



Food and Agriculture
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United Nations

AgrInvest-Food Systems Project

Increasing sustainable investment in the Ethiopian dairy value chain

**Bottlenecks and investment
opportunities in Central Oromia**



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Bottlenecks and investment opportunities in Central Oromia

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Abbreviations and acronyms

ACC	Agricultural Commercialisation Cluster
AI	Artificial Insemination
ATA	Agricultural Transformation Agency
CBE	Commercial Bank of Ethiopia
CSA	Central Statistics Agency of Ethiopia
DAs	Development Agents
DBE	Development Bank of Ethiopia
DFIs	Development Finance Institutions
ECDPM	European Centre for Development Policy Management
EMDIDI	Ethiopian Meat and Dairy Industry Development Institute
ETB	Ethiopian Birr (national currency)
FAO	Food and Agriculture Organisation of the United Nations
FTC	Farmers Training Centre
GHG	Greenhouse gas
GTP	Growth and Transformation Plan
IAIP	Integrated Agro-Industrial Park
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
ILRI	International Livestock Research Institute
MCC	Milk Cooling and Collection Centre
MFI	Microfinance Institutions
NBE	National Bank of Ethiopia
NGO	Non-Governmental Organisation
PLC	Private Limited Company
RUFIP	Rural Financial Intermediation Program
RUSACOOs	Rural Saving and Credit Cooperatives
SACCOs	Saving and Credit Cooperatives
SMEs	Small and medium-sized enterprises
SNNPR	Southern Nations, Nationalities, and Peoples' Region
SNV	Netherlands Development Organisation
USAID	United States Agency for International Development

Executive summary

Demand for dairy products is flourishing in Ethiopia. New dairy processing firms are springing up across the country and existing processors are expanding operations. However, persistently low milk yields mean the supply of fresh milk is struggling to keep up. As a result, prices of dairy products have risen in recent years, as have imports (Minten *et al.*, 2018; Ndambi *et al.*, 2018).

With its conducive climate and topography, high concentration of livestock and proximity to Addis Ababa and other urban markets, **the central part of the Oromia region** has emerged as the main hub for dairy processing in Ethiopia and **holds great potential for attracting investment** to take advantage of growing demand and further develop and transform the dairy sector.

But **various factors inhibit the performance of the dairy value chain in Oromia.** The availability and quality of feed is a significant challenge. High feed prices and low supply of quality feed and fodder have become major impediments to peri-urban and commercial dairy production. In rural production systems, the availability of suitable pasture is affected by climate variability, land degradation and inadequate supply of quality forage seed (TRAIDE Ethiopia, 2021). Poor management of locally available feed resources such as crop residues also affect feed supply.

The supply of other key inputs and services to the dairy value chain in Oromia is also patchy, and quality is often low. This is the case for key services such as artificial insemination and veterinary services. It is also the case for training, maintenance and other support relating to milking machines and other processing equipment.

Access to finance is another major challenge for the dairy value chain actors in Oromia, who find it very difficult to secure credit at reasonable rates from banks and other formal financial institutions. Smallholder dairy farmers, dairy cooperatives and small and medium-sized dairy enterprises rely on local saving and credit cooperatives (SACCOs), microfinance institutions, traders or informal lenders for finance (TRAIDE Ethiopia, 2021). However, loan sizes provided through these sources are generally small and incur high interest rates.

The dairy value chain in Oromia is also poorly organised. Dairy producers and downstream actors in the value chains face many challenges in getting milk to formal markets. Milk collection, chilling and transportation systems and facilities are lacking, price information is hard to obtain, producer-buyer relationships are largely informal and supply contracts are rarely used and difficult to enforce (Brasacco *et al.*, 2019).

There are **gaps in the policy framework for investment in dairy,** particularly in relation to land acquisition, and a lack of incentives for establishing specialised dairy farms. The existence and enforcement of food and feed safety standards and quality regulations could work as pull factors for better quality dairy, but are currently weak. The policy to encourage investment in large-scale commercial feed production is also poorly administered.

Broader political economy factors also shape the performance of the dairy value chain in Oromia and influence public and private investment in the value chain. Increasing land scarcity makes it difficult for newcomers to engage in dairying and impedes investment in feed production. Foreign exchange shortages make it hard to import inputs such as machinery, or hybrid seeds, fertiliser and other agrochemicals for the production of feed and fodder.

Meanwhile, the fact that the dairy sector is dominated by **geographically dispersed smallholder farmers inhibits the development of a strong market for inputs and services**. The lack of such a market weakens incentives for private investment in input and services production, contributing to patchy supply of inputs and services.

Ongoing **conflict in Ethiopia's northern region of Tigray**, which is threatening to spill over into the rest of the country and take on the characteristics of a protracted crisis **is also having a chilling effect on investor sentiment**. In the recent past, political unrest in Oromia also diminished the region's attractiveness to foreign investors.

Notwithstanding these challenges, **investment in the dairy value chain in Oromia has the potential to affect the sustainability of the food system in Oromia**, and in Ethiopia more broadly. Dairy production is already a major source of employment and livelihoods in Ethiopia, particularly for women and rural households, and a better performing dairy sector offers great prospects for increasing incomes, including in rural areas. In turn, increased incomes can also contribute to improved food security and better health and nutrition outcomes at the household level.

Investments to increase production and consumption of protein- and micronutrient-rich dairy products can also **contribute to greater dietary diversity in Ethiopia** and improve nutrition in the country, including by addressing stunting and other forms of malnutrition (Brasenco, *et al.*, 2019).

However, increased dairy production could also generate negative environmental impacts. Globally, dairy production is a significant contributor to greenhouse gas (GHG) emissions, and low productivity in Ethiopia means that the emission intensity of dairy production is very high in the country. **Expanding dairy production would likely increase GHG emissions in Ethiopia**. Investments in dairy commercialisation will likely also lead to increasing demand for water, particularly for the production of feed (de Paiva Seroa da Motta, 2019).

Given that Ethiopian women's role in dairy production decreases as production moves off-farm, the commercialisation of dairy production and marketing also threatens women's traditional control over the production and sale of dairy products, and the incomes they derive from these activities (Kinati Mulema, 2018). **Investments that do not take prevailing gender norms**, roles and power relations into account therefore **risk perpetuating or worsening gender inequality** in the dairy value chain in Ethiopia.

Analysis of the dairy value chain in Oromia suggests a number of pathways on which local stakeholders, development partners and international actors should focus, collaborating to attract increased investment in dairy in Oromia, improve the performance of the dairy value chain and ensure broader sustainability benefits for the local food system.

One of the most promising opportunities is to stimulate and facilitate **a dialogue between the different institutions to unlock the supply chain of finance** that can contribute to the sustainable development of the dairy value chain in central Oromia. A specific study that identifies and highlights the linkages between the different relevant actors, such as financial institutions, national and federal investment commissions and sector associations can help to find entry points to engage them.

For example, **efforts should be made to attract and capitalise on large-scale investments in integrated crop and dairy management systems to improve forage availability.** Private investment in both large-scale dairy farming and large-scale forage production presents a promising opportunity for developing the market for forage in Oromia and increasing forage availability in the region (and potentially beyond). Such an investment model could ensure a degree of predictability from both the supply and demand side of the forage equation. Surplus feed could be sold to local markets through formal channels, increasing the availability of forage and strengthening the feed input link in the dairy value chain. Collaboration with local cooperatives could facilitate improved distribution of forage to smallholder dairy farmers.

In a similar vein, **public-private partnerships should be established and strengthened to improve the provision of inputs and services to the dairy value chain in Oromia.** A partnership approach facilitating coordinated action by different stakeholders, including (smallholder) dairy farmers and farmers' organisations, feed and fodder producers, dairy processors, government agencies, development partners and relevant civil society organisations can help address dairy value chain bottlenecks. Such an approach is particularly crucial for improving access to and the affordability of quality inputs and services to the dairy sector in Oromia. In this regard, the Dairy Feed Advancing model provides a promising model for how to do this (Van der Lee *et al.*, 2018).

To address the challenge of accessing finance, **blended finance mechanisms should be used to unlock credit for dairy value chain stakeholders.** In this regard, international development finance institutions (DFIs) as well as the Development Bank of Ethiopia and the Commercial Bank of Ethiopia should work with commercial banks and microfinance institutions (MFIs) in Oromia to mobilise the financing of small and medium-sized enterprises (SMEs) in the dairy sector. In parallel, MFIs and commercial banks should expand their digital financial services and e-commerce platforms from which they can mobilise more savings and better service smallholder farmers and agribusiness SMEs.

Finally, **investments in dairy processing should be promoted through the Bulbula Integrated Agro-Industrial Park (IAIP),** for which dairy has been selected as a priority commodity. Bulbula IAIP holds significant potential to attract investment in dairy processing. It is well connected to the Ethiopian road network, so dairy products produced at Bulbula will have easy access to markets in Hawassa and Addis Ababa. The Oromia Industrial Parks Development Corporation also plans to support improvements in milk production and productivity in the surrounding areas, including through improving the breed of livestock, strengthening livestock protection and control, and improving livestock feed production and usage. Also it further intends to improve the capacity of local producers (smallholder farmers and cooperatives) through training and improving the efficiency of milk collection through the construction of milk sheds and facilitating transport services.

1. Introduction

1.1. Background to this study

This study of the dairy value chain in the Oromia region of Ethiopia was conducted as part of the AgrInvest-Food Systems Project, a collaboration between the Food and Agricultural Organization of the United Nations (FAO) and the European Centre for Development Policy Management (ECDPM) to promote private investments in African food systems that contribute to local economic, social and environmental sustainability.

1.2. Understanding the Ethiopian context

Demand for milk and other dairy products is flourishing in Ethiopia, driven by population growth, rising incomes and rapid urbanisation (Minten *et al.*, 2020). New dairy processing firms are springing up across the country and existing processors are expanding operations.¹ However, persistently low milk yields mean the supply of fresh milk is struggling to keep up with growing demand. Prices of dairy products have risen in recent years, as have dairy imports (Minten *et al.*, 2018; Ndambi *et al.*, 2018).

More than 90 percent of the milk produced in Ethiopia is consumed as fresh milk.² Estimates stipulate between two-thirds and 95 percent of dairy is marketed through informal channels (Ndambi *et al.*, 2018, Brascosco *et al.*, 2019, TRAIDE Ethiopia, 2021).

Figure 1: Informal vs. formal market systems



Source: 2021 Dairy Business Opportunity Report - TRAIDE Ethiopia.

Traditionally Ethiopians consumed fresh and pasteurised milk,³ fermented or sour milk (ergo), butter, cottage cheese (ayib) and buttermilk (arera), but the range of dairy products being consumed by Ethiopians has expanded to include yoghurts (both plain and flavoured), ultra heat treatment milk, ice cream and various types of cheeses. These changing consumption patterns present commercial opportunities for dairy producers.

1.3. Focus on central Oromia

The Oromia region has a conducive climate and topography for dairy production using improved high-yielding cattle breeds (Brascosco *et al.*, 2019). Home to about 36 percent of Ethiopia's approximately 70 million cattle,⁴ Oromia accounts for about 38 percent of the milk produced in Ethiopia.⁵

¹ Interview with a dairy expert active in Ethiopia, including in Central Oromia.

² FAOSTAT.

³ The vast majority of milk consumed in Ethiopia is from cows (Makoni *et al.*, 2014).

⁴ CSA, 2021. https://www.statsethiopia.gov.et/wp-content/uploads/2021/05/REVISED_2013.LIVESTOCK-REPORT.FINAL-1.pdf.

⁵ In the year November 2019 to November 2020, Ethiopia produced an estimated 4.7 billion litres of milk, of which 1.8 billion litres was produced in Oromia (CSA, 2021).

Three of Ethiopia's most important milksheds are found in the central part of Oromia: The Addis Ababa milkshed (North Shewa Zone); the Adama-Asella milkshed (East Shewa Zone); and the Ambo-Woliso milkshed (West Shewa Zone) (Brandsma *et al.*, 2013). The East Shewa Zone in Oromia also hosts a significant number of livestock feed processing plants, as well as the Bulbula Integrated Agro-Industrial Park.

This central part of Oromia surrounds Ethiopia's capital and largest city, Addis Ababa, by far the most important market for dairy products in the country. Market-oriented milk production and formal processing in Ethiopia is largely confined to the areas around Addis Ababa (Ndambi *et al.*, 2018). Strong local demand and easier access to inputs mean that there is significant potential for further transformation of traditional dairy production into market-oriented and commercial dairy systems in this part of the country. Particularly, there is better access to processed animal feeds, including feed for dairy cows, in Central Oromia than other parts of the country. There are also multiple cooling facilities, genetic improvement ranches and liquid nitrogen plants. The only national semen collection centre is located in Addis Ababa (Ndambi *et al.*). These characteristics make the dairy clusters in and around Addis Ababa and the other regional capitals distinct from the rest of the country. The focus on central Oromia risks giving a biased view of the current trends and creating unrealistic expectations regarding demand for finance and investment if this finance and investment is solely focused on formal parts of the value chain. Attention should also be paid to the commercial potential and employment creation potential of the more informal parts of the dairy value chain in existence, for example the potential for investments in traditional dairy processing (Brascesco *et al.*, 2019). The dairy production by pastoralists in the lowland areas of Oromia are very distinct from the production systems in the highlands and are therefore not part of the analysis of this report.

1.4. Methodology and limitations

Drawing on a desk review of secondary sources, and on interviews with key experts and stakeholders, this study assesses the state of the dairy value chain in central Oromia, examining its commercial potential, mapping dairy value chain activities, actors and markets and identifying major bottlenecks hampering the performance of the value chain. The study also assesses the policy environment and other political economy dynamics affecting investment in dairy in central Oromia (and in Ethiopia more broadly), and explains the dairy value chain's relevance to key food system sustainability objectives in Ethiopia.

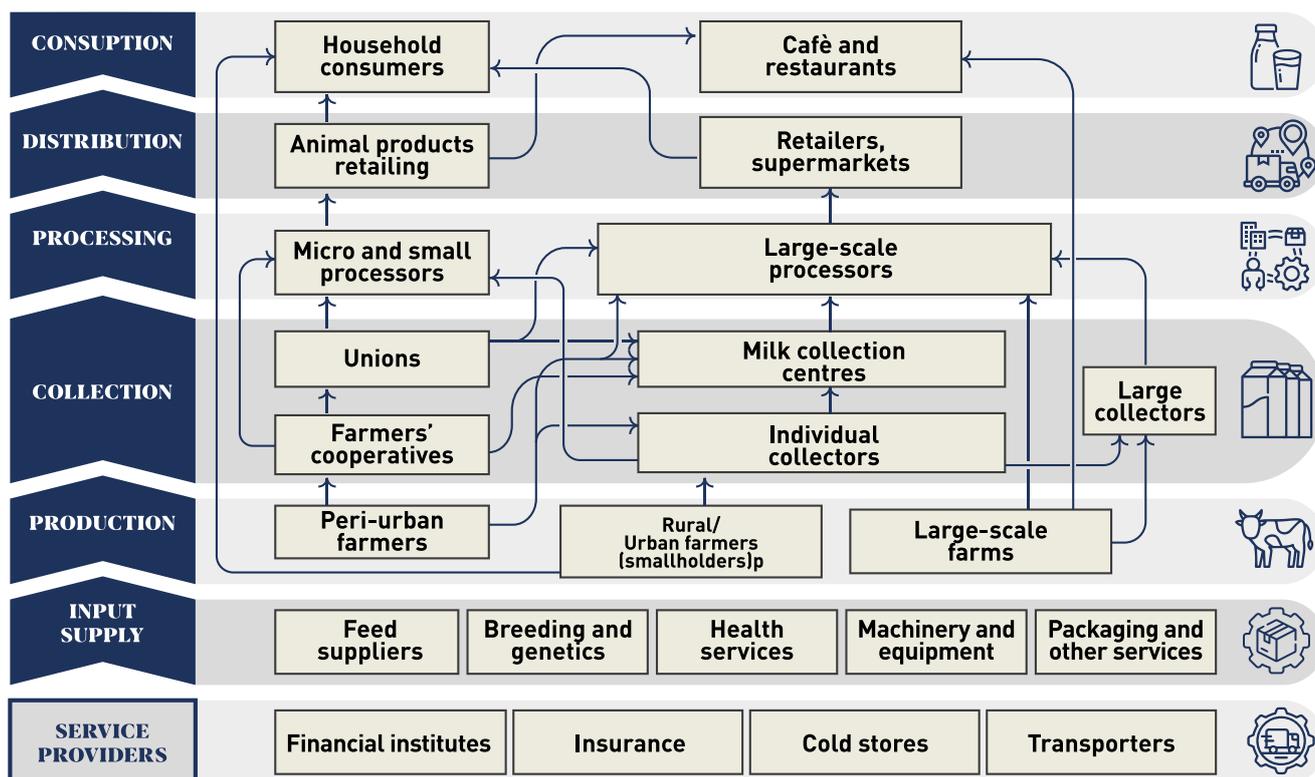
Both virtual interviews and in-person interviews were carried out during site visits to the Sendafa, Sululta and Holetta areas in the Oromia Special Zone Surrounding Finfinne (Finfinne is the Oromo name for Addis Ababa). Interviewees included various dairy value chain actors including private dairy advisors, dairy farm owners, milk collectors, feed suppliers and experts working for development projects and government agencies. Some stakeholders, such as *woreda* (local government) livestock experts and cooperatives development officers were not available for interview.

Based on this assessment, the study identifies five promising pathways to promote private investments that contribute not only to strengthening the dairy value chain in Oromia, but also to improving the sustainability of the local food system. The elaboration of these pathways is intended to inform further engagement with dairy value chain stakeholders, public authorities and potential investors to facilitate multi-stakeholder collaboration in pursuit of one or more of these pathways.

2. The dairy value chain in Oromia

The main stages of the dairy value chain in Oromia (as elsewhere) are: (i) supply of inputs, with feed being particularly important; (ii) milk production; (iii) milk collection, aggregation and processing; and (iv) distribution and retail of milk and other dairy products. The performance of the value chain is supported through the provision of a range of services, notably financial and extension services, as well as the creation of appropriate governance institutions and an enabling policy and regulatory environment.

Figure 2: Ethiopian dairy value chain



Source: 2021 Dairy Business Opportunity Report - TRADE Ethiopia.

2.1. Milk production

In the central part of Oromia, dairy production systems are divided into two types: (i) the rural system; and (ii) the peri-urban/urban and commercial systems (Brascesco *et al.*, 2019). The rural system comprises subsistence family farmers and mixed crop-livestock smallholder producers who use low input-low output technologies, have limited or no access to formal markets, but produce 90 percent of the milk in Ethiopia. The rest of the milk produced in Ethiopia is produced through the peri-urban/urban and commercial systems, made up of specialised dairy farmers (including smallholder producers and medium- and large-sized dairy farms) who supply urban markets (Brascesco *et al.*, 2019). Indigenous cattle produce about 97 percent of the milk produced in Ethiopia, with the rest produced by the higher yielding hybrid and exotic cattle farmed mainly in the commercial system (CSA, 2021). Hybrid cattle are particularly prevalent in the North Shewa and Finfinie special zones of Oromia (See Table 1).

Table 1. Number of milking cows and breeds owned by smallholder farmers (CSA, 2021)

Geography	Dairy cows (Total)	Milking cows (Total)	Av. Yield	Annual (litres)	Breeds (%)		
					Indigenous	Hybrid	Exotic
National	7 556 402	15 041 686	1.48	4 692 993 642	97.1%	2.5%	0.4%
Oromia	2 734 395	5 200 135	1.66	1 794 005 088	96.8%	2.8%	0.4%
Target zone							
West Shewa	123 682	472 138	1.37	147 403 899	96.9%	3.1%	0
North Shewa	116 149	242 700	1.86	100 427 603	81.6%	18.40%	0
East Shewa	78 957	158 107	1.87	63 906 197	100%	0%	0
South West	107 919	180 008	1.15	41 444 535	100%	0	0
Finfinne special zone	62 294	186 694	1.96	81 763 341	91.20%	8.80%	0

Source: Report on Livestock, Statistical Bulletin 589, Central Statistical Agency of Ethiopia.

As in the rest of Ethiopia, most dairy farmers in Oromia are smallholder farmers. One recent survey of dairy farmers in Central East Oromia found that three-quarters of dairy farming households owned three cows or less (Brascesco *et al.*, 2019). In Arsi and East Shewa, both areas in Oromia with fast-growing smallholder dairy production, the average herd size is around seven cows (Van der Lee, 2020). A number of small and medium-sized commercial dairy farms (keeping 25 to 400 dairy cows) are located on the outskirts of Addis Ababa and in Sululta, Sendafa, Sebeta and Akaki in the Finfinne special zone.⁶ These semi-commercial and commercial farmers typically keep hybrid dairy cows and high-yielding exotic breed cows, make use of feed concentrates sourced from feed mills and generate higher milk yields per cow.⁷

In recent years, a number of restaurant chains and supermarkets have invested in dairy farming to ensure consistent access to quality milk. Examples include Kaldi's Coffee, which has 40 outlets in Addis Ababa and is engaged in dairy farming (and processing) through its sister company, Loni Agro Industry PLC. Antica and Lime Tree is another restaurant chain which has its own small-scale dairy farms in Sendafa, while Friendship Supermarket is in the process of setting up a small-scale farm in the Bishoftu area.

2.2. Milk collection and aggregation

Milk collection and aggregation in central Oromia is mostly carried out by informal collectors, particularly in rural areas.⁸ The predominant informal marketing channels involve few checks on the quality of the milk produced (Brascesco *et al.*, 2019). In the peri-urban and urban areas of Oromia, where milk marketing channels are more formalised, some milk is collected from producers and aggregated by cooperatives and dairy processors who test the quality of milk on delivery (Yilma *et al.*, 2011).

Milk collection and cooling centres (MCCs) established with the support of development partners such as Netherlands Development Organisation (SNV) and United States Agency for International Development (USAID) play an important role in aggregating fresh milk. According to a study carried out by SNV, there are about 180 MCCs in Ethiopia⁹, of which 88 (49 percent) are located in Oromia.¹⁰ Around 38 percent of MCCs in the country are owned and operated by dairy processors, about 37 percent by farmer groups (mainly cooperatives) and the rest by government bodies

⁶ Interview with a private dairy advisor in Central Oromia.

⁷ Interview with a private dairy advisor in Central Oromia.

⁸ Interview, expert working for Oromia Livestock Agency.

⁹ With a total installed capacity of 437,000 litres.

¹⁰ The same study revealed that 149 (83 percent) of these centres are functional. The remaining 31 (17 percent), either have not been (completely) installed or have broken down. Out of the functional centres, only 56 (or 31 percent of the total) are operational.

or NGOs. Most of the MCCs run by processors are operational, while less than a fifth of the MCCs operated by farmer groups, government bodies or NGOs are operational (Berhanu *et al.*, 2021).

In Ethiopia, the government and development partners support (dairy) cooperatives to aggregate milk production, create scale in both input and output markets and function as interfaces between smallholder farmers and lead firms (Holtland *et al.*, 2017). There are about 180 primary dairy farmers' cooperatives in the country, of which 96 are part of 6 dairy cooperative unions (TRAIDE Ethiopia, 2021). However, in Oromia, most dairy farmers do not belong to a cooperative. Of the approximately 31 dairy cooperatives in Central Oromia, only a few – including Ade Berga in Holeta and Ada'a dairy cooperative in Debre Zeit – actively collect fresh milk from their members.¹¹ In most cases farmers have to take the milk to the cooperative or collection centre or organise transport themselves. The milk produced by off-road dairy farmers often fails to reach the processing plants, as milk collectors do not cover more remote areas (TRAIDE Ethiopia, 2021). Brasesco *et al.* (2019) identify a number of reasons explaining farmers' preference to sell to informal traders, including the fact that informal traders pay higher prices and collect at the farm gate, while cooperatives' collection points are often situated far away, have inconvenient collection times, and reject milk when quality is perceived as insufficient.¹² Dairy cooperatives, on the other hand, say private milk collectors are active only when the demand for milk is high while cooperatives collect milk throughout the year.¹³

Dairy cooperatives in Ethiopia have also had trouble securing strong linkages with formal milk buyers (ALINe, 2018). Cooperative-run dairy processing units often depend on external support and struggle to guarantee sufficient milk supply. Weak leadership of cooperatives and a lack of capacity to provide business, technical and management support on the part of the Woreda Cooperative Agencies (the government agencies mandated to support cooperatives) contribute to low levels of farmers' trust and interest in working collectively (ALINe, 2018). However, aided by support from development partners such as SNV, dairy cooperatives in Ethiopia have improved the services they offer their members as well as their linkages with formal buyers and processors.¹⁴

2.3. Dairy processing

In Oromia, as elsewhere in Ethiopia, rural livestock-owning households process their excess fresh milk at home to produce fermented milk, butter or cottage cheese (Teklewold *et al.*, 2019). Some of their output is consumed at home, with the rest brought to local markets or sold to traders. Around 85 percent of the milk in Ethiopia is consumed at household level, while only 7 percent is marketed (Getabalew *et al.*, 2019 in TRAIDE Ethiopia, 2021). In Central-Eastern Oromia, 55 percent of milk is consumed raw within the household or sold locally. Commercial milk processing is carried out off-farm on a small, medium and large scale. Small-scale milk processing is carried out mainly by cooperatives and privately-owned small businesses, often supported by local government and NGOs with the aim of stimulating the small-scale dairy industry and creating jobs locally (Brasesco *et al.*, 2019). Small-scale milk processors are engaged in milk processing using intermediate technologies and produce yoghurt, cottage cheese and butter. They serve as important market outlets for smallholder dairy producers and employ local youth, women and the landless.

There are also medium and large-scale milk processors in the country. Experts from SNV estimate that there are about 35 medium-to-large dairy processors in the country with their installed capacity

¹¹ According to an unpublished and unofficial internal report of the Ministry of Agriculture.

¹² Farmers in some cases feel that standards are not applied objectively at times of high supply, and that their milk is rejected by cooperatives on false bases (Van der Lee, 2018).

¹³ Interview with dairy cooperative manager in Holeta.

¹⁴ Interview with a dairy expert active in Ethiopia, including in Central Oromia.

varying from 10,000 to 60,000 litres of milk per day. Approximately 24 of the dairy processing plants (69 percent) are located in and around Addis Ababa. However, a study conducted by SNV found that dairy processors in the country are using only 22 percent of their capacity on average (Berhanu *et al.*, 2021). The combined daily processing capacity of the existing processors is estimated to be 250,000 litres of milk. The major causes of this underutilisation of capacity is the limited and inconsistent supply of fresh milk from the smallholders. The same report indicates that more than 80 percent of the processors are found in Addis Ababa and the Central Oromia region. The major processing companies which are currently active include Mama, Lame (shola brand), Family, Elemtu, Berta, Holland Dairy, Life Milk Processing Enterprise and Loni. They all are involved in buying, wholesaling, processing & packaging, marketing & distribution and retailing.

On the other hand, an assessment report (not published) conducted jointly in 2020 by the Agricultural Transformation Agency (ATA) and the Ministry of Agriculture of Ethiopia indicated that there are more than 20 registered milk processors in the cluster called the Great Selale-Addis Milk Shed,¹⁵ with processing capacities ranging from less than 1,000 litres per day to 50,000 litres per day, while collectively they process about 163,000 litres per day. Currently, the total potential processing capacity is estimated to be about 358,600 litres per day, but they operate at only 42 percent of their capacity.

2.4. Retail and consumption

Supply of the various dairy products in Ethiopia passes through formal and informal markets, which are often interwoven, and 78 percent to 95 percent of the milk is sold through the informal market (TRAIDE Ethiopia, 2021). In rural areas in Oromia, producers often sell their milk and other dairy products directly to consumers through informal local markets. In urban areas, retailers such as restaurants, hotels and cafes often keep a few dairy cows for producing milk (and for semi-processing) or they buy milk directly from producers or from local collectors. Supermarkets and retail shops sell dairy products marketed through formal channels, including imported dairy products such as powdered milk, ghee and various types of cheese (Brascesco *et al.*, 2019). In the formal milk marketing channel, pasteurized dairy products are distributed from commercial processors to a wide range of wholesalers and retailers, which handle most of the milk supplied to final consumers. Some commercial processors are engaged directly in wholesaling and retailing.

Fresh food centres¹⁶ are becoming popular places for sourcing dairy products including fresh milk, pasteurized milk, yogurt and cheese in Addis Ababa.¹⁷ Addis Ababa has the highest per capita consumption in the country, averaging around 52 litres of milk per year, while inhabitants in smaller cities consume less than 30 litres per year on average. However, it is worth noting that even in urban areas, including the capital city, middle- and low-income households access fresh milk mainly through informal markets (TRAIDE Ethiopia, 2021).

¹⁵ Great Selale - Addis Milk Shed is found in the North Shewa Zone of Central Oromia.

¹⁶ Fresh food centres are retail shops which mostly sell fruit and vegetables, dairy products and meat (mainly chicken).

¹⁷ Interview with retail shop owner in Addis Ababa.

3. Inputs and support to the dairy value chain

3.1. Livestock feed

Livestock feed is obtained from on-farm feed supply, communal grazing, purchased feed/forage, and manufactured commercial feed. Green fodder (grazing) is the major source of feed (55 percent) used for livestock in Ethiopia, followed by crop residues (31 percent) and hay (7 percent). Improved feeds such as alfalfa account for only 0.6 percent of the feed used for livestock in Ethiopia (CSA, 2021). Agro-industrial by-products from mills and breweries are also used by dairy farms.

Private dairy advisors note that as farmers have witnessed the improvement in milk yield from using concentrate feed, the practice of using such feed is increasing. Micronutrients which are important in making concentrate are imported. Importing of processed animal feed is very limited, mainly due to the shortage of foreign currency (TRAIDE Ethiopia, 2021). Small-scale dairy farmers point out that access to crop residues, green fodder and open grazing land is becoming more limited over time, which has led them to use industrially processed feeds. Either way, commercial feed producers and grass hay and green fodder vendors are becoming increasingly important actors in the dairy value chain in Oromia.

There are about 31 livestock feed mills in Ethiopia, many located in Dukem and Bishoftu, around 40 kilometres from Addis Ababa. Alema Koudijs Feed PLC, a joint venture between Ethiopian and Dutch investors, and the main supplier of concentrate feed in the country, is based in Bishoftu and produces a range of feed products. Only 20 percent of its capacity is used for dairy feed production while the balance is used for the production of feed for poultry and cattle fattening. Even though the unit price of the dairy feed from Alema is more expensive than other concentrate feed, dairy farms, including smallholder farmers, prefer the feed from Alema due to its high quality and its positive effect on milk yields.¹⁸

3.2. Breeding and genetics

Access to improved dairy cows was mentioned as a major obstacle for dairy farmers. Dairy farmers can access dairy heifers and cows either through direct purchase or through crossbreeding with their local cows using artificial insemination (AI). Previously dairy farmers were able to access crossbred dairy heifers from state-owned ranches found in various locations, but once the ranches were privatized the price of crossbred heifers skyrocketed.¹⁹ One good crossbred heifer could cost more than ETB 100,000 against ETB 35,000 four years ago, whereas the price of local heifers increased from ETB 8,000 to ETB 12,000 during the same period.²⁰

The government is providing an AI service and it is apparently the cheapest means of getting improved dairy cattle breeds. However, the AI service provided by the public extension system is mostly inefficient due to the shortage of AI technicians and inputs like semen and liquid nitrogen.²¹ There is no public incentive system to support the dairy sector at all according to an internal assessment report by ATA (2017), which is unpublished but indicates serious skill and knowledge gaps among the extension work force.

3.3. Extension services

Ethiopia's agricultural extension system comprises development agents (DAs), farmer training centres (FTCs) and agricultural technical and vocational training and education colleges. The Holeta Agricultural Research Center, close to Addis Ababa (in the Finfinne special zone) is actively involved in forage seed research and production. Private dairy advisors provide services such as hoof trimming,

¹⁸ Interview with a dairy expert.

¹⁹ Interview with Oromia Livestock Agency and dairy farmers in Sandafa.

²⁰ Interview with small dairy farm owner in Sandafa.

²¹ Interview with Land O'Lakes Ethiopia.

veterinary services, and AI. According to an internal report of the Ministry of Agriculture, there are approximately 21 DAs per 10,000 farmers in the country, with more in high-potential agricultural areas. In Oromia, as in other major agriculture producing regions, there are generally three DAs per *kebele* (local administrative unit), one of whom is a livestock development agent.

The Ethiopian extension system is centred on FTCs, with farmer groups considered as entry points for grassroots extension services and for the bottom-up extension approach. FTCs, assisted by DAs and farmer groups, are expected to provide a wide range of agricultural extension services such as farmer training, demonstration of improved farming techniques, market information and advisory services to farmers in their vicinity. The same document from the Ministry of Agriculture indicated that currently the government has established close to 11,000 FTCs across the country. According to stakeholders interviewed for this study, the performance of FTCs in Oromia is hampered by the limited support they receive from the government and by their limited resources, such as land to practise seed multiplication.

With the support of development organisations such as SNV and USAID Ethiopia, a pool of private dairy advisors was created through continuous training and a coaching service. These are individual advisors who were trained with a special focus on practical skills and coaching. They were trained in all practical aspects of dairy farm management and milk production, as well as milk processing. These advisors are currently providing a paid service to small and medium farmers. They provide mainly practical advice on site services such as AI, hoof trimming, setting up standard dairy feeding sheds, and maintenance of dairy processing equipment. The introduction of a pool of private advisors, mostly concentrated around Addis Ababa, is considered a positive development in the dairy value chain in Oromia.²²

3.4. Financial services

Smallholder farmers and micro, small & medium enterprises in Ethiopia can access finance from informal, semi-formal and formal financial institutions. The informal sources include *Iqub*,²³ families and relatives (Karafo, 2017). The main sources of credit in the informal credit markets are credits from: (1) relatives and friends; (2) moneylenders; and (3) traditional institutions. Relatives and friends are significant players, who provide credit with no interest while moneylenders, who are engaged in the business of providing credit with interest, commonly charge exorbitant interest rates and they are known for using morally unacceptable procedures to enforce contracts (Yimer, 2021). The traditional financial institutions such as *Iqub* use local networks and knowledge to bring people together to provide financial services to society. Semi (i.e. quasi) formal organisations such as farmers' cooperatives, local associations and non-governmental organisations operating at grassroot levels offer financial services to entrepreneurs and SMEs (Berhanu and Fufa, 2008).

The formal financial sector in Ethiopia mainly consists of banks, microfinance institutions, insurance companies, and more recently, leasing companies. Some key actors in Ethiopia's financial system include the National Bank of Ethiopia (NBE), the state-owned Commercial Bank of Ethiopia and the Development Bank of Ethiopia (DBE),²⁴ sixteen privately-owned commercial banks, and approximately 41 microfinance institutions (MFIs), eleven of which are owned by regional governments.²⁵ According to the International Monetary Fund (IMF 2020: 9), the total assets of the Ethiopian financial system

²² Interview, expert from Land O' Lakes.

²³ *Iqub* is a traditional cooperative formed voluntarily by individuals. It is a rotating saving and credit type association whose members make regular contributions to a revolving loan fund.

²⁴ DBE operates as a development finance institution and holds a share of around 4.5 percent of the total assets of the Ethiopian financial system (IMF 2020: 10).

²⁵ The largest five MFIs (Amhara, Dedebit, Oromiya, Omo and Addis Credit and Savings institutions) hold 90 percent of the savings and 86 percent of the credit of all MFIs in the country (NBE 2020: 42). According to the IMF (2020: 10), these MFIs own around 5 percent of the total financial assets in the country.

(excluding NBE) at the end of December 2019 stood at nearly USD 46 billion. Commercial banks account for almost 90 percent of these assets, with the Commercial Bank of Ethiopia (CBE) alone accounting for around 65 percent of these.

As it provides loans without second degree collateral,²⁶ compared with other banks, DBE goes through a relatively thorough appraisal process and is found to be financially and economically viable and socially desirable in terms of environmental protection, employment generating capacity and other social benefits that may be included in the framework of the Development Regulation Act of the Government.²⁷ As the bank is used by the government to lead the channeling of development funds sourced from bilateral and multilateral agencies, DBE has experience of managing funds tagged for specific programmes and sectors such as IFAD's **Rural Financial Intermediation Programme (RUFIP)**,²⁸ the **Women Entrepreneurship Development Project** and the **SME Financing Project** of the World Bank.

Ethiopia's banks claim to be willing to lend to farmers and other small-scale value chain actors, provided certain requirements are met. But in practice, these financial institutions do not tailor their offerings sufficiently to serve the needs of the dairy value chain in general and dairy producers in particular. In general, Ethiopia's banks display a lack of understanding, and potentially also a lack of interest, in the dairy sector.²⁹ Fieldwork by SNV and the Ethiopian Meat and Dairy Industry Development Institute (EMDIDI) finds that bank loans provided to the sector often do not involve a feasibility study, and tend to focus on ensuring repayment, ignoring whether or not an investment has generated positive returns.

The DBE, meanwhile, has financed medium and large-scale dairy processing projects, but focuses on investments requiring relatively large loans of at least ETB 25 million. The Cooperative Bank of Oromia is active in financing dairy collectors and processors, and has financed at least two cooperatives in Oromia, including Adea dairy (based in Modjo-East Shewa) and Ade'berga cooperative (based in Holeta Finfinne special zone).

MFIs are the main financial service providers for smaller dairy-related activities in Oromia. The Oromia Credit and Saving Share Company, which was recently upgraded to a commercial bank, and Bussa Gonofa both provide credit services to dairy farmers in the region. They both also provided smaller loans to milk collectors and traditional milk processors. However, neither of them have a separate credit product targeting the dairy sector specifically, rather providing general credit products, which they classify into group loans and SME loans. In general, MFIs and commercial banks display similarly low levels of appetite for taking on risk when lending to the agriculture sector, and have similar provisions for lending to SMEs (Mersha and Ayenew, 2017: 9). Semi-commercial farmers complain that loans from MFIs are very small, whereas obtaining credit from commercial banks is complicated by requirements for collateral, keeping financial records and submitting business plans.

On the other hand, in a situation where quite a large number of smallholders keep a small number of dairy cows, it is difficult for financiers to extend credit service without additional security or collateral. Insurance companies such as the Ethiopian Insurance Company (public) and Nyala Insurance (private) insure live animals, provided that owners have veterinary health certificates for their animals (TRAIDE Ethiopia, 2021).

²⁶ Second degree collateral refers to all assets or properties pledged as a guarantee for a loan where such assets are not owned by or related to the financed project or activity. For instance, if the owner of a company is pledging his/her private house as collateral for a business loan, it is called second degree collateral.

²⁷ Interview with DBE.

²⁸ RUFIP was a programme designed to facilitate access to finance for rural households through a network of Micro Finance Institutions (MFIs) and Rural Saving and Credit cooperatives (RUSACCOs). DBE has coordinated the selection of MFIs, RUSACCOs and the channeling and collection of the fund.

²⁹ Interview with a dairy expert active in Ethiopia, including in Central Oromia.

World Food Programme, the International Livestock Research Institute (ILRI), Mercy Corps and Farm Africa are implementing projects that facilitate micro insurance and access to credit services in the pastoralist/agropastoralist areas of the Somali and Oromia regions. These projects are supporting livestock operators who take out loans to purchase cattle that include insurance against the loss of their animals due to disease, theft, or accidents. However, there are no such projects in central Oromia.

Leasing finance is a financial solution under which businesses with limited or even no collateral can more easily acquire the vehicles, equipment, or other items they need to produce their commodities. The IFC has recently helped Ethiopia's government create a favourable regulatory environment for leasing and has helped the Development Bank of Ethiopia and the five regional finance companies based in Addis Ababa, Southern Nations, Nationalities, and Peoples' Region (SNNPR), Tigray, Oromia, and Amhara launch leasing operations. In 2019, Ethiopia's first independent leasing company, Ethio Lease, launched operations. Ethio Lease is a subsidiary of Africa Asset Finance Company Inc., a US-headquartered equipment finance firm that entered the Ethiopian market in 2019.³⁰ Ethio Lease is the first and only financial institution which is owned (99 percent) by foreigners. Leasing is the only financial sector in Ethiopia open to foreign investors and is a relatively recent phenomenon in the financing landscape of the country. There are only a few actors active in the sector. The *Capital Goods Finance Operational Modality Directive No CGFB/10/2019* issued by the NBE requires leasing companies to provide a minimum of 60 percent of their total outstanding capital goods finance portfolio to SMEs and a minimum of 65 percent of the portfolio to the manufacturing sector.

³⁰ Interview with an employee of Ethio Lease (2020).

4. Enabling environment

4.1. Policies and strategies for livestock and dairy

The livestock and dairy sectors have gained significant policy prominence in Ethiopia in recent years, especially through the launch of the Ministry of Agriculture's³¹ ten-year plan for the livestock sector, ATA's ten-year strategy and the Action Plan for Transforming the Dairy Sector in Ethiopia (Action Plan).³² However, ensuring these policies, strategies and plans achieve their intended impacts remains a significant challenge.

Broadly speaking, the dairy-related policies of the Ethiopian government (both federal and regional) aim to promote a shift to the commercialisation and production of high-value commodities for domestic consumption and an export-oriented marketable surplus. At the same time, the government puts smallholder farmers at the centre of state interventions, at least in its various policy documents, such as the national development strategy captured in the different phases of the Growth and Transformation Plan (GTP-I and GTP-II). Development partners have aligned their support to the goal of commercialising the commodities produced by smallholders (Alemu and Berhanu, 2018).

In recent dairy-specific action plans, the problems of an insufficient supply of inputs are acknowledged, as well as the intention in policies and strategies to give more space to private sector involvement in input supply chains.³³ In practice, however, implementing mechanisms and arrangements that encourage the involvement of the private sector in input supply chains is challenging. In Oromia, government agencies still remain the main providers of dairy related inputs and services. There is a risk that the government is crowding out potentially more effective private sector provision of certain inputs and services to the dairy value chain. This dynamic can partly be attributed to the legacy of state control over input supply chains (Labzae and Planel 2021).

Policies, strategies and plans relevant to dairy development in Oromia also aim to have broad positive societal impacts, such as raising incomes and creating job opportunities along the dairy value chain and improving food and nutrition security. However, the causal pathway between commercialisation, improvements in productivity and socio-economic outcomes is not well addressed in these policies, strategies and plans. Furthermore, they devote relatively little attention to environmental impacts.

The Agricultural Transformation Agency (ATA) plays an important role in the livestock sector, including in the Oromia region. ATA promotes the commercialisation of smallholders and pastoralist livestock production through its Agricultural Commercialisation Cluster (ACC) approach, which seeks to exploit comparative advantages and promote the specialisation and intensification of specific commodities in different agro-ecological contexts. To this end, ATA has been developing cluster-specific strategies and implementation plans for priority value chains, and has identified the dairy value chain as a priority value chain for two zones in central Oromia: North Shewa and Finfinne Special zone. Under the cluster approach, ATA promotes the coordination of public, private and other development actors to address priority bottlenecks in the dairy value chain (including feed production).

³¹ The Ministry of Agriculture is the main actor responsible for agricultural policy formulation, technical support and the provision, supervision and coordinating of national dairy development projects. It is also in charge of promoting collective action through the formation of cooperatives and unions, and for facilitating linkages with other national, regional, and international organisations engaged in dairy research and development.

³² One such action plan is for the period 2021-2025 and covers several regions: "potential dairy clusters and/or milk shade areas in Oromia, Amhara, SNNPR and Sidama regional states".

³³ For example, the 2020 Action Plan for Transforming the Dairy Sector in Ethiopia mentions: "Encouraging the private sector to be involved in these input supply chains will have a paramount importance".

In July 2020, the National Planning and Development Commission³⁴ presented a Ten Year Perspective Plan (2021-2030), outlining the ambitious aim of making Ethiopia a middle-income country by 2030. ATA's ten year strategy³⁵ builds on this plan for the sector and the Minister of Agriculture's Strategic Priorities. Of the six strategic pillars outlined under the Ministry of Agriculture's new plan, five have a direct or indirect focus on livestock development. The pillars are: 1) Enhance productivity of smallholder farmers and pastoralists through provision of modern inputs and services; 2) Develop a legal framework that will allow farmers to lease land use rights and become shareholders in large commercial farms; 3) Modernise livestock production through improving veterinary infrastructure, research and innovation, and establishing linkages with other industries; 4) Encourage private sector investment in agricultural Research and Development and explore Public-Private Partnerships to expand medium and large-scale irrigation infrastructure; and 5) Develop a legal framework for agriculture-specific financial services such as microlending, crop insurance, and forward contracts.

Investment policies, both at federal level (e.g. through the presidential delivery unit) and regional level (e.g. Oromia Investment Bureau) often bias investments towards large-scale export-oriented crop production, while the dairy development policy intends to focus on and strengthen smallholder dairy farmers, to support them to transition from traditional dairy production systems to market-oriented and commercial ones.

The Ethiopian Meat and Dairy Industry Development Institute (EMDIDI) is an autonomous federal government office accountable to the Ministry of Agriculture. It is mandated to conduct research on the market for dairy products, to provide advisory services to projects, private sector and government offices as well as to facilitate access to financial services. EMDIDI also has an experimental forage site, a dairy chemistry laboratory, a dairy microbiology laboratory, and feed processing facilities. EMDIDI works on national and regional initiatives that aim to increase processing of animal products by promoting investment opportunities, conducting market research and providing technological support, training and consultancy services. It specifically works on collecting, processing and disseminating the necessary information on market requirements for animal products (including for the international market). It also provides advisory services for the selection and commissioning of technologies. However, EMDIDI's activities are more focused on meat production, as meat exports bring in crucial foreign currency, whereas dairy products are mainly produced for the domestic market. Currently, the Ethiopian dairy sector is not competitive and formal exports of dairy products are negligible (TRAIDE Ethiopia, 2021).

4.2. Financial and technical assistance from development partners

Development partners and non-governmental organisations (NGOs) also play an important role in dairy development in Oromia, including through providing technical and financial support to smallholder producers, dairy cooperatives and unions and private dairy value chain actors. Institutions such as the International Livestock Research Institute (ILRI), SNV, Land O'Lakes, FAO, Heifer International, African Dairy Genetic Gains, the Ethiopian Society of Animal Production and others are involved in supporting genetic improvement at various levels in different high dairy potential areas of the country, including in Oromia. Development partners such as USAID and SNV have implemented numerous dairy programmes across Ethiopia, including to train private dairy advisors and promote market-linked

³⁴ <https://www.ethiopia.gov.et/ministries/commissioner-of-national-planning-commission/>.

³⁵ http://www.ata.gov.et/wp-content/uploads/2020/12/Presentation_ATAs-strategy-going-forward.pdf.

innovation for dairy development.

Development partners such as USAID and SNV support efforts to improve access to finance. Through the Ethiopia Value Chain Activity project, USAID offers 50 percent guarantees to selected dairy projects. USAID together with Harvard University is also supporting the National Bank of Ethiopia to accept land as a collateral item for smallholder farmers. However, this project ends in 2021. Through the BRIDGE programme, SNV provides smart subsidies to agro-dealers who engage in forage seed multiplication and distribution. The subsidy is competition-based and can only cover 33-50 percent of the project cost while the balance is financed by the entrepreneur. This scheme succeeded in encouraging investors to consider forage as a viable business. It was mentioned by a project staff member that a total of 28,000 farmers have benefited from these schemes as they were then able to buy forage seeds from the agro-dealers.

SNV supports private actors to engage in improved forage seed production. SNV has been mainly promoting the production and distribution of oat, grass pea (locally known as *guaya*) and alfalfa through private agro-dealers which have connections with smallholders with land to grow fodder.



5. Value chain bottlenecks

A number of factors negatively impact the performance of the dairy value chain in Oromia. The key factors are noted here.

5.1. Access to feed

Arguably the most significant impediment to increasing milk production and productivity in Oromia is the low availability and high price of quality livestock feed. A good nutrition programme is key to a successful dairy operation, but for many dairy farmers in the region, high quality feed is very expensive, if available at all; small and medium-scale dairy farmers in Sendafa report that the cost of feed accounts for more than 80 percent of their total production cost and that the price of feed is steadily increasing. Production of feed is constrained by shortages of land for seed and forage production, and by inadequate access to quality forage seed and other feed supplements and ingredients. Seasonal fluctuations also affect feed supply, both in terms of quality and quantity. Poor management of locally available feed resources such as crop residues and limited access to crop residues and hay curing and/or improving technologies also affect feed supply.

5.2. Access to other inputs and services

The low quality and coverage of input and services is a major impediment to attracting investments to the dairy sector in Oromia. Especially in Oromia, where the main milksheds are located, government and development partners have made efforts to improve access to and the affordability of AI and veterinary services. Despite these efforts, coverage of these services in Oromia and elsewhere in the country is still patchy; there is insufficient availability of the vaccines and other drugs that are necessary for farms to upgrade their production and for the dairy value chain as a whole. Farmers are generally dissatisfied with the quality of services (Brascesco *et al.*, 2019; Van der Lee, 2020). An example is the current high cost and low level of service provision related to milking machines and other processing equipment (maintenance, support and training). There are now 75 milking machines in the country that are not working, because of the lack of technical capacity for maintenance, lack of spare parts and the poor quality of imported spare parts (Berhane *et al.*, 2021; Ndambi *et al.*, 2018).

Access to improved dairy cows was mentioned as a major obstacle for dairy farmers. An expert from Land O'Lakes commented that attracting and capacitating the private sector to engage in AI service delivery could be one of the avenues to overcome the shortage of crossbred cows and heifers thereby reducing the cost of establishing a dairy farm in these areas.

The dairy programmes and strategies implemented in Oromia also try to incentivize (large-scale) investments in commercial farms, based on the assumption that by strengthening the linkages between large-scale commercial farms and smallholder farmers, e.g. through outgrower schemes or contract farming, smallholders' access to inputs, services, technologies, knowledge and markets will improve. The establishment of agro-industry parks and agricultural commercialisation clusters has a similar rationale.

5.3. Access to finance

Ethiopian law restricts foreign financial services providers from operating in Ethiopia, which has a limiting effect on competition and innovation in the Ethiopian financial system. Partly as a result,

³⁶ According to the World Bank's Global Findex database, in 2017 only 34.8 percent of the adult population had a financial account (32.4 percent in rural areas), only 26.3 percent of the adult population (15+) had savings in a financial institution and only 10.7 percent had borrowed from a financial institution.

³⁷ Ethiopia ranked 176th in the "Getting Credit" indicator of the World Bank's Doing Business report in 2020 (World Bank 38 Group, 2020: 30). Interview with SNV.

Ethiopia suffers from low levels of financial inclusion,³⁶ and accessing credit in the country is difficult,³⁷ particularly for small and medium-sized enterprises (SMEs). The financing gap for SMEs in Ethiopia is estimated to be approximately USD 3.9 billion, 2.4 times the current level of SME lending (World Bank, 2021), and the COVID-19 pandemic is complicating efforts to close this gap.

Accessing affordable credit is also particularly difficult for actors in the agriculture sector. Local banks, facing their own liquidity constraints, focus their lending activities on businesses perceived to be less risky, particularly those operating in services, real estate and construction, and who have ready collateral. Lending to actors in the agricultural sector is considered a more risky proposition, largely due to the sector's fragmented nature and the low number of commercial farms operating in it. Given the scarcity of foreign exchange in Ethiopia, banks and financial services providers are more willing to finance export-oriented agricultural investments (Woolfrey *et al.*, 2021). The dairy sector though is largely oriented towards the local market.

Dairy value chain actors in Oromia, as in the rest of Ethiopia, find it very difficult to access finance at reasonable rates from banks and other formal financial institutions. This is particularly true for smallholder farmers and dairy cooperatives, but also for dairy SMEs and other agribusinesses operating in the dairy value chain. Dairy value chain actors are forced to rely on local saving and credit cooperatives (SACCOs), microfinance institutions, traders or informal lenders for finance (Woolfrey *et al.*, 2021). However, loan sizes provided through these sources are generally small and often insufficient to facilitate significant investments, while high interest rates reduce further the attractiveness of taking these loans (e.g. from ICCO Terrafina Microfinance, n.d.).

5.4. Poor logistical management

The dairy value chain in Oromia, and in Ethiopia generally, is constrained by low milk productivity at farm level due to poor animal genetics, insufficient access to proper animal feed and poor management practices. Likewise, dairy producers and downstream actors in the value chains face many challenges in getting milk to market. For the most part, milk collection, chilling and transport are not well organised and the market fails to pay fair prices to milk producers, who in turn fail to ensure the supply of quality milk to consumers. Based on data collected from dairy value chain actors in Sendafa, around a quarter of milk produced is spoiled or otherwise lost due to inefficient logistics to link producers and processors.

5.5. Access to price and quality information

Although milk market price information at local and regional markets is required for producers, traders and consumers, there is a lack of sufficient price information, particularly terminal market price information. Sources of information are mostly informal, from other farmers, traders, personal observation and government extension agents.

5.6. Poor coordination for supply contract enforcement

Milk collectors in the Sendafa area complain that contracts with small-scale dairy farmers are ineffective, as farmers are willing to break these contracts when offered higher prices by another buyer. The head of a dairy cooperative in Holleta reports that even though the cooperative provides their member dairy farmers with feed on a credit basis, members sell their milk to private traders especially when market prices are high, and turn to the cooperative when the market for fresh milk slows during the main fasting period of March-April. Experts from SNV also commented that formalising supply contracts in the form of forward contracts is a nationwide challenge, as it is difficult and expensive for private buyers to enforce contracts in a context where local government authorities

generally support smallholder farmers.

5.7. Policy gaps

While there are a number of policies and regulations relevant to dairy in Oromia, the policy and regulatory environment pertaining to investment in the dairy value chain has many gaps. There is no effective land acquisition policy for dairy investments and few incentives for investors to establish dairy processing plants and specialised dairy farms, while the policy to encourage investment in large-scale commercial feed production is poorly administered. Anecdotally, some potential investors find it difficult to deal with the bureaucratic procedures for securing land and investment licenses.

Incentives offered by the government have a direct or indirect role in steering investment into different parts of the dairy value chain. The government incentives are mostly connected to those investment areas which are believed to contribute towards achieving national goals such as employment creation. The Government of Ethiopia has initiated an ambitious industrial development policy, which aims to create 2 million direct jobs in the coming decade. This will be achieved mainly by developing and expanding a labour-intensive manufacturing sector. In this regard, the dairy farmers in Ethiopia are indirectly pushed to move into dairy processing mainly in order to secure land for investment.³⁸

5.8. Weak enforcement of food safety regulations and quality standards

Enforcement of food safety regulations has also been weak in the past, disincentivising private investment in food quality and safety (Brascesco *et al.*, 2019). Adulteration of milk (by adding water) has become common practice, particularly when there are shortages of fresh milk (such as after fasting periods and during dry seasons).³⁹ Weak enforcement of quality regulations related to feed also disincentivises investments to improve feed quality, and has led to cases of feed adulteration and a generally poor quality-price ratio for feed (Ndambi *et al.*, 2018).⁴⁰

Stronger enforcement of regulations can strengthen the efforts of dairy value chain stakeholders to invest in improved practices and technologies, although for many stakeholders weak resources and capacities will limit the ability to invest. To this end, the 2021-2025 Dairy Action Plan sets out a plan to revise the Ethiopia milk quality standard and make it mandatory. The Ethiopian Food and Drug Administration (EFDA) has also intensified its dairy-related activities. In early 2021, this resulted in the closure of a number of processing units in Oromia because they didn't meet hygiene and other

³⁸ Interview with SNV.

³⁹ Interview, cafeteria owner in Addis Ababa.

⁴⁰ Emerging results from RTI research assessing the resilience of agro-dealers in Ethiopia shows how the COVID-19 pandemic is affecting agricultural input retailers negatively, exposing them to more expensive imports on the one hand and a reduced purchasing ability of farmers on the other. See <https://agrilinks.org/post/mapping-framework-micro-small-and-medium-enterprise-resilience>.

⁴¹ Interview with dairy expert active in Ethiopia including in Central Oromia.



standards.⁴¹

6. The political economy of investment in dairy

This section identifies the main structural, institutional and other factors that shape the performance of the dairy value chain in Oromia (and in Ethiopia more broadly) and which influence public and private investment in the value chain as well as the broader impacts of such investment on sustainability.

6.1. Land scarcity

The availability of suitable land for dairying in Oromia is declining due to demographic pressure, the customary intergenerational subdivision of land, the expansion of crop cultivation, and land degradation (Van der Lee, 2020; Brascesco *et al.*, 2019). Land use change, from farmland to urban and infrastructure development, and allocation of land to state farms and flower farms, for example in East Shewa, have also increased pressure on agricultural land (Van der Lee, 2020). These factors make it difficult for newcomers to engage in dairying, and for current dairy producers to upgrade their operations. The decreasing availability of suitable land and the fragmentation of agricultural plots also impedes investment in forage and forage seed production, in turn exacerbating livestock feed shortages (Van der Lee, 2020).

As pressure on land in Ethiopia increases, large tracts of land need to be treated with transparency and sensitivity (Nicolay *et al.*, 2020). In the past, large-scale agricultural investments that displaced local populations, have led to social unrest (Woolfrey *et al.*, 2021). Local communities have a weak bargaining position against the consequences of unfulfilled or contested non-compliance of large-scale investors (Nicolay *et al.*, 2020). The current tensions between federal and regional authorities can catalyze these tensions. Ensuring compliance with best practices regarding land tenure is key to avoid possible injustices related to land allocation, and companies' community engagement should be adequately organised. Regional and local institutional mechanisms that could contribute to more integrated multi-sectoral and risk-informed local development planning, including land allocation, are not likely to evolve in the current political situation.

6.2. Distance to market and to input and services provision

The travel time from dairy farms to cities is closely linked to the investment decisions made at those farms regarding the use of inputs, and the choice to produce liquid milk or processed products like ghee, cheese and yoghurt. Urban demand for nutritious dairy products is increasing. Proximity to urban markets has a positive effect on farm-level investments to upgrade productivity (Minten, 2018; Van der Lee, 2020). Farmers located closer to Addis Ababa and other bigger urban centres like Adama, Asella and Shashamen, have more traders present in their villages who buy liquid milk. The traders provide services to farmers, like information, inputs, credit and cooling technologies, that positively impact their productivity. (Vandercasteelen *et al.*, 2019). A recent study showed that "increasing travel time [to Addis Ababa] significantly reduces the share of households using crossbreed cows, artificial insemination, veterinary services, vaccination, the number of cows in milk production, and the application of industrial feed" (Vandercasteelen, 2019).

But it is not only proximity to urban centres that positively impacts the willingness and ability of dairy farmers to invest in practices that enhance productivity and contribute to producing a marketable surplus. A recent study looking at nine villages in Oromia found that the categorisation of dairy farms as (peri)-urban or rural is insufficient to explain the differences in commercialisation and modernisation between these farms. Transport connections to local service centres, such as milk collection infrastructure, agrovet shops and artificial insemination (AI) and veterinary services are

crucial also for remote rural farms to be included in dairy and other markets. Being close to a centre where farmers can access inputs and services (AI, veterinary, and extension services) improves the overall quality of their dairy farm (Van der Lee, 2020).

6.3. Foreign exchange shortages

Persistent foreign exchange shortages due to Ethiopia's significant trade deficit are a major factor influencing dairy value chain dynamics. These shortages impact feed producers, dairy farmers and processors directly, by making it difficult for them to import inputs such as machinery, hybrid seeds, fertiliser and other agrochemicals for the production of feed and fodder. In practice, producers that want to import inputs from abroad often engage in export-oriented activities to obtain foreign exchange (Woolfrey *et al.*, 2020). Indirectly, the foreign exchange shortages influence dairy value chain dynamics through the strong push by the Ethiopian government to promote export-oriented agriculture as a source of foreign exchange and the greater willingness of financial services providers to finance export-oriented agricultural investments (Woolfrey *et al.*, 2020).

6.4. An undeveloped market for inputs and services

As noted above, most dairy farmers in Oromia operate on a small scale. The relative absence of large-scale commercial dairy farms in the region (and in Ethiopia more broadly) as well as the geographical fragmentation of smaller producers reduces the incentive for private investment in the production of inputs and services for the dairy value chain, such as feed concentrates, AI or maintenance of milking machines.⁴² Some private extension services providers have emerged, such as in AI, but the cost of their services tends to be more expensive than the cost of publicly provided extension services, although private providers offer higher quality services. (Brascesco *et al.*, 2019). Existing regulatory frameworks and issues around licensing also disincentivise private investment in the provision of services to the dairy industry, which remains largely in the hands of the public authorities.

As a result, dairy farmers struggle to access and afford these inputs and services, which in turn inhibits the emergence of larger-scale and more commercially-oriented dairy production and the growth of a more stable local market for these inputs and services (Brascesco *et al.*, 2019, Van der Lee *et al.*, 2018). Different factors make it difficult to overcome the deadlock between the absence of a large stable market for dairy products and the low supply of inputs and services. Currently, remote small-scale producers, who want to invest in an upgrade of their farm are hindered by lack of easy access to, for example, the milk collection grid, to agrovet stores, advisory and extension services and to (market) information. There is not a diverse spectrum of available services that can match the diversity of farms and cater for their different needs (Van der Lee, 2020).

6.5. Dietary customs

Demand for dairy products in Ethiopia is projected to increase significantly in the coming years, but the country's religious fasting periods cause regular and significant demand fluctuations, with milk sales decreasing by up to 50 percent during fasting periods (Brascesco *et al.*, 2019).⁴³ Due to these fasting periods, Orthodox households consume less milk compared with households of other religions (D'Haene *et al.*, 2019). Another important cultural factor affecting dairy consumption is the custom of drinking uncooked milk, either in fresh or fermented form (Mossie, 2019). Unlike in neighbouring countries, there is a strong reluctance in Ethiopia to boil milk before consumption. The common belief is that nutrients in the milk are destroyed when milk is boiled and that "boiled milk is dead" (Amenu *et al.*, 2019). Instead, it is common practice to ferment milk at the household. The implications of these

⁴² Interview with dairy expert active in Ethiopia including in Central Oromia.

⁴³ There are about 200 fasting days in a year. These follow the religious calendar and are independent of dry and wet seasons (Brascesco *et al.* 2019).

consumption practices for investing in dairy commercialisation needs to be better understood.

6.6. Patriarchal socio-cultural norms

Ethiopia's patriarchal socio-cultural norms negatively affect women's access to and decision-making over assets, resources and education (Brasceso *et al.*, 2019). Unequal access to resources and biased distribution of (economic) benefits negatively affect the efficiency of the dairy value chain as a whole. Socio-cultural norms and mobility restrictions constrain women's access to capacity building interventions, extension services, improved technologies and credit. This in turn constrains their ability to invest in technologies and practices that could increase productivity, profitability and sustainability in the dairy value chain. In addition, women are under-represented in the decision-making processes and governance structures in dairy value chains, as most leadership and management positions in commercial dairy businesses and in dairy cooperatives are held by men (Brasceso *et al.*, 2019).

6.7. The politics of agricultural extension services

The agricultural extension system in Ethiopia is a political instrument of influence for the national government (Adem 2012, Lefort 2012, Planel 2017, Segers *et al.* 2009, all cited in de Roo, 2020). Government extension officials (called development agents - DAs) decide which farmers will benefit from interventions. They appoint model farmers and create farmer development groups that are meant to support the adoption and uptake of agricultural practices and technologies.⁴⁴ Incentivised by top-down targets, extension officials often exert pressure on farmers, including mixed crop-livestock farmers, to buy selected seeds and fertiliser on credit (Labzae and Planel, 2021). Incentives to "show impact" push DAs to select already-privileged farmers (in terms of access to resources, knowledge and power) to test new interventions hoping to increase the chances of successful uptake. This bias can give false expectations of how scalable these interventions are.

Many investors in dairy aim to integrate small-scale dairy farmers into their supply chains, often through contract farming arrangements and by partnering with development organisations.⁴⁵ To accomplish this in Ethiopia, where the productivity and profitability of small-scale farms is relatively low, the skills and capacities of small-scale farmers need to be upgraded. While some investors aim to provide training directly to farmers, they often partner with Ethiopia's extension system. For these investors, it is important to take into account the way power and politics influence how extension services play out in practice in Ethiopia. Neglecting the reality of less privileged smallholders (who comprise the vast majority of dairy producers in Oromia) risks perpetuating or deepening existing poverty (de Roo, 2020).

6.8. Violent conflict and political unrest

Ethiopia has enjoyed a reputation of relative stability in an otherwise unstable region, but perceptions are changing due to the ongoing conflict in the Tigray region in the north of the country, which is expected to have spillover effects in the rest of the country.⁴⁶ With the security situation taking on the characteristics of a protracted crisis,⁴⁷ Ethiopia's development partners are responding. The European Union suspended EUR 88.5 million of support in December 2020.⁴⁸ The United States has also suspended part of its support to the Ethiopian government, although it is still funding humanitarian assistance through international organisations and NGOs.⁴⁹ In February 2021, the Dutch government

⁴⁴ The local government in Oromia also implemented the garee (team) level, above the farmer development group. The garee links households to lower administrative levels and is perceived also to function as a vehicle for control (Emmenegger 2016, Lefort 2012, cited in de Roo, 2020). Cognisant of the political implications, farmers can be wary of government initiatives that aim to organise the collective labour needed for some agronomic practices like ploughing or row planting and prefer their own organisations (de Roo, 2020).

⁴⁵ Numerous dairy development projects in Oromia try to use investments in the extension system in their approaches to leverage private sector investment from bigger off-takers like processors. SNV's current dairy programme BRIDGE builds on a more participatory dairy extension service approach, developed and implemented together with government partners in its previous dairy project EDGET (ALINE, 2018). Other projects tested models introducing private service provision in a range of dairy-related services (Van der Lee *et al.*, 2018).

⁴⁶ See <http://www.fao.org/emergencies/resources/documents/resources-detail/en/c/1415450/>.

⁴⁷ See <https://www.crisisgroup.org/content/resurgent-tigray-and-horn-africa-politics>.

⁴⁸ See <https://www.politico.eu/article/eu-commission-suspends-nearly-90-million-euros-in-aid-to-ethiopia-over-internal-conflict/>.

⁴⁹ See <https://www.devex.com/news/us-officials-call-for-aid-access-end-to-violence-in-ethiopia-100019>.

postponed programmes implemented by or with the Ethiopian government worth EUR 2.8 million. This is significant given that USAID and the Dutch government are two of the main funders of dairy development projects in Oromia. The Dutch-funded BRIDGE project, for example, is explicitly mentioned in the budget estimate of the 2021-2025 Dairy Action Plan.

The conflict has affected the confidence of creditors. Ratings agency Moody's reduced Ethiopia's credit status on 20 October, because of the political instability, economic volatility and expected delays in debt rescheduling. The liberalisation agenda and related trade access are likely to suffer from the stagnating flows of foreign direct investment and (the prospect of) sanctions.⁵⁰

The Oromia region has experienced significant unrest in recent years, fueled by ethnic tensions and political grievances. In 2016 this unrest manifested itself in attacks on foreign-owned factories and flower farms.⁵¹ This episode led to a moratorium on the government's provisioning land to foreign investors (Woolfrey *et al.*, 2021). It also diminished Oromia's attractiveness to foreign investors, with many redirecting their focus to other regions perceived to be more stable, such as the Amhara region (Woolfrey *et al.*, 2021; interviews with foreign investment experts). Ethnic rivalries over land, power and resources remain unresolved in Oromia, and in 2020, tensions again erupted into riots and violence.

⁵⁰ See https://www.africa-confidential.com/article/id/13652/The_costs_of_Abiy%27s_all-out_war.

⁵¹ See <https://www.reuters.com/article/us-ethiopia-unrest-idUSKCN1270MX>.

7. Dairy and sustainability in Oromia

This section briefly explains the link between the dairy value chain and the broader socio-economic and environmental sustainability objectives relevant to the Ethiopian food system.

7.1. Employment and livelihoods

Livestock and dairy production is an important source of livelihood for around 80 percent of Ethiopia's rural population (Brasceso *et al.*, 2019). In certain rural parts of Oromia, as in other rural parts of the country, more than half of household income derives from livestock and dairy products. Dairy production is potentially the largest rural employer in Ethiopia's highlands, where 80 percent of Ethiopia's milk is produced. Brasceso *et al.* (2019) estimate that the dairy subsector created over 3 million full-time jobs across the Ethiopian highlands in 2015.

Beyond creating employment opportunities for smallholder farmers, a better performing dairy subsector offers great prospects for increasing incomes through the production of high-value dairy products (Brasceso *et al.*, 2019). Better connecting geographically fragmented smallholder milk producers to dairy processors through formal business arrangements, including through cooperatives, can generate increased incomes and profits for smallholder farmers.⁵² Investments in large-scale specialised dairy farms can create employment opportunities as can investments in fodder production and dairy processing. A more formalised dairy value chain can also support the establishment of local businesses to serve dairy producers, processors and transporters, which in turn will generate more off-farm employment opportunities (Brasceso *et al.*, 2019).

7.2. Gender equality

Dairy production provides an important source of income for Ethiopian women, especially rural women, but their participation in dairy value chains is concentrated in less profitable activities. Customarily, women undertake dairy-related tasks at household level, including gathering forage, tending to livestock, allocating milk for household consumption or sale and small-scale processing of dairy products. This results in a highly unequal burden of labour for women, and in their disproportionate exposure to health risks (FAO 2017).⁵³ Women also dominate the informal retailing of milk and traditional processed dairy products in local markets, and participate in formal retailing, although generally not as the owners of retailing businesses (Brasceso *et al.*, 2019).

The share of female labour in dairy processing decreases as processing moves off-farm and scale increases (Brasceso *et al.*, 2019).⁵⁴ Men become more involved, and assume more decision-making responsibilities in other stages of the dairy value chain, such as input supply and distribution, as well as where dairy production and marketing is more commercialised and where dairy production becomes a more important source of household income (FAO, 2017). The commercialisation of dairy production and marketing therefore threatens womens' traditional control over the production and sale of dairy products, and the incomes they derive from these activities (Kinati and Mulema, 2018). Investments that do not take prevailing gender norms, roles and power relations into account risk perpetuating or worsening gender inequality in Ethiopia.

⁵² Interview with dairy expert active in Ethiopia, including Central Oromia.

⁵³ <http://www.fao.org/3/i6653e/i6653e.pdf>.

⁵⁴ Although in certain parts of Ethiopia, including in Central-Eastern Oromia, women still represent as much as 70 percent of the formal dairy processing workforce (Brasceso *et al.*, 2019).

7.3. Nutrition

Ethiopian diets are insufficiently diversified, increasing the risk of various chronic diseases and negatively affecting nutrition, growth and health, especially of young children (Ndambi *et al.*, 2020). Greater dietary diversity is crucial for improving nutrition in the country, and dairy products can play an important role in this. Per capita milk consumption in Ethiopia is amongst the lowest in the world,⁵⁵ so there is significant potential to promote increased consumption of protein- and micronutrient-rich dairy products to address stunting and other forms of malnutrition (Ndambi *et al.*, 2020). Increased incomes generated from dairy production can also contribute to improved food security and better health and nutrition outcomes at the household level (Brasceso, *et al.*, 2019).

Ethiopian consumers are insufficiently aware of the importance of dairy products for good nutrition, although in Oromia, rural communities do recognise the nutritional value of dairy (Brasceso *et al.*, 2019; Hirvonen and Wolle, 2019). In this region, dairy products are consumed by more than half of young children, and around one-third of adult women (Hirvonen and Wolle, 2019). However, missing or poorly-functioning markets and poorly-developed dairy value chain infrastructure negatively affect the availability and affordability of dairy products in the region. Consuming globally recommended levels of dairy would require the average resident of Oromia to spend about 14 percent of their income on dairy products (Hirvonen and Wolle, 2019).

7.4. Food safety

The safety of dairy products is also a significant issue in Oromia, and in Ethiopia more broadly. Insufficiently hygienic production and handling practices often lead to poor quality milk and microbial counts that are much higher than the acceptable limits (Brasceso *et al.*, 2019). Rejected milk is sometimes processed into butter or cheese which has then been reported to cause health problems (Brasceso *et al.*, 2019). Consumer trust in the quality and safety of milk and dairy products is low. There is a local preference to drink raw milk that can be attributed partly to cultural beliefs, but also to perceptions around pasteurised milk being diluted or unsafe (Amenu *et al.*, 2019; TRAIDE Ethiopia, 2021).

7.5. Greenhouse gas emissions

Dairy production is a significant contributor to greenhouse gas (GHG) emissions. A 2013 report by FAO found that livestock accounted for 14.5 percent of anthropogenic GHG emissions globally, with cattle milk production accounting for a fifth of the livestock sector's total emissions (Gerber *et al.*, 2013). Low levels of livestock productivity and milk yields in Ethiopia mean that the emission intensity (emissions per unit of production) of dairy production is very high in the country, particularly regarding its pastoral, agropastoral, and rural mixed-crop livestock systems. An increase in commercial dairy production will most likely have a negative impact on the overall greenhouse gas emissions of the sector.

To address this, the Ethiopian government is aiming to use regulation to maintain the current cattle population at the same level over the next decade, while also promoting genetic improvement and improved feeding, health and management practices to increase cattle productivity (Shapiro *et al.*, 2017). Given the strong inverse correlation between emission intensity and average milk yields per cow in Ethiopia, improving milk yields will lead to significant reductions in emission intensity in the country (FAO and New Zealand Agricultural Greenhouse Gas Research Centre, 2017).

⁵⁵ Per capita consumption is around 20 litres per year, compared with a global average of 105 litres (Brasceso *et al.*, 2019).

7.6. Other environmental sustainability challenges

Livestock rearing in Ethiopia's densely-populated highlands has contributed to overgrazing, land degradation and vegetation loss (Brasceso *et al.*, 2019). Improper use of fertilisers in the production of crops for livestock feed and improper storage and application of manure leads to soil pollution and surface and groundwater pollution (de Paiva Seroa da Motta, 2019). These environmental challenges need to be addressed through more sustainable management of grazing lands and better crop production and waste management practices. Appropriate recycling of manure can help reduce soil and surface and groundwater pollution and can reduce the need for synthetic fertilisers, thereby reducing the environmental costs associated with fertiliser production and use (Tadesse *et al.*, 2021). The dairy subsector also requires large amounts of water, the vast majority of it needed for the production of livestock feed. With the commercialisation of the subsector, demand for feed is likely to increase, which will in turn cause a rising demand for water (de Paiva Seroa da Motta, 2019).



8. Promising opportunities for sustainable investment in the dairy value chain in Oromia

The sections above have provided a snapshot of the dairy value chain in Oromia. They have described the actors and activities that make up the value chain, the bottlenecks hampering its performance, the political economy dynamics behind these bottlenecks and the linkages between the value chain and broader sustainability objectives. Building on this picture, this section identifies five promising pathways for promoting sustainable investment in dairy in Oromia.

8.1. Facilitating a multi-stakeholder platform to unlock finance in the dairy value chain

The supply chain of finance that can contribute to sustainable development of the dairy value chain in central Oromia has all the signs of being stuck. There are, however, efforts on the ground to stimulate and facilitate a dialogue between the different institutions. For example, TRADE Ethiopia and SNV are developing activities to facilitate dialogues and engage with the different relevant actors, such as financial institutions, national and federal investment commissions and sector associations.

They find that a focused discussion is indeed valuable, but requires further study to prepare such a dialogue in order to ensure that it has a clear focus. In fact, a specific study that identifies and highlights the linkages between the key actors and finds entry points to engage them is necessary. There is also potential to build on extensive hands-on experience with foreign investors in different agricultural value chains in Ethiopia to redefine their operations and corporate social responsibility activities in order to better align with the development priorities of the communities in the areas where they work.

Currently, financial institutions seem to have a negative image of the sector (it is neither dynamic nor profitable). Consequently, there seems to be low interest in increasing funding to the sector, developing new products or positioning themselves as business partners for farmers, businesses and investors interested in the dairy value chain. For example, even public banks like the Development Bank of Ethiopia reported that 1 percent of their loan portfolio is dairy (ETB 450 million or USD 9.4 million), and non-performing loans account for 34 percent. This translates into a difference in price for financial products. In many cases, loans catering for the dairy sector cannot obtain good preferential interest rates. However, there seems to be potential for better rates, as financial institutions are developing innovative financial products beyond loans for other agricultural commodities, such as coffee. At the same time, the current dairy value chain presents significant opportunities for investors, but because of the multiple and interlinked challenges, investors need to have long-term aspirations.

Regularly, main investors are dairy farmers themselves or, increasingly, farmers organisations such as primary dairy cooperatives. The dairy sector is changing rapidly. The number of farmers willing and able to produce marketable surpluses of sufficient quality and invest in expanding their business is growing. Also, a rising number of primary cooperatives are increasing their volumes now that market linkages with processors can be ensured.

There are specific challenges related to the limited access to finance for domestic, small-scale and/or geographically distant actors. A better understanding of the characteristics of the value chain could help increase the availability, access and adequateness of financial products that can improve dairy businesses and the value chain as a whole.

Financial institutions can play an important role in strengthening the resilience to shocks of households and companies, farming systems and the dairy value chain as a whole. By adding mitigation and coping mechanisms to their products and services, financial institutions can help upgrade investment strategies to integrate resilience better. For example, diversifying the income base of households can make farms and households more resilient to economic shocks. Allowing, or even promoting a diversity of crops and livestock at farming system level can increase landscape resilience to climate-induced shocks such as prolonged droughts or floods (Gebru *et al.*, 2018). At the level of the dairy value chain, there is huge variety in types of investors (be they farmers, processors, cooperatives, diaspora investors, etc.) and the investment decisions they take, for example on how to deal with risks. This diversity of production, processing and distribution models make the value chain as a whole more resilient to sudden changes in regulations of foreign exchange, for example (Soanes *et al.*, 2021). Financial institutions need to adapt the financial products and services they offer and develop them so that they can support the wide variety of value chain actors.

The dairy value chain is one of the preferred agricultural subsectors according to the most recent policies. In this regard, there are some incentives for the sector. However, in practice these incentives, even if they are well-intended, especially from the Investment Commission, seem to increase the fragmentation in the processing part of the value chain. At the same time, there seems to be a bias on the part of the different Investment Commissions towards commodities that earn foreign exchange.

Job creation is another important driver for the Government (as it is for the Investment Commission). Presumably, this has led to the counterproductive conditionality of loans related to processing when giving out licenses to lease land. Improving the business development capacities of actors at all levels of the value chain could be more beneficial in terms of job creation.

There could also be a role for ATA, which has programmes to discuss with the Investment Commission. They could for example discuss steps to promote more systemic investments in the dairy value chain e.g. strengthening the access and use of information technology and geographical information that could facilitate the quality and quantity of the extension services provided.

8.2. Facilitating and capitalising on large-scale investment in an integrated crop and dairy agricultural system to improve forage availability

While access to feed is a major constraint in the dairy value chain in Ethiopia, the market for commercial livestock feed is taking off in the country, with dairy producers in better connected areas increasingly using commercially produced concentrate feed such as oilseed cakes and wheat bran due to the positive impacts these have on milk yields (Minten *et al.*, 2020). Supplementing concentrate feed with forage would boost milk yields further. The market for forage in Ethiopia remains undeveloped nevertheless. The Ethiopian government and international agencies dominate forage purchasing, which stifles competitive behaviour and innovation.⁵⁶ A scarcity of available land constrains production of forage and forage seed, resulting in supply not meeting demand (Brascesco *et al.*, 2019). Distribution of forage to Ethiopia's geographically dispersed smallholder dairy producers is also a significant challenge.⁵⁷

Demand for forage in Oromia, in Ethiopia more broadly, and in neighbouring countries, is forecast to be strong in the coming years. Ethiopia also has an ideal climate for sustainable, year-round multi-crop sequencing and irrigated forage systems. There is therefore significant scope for promoting forage production in Oromia, particularly in the mid-altitude and highland areas of Central Oromia (Brascesco *et al.*, 2019).

⁵⁶ Interview with dairy expert active in Ethiopia, including Central Oromia.

⁵⁷ Interview with dairy expert from Land O' Lakes Ethiopia.

To this end, policies should be directed towards making land available for forage seed production and developing a forage seed industry (seed production and seed certification) (Brascesco *et al.*, 2019). The regional government should allocate irrigated land that is available for forage production, promote outsourcing and enforcement of forage production contracts, and encourage forage trade. Efforts should also be made, in collaboration with the Kulumusa, Melkasa and Adami TuluTulu agricultural research centres, to improve the availability of improved forage seed, while farmer training centres could be used to produce forage seed and scale up forage production (Brascesco *et al.*, 2019).

Efforts should also be made to facilitate private investment in specialised large-scale forage farms that can produce a range of forage options to supply smallholders as well as large-scale commercial dairy operations. A prospective large-scale investment in an integrated crop and dairy agriculture system connecting large-scale dairy farming and large-scale forage production represents a promising opportunity for developing the market for forage in Oromia and increasing forage availability in the region (and potentially beyond). Such an investment model would ensure a degree of predictability for both the supply and the demand side of the forage equation. Surplus feed could be sold to local markets through formal channels, increasing availability of forage and strengthening the feed input link in the dairy value chain. Collaboration with local cooperatives could facilitate improved distribution of forage to smallholder dairy farmers.

Beyond having a positive impact on milk yields, and by extension on livelihoods, investment in forage production can help convince rural communities to forgo livestock grazing, and thereby permit the natural regeneration of the overgrazed highlands in Oromia and other parts of Ethiopia (World Bank Group, 2020).⁵⁸ A key constraint on private investment in forage in Oromia is the availability of suitable, unused land. Close collaboration with the regional government and community representatives will be needed to identify suitable investment locations and to ensure broadly positive impacts of forage investment on local communities.

8.3. Developing public-private partnerships for inputs and services

There is significant investment potential in the dairy value chain in Oromia, but the various bottlenecks need to be tackled in a coordinated way in order to improve the performance of the chain, and ensure it contributes to the sustainability of the Ethiopian food system. A partnership approach facilitating coordinated action by different stakeholders, including (smallholder) dairy farmers and farmers organisations, feed and fodder producers, dairy processors, government agencies, development partners and relevant civil society organisations could help. If they are sufficiently flexible and appropriately adapted to the local context (including the interests and incentives of local stakeholders), such partnerships could help attract private investment into the value chain and ensure that it has positive systemic impacts.

Improving the access and affordability to quality dairy input and services has been identified as an important solution to the value chain bottlenecks in Oromia. The Dairy Feed Advancing Model is an example of a model that has invested in partnerships between different actors in the value chain. The model was piloted in the Debre Berhan and Selale areas in North Shewa between 2015 and 2018. It promotes engagement between private companies in feed production and dairy processing (Alema Koudijs Feed Plc (AKF), MB Plc (Family Milk) and Etete Milk Processing S.c), smallholder dairy farmers and government agencies. The Dairy Feed Advancing Model addresses the difficulties of access to affordable and high quality feed for smallholder farmers, processors operating below operating

⁵⁸ https://ieg.worldbankgroup.org/sites/default/files/Data/reports/ppar_ethiopiasustainableland.pdf.

capacity, and feed processors being constrained by the lack of a market for concentrate feed. The model used various reinforcing strategies to achieve beneficial outcomes for all the stakeholders involved. The main results were a significant increase in household milk sales, increased daily milk intake by the processors and increased demand for the feed producer.⁵⁹ Both the companies and the dairy farmers valued the innovative approach and found the model appropriate and inclusive.

The pre-financing credit facility and the discount that farmers received were key to overcoming the initial hurdles of the current “Catch-22” of the low supply of quality and affordable feed and the demand for it. The success of this element of the model suggests that attention to the credit aspects for smallholder farmers is essential for more systemic investments in the value chain. Demand for quality feed and willingness to pay is significant, especially in the areas where the dairy herd consists of crossbred cows and access to urban markets is good. Factors limiting the implementation of the model are the ineffective regulatory framework for the dairy sector as well as weak communication mechanisms within the dairy sector.

8.4. Unlocking credit for dairy stakeholders through blended finance

There is immense potential for broadening access to finance for SMEs through the use of blended finance mechanisms that strategically use finance from development finance institutions (DFIs) to mobilise private investment. The federal government has always put the agricultural and agro-processing sectors at the forefront in its development agenda. The Development Bank of Ethiopia (DBE) and the Commercial Bank of Ethiopia (CBE) are supposed to play an active role in financing priority sectors such as agro-processing, including dairy businesses. The DBE has different financial products for different target sectors. The bank has three major credit products including project financing, a special credit line, and credit services from external funding. As the DBE is used by the government to lead the channeling of development funds sourced from bilateral and multilateral agencies, it engages in managing funds tagged for specific programmes and sectors. For instance, the DBE has experience of working with European Investment Bank, the International Fund for Agricultural Development (IFAD) and the World Bank in managing funds specifically designed to address the financing needs of agribusiness SMEs.

Hence, engaging DFIs, the DBE and the CBE as the main sources of funding and MFIs as retailers of loan services would better serve small and medium agribusiness enterprises. In particular, in a situation where most of the actors are starved of an adequate supply of finance, an agricultural value chain financing model might work for the dairy business. The agricultural financing model in the dairy sector would be relevant to bringing different financial institutions together to finance different parts of the chain in a coordinated fashion. MFIs are better placed to extend financial services to micro and small dairy farmers, and fodder seed producers and multipliers whereas commercial banks and the DBE can serve medium and large-scale feed and dairy processors. Further, bringing those insurance companies such as **Oromia Insurance Share Company**, which have experience in livestock micro-insurance, into the mix will play an important role in building the confidence of financiers as well as value chain operators.

In parallel, MFIs and commercial banks can expand their digital financial services and e-commerce platforms from which they can mobilize more savings and encourage smallholders and agribusiness

⁵⁹ AKF supplied quality feed concentrate to dairy processors, who in turn distributed it to farmers that supply raw milk to the processors. Government extension officers, AKF and IFDC 2Scale staff provided training to dairy farmers on key topics (animal health, milk handling, forage production, and the dairy business). Average household milk sales increased by 34 percent in Selale and by 36 percent in Debre Berhan after the implementation of the model. The two milk processors increased daily milk intake from 5,000 litres to 16,000 and 13,000 litres respectively. The feed producer was able to create market demand for its products.

SMEs to make use of modern financial services. The engagement of development partners, innovation funds, matching funds and guarantee funds could further stimulate interest for financing agribusiness and agricultural enterprises. The Warehouse Receipt Financing system recently launched (with the support of the IFC) at the Ethiopia Commodity Exchange in partnership with the CBE, could also be an interesting tool to unlock short-term financing for dairy stakeholders, particularly concerning forage and forage seed production.

8.5. Promoting investments in dairy processing through the Bulbula Integrated Agro-Industrial Park (IAIP)

With the support of FAO and the United Nations Industrial Development Organization, the Ethiopian government is developing Integrated Agro-Industrial Parks (IAIPs) in the major agriculture-producing regions of the country to spur agricultural commercialisation. By providing geographically concentrated institutional and physical infrastructure, utilities and services, these IAIPs are meant to promote positive agglomeration effects and attract investment in agro-processing in Ethiopia. The IAIPs are developed and managed by the regional governments. Accordingly, the Oromia National Regional State has established the Oromia Industrial Parks Development Corporation, mandating it to identify sites for the development of IAIPs and lead the establishment and management of these parks.

The Corporation has identified five suitable locations in Oromia. Of these, the Bulbula IAIP in East Shewa, has recently been completed. The park is divided into five zones targeting five different sectors, including the dairy sector. Bulbula IAIP is expected to facilitate the collection of inputs, including fresh milk, from 38 *woredas* (local districts) through 8 rural technology transformation centres. The Park is currently constrained by insufficient access to electricity, but this issue is expected to be resolved in the fiscal year 2021-22.

Bulbula holds significant potential to attract investment in dairy processing. It is well connected to the Ethiopian road network, lying on the main road that links Oromia region to the south region and to the border with Kenya, and on the recently completed expressway linking Modjo dry port and Hawassa city, which is the capital of both Sidama and SNNPR. Dairy products produced at Bulbula will have easy access to markets in Hawassa and Addis Ababa.

With its mandate to facilitate the supply of agricultural products to Bulbula, the Oromia Industrial Parks Development Corporation plans to support improvements in milk production and productivity in the surrounding areas, including through improving the breed of livestock, strengthening livestock protection and control and improving livestock feed production and usage. Efforts are planned to establish livestock husbandry centres and to cooperate with investors working on the multiplication of local heifers. The Corporation also plans to improve both the capacity of local producers (smallholder farmers and cooperatives) through training, and the efficiency of milk collection through the construction of milk sheds and facilitation of transport services.⁶⁰

Furthermore, the Corporation plans to identify the projects and non-governmental organizations (NGOs) working in the cluster of the industry park to work with them cooperatively, building the capacity to empower them to utilize the resources, and assessing the effective technologies from stakeholders to implement in the activities. The Corporation would like to play an active role in market networking through linking rural transformation centres to the parks and then connecting processors with the end markets. A lot of work

⁶⁰ Interview, livestock expert seconded to Oromia livestock Agency.

remains to be done to capitalise on Bulbula's potential to attract investment in dairy processing.

9. Conclusion

The sustainable and inclusive development of the agricultural sector is at the heart of the Ethiopian national development strategy. The dairy value chain in Ethiopia is a major source of livelihoods, particularly for women and rural households. Increasing the levels of consumption can contribute to healthy diets, addressing different forms of malnutrition. The central part of Oromia, due to its favourable agro-climatic conditions and proximity to Addis Ababa and other urban markets, is the main hub for dairy processing in Ethiopia, with a relatively high proportion of (peri)urban and commercial farming systems and a more formal marketing system. It has features that are distinct from the rest of the country, where mixed crop livestock and (agro)pastoral systems are dominant and marketing systems are informal. Increased private investment can catalyze further development and the transformation of the dairy sector in central Oromia, taking advantage of growing demand.

But various factors inhibit the performance of the dairy value chain in Oromia. For example, high feed prices and low supply of quality feed and fodder have become major impediments to (peri)urban and commercial dairy production. The supply of other key inputs and services to the dairy value chain in Oromia is also patchy, and quality is often low. Dairy value chain actors in Oromia often struggle to gain access to finance. The politically volatile situation in the country is also diminishing the country's attractiveness to foreign investors and is very likely to influence the government's agricultural development agenda and related liberalisation agenda.

Analysis of the dairy value chain in Oromia suggests a number of pathways on which local stakeholders, development partners and international actors should collaborate to attract increased investment in dairy in Oromia, improve the performance of the dairy value chain and ensure broader sustainability benefits for the local food system. Facilitating a dialogue between the different institutions to unlock the supply chain of finance can contribute to the sustainable development of the dairy value chain in central Oromia. Blended finance mechanisms can be used to unlock credit for dairy value chain stakeholders. Innovative public-private partnerships (between farmers associations, secure marketing channels, and public and private providers of inputs and services) can improve the provision of inputs and services to the dairy value chain in Oromia. Anchor investors in the dairy sector that can ensure a degree of predictability on both the supply and the demand side of the forage equation could be attracted. The Bulbula Integrated Agro-Industrial Park (IAIP) holds significant potential to attract investment to dairy processing.

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