



# Investment opportunities in the Ethiopian Dairy sector

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## Message

from

**H.E. Teshome Toga**

Ambassador of the Federal Democratic Republic of Ethiopia to the BENELUX, Baltic Countries and Permanent Representative to European Union

On behalf of the Ethiopian Embassy, I would like to warmly welcome you to the business event organized by both the Ethiopian Embassy in Brussels and the Embassy of the Kingdom of Netherlands in Addis Ababa. The Ethio-Netherlands Business Event, being first of its kind, is aiming at enforcing the ever-growing friendly relations between the two countries. It is my strong believe that both the Ethiopian and Dutch private sectors shall benefit from this important business forum as it creates a unique opportunity for new networks and acquaints the Dutch private sector with valuable insights about business opportunities in Ethiopia.

Presently, Ethiopia and the Netherlands enjoy good diplomatic relations and a strong development and economic partnership. Ever since the Netherlands opened its diplomatic Missions in Addis Ababa in 1950, the relation grew from strength to strength. Most recently, the second round of political consultation took place in The Hague from 5 to 6 March 2015, where we emphasized the need to further stimulate the economic relations by maintaining and diversifying the foreign direct investment (FDI) and trade between the two countries. Our statistics clearly indicate that Dutch investors are leading among Europeans in FDI flows in Ethiopia. Tapping into the Dutch investment opportunity and potentials in Ethiopia, the Dutch government has included Ethiopia in almost all financial instruments available for the private sector encouraging investment in developing countries.

Trade between the two countries is showing an encouraging development in recent years. Today, there are over 100 Dutch companies active in Ethiopia, and this number is increasing. However, I strongly feel that the current level of investment is not commensurate with the potentials of the two countries. My government is highly

committed to promote the private sector by offering a comprehensive set of incentives to enhance the FDI in the country. Investors shall be accorded with several incentives depending on the sectors; such as custom duty payment exemptions on capital goods and construction materials, income tax exemptions from two to seven years and carry forward losses. Similarly, several export incentives have been put in place to encourage investors aspiring for export. Ethiopia is highly devoted to protect investment through its Investment Code that protects private property, repatriation of capital and profit. More importantly, my government guarantees constitutional protection from expropriation. Ethiopia is also a signatory to the International Investment agreements such as the Multilateral Investment Guarantee Agency (MIGA), Bilateral Investment Promotion & Protection Treaties (BIPPT), and the International Convention for the Settlement of Investment Dispute (ICSID). Equally, Ethiopian products have duty-free, access to the U.S. and EU markets.

Ethiopia is now going through a constant multifaceted economic growth and transformation. Ethiopia's improved economic infrastructure, abundant and affordable labor along with its excellent climate and fertile soil remains the country's comparative advantage attracting investors. Market wise, the >90 million population and strategic geographical location offer a wide market access. Ethiopia with its huge investment potential has a lot to offer for the Dutch private sector. My government is ready to address any investment request from the Dutch private sector and to create economic interdependence between the two countries and peoples. It is therefore, my sincere believe and expectation that the outcome of this business event will highly equip participants with the required information and techniques necessary to elevate the economic relations of the two countries to a higher level.

Using this opportunity I would like to extend my appreciation to all the stakeholders who took part in organizing this important event both in Ethiopia and in the Netherlands along with our Embassy in Brussels. My special thanks also goes to my counterpart and friend Lidi Remmelzwaal, the Ambassador of the Kingdom of the Netherlands to Ethiopia and Djibouti for her tireless effort and the excellent working relations we have developed over the last two years.

With my best wishes for the success of the Ethio-Netherlands Business Event.



## Foreword

from

**Lidi Remmelzwaal**

Ambasador of the kingdom of the Netherlands in Ethiopia

Not many people realize how much Ethiopia has changed over the last two decades. Ethiopia combines strong economic growth with impressive results in poverty reduction and other social indicators, food security and infrastructure; a structural transformation of the economy is underway, with an increasing role for manufacturing and industrialization. For the coming years, the perspective for future private sector investment is promising in many areas, especially in sectors where more value can be added and where large numbers of jobs can be created.

Of course these developments have also had its effect on the changing relation between the Netherlands and Ethiopia. Although development cooperation is still very much needed for years to come, the relation has broadened into a dynamic partnership, in which Aid and Trade and economic cooperation are becoming more and more prominent.

Many Dutch companies have discovered the potential in Ethiopia; at present we have are over 100 companies with a permanent basis in Ethiopia and the number is increasing. Although the majority of these companies is active in horticulture/agriculture, there is also Dutch presence in other sectors like transport, construction, tourism, food & beverages etc.

Opportunities in Ethiopia are almost endless and one of the promising areas is the Agro-sector of Dairy. The Netherlands Embassy in Addis Ababa therefore felt the need to commission a Business Opportunity Report, to provide further insight into the opportunities in dairy sector and specific information for companies that are interested to invest in this sector in Ethiopia.

This Business Opportunity Report will also be used as an important input for the first Ethio-Netherlands Business Event that will take place on 5 and 6 November 2015 in the Netherlands. This important event will focus on a selected number of promising sectors in Ethiopia, such as seeds, oilseeds, poultry, dairy, spices, textiles and logistics.

The idea for this Ethio-Netherlands Business Event surged in a dynamic discussion that I had with my colleague, the Ethiopian Ambassador to the Netherlands (based in Brussels). We felt that the growing economic cooperation, the ambition of Ethiopia and the numerous opportunities for Dutch companies deserve a much broader and prominent approach, such as this Ethio-Netherlands Business Event, in addition to sectoral economic and trade missions.

In good partnership between Ethiopia and the Netherlands this initiative was further developed and together with many other partners and stakeholders this idea has been turned into reality. This Business Opportunity Report is an important building block for the Ethio-Netherlands Business Event.

I hope that this Business Opportunity Report on Dairy will prove to be instrumental for raising the interest of Dutch companies to invest in Ethiopia and will provide them with useful and realistic information. The Ethio-Netherlands Business Event will certainly offer an interesting podium for this and I am very much looking forward to this important event. It will certainly be yet another step in the further strengthening and broadening of the partnership between the Netherlands and Ethiopia.



- ▶ The total volume of milk produced in Ethiopia has gradually increased over the last 15 years from less than 1 billion liters to 3.0 billion litres in 2014/15.
- ▶ The dairy sector contributes considerably to the national Gross Domestic Product (GDP). It has a share of 40% in the agricultural GDP and 12–16% in the national GDP. The latter is about twice as high as it is in neighbouring countries in Eastern Africa, mainly because of the significantly higher share of agriculture in the Ethiopian GDP.
- ▶ The Government of Ethiopia plans to almost double domestic milk production between 2015 and 2020. This increase will require investments and improvements in yields of fodder crops, feeding, genetics, health, and dairy processing.
- ▶ Ethiopia imports a significant amount of dairy products and decreasing this will reduce foreign currency spending on imports.
- ▶ Over the next five years the government is not only aiming at a decrease in dairy imports, but is also working on a dairy policy that will result in the export of dairy products.



# Major trends in the development of the dairy sector

## 1



# 1.1 Production and processing

## 1.1.1 Farming systems

The milk is produced by 11.4 million milking cows that are kept within five different dairy farming systems:

- **Pastoral system**—traditional pastoral livestock farming
- **Agro-pastoral system**—traditional lowland mixed livestock farming
- **Mixed crop livestock system**—traditional highland mixed farming
- **Urban and peri-urban systems**—the emerging smallholder dairy farming
- **Commercial system**—specialized commercial intensive dairy farming.

The rural dairy system, which includes the first three groups, contributes 98% of total production, while the two latter groups contribute only 2% of the total national milk production. In the first two groups cattle are kept as sources of food for the farm household (milk and meat), to provide traction power, and to store wealth, and prestige. The mixed crop-livestock systems are mainly found in the highlands of Ethiopia, where cattle are used for traction and milk is mainly consumed in the household or sold to neighbours. Surplus milk is converted to butter or ghee and fermented dairy products such as local types of yoghurt (*ergo*) and soft cheese (*ayib*). These products can be made for home consumption as well as for sale in urban areas, since they are easier to transport and have a longer shelf life.

In urban and commercial systems, a substantial part of the milk produced is delivered to the formal market.

The total Ethiopian cattle sector consists of 56.7 million head of cattle. The vast majority of this national herd are bulls of indigenous breeds that are kept for traction power, and cows and young stock of the same breeds that are kept to produce replacement bulls. Most of these cattle will end up in slaughterhouses producing beef and hides as by-products. Culled dairy cows also contribute to meat and hide production.

The Ethiopian dairy cattle population is distributed over all regions of the country. The four regions with the greatest number of milking cows are shown in figure below. Almost all of the cows in Tigray, Amhara, Oromia and SNNP are located in highlands. The highlands are also the regions with market-oriented milk production. Out of the total milking cow population, only about 10% is located in lowland areas.

## 1.1.2 Major milksheds

The development towards more milk supplied to the formal sector is taking place in the larger cities. Figure on page 6 shows the milk volumes produced in nine major milk-production areas, called *milksheds*. Figure also shows where the milksheds are located. These milksheds have the best potential for value chain and dairy sector development. This is why we consider these regions as the areas with the greatest opportunities for investment in the dairy sector.

The Adama-Asella milkshed 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 milkshed is 200 km long and is located east of Addis, connecting Dukem-Debre Zeit-Adama-Assela. It has well-developed infrastructure to access the large Addis Ababa market and other small towns using new express roads. The area also has high potential for roughage production, access to feed from nearby feed factories (Alema Koudijs 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.

The Great Addis milkshed is the most developed milkshed and is leading the dairy development in the country. Many linkages between chain partners are already developed and are evolving further. Most of the dairy processing industries are located within a few kilometers of the milkshed. Most of the dairy processors (Lame, Mama, Elemtu, Selale and others) have established chilling facilities with various capacities. This is also the area that supplies milk to the most affluent population—about 4 million citizens in the capital. The region has good conditions for fodder production and use of by-products, and farmers have a high percentage of crossbreds and good access to AI.

In the Ambo-Woliso milkshed, 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 Great Addis and Adama-Asella milksheds. Milk production is low compared to the number of milking cows, since most of them are local breeds with low average daily production.

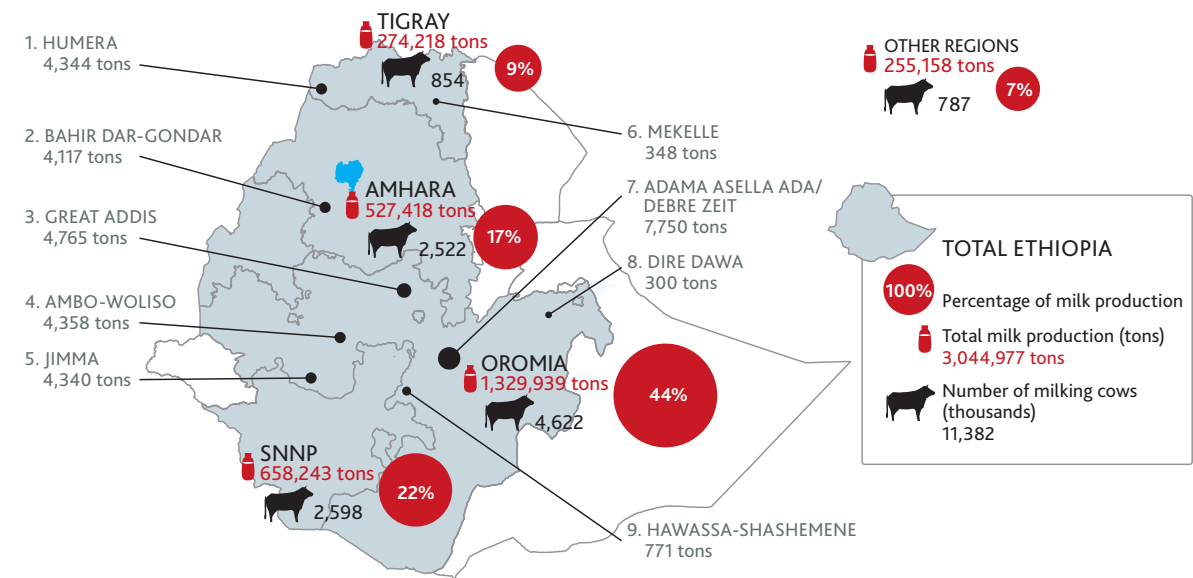
Humera milkshed consists of the North-Western and Western part of Tigray. The area is known for its Barka cattle breed (commonly known as *begait*), which is an indigenous zebu breed inhabiting Eastern Sudan, Southern Eritrea, and Northwest Ethiopia. The breed is mainly known for its higher milk yield (daily yields up to 12 liters per cow), meat, and traction power. The breed has been distributed in various areas of the region with the aim of boosting milk production. For this reason the government has also established a specialised ranch with the aim to improve the supply of heifers. In Humera and other towns, a number of cooperatives and private firms are emerging in production and distribution of milk. Seven cooperatives and one union are engaged in dairy production and marketing and are working on establishing a processing plant. During the wet season (June–September) cattle depend on natural pastures and browse trees, while during the dry season (October–May) crop residues and crop stubbles that remain after the harvest are used as sources of animal feed. Supplementation with commercial feeds is rarely practiced.

The Bahir Dar milkshed also has good conditions for fodder production and is developed by a significant number of cooperatives and a few active cooperative unions involved in milk processing.

In the Hawassa milkshed, still much has to be developed. The small cooperative and private processors are so far only able to process small volumes. But many cities and towns in the surrounding area (e.g. markets of Ziway, Shahsemene, Hawassa, Arba-Minch, Dilla, and Wolayta) offer significant market potential.

In the Dire Dawa and Jimma milksheds, farmers make their livelihoods from cash crops such as chat and coffee, and it may be hard for milk production to compete with these crops. This situation is exacerbated by the low availability of fodder in both areas; in Dire Dawa due to low rainfall, and in Jimma due to intensive cropping. The situation in Mekelle is uncertain, with fodder availability and the investment climate being uncertain factors.

Milking cows and milk production per region and the total volume of milk produced (in metric tons per year) in the nine largest milksheds  
Source: CSA, 2015, and own calculations, based on data of CSA, 2015

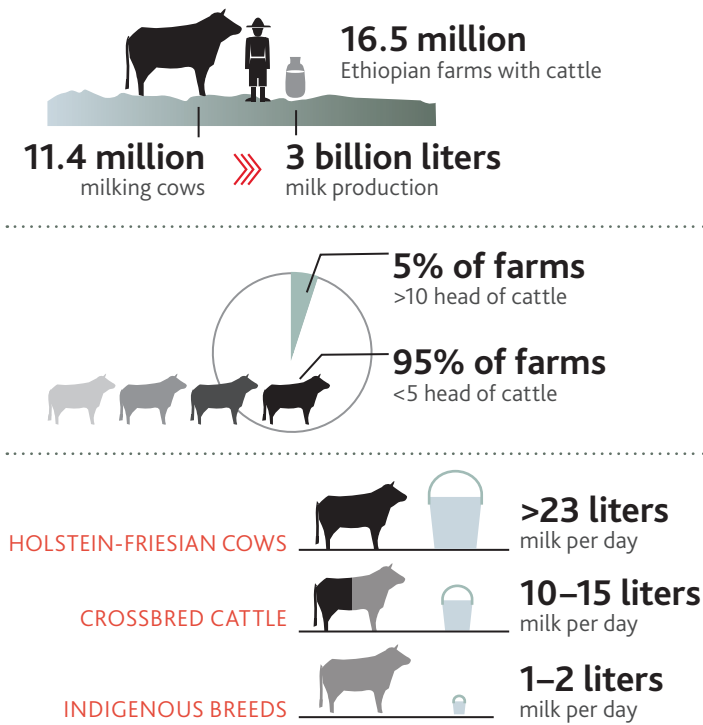




1.1.3 Dairy farms

Milk production

The 11.4 million milking cows that produce 3.0 billion liters milk are mainly kept by smallholders in the highland areas. These smallholders keep additional cattle to provide traction power, to produce meat and manure, and to serve as an insurance in times of drought or a household emergency. Of the total 16.5 million Ethiopian farms with cattle, 95% are holdings with less than five head of cattle. And 5% of the farms have 10 or more head of cattle. That means almost one million farms in this category. About 3% of the milk produced in the highland areas comes from medium- and large-scale commercial farmers. Indigenous stock produce 97% of the milk produced by cattle and the remaining 3% comes from improved exotic crosses and pure grade exotic cattle. The percentage of Friesian or Jersey-blood in these crossbreds usually ranges between 60% and 90%. This type of cattle can mainly be found within the urban and peri-urban farming systems and within the commercial farms in the milksheds of Great Addis, Adama-Asella, Ambo-Woliso, Hawassa-Shashemene and Mekelle.



The mild temperatures, high rainfall and fertile soil in the highlands create good conditions for higher producing exotic breeds. Alfa Farm in Debre Zeit shows that Holstein-Friesian cows kept under good management circumstances in this climate can produce more than 7,500 liters of milk per lactation (equals average production per day of more than 23 liters). Based on own observations and expert opinions on farms with crossbreds in the Addis Ababa milkshed, crossbred cattle reach an average production between 10 and 15 litres per day, combined with a lactation period of about 10 months. The indigenous breeds have an average milk production between 1 and 2 liters per day (average in 2015 is 1.35 liters per cow per day) for a lactation period of six months.

Feed and fodder

Expansion of dairy farms and production per cow are constrained by lack of land, cows, feed, and water. Feed supply for dairy cows is a weak point in the Ethiopian dairy sector. Feed is scarce and expensive. Most of the commercial farms have little land since it is hard to obtain land from the government. According to government plans, this policy might be changed. The government shows awareness of the fact that producing more milk requires more land for fodder production. But at the same time experts argue that land in the highlands is scarce and dairy farmers will have to compete with, among others, crop growers. They see higher production of fodder per hectare as a better solution instead of adding more land to the farm.

More land and higher fodder yields per hectare are big challenges for the Ethiopian dairy sector. Fodder conservation, use of new fodder crops and grass varieties, and making better rations to fulfil the needs of higher-producing cows and providing enough water for them are additional steps to ensure cows produce milk according to their potential. The production of fodder in lowland areas and its transport to dairy farms in highland areas is mentioned as a way of improving feed availability on commercial dairy farms in the major milksheds. Production of concentrates is also gaining importance and can contribute to better rations if used in balance with sufficient roughage.

Rations on the commercial dairy farms usually contain hay, wheat bran, brewery by-products (grain and yeast), molasses, and high-protein oilseed pressings like noug cake, sesame cake, and cotton seed cake. Brewers-grain

and molasses are very popular among farmers, as they are considered to boost higher milk production per cow<sup>1</sup>.

Seasonal influences play a big role in the dairy sector in the highlands. June, July and August are the months with heavy rainfall. September, October and November are the harvest months, when farmers make hay on grasslands and harvest forage crops, and this is also the period with the highest milk production. The next three months are the dry season with occasional frost in the morning in January. There may be showers during March until May, which is the hottest month. From March to June, milk production gradually drops until it rises again from July onwards.

1.1.4 Collection of milk

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. They sell the end products in their own shops or to private-owned shops, cafeterias, hotels, etc. The present cooperatives came into existence for various reasons. Some were already formed during the Derg regime (1974–1991), others were established afterwards by farmers themselves or with the aid of donors, church organizations, or the government. Some cooperatives also provide services such as selling feed. Primary cooperatives may form unions to build up more negotiating power or to collaborate in their own processing and marketing activities. The unions negotiate the selling price on behalf of the member cooperatives. They can also provide services such as training, financial audits and other business services. The size of cooperative ranges between 20 and 400 farmers. Unions serve as umbrella organizations for 5–30 cooperatives. The number of dairy cooperative unions is rather small (around 5). Cooperatives and unions can add much value to the collected milk. The quality of the staff of cooperatives and unions can differ and this may influence performance. Some cooperatives also lack milk transportation capacity, accessible roads and sound equipment in the processing plant.

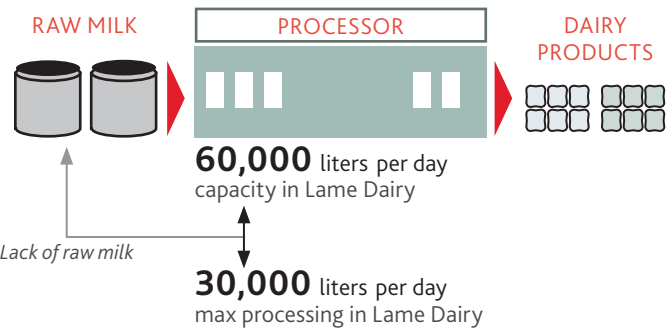
<sup>1</sup>Recent investigations (September 2015) of feed and milk samples in Ethiopia have shown that noug cake is among the causes of high levels of aflatoxin concentration in feed and in milk from animals fed with this feed.

Not all the milk is collected by cooperatives. Private milk processors collect milk directly from commercial farms and establish their own collection centers. Private traders do the same, selling raw milk in towns and cities. Some processors have their own dairy farms to supply the raw milk. No information is available on the percentage of milk collected by cooperatives versus private companies.

1.1.5 Dairy processing

Processors collect raw milk from dairy farms, private milk collectors, cooperatives and unions. As described above, the raw milk is collected at the collection center and transported to the processing plant. It is processed into pasteurized milk, cheese, butter and yogurt. The processed dairy products are distributed to retail shops, supermarkets, schools, hospitals, restaurants, cafes and hotels located in major urban centres.

Dairy processing is booming in Ethiopia. Every year new processing plants are established. Based on the latest reports there are at least 35 active dairy processors in the country. Table on page 28 shows the list of processors as collected by Land O'Lakes, the AGP-LMD-project and NABC. Most of the companies operate in the vicinity of Addis Ababa. The daily processing capacity of the largest processor, Lame Dairy, is 60,000 liters per day, but until now it operates at a maximum of 30,000 liters. Eight companies have a processing capacity of over 10,000 liters per day. Many of the processing plants attain volumes that are significantly below their capacity (see table on page 28). Lack of raw milk is the most important reason for this, according to most processors. Many say that “there is more demand than we can supply”, although some farmers perceive that there is a lack of demand which prevents them from expanding production and that their cost price is higher than the market price. Perceptions differ.



Interviews with so-called ‘promising dairy companies’ by NABC show that many of these young companies have plans to expand their processing plant. Many of them are farm-based and aim to supply dairy products to local households, hotels, cafeterias, factories and supermarkets. The major challenges they experience are: keeping up with high demand, access to finance, supply of raw milk (including lack of feed and quality of cows), dealing with the fasting season, and technical expertise on processing (equipment, as well as technicians).

The most expressed needs these processors mentioned during the interviews were: technical know-how including training, increase of milk production and management on the supplying farms, and equipment for dairy processing.

During the fasting periods members of the Ethiopian Orthodox religion do not eat animal products (meat, eggs and dairy). There are three, long fasting periods during the year: 43 days before Christmas, 55 days before Easter and 15 days before August 15th. These fasting periods cause high volatility in consumption of dairy products. During the fasting season dairy processors try to limit the supply of milk, e.g. by requiring higher quality of milk or paying a lower price. The average farm-gate milk price per liter in this period is about ETB 1–2 (€ 0.04–0.08) lower than in other periods. This compensates for the lack of demand and/or extra costs processors incur to store dairy products (cheese, butter, etc.) during the fasting season.

Some processors have plans to produce UHT-milk, but so far no one has started this. During the interviews, dairy experts stated that the present quality of the raw milk is not good enough to produce such a product with a long shelf-life. The low-quality raw milk is one of the major weaknesses of the Ethiopian dairy sector. Many processors mention the problem but there has been little action to improve the situation. It seems that the demand for raw milk is so strong that processors cannot afford to refuse low-quality milk. And there are many reasons for the low quality.

First, hygiene is poor during the milking process. Second, there is an absence of chilled storage on the farm and chilled transport to the collection centers. Third, quality checks at the collection centers and processing plant are insufficient. And fourth, there is a lack of quality-based payment systems. Concerns expressed frequently by chain actors include: milk diluted with water, high

bacterial count, milk containing antibiotics or aflatoxins, and sour (spoiled) milk in the supermarket.

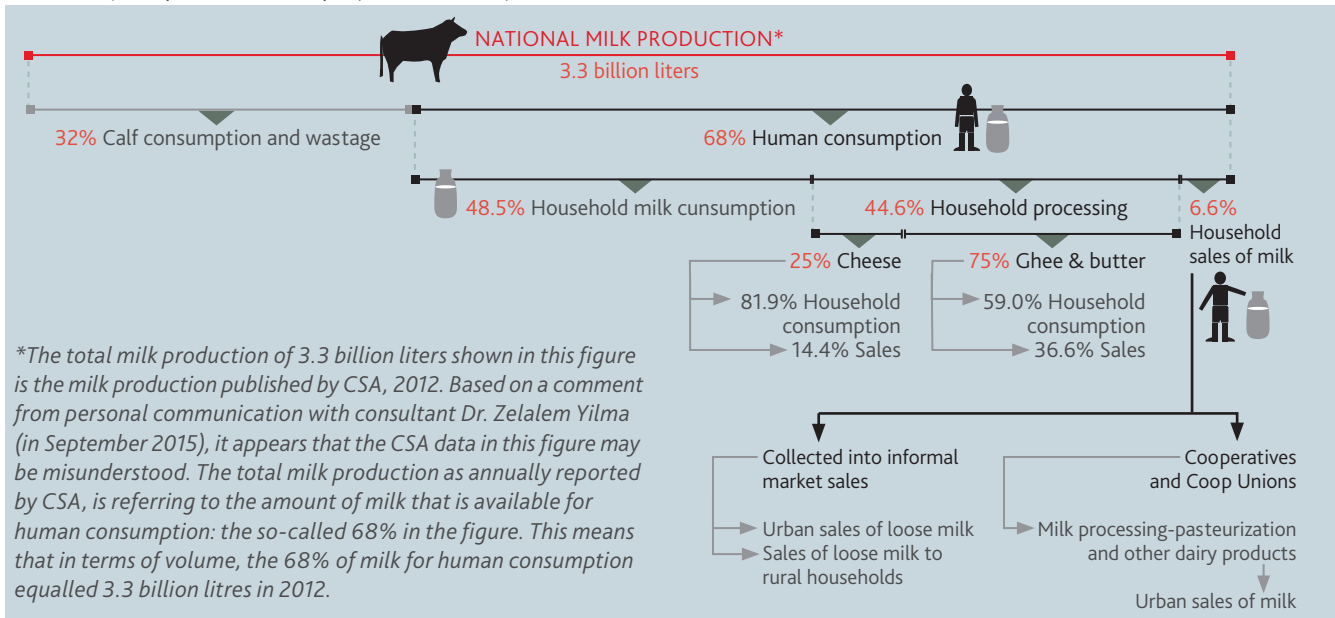
There are a few processors (e.g. Elemtu Integrated Milk Industry and Ruth and Hirut Dairy) who have introduced a payment system, where the raw milk price depends on the percentage of fat content in the milk, as an incentive to discourage dilution of milk with water. For some consumers, concerns about milk quality have led to reduced consumption or avoidance of milk, or even a switch to purchasing imported products. Building trust in the milk quality is an important challenge for the sector.

## 1.2 Value chain structure

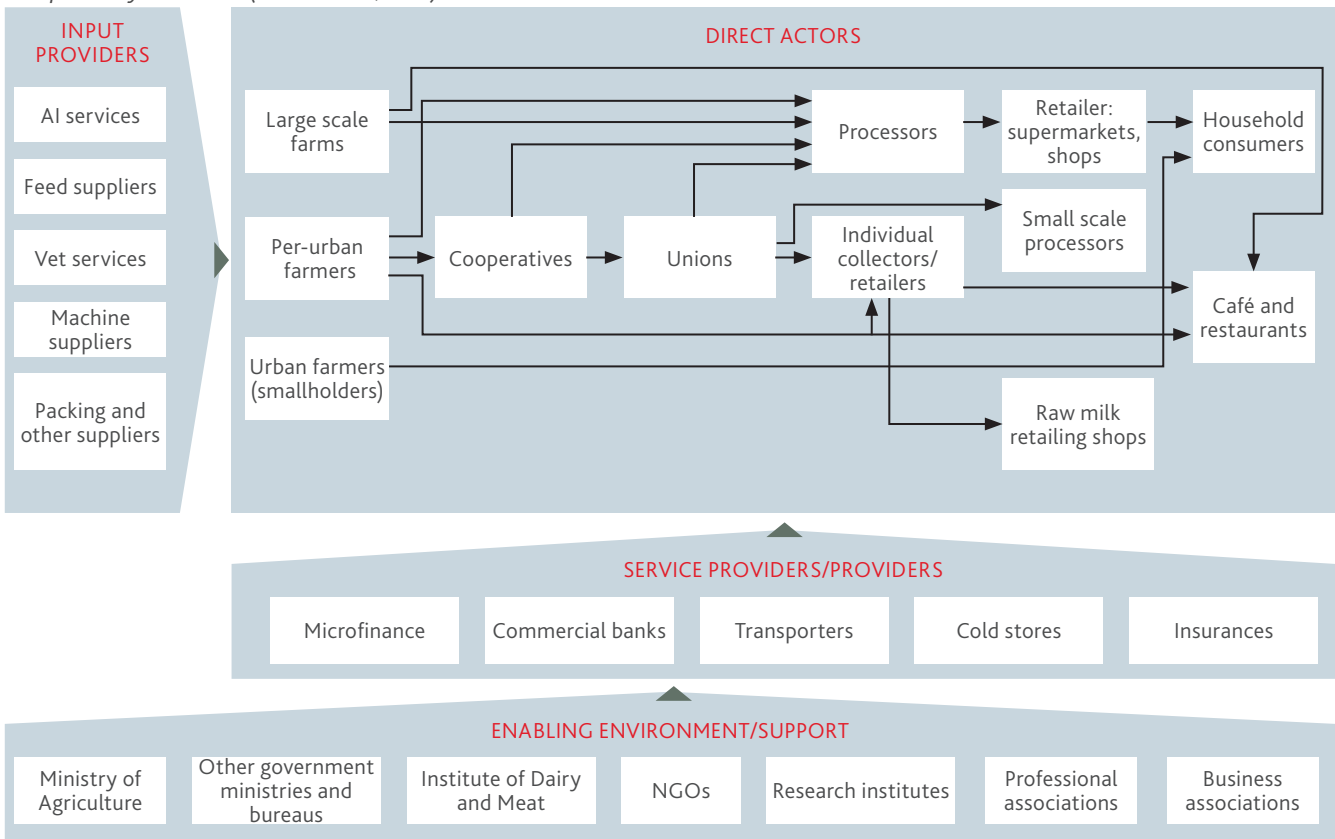
Figure on next page shows that from the total milk produced by Ethiopian dairy cows, only 68% is used for human consumption. The remaining 32% is fed to calves or wasted on the farm. And 6.6% of the milk for human consumption leaves the farm in liquid form, either shipped for processing or sold as raw milk on the informal market to neighbours or nearby urban households, kiosks, shops and restaurants. The rest of the milk is consumed or processed at home. The proportion of the home-processed products sold is 13.8% of the total amount of milk available for human consumption. Cumulatively, the 6.6% of the milk directly sold to processors as mentioned above and the 13.8% sold from home as cheese, ghee and butter amount to 20.4% of the total amount of milk that is available for human consumption outside the family where it is produced.

Figure below shows an overview of the main actors in the dairy value chain. It distinguishes between dairy farming systems (mentioned before in 1.1) and other actors in the dairy chain. Within this chain cooperatives and unions play important roles in collecting and marketing raw milk and serving the interests of the many small milk producers. The collection of milk from individual farmers is usually done by the cooperatives. In some cases these cooperatives not only collect and sell milk, but also provide services such as selling inputs like feed or seeds. Cooperatives serve small groups of farmers and in order to build market power and achieve economies of scale, they can jointly establish (cooperative) unions, functioning as super-cooperatives. Processors collect from cooperatives and from commercial farms. At the end of the chain the processor supplies small retail shops or kiosks, supermarkets and restaurants.

Allocation of milk produced in Ethiopia (AGP-LMD, 2013)



Ethiopian dairy value chain (Land O'Lakes, 2010)



## 1.3 Inputs and services

### 1.3.1 Animal feeds

Feed supply is already mentioned as a weak point of the dairy sector. Fodder is scarce and concentrates are not very common. Specialized grass and fodder crop growers sell hay bales to farmers. Over the past two years hay prices have more than doubled (just like milk prices) due to drought in the lowlands and NGOs or authorities buying hay to feed the cattle of smallholders. Intensification of the number of dairy cows per ha in the highlands also contributes to the scarcity of hay.

Some of the farmers visited around Addis Ababa use concentrates produced by feed mills. Concentrates are made from available agro-industrial by-products, grain and grain screenings (mainly wheat bran). There is little knowledge about how to make balanced rations to keep cows productive and healthy. Lack of land to produce own fodder is also a constraint on the availability of feed. At the same time there are areas in the highlands with potential for higher harvest yields than realized. SNV and research institutes are conducting experiments with improved grass seeds and fodder crop varieties.

Cutting grass two or three times a year, irrigation and ensilaging are other ways of improving fodder availability for cattle. Feeding cattle more crop residues is good for adding fibre to rations, but these often contain little valuable nutrients.

Feed mills and feed dealers could contribute to feed quality and feeding by giving more information about the quality of the feed, the use of feed in rations and emphasizing the value of roughage for keeping cows healthy and productive and for reducing feed costs.

Import tax is levied on feed components (premises with vitamins and minerals) brought into the country. This tax increases the price of concentrates and may hinder milk production. Recently a group of experts led by the Agricultural Transformation Agency (ATA) studied the pros and cons of this levy. They drafted a report in which they drew the conclusion that the extra import taxes do not compensate for the missed added value in livestock value chains. Therefore, they have put forward a proposal, which is now being considered by the government, to abolish the import tax on feed ingredients.

In 2015, the government limited the export of crop residues and by-products used for animal feed to make more feed available for livestock. The export of fodder had already been limited earlier.

### 1.3.2 Breeding and genetics

The National Artificial Insemination Center's (NAIC) objective is to improve milk production in local cattle breeds by producing and distributing quality semen from genetically improved bulls. The organisation has its bull stud and a bull and dam farm with dairy cows at Holetta. This farm oversees the production, testing, selection, and rearing of pure Friesian, Jersey and crossbreeding bulls. The cows on this farm are inseminated with international top-bulls to produce superior male offspring. Bulls that fulfil certain criteria are moved to Kaliti (Addis Ababa area) to produce semen that is distributed to AI technicians.

In 2009, a group of private livestock professionals founded ALPPIS (Addis Livestock Production and Productivity Improvement Service), now the leading private AI service-provider in Ethiopia. ALPPIS imports and distributes semen from the US exporter World Wide Sires (WWS). The organisation also supplies AI equipment, veterinary drugs, advisory services and trainings for AI technicians and farmers. Since 2010, NAIC and universities also source semen from ALPPIS. Based on AI conception rates, the technicians at ALPPIS have shown better results than their fellow AI technicians at NAIC.

The government-organised NAIC is facing a range of inefficiencies in its AI service: different service levels, differences in prices between technicians, limited availability of technicians, and currency and protocol problems when importing semen. At the same time, research has shown that the selection programs for bulls and crossbreeding programs have not met expectations and need to be adjusted. Producers sometimes complain about poor services from AI technicians, as well as veterinarians. Due to large distances, lack of fuel for cars and motorbikes, or constrained servicing times, these services do not always function to the best interests of dairy farmers.

In the government's 2015 Livestock Master Plan (see 3.1) improved breeding policies and better health services are considered key prerequisites for increasing

milk production per cow. AI, crossbreeding, oestrus synchronization, milk-recording schemes, and customized genetic selection programs are all part of the improved breeding strategies. The mass synchronization and insemination program, developed in Ethiopia over the past five years to improve pregnancy rates and the number of inseminations per technician, is one of the measures taken to improve the success of AI. Results have shown that through this program the pregnancy rate after first insemination can be improved from 27% to 60%. Further positive influences are expected on the number and genetic level of calves.

Another road in the Livestock Master Plan to improve AI services is privatization of the service. Land O'Lakes has recently started a project to explore this.

### 1.3.3 Animal health

In Ethiopia, veterinary services are primarily delivered by the government. In 2012 there were a total of 9,711 animal health professionals, 256 at federal level and the remaining 9,455 distributed across regional states. Academic veterinarians account for about 9.3%, with the remaining being lower-level animal health professionals.

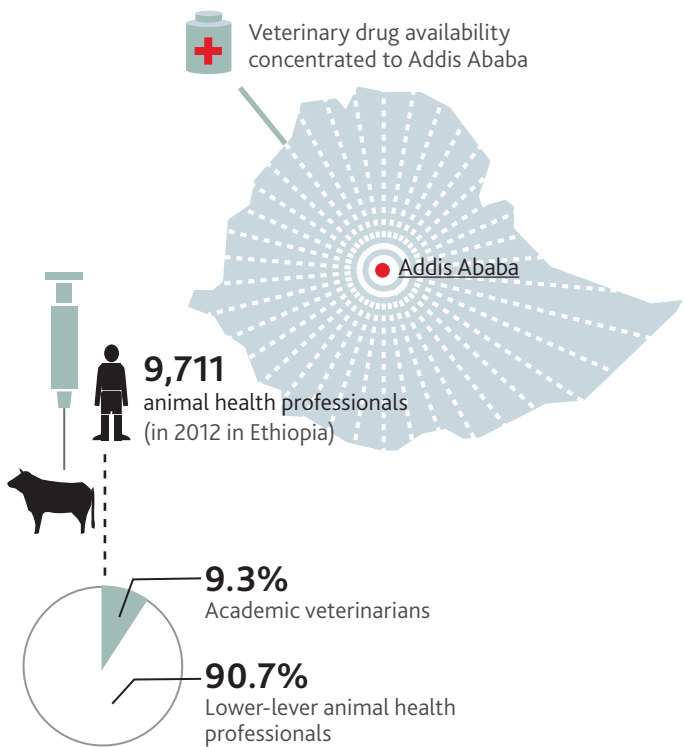
The problems in the veterinary services show similarities with the weak points in the AI system described above. The present quality of veterinary services is considered to be poor. There is also a drug supply problem for veterinary service-providers. Most private veterinary drug wholesalers found in Addis do not have online services to check the availability, quantity and price of drugs. Thus veterinary service providers are forced to visit each supplier around Addis and spend two to four days on procurement. During this time, they cannot serve the farmers in their area.

To improve the quality of veterinary services, the government policy is aiming at privatizing the delivery of veterinary clinical services and drugs. The present dominant position of the government in these services needs adjustment.

Experts are worried about the high price of drugs due to import taxes. Since the government has placed a high priority on livestock production, the sector will request for exemption or a deduction.

### 1.3.4 Equipment

Ethiopian farms hardly invest in durable assets. Milking equipment, tractors and machines are rare. Almost all cows in the country are milked by hand. The increase in herd size in the major milksheds may pave the road for milking machines on farms. More emphasis on harvesting fodder will lead to investments in harvesting equipment. The medium- and large-scale farms will need simple and cheap equipment. Simple second-hand equipment from Europe fits better than new, high-tech equipment. About the same is true for equipment in dairy factories. The many new factories being built are creating a substantial need for dairy-processing equipment, but the present situation is that Indian and Chinese companies offer a better quality-price ratio for the Ethiopian market than US or European companies. However, second-hand European equipment is quite popular because of its perceived better quality.





1.3.5 Advice

The public agricultural extension and advisory services in Ethiopia are decentralized. Within all kebeles (villages) development agents are based at farmer training centers and provide extension services. Development agents can receive support from subject-matter specialists who function at woreda (district) level.

The public extension service is mainly focused on smallholder dairy farmers. Development partners, such as SNV, Land O’ Lakes, USAID and ILRI, have been providing advisory services for dairy-sector actors on various issues, such as improving production and productivity, business development, product and market development, milk quality, etc. These services are carried out by their own technical staff and/or outsourced to consultancy firms for specific subjects.

The advisors in the market working on business development and dairy technology advice are few, be they freelancers or consultancy firms. Their services are not easily accessible due to affordability and quality issues: the cost and service level do not match the needs of customers. With the exception of financial management and audit services, most of the dairy farms and firms hardly obtain any services from private consultancy firms. Only a few have received consultancy services from development partners through free private consultants.

There is lack of dairy-sector advisors in many disciplines. Especially in dairy technology and engineering, the shortage of expertise is very pronounced. Moreover, there is no strong platform for sharing knowledge and information on these themes. There is a need to establish a public or private center of excellence for continuous technological innovation and transformation. There is also a growing demand for consultancy services in various fields. Affordability and quality of tailor-made services should meet the needs of the target groups.

Advice tailored to support commercial farmers is a new service area. Farmers need skills on overall farm management and on feeding, housing, health and hygiene, which would pave the road to more efficient farms resulting in higher milk production per cow per day, and in increased profitability.

1.3.6 Access to finance

Agricultural communities have not only established cooperatives for milk collection and processing, but also for financial services such as collecting savings and providing loans. The Cooperative Bank of Oromia (CBO) is the largest of them all and groups such as primary cooperatives, cooperative unions, and cooperative federations, are the majority shareholders (63%). CBO has the knowledge and many years of experience in financing a large number of agro-sectors in the country. It collaborates with various financial institutions, e.g. Rabobank, to improve skills and knowledge in agro-finance.

Larger farms needing loans for investment may have access to credit based on collateral. Development Bank of Ethiopia (DBE) may provide loans up to 70% of the total investments.

Some cooperatives provide services using part of the milk payments to pay the feed supplier or the bank. This kind of finance and liquidity structure eases financing and repayment, offering banks and feed suppliers a better guarantee of continued repayment. For this reason the Agricultural Transformation Agency (ATA) works together with Kifiya Financial Technology to offer digital voucher schemes to smallholders. Especially in Amhara, this programme allows a large proportion of the farmers to gain access to credit. In the first phase of the program participants will still work with paper vouchers.

Additional financing possibilities for farmers can be offered by microfinance providers. In the agriculture sector in Ethiopia the most important microfinance institutions are the savings and credit cooperatives (SACCOs). The greatest challenges are to improve the professionalism of these cooperatives and to reduce their interest charges.

A Dutch company exporting goods to Ethiopia may face problems if they are being paid in local currency (birr) and want to exchange this into foreign currency. Money can only leave the country when paid in US dollars or Euros. Often this is done in cash. Payment by international transfer is difficult, though international banks can help to smoothen this process.

1.4 Trade and logistics

The collection centers and the processors are the connecting links in the dairy chain. They organize the logistics as well as the trading from farmer to processor and from processor to retailers. Practices between processors vary significantly—from chilled transport to transport with few quality precautions. Individual milk haulers may offer good-quality raw milk, but others may adjust milk composition to fit consumer demand for cheap milk.

Transportation of milk from smallholder farms to milk collection centers (MCCs) or any market outlet is done mainly by family members, mostly children on foot, although animals, bicycles and motorcycles are also used. Some individuals rent or own trucks to transport milk from farms to milk shops, cafes, restaurants and milk-processing centers. Commercial dairy farmers and dairy cooperatives also use trucks with the capacity to carry 10- to 50-liter milk cans from their farms to markets.

1.5 Lucrative domestic market

1.5.1 Growing demand

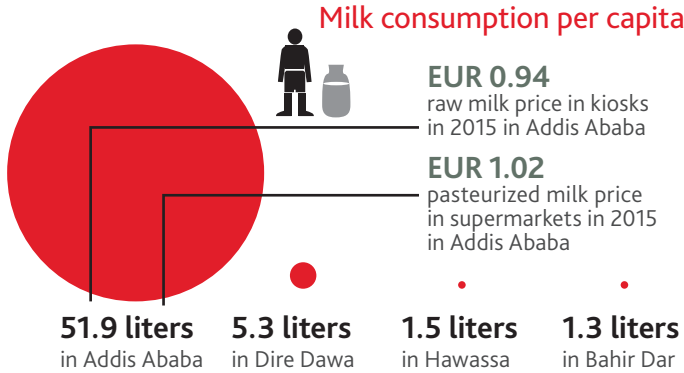
Ethiopia is one of Africa’s rising economies with the highest growth rate in GDP in recent years. At the same time the country’s average GDP per capita is still quite low. This means that there is a great potential for further growth. The same is true for the potential growth in the consumption of dairy products. The country has a long tradition of dairy consumption and the increase in incomes is therefore expected to lead to an increase in dairy consumption as well. If this consumption follows the pattern of other African countries already in a higher GDP-class, dairy consumption per capita is expected to increase strongly. This is one of the reasons for the launch of many new dairy processors in the last few years.

Other positive factors for the future of the dairy sector in Ethiopia are: the positive economic outlook, the large domestic milk market (estimated by United Nations: 100 million people in 2015), the expected strong further growth in population, cheap labour, and urbanisation. Other factors relate to the agro-ecological situation: fertile soil and high precipitation create good conditions for fodder production, a good climate for high productive dairy cows in the highlands, possibilities to produce

more fodder in the lowlands, crop residues and food by-products are available, and finally the conducive dairy policy of the government. The formal dairy value chain is still in the early stages of development, offering many opportunities for new investors to further develop the industry. This can begin in the milksheds already mentioned in this report, and at a later stage to be continued with the development of new milksheds.

1.5.2 Consumer trends

For some time, the average per capita consumption of dairy products has been estimated at around 20 liters. Some additional data from a small survey in four major towns of Ethiopia showed that the average milk consumption per capita was relatively high in Addis Ababa (51.9 l), but much lower in the other three towns involved in the survey: 5.3 l in Dire Dawa, 1.5 l in Hawassa and 1.3 l in Bahir Dar. In Addis Ababa about 50% of the milk consumed was pasteurized, in the other three cities all the milk consumed was unpasteurized. The report concludes that the high consumption in the capital reflects the large number of higher income households and foreigners, and at the same time the low consumption in the other three cities indicates an un-served demand. Although a third of the population still lives in extreme poverty—on less than € 0.55 per day—an urban middle class is rapidly emerging. Research done by 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%. In September 2015, the authors recorded prices in Addis Ababa of ETB 22 (€ 0.94) for raw milk in kiosks, and ETB 24 (€ 1.02) for pasteurized milk in supermarkets. Many middle and low-income consumers consider milk prices too high to afford.



The number of supermarkets in Addis Ababa is growing fast and the increased sale of dairy products in these stores is expected to raise quality standards to higher levels. There are also more than 100 grocery minimarkets engaged in the retail of dairy products. At the same time, many processors create their own small retail shops in Addis Ababa and most of the citizens will keep on buying from these kinds of shops and kiosks with lower quality standards than supermarkets.

The domestic milk consumption in 2019/20 is projected to be 132% of the production in 2014/15. This means that the market volumes will grow. The projections indicate that cow-milk production will exceed consumption, causing the excess milk on the domestic market to trigger a drop in milk price, making milk more accessible to lower-income consumers.

The quality of milk in the present market is low compared to international standards. This creates doubts about milk safety amongst consumers. Many consumers are uncertain about the safety and expiration date of pasteurized milk. The opportunity for the dairy industry is to improve the quality and reputation of milk and to promote its nutritional benefits, especially for young children.

In the long run, improvements in logistics would also result in lower prices for consumers, making dairy products available for broader groups of lower-income consumers. Furthermore, there are excellent opportunities to introduce new, affordable products that fit the consumption patterns of different middle- and low-income consumer segments.

1.6 Import and export

Imports of dairy products have strongly fluctuated over the years. Over the last three recorded years the variation was between US\$ 11–15 million (see table below for most recent data). And 80% of this value comes from imported milk powder, widely used in infant formulas. There is no Ethiopian company processing milk powder, although some processors are planning to invest in such facilities.

Presently the value of exported dairy products is very low. Based on the projected overshoot of 2.5 billion liters in 2020, this value can rise considerably.



Import of milk and milk products in weight and in value

Product	2011		2012		2013	
	Net wt. (kg)	CIF Value (US\$)	Net wt. (kg)	CIF Value (US\$)	Net wt. (kg)	CIF Value (US\$)
Cheese	102,387	467,840	97,568	497,297	83,532	665,350
Milk, butter and yogurt	1,689,714	9,900,636	1,766,451	9,438,761	1,199,761	4,923,178
Powdered milk	450,642	2,932,581	983,178	5,792,618	810,516	5,413,487
Total	2,242,743	13,301,057	2,847,196	15,728,676	2,093,132	11,002,015

Source: Data Collected from Ethiopian Customs Authority Import Data Base



Taking into account the challenges listed in the table below, the opportunities for Dutch and European companies are in milk production on farms, dairy processing, business development and financial services. The suggested interventions mentioned in the list with challenges on page 20 and page 21 can also be considered as opportunities.

The list of challenges for the dairy sector is based on interviews held in 2015 by interviewers from NABC and Wageningen UR Livestock Research (DairyBISS project staff) and on sector analyses made in the past five years by AGP-LMD, Land O'Lakes, SNV and Wageningen UR.



# Investment opportunities

## 2



2.1 Challenges

DAIRY FARMING		DAIRY COLLECTION AND PROCESSING		OVERALL			
Challenges	Interventions needed	Challenges	Interventions needed	Challenges	Interventions needed		
1. Shortage of feed/poor ration formulation	<ul style="list-style-type: none"><li>▶ Increase grass and fodder crop production</li><li>▶ Optimize use of by-products and crop-residues</li><li>▶ Improve feed and quality control</li></ul>	8. Weak services of veterinarians	<ul style="list-style-type: none"><li>▶ Privatization of veterinary services</li><li>▶ Develop and enforce quality requirements for veterinary services</li><li>▶ Training in skills and business plans for veterinarians</li></ul>	1. Lack of chilled transport	<ul style="list-style-type: none"><li>▶ Raise quality standards of processed milk</li><li>▶ Collaboration between cooperatives by investing in chilled transport</li></ul>	1. Limited access to finance	<ul style="list-style-type: none"><li>▶ Training of financial specialists to evaluate dairy farm business plans and entrepreneurship qualities of farmers</li></ul>
2. Shortage of land and fodder	<ul style="list-style-type: none"><li>▶ Allocate more land for dairy farmers</li><li>▶ Enhance production of fodder crops, including irrigation and conservation</li></ul>	9. Weak AI services: genetic level and conception rates	<ul style="list-style-type: none"><li>▶ Privatization of AI technical services</li><li>▶ Develop and enforce quality requirements for AI technicians</li><li>▶ Training in skills and business plans for AI technicians</li><li>▶ Develop breeding policy consistent with regional farm management conditions</li></ul>	2. Lack of quality control by processor	<ul style="list-style-type: none"><li>▶ Introduce use of extra laboratory quality checks</li><li>▶ Implement quality-based payment system, including training to improve quality</li></ul>	2. Weak linkages between chain actors	<ul style="list-style-type: none"><li>▶ Build networks, platforms and/or umbrella organisations for better exchange of interests and mutual trust</li></ul>
3. Poor young stock-rearing	<ul style="list-style-type: none"><li>▶ Better care for young calves</li><li>▶ Better quality feeding during rearing period</li><li>▶ Better housing</li></ul>	10. Poor housing facilities	<ul style="list-style-type: none"><li>▶ Design new barns and free stalls with natural ventilation and grazing or feed lot space for exercise of dairy cattle</li><li>▶ Milking parlours for large farms</li></ul>	3. Lack of dairy technology know-how	<ul style="list-style-type: none"><li>▶ Training of staff of processors in processing and product development</li></ul>	3. Weak private sector and privatization policy of government	<ul style="list-style-type: none"><li>▶ Training in business development for private sector</li><li>▶ Support government to organise successful privatization routes</li><li>▶ Challenge present government staff to start own private enterprise</li><li>▶ Invite international organisations to build service networks</li></ul>
4. Low milk production per cow	<ul style="list-style-type: none"><li>▶ Improve cow management: feeding, health and housing</li><li>▶ Increase supply of heifers in a reliable, affordable and sustainable way</li><li>▶ Improve AI services fulfilling the needs and priorities of dairy farmers</li></ul>	11. Lack of entrepreneurial skills of farmers	<ul style="list-style-type: none"><li>▶ Training in entrepreneurship and making business plans for farms</li></ul>	4. Underutilization of processing capacity	<ul style="list-style-type: none"><li>▶ Collaboration with raw-milk suppliers to increase and assure supply</li><li>▶ Collaboration between (new) investors to avoid investments in overcapacity</li></ul>	4. Import taxes that hinder development of livestock sector and reduce GDP	<ul style="list-style-type: none"><li>▶ Make integrated studies of the impact of import taxes on development of livestock sector and GDP</li><li>▶ Adjusting import taxes to the interest of Ethiopian development</li></ul>
5. Poor quality of raw milk	<ul style="list-style-type: none"><li>▶ More hygiene during milking, storage and transport</li><li>▶ Promote use of milking and cooling equipment and transport facilities in reliable and affordable way</li><li>▶ Use of stainless steel buckets for milking and cans for transport</li><li>▶ Stimulate use of filters and chilling</li><li>▶ Implement quality-based payment system, including training to improve quality</li></ul>	12. Absence of farm management expertise and consultancy	<ul style="list-style-type: none"><li>▶ Stimulate establishment of farm management consultants</li><li>▶ Investigate private-public ownership with cooperatives and government</li><li>▶ Training in skills and business plans for veterinarians</li></ul>	5. Lack of economies of scale in collection and processing	<ul style="list-style-type: none"><li>▶ Collaboration between cooperatives</li><li>▶ Collaboration between (new) investors to avoid investments in overcapacity</li></ul>	5. Animal diseases that hinder export	<ul style="list-style-type: none"><li>▶ Systems to control economically important diseases (including identification and traceability systems)</li></ul>
6. Lack of chilling facilities on farm	<ul style="list-style-type: none"><li>▶ Small chilling equipment on farms and/or collection centers</li></ul>	13. Lack of manure management knowledge and practices	<ul style="list-style-type: none"><li>▶ Training in better manure handling and use of manure to grow crops</li><li>▶ Development and construction of manure storage</li></ul>	6. Weak management of cooperatives	<ul style="list-style-type: none"><li>▶ Training of management and board members</li></ul>		
7. Vast majority of dairy farmers are smallholders (1–3 cows)	<ul style="list-style-type: none"><li>▶ Create economies of scale by collaboration between smallholders</li><li>▶ Specialization of farmers in one sector</li></ul>			7. Lack of transparency: quality and financial results	<ul style="list-style-type: none"><li>▶ Training of management and board members</li><li>▶ Appointments about reporting and monitoring</li></ul>		

The challenges listed above should help investors and traders to easily understand which gaps they can fill. The whole list makes clear that the Ethiopian dairy sector is still at the beginning of its development, a turning point in its history, shifting from government involvement towards private sector participation.

This is most significant for the veterinary services and AI subsectors. At the same time the government could facilitate the process of development by taking a stronger role in enforcing regulation and transparency on themes like milk quality and feed quality.



## 2.2 Opportunities in dairy farm production

### Commercial feed and fodder production



#### a. Establish fodder production farms

High prices for fodder and fertile soils create opportunities for specialized farms that grow fodder crops such as alfalfa and maize, both in the highlands and lowlands. Since land is cheaper in the lowlands, opportunities there are even better. Some large farms in the lowlands are already experienced in growing hundreds of hectares of alfalfa.

#### b. Supply of concentrates

The increase in the number of medium- and large-scale farms, the scarcity of feed and the increase of improved breed dairy cows create the need for more use of concentrates produced by feed mills. Lack of experience with concentrates, questions about the quality and the high price, have resulted in their limited use on a large scale. Good advice about healthy and productive rations is an important prerequisite for profitable use of concentrates.

#### c. Introduce new fodder crops and grass varieties, combined with improved cultivation, harvesting and conservation techniques

The existing land yields can be increased by using highly productive fodder crops and grass varieties. The usable yields per hectare can increase significantly with better crop management, irrigation, more cuts per year from grass, and silage making.

### Supplying young stock



#### a. Feed for calves

Milk replacer for young calves and concentrates for young stock combined with advice, will result in higher producing cows.

#### b. Establish heifer rearing farms

Lack of dairy heifers, high heifer prices and poor calf rearing on farms create opportunities for farms that specialize in rearing young stock from calf to pregnant heifer. Emphasis on health and growth will deliver dairy cows with higher milk production.

### AI services and upgrading genetics



#### a. Establish private AI services

The poor service level of existing AI organisations, the need for superior genetics and exotic breeds such as Holstein-Friesian and the mass synchronization and insemination program, create excellent opportunities for AI organisations to start servicing in Ethiopia, whether with or without a bull stud, semen production and testing programs. Collaboration with NAIC and government within a public-private AI company will also be an option to build up market share in Ethiopia. Collaboration with the private company ALPPIS is another alternative to get better access to the market.

#### b. Support in optimizing AI services

Training of technicians, improving the logistics of transporting semen, introducing recording schemes and selection programs, will help Ethiopian AI organisations to improve performance.

#### c. Develop and implement a national or regional breeding strategy

A breeding strategy needs to be developed that is consistent with regional farm management conditions. This can be carried out by a private (AI) organisation or in cooperation with government or research.

#### d. Establish regional breeding farms

Farms that sell young stock or heifers that are offspring of genetically superior dams and where the seller can show production records and pedigrees that assure the genetic merit of the cattle.

#### e. Import of animals or genetic material

High-quality dairy livestock is expensive and scarce. Import of semen, embryos, calves and heifers are all ways to contribute to higher-producing cows.

### Health



#### a. Establish mobile veterinary clinical services

The government promotes mobile veterinary clinic services at farm level, as part of the process of privatization of veterinary services.

#### b. Support government in disease control programs

Higher requirements of meat and livestock importers and the need for strategies to control disease outbreaks create opportunities for health monitoring and control programs.

### Cattle-housing design



Free stall barns will give cows more exercise, contributing to better health. Barns also need more fresh air, by natural ventilation or electric fans. Barns should also facilitate hygienic procedures, efficient feeding and milking, and continuous water availability for cattle.

### Farm equipment for milking and harvesting



Small-scale and second-hand European equipment is popular and perceived as high quality. Small milking machines, stainless steel milk cans and buckets are highly appreciated.

## 2.3 Opportunities in dairy processing

### Processing plants



Milk processing is booming in Ethiopia. There are many investment opportunities. International companies can either establish their own subsidiary company or collaborate with existing or newly formed Ethiopian processing companies. The real challenges behind investments in processing are: (1) offering quality products to retail partners and (2) assuring the supply of raw milk fulfils quality standards.

### Cold chain logistics and storage equipment



1. Offer bulk milk tanker transport equipment
2. Offer milk chilling equipment for milk collection centers
3. Offer milk chilling tanks for the processing industry
4. Set up a service organisation for maintenance of dairy equipment, to serve dairy processors in (one or more) milksheds in Ethiopia

If European companies adapt their equipment to the needs of the Ethiopian market (e.g. right size, second-hand, appropriate quality standards and less high tech) they can compete with Chinese or Indian suppliers.

### Dairy technology and product development



Many new dairy-processing plants lack experience and know-how about how to operate and repair equipment, how to carry out laboratory analyses and how to develop new products.

## 2.4 Opportunities in business development and financial services

### Business development advice



Many of the present farms and processing companies perform sub-optimally. Advice by skilled consultants can contribute to better returns on investment. Setting up a new company (whether a medium- or small-scale farm, or processing company) first needs preparation and planning. During the start-up and operational phases, a company needs instruction and fine tuning, followed by evaluation and further improvement. If the company is successful, the next step may be expansion.

### Financial services



Farmers and processors are facing problems in collecting funds and loans to cover their investments. A bank with expertise in the sector can make all the difference. Dutch banks can contribute by sharing their expertise on the dairy sector to help regional banks assess the performance and investment plans of companies seeking loans.

### Technical support in controlling animal diseases



Dutch experts in the fields of animal identification and surveillance systems, vaccination programs and bio-security systems, can provide support to improve the health of livestock.

Points to consider

3





### 3.1 Government dairy policy/ Livestock Master Plan

Over the past 5 years, the Government of Ethiopia has prioritized the transformation of the agricultural sector as part of the national Growth and Transformation Plan (GTP). The introduction of GTP II 2015–2020 is followed by a roadmap that comprises investment interventions bundled together in the so-called Livestock Master Plan (LMP). The Cow Dairy Development Roadmap is the part of the LMP concerning the dairy sector. This plan has two tracks to reach the goal of significantly higher milk production:

1. For the traditional smallholder dairy farming system, the proposed interventions are: cross-breeding with exotic dairy breeds through AI and synchronization, and better feed and health services.
2. For the commercial dairy farming system, the proposed interventions are: bringing more crossbred cattle into the farms, expanding the number of farms, increasing the availability of forage and concentrated feeds, and improving the marketing and processing of milk.

The second track is in line with the proposal to make land available for commercial fodder production by investors and to stimulate dairy farmers to outsource this forage production. To stimulate the production of

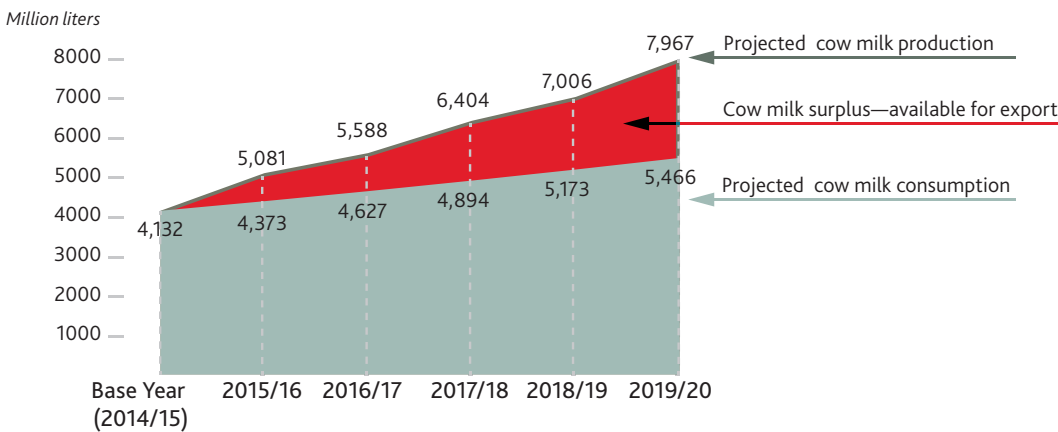
quality concentrates, the government aims to introduce and enforce feed-quality standards and to promote the establishment of feed factories. Also the availability of by-products from oil-production will be stimulated by banning the export of oilseeds that can otherwise be processed within the country and to limit the import of cooking oil.

The processing and marketing activities should focus on more diversity of dairy products to meet the needs of various consumer segments. This will require investments in the production of UHT-milk, milk powder, and value-added products such as yogurt, ice cream and cheese. To support this development, capacity-building of dairy technologists is an important requirement. The development and enforcement of milk quality standards is also foreseen within the next five years.

There are a wide variety of measures in the field of animal health, ranging from reducing the impact of livestock diseases to improving accessibility to drugs. The policy on genetics will focus on improved breeding programs. As mentioned before, the government plans a shift towards privatization of breeding and veterinary services.

A team of experts supported the Ethiopian Ministry of Agriculture to consider alternative strategies for reaching the goals set within the LMP by using economic model calculations. These specialists expect that the implementation of this plan will result in a 93% increase in milk production (see figure below).

Cow milk production and consumption as projected in the Livestock Master Plan (LMP) Source: MoA, 2014



This increase will not only create opportunities for supplying more dairy products to Ethiopian consumers, but will also pave the way for export of dairy products. A milk surplus of 2.5 billion liters is expected to be available for export in 2019/20. Ultimately, the contribution of the dairy sector to GDP is expected to rise from ETB 28 billion in 2014/15 to ETB 52.9 billion in 2019/20. Researchers conclude that investing to improve cattle productivity has high potential to reduce poverty, contribute to national income growth, meet future domestic consumption requirements, and also increase meat and milk exports and foreign exchange earnings.

In addition to the above activities, the success of the plan depends on:

- Encouraging the private sector to invest in milk processing plants and dairy farms
- Ensuring availability of more and better feed, seeds, forage production and marketing, and better health services in all areas, whether or not breed improvement is implemented
- More effective extension services to support production, processing and marketing of quality milk.

For the entire livestock sector—dairy as well as animals for meat—the government is aiming at better policies and measures for prevention, control and eradication of major livestock diseases. The top priority list of diseases are: foot and mouth disease (FMD), *peste des petits ruminants* (PPR), trypanosomosis, sheep and goat pox (SGP), contagious bovine pleuropneumonia (CBPP) and external parasites. The prevention and control of these economically important diseases also requires the implementation of livestock movement control, and identification and traceability systems. These systems also have to be in line with the requirements set by international trading partners to facilitate the growth of exports of live animals and meat.

### 3.2 Other government regulations

#### Land leasing

Land in Ethiopia is considered public property. It can be leased by those who want to use the land. There are two broad classifications of land for rent or lease purposes: rural land, mainly used for agricultural purposes, and urban land, mainly used for industrial purposes or other activities. Land lease or rental rates differ depending on location. The lease price of rural land is set by authorities and may depend on factors such as the development level of the area, distances from all-weather roads, quality or grade of the soil, irrigation possibilities, and agricultural activity. The duration of the lease contract can also vary depending on the same factors.

Land prices in urban areas can be set by auction. Companies that contribute to regional welfare can occasionally lease land without any payments.

#### Taxes

Ethiopia levies taxes on the import of many goods. There are exemptions for capital goods such as equipment for dairy factories or machinery for use on farms (including spare parts worth up to 15% of the value of the capital goods) and spare parts imported during the first five years after the start of the investment project.

Investors starting new businesses can be exempted from income tax for a period of four or five years. When the investor expands his enterprise by at least 50%, the exemption period may start again. Investors who produce for export can receive an additional two-year exemption from paying income tax. Milk processing facilities may obtain a tax exemption period of up to 15 years if located in the assigned integrated agro-processing parks. Four of these parks will be established in the coming years. For more detailed information: [www.investethiopia.gov.et](http://www.investethiopia.gov.et)

## 4.1 Dairy processors in Ethiopia

The list below is a combination of the list from AGP-LMD (AGP-LMD, 2013) and information collected recently by NABC.

No.	Dairy Processors	Location	Year of Establish-ment	Daily Process-ing Capacity (liters)	Attained Aver-age Capacity (liters)
1.	Sebeta Agro Industry (Mama Dairy)	Sebeta	1998	45,000	45,000
2.	Lame Dairy Processing (former DDE)	Addis Ababa	2007 (1964)	60,000	36,000
3.	Elemtu Integrated Milk Industry	Solulta			30,000
4.	Evergreen Dairy				30,000
5.	Etete				9,000
6.	MB PLC (Family Milk)	Addis Ababa	2003	15,000	7,000
7.	Yadeni Dairy Farm (Bora Milk)	Addis Ababa	2008	15,000	7,000
8.	Berta and Family plc	Addis Ababa	2000	9,000	6,000
9.	Genesis Farm	Debre Zeit	2001	4,000	4,000
10.	Holland Dairy	Debre Zeit	2008	4,000	4,000
11.	Ada'a Dairy Cooperative	Debre Zeit	1998	15,000	3,000
12.	Lema Dairy	Debre Zeit	2004	10,000	3,000
13.	Almi Tikus Wetet (Almi Fresh Milk)	Hawassa	2005	4,000	3,000
14.	Abay fana Awash Agro-Industry	Adama		3,500	2,000
15.	Fantu and Family Dairy Farm	Addis Ababa		2,500	2,000
16.	Ruth and Hirut Dairy Farm	Chacha	2008	4,000	1,500
17.	Life Milk Processing Enterprise	Sululta	2007	1,500	1,500
18.	Chuye Milk and Milk Products Processing	Addis Ababa		3,000	1,000
19.	Mojo Milk	Mojo	2011	500	1,000
20.	Life Agro dairy			3,000	
21.	Beral dairy			3,000	
22.	Zemen Milk	Mekelle		2,000	150
23.	Penguin International Business plc (cheese world)	Addis Ababa		1,800	600
24.	Jantekel Dairy Union (Facil Milk)	Gonder	2007	1,200	300
25.	Kassa Abebe Integrated			600	
26.	Alem Tshai Tesfa Dairy			500	
27.	Aberash Workineh Dairy Farm			250	
28.	Asnakech Dairy			200	
29.	Yakla Milk			200	
30.	S&S Farm			150	
31.	Henok Dairy Farm			100	
32.	Beral Milk	Addis Ababa	1991		
33.	Semit Agro Industry/Enat Milk	Mojjo			
34.	Harmonius Agro Industry	Adama			

# Sources of further information

4





## 4.2 Public sector partners

### 4.2.1 Research 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 center 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.

### 4.2.2 Other institutes and agencies

#### 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, formerly EMDTI)

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:

1. **Practice:** healthcare practices
2. **Premises:** healthcare facilities, food establishments, medicine facilities, port inspection sites and health related facilities
3. **Professionals:** all health professionals
4. **Product:** production up to consumption of medicines, medical equipment and trade devices, food and food supplements, herbal products, cosmetics, complimentary and traditional medicines.

All these regulatory activities are decentralized and functional throughout all regions and districts of the country.

### 4.2.3 Education

Out of the 30 universities in Ethiopia, 21 have a focus on agriculture-related issues. Quite a number of universities have an animal science program (usually including a focus on dairy), but only two of the more established universities (Haramaya and Hawassa) have the full range of disciplines involved in dairy value-chain development: animal science, veterinary science, rural and cooperative development, business and marketing, and food technology. Some other universities—Jimma, Gondar, Mekelle and Wolaita—also have a broad range of disciplines but no food processing technology department. In the case of Bahir Dar University, there is no veterinary science department, and Addis Ababa University has no animal science department. In addition to the universities, there are about 25 Agricultural Technical and Vocational Education and Training (ATVET) schools. All ATVET schools have an animal science department, while a few of them offer animal health courses.

### 4.2.4 Development programs

#### USAID Livestock Market Development (AGP-LMD) by CNFA (2013–2018)

The Agricultural Growth Program-Livestock Market Development (AGP-LMD) is a five-year project funded by the United States Agency for International Development (USAID) as a contribution to the Government of Ethiopia's Agricultural Growth Program (AGP). The overall goal is to improve smallholder incomes and nutritional status. The program follows a holistic value-chain development approach and is developing the capacity of value-chain businesses. Within the dairy sector it focusses on dairy producer groups, milk collectors, processors and other supporting businesses to increase milk production at the farm level, improve collection and logistics, and strengthen processing capacity and efficiency.

#### 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.

#### DairyBISS (2015–2018)

This three-year project will establish a dairy business platform that initiates and monitors activities in business development, capacity building, and business information development. Proofs 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. DairyBISS is implemented by Wageningen UR 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.

### 4.3 Private-sector associations

#### Ethiopian Milk Producers and Processors Association (EMPPA)

EMPPA was established in 2006 and its members include milk producers and processors, milk collectors and distributors, input suppliers and consultancy service-providers. It works in close cooperation with different value-chain actors.

#### Ethiopian Dairy Cattle Breeders Association

This association was established in 2005 and currently has 73 members. It provides networking, information and knowledge-sharing and capacity development for its members. It actively participates in and contributes to dairy-sector development initiatives through advocacy on policies and strategies.

#### Ethiopian Veterinary Association

Established in 1976, the mission of this association is to improve animal health by advancing the veterinary medical profession and contributing to the improvement of animal production and productivity in Ethiopia.

#### Ethiopian Animal Feed Industry Association (EAFIA)

EAFIA was established in 2007 with technical support from Land O' Lakes, feed factory owners, private dairy farmers and dairy cooperatives. Currently, it has more than 70 members. The objective of the association is to improve the quality and quantity of livestock-feed production and services for its members

#### Ethiopian Commercial Dairy Producers Association

This organisation was established as a commercial dairy farmers' association in 2015 but is still in the process of legal registration. Its objective is to function as a platform for commercial dairy farmers, providing opportunities for networking, information and knowledge sharing, and capacity development.

#### References

- Abebe, T., 2015, *Breaking with tradition – Selling milk*, SNV, Addis Ababa
- AGP-LMD, 2013, *Agricultural growth project – Livestock market development, Value chain analysis for Ethiopia: Meat and live animals – Hides, skins and leather – Dairy*, USAID/Ethiopia
- Bingi, S. and Tondel, F., 2015, *Recent developments in the dairy sector in Eastern Africa*, Briefing note No. 78 – September 2015, European Centre for Development Policy Management (ECDPM), Maastricht
- Brandsma, W., D. Mengistu, B. Kassa, M. Yohannes and J. Van der Lee, 2013, *The major Ethiopian milksheds – An assessment of development potential*, Livestock Research Report 735, Wageningen UR Livestock Research, Wageningen
- CSA, 2012, *Agricultural sample survey 2011/12 Volume II Report on production and livestock characteristics (private peasant holdings)*, Central Statistical Agency of Federal Democratic Republic of Ethiopia, Addis Ababa
- CSA, 2015, *Agricultural sample survey 2014/15 Volume II Report on production and livestock characteristics (private peasant holdings)*, Central Statistical Agency of Federal Democratic Republic of Ethiopia, Addis Ababa
- FAOSTAT, 2010, *Food and Agriculture Organization of the United Nations*, [www.fao.org](http://www.fao.org)
- FDROE, 2015, *Ethiopia's climate resilient green economy – Climate resilience strategy agriculture and forestry*, Federal Democratic Republic of Ethiopia, Addis Ababa
- Felleke, G., Woldearagay, M. and Haile, G., 2010, *Inventory of dairy policy*, Report Target Business Consultants Plc
- IFCN, 2014, *IFCN Dairy Report 2014*, International Farm Comparison Network, IFCN Dairy Research Center, Kiel
- Kramer, L., Boere, A. and Nikodimos, D. K., 2015, *Quick-scan dairy Ethiopia – A private sector perspective on the Ethiopian dairy value chain*, NABC, The Hague
- Land O'Lakes, 2010, *The Next Stage in Dairy Development for Ethiopia*, Land O'Lakes Inc., Addis Ababa
- Makoni, N., Mwai, R., Redda, T., Zijpp, A.J. van der, Lee, J. van der, 2014, *White gold: Opportunities for dairy sector development collaboration in East Africa*, Centre for Development Innovation, Wageningen UR, CDI report 14-006, Wageningen
- MoA, 2015, *Livestock Master Plan – Roadmaps for growth and transformation*, Ministry of Agriculture, Addis Ababa
- PICO-EA, 2013, *Situation analysis of the dairy industry in Ethiopia: particular focus on dairy genetics and resource poor producers*, People, Innovation and Change in Organizations, Eastern Africa (PICO-EA), Nairobi
- Rege, J., 1999, *The state of African cattle genetic resources – Classification framework and identification of threatened and extinct breeds*, Animal Genetic Resources Information Bulletin, 1999, (25): page 1–25.
- Rockeman, K., Tadesse, B. and Redda, T., 2015, *AGP-LMD External mid-term performance evaluation report*, Tufts University, Addis Ababa
- Tegene, A., Estifanos, A., Tera A. and Hoekstra, D., 2012, *Technological options and approaches to improve smallholder access to desirable animal genetic material for dairy development: IPMS Experience with hormonal oestrus synchronization and mass insemination in Ethiopia*, Proceedings Tropentag, September 19-21, 2012, Göttingen
- Tolera, A., Yami, A., Mengistu, A., Alemu, D., Geleti, D., Assefa, G., Gizachew, L., Bediye S. and Woldesemayat, Y., 2012, *Livestock feed resources in Ethiopia: challenges, opportunities and the need for transformation*, Ethiopian Animal Feeds Industry Association, Addis Ababa
- Chebo, C. and Alemayehu, K., 2012, *Trends of cattle genetic improvement programs in Ethiopia: challenges and opportunities*, Livestock Research for Rural Development, Volume 24 (7) 2012, Article #109



