

PATHWAYS TO GROWTH

Outlook for Dairy Development in Ethiopia

by

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**Background paper for National Workshop
“Enhancing Dairy Development in Ethiopia”**

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Abstract

This background paper describes trend and opportunities in the Ethiopian dairy sector against the backdrop of general lessons from dairy development worldwide. It states that four general global trends are relevant to Ethiopia too: increasing demand for dairy products, dwindling protection of the dairy sector, increasing foreign investments, and increasing emphasis on sustainable production and processing systems. The Ethiopian dairy sector likewise needs to face the two main challenges of developing its institutions and including smallholder farmers into more formal dairy chains. This development should build on a clear vision of dairy stakeholders on the direction the sector should go. Options are outlined for the main choices to be made: the choice between developing the traditional sector and/or the commercial dairy sector; supply of milk to urban areas based on transition of smallholders and/or on large-scale commercial milk production; choice of government policy instruments to enable transition; roles and responsibilities of public and private actors in dairy development; set-up of education, training, and advice; and establishment and strengthening of essential institutions (veterinary service, AI system, food quality control, market supervision etc).

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1. Introduction

There has been growing interest in both the public and the private sectors in further developing the dairy sector in Ethiopia. Dairy has recently been identified by the federal government³ and regional governments (such as Oromiya State) as a priority commodity with promising growth and business opportunities. A growing number of private entrepreneurs (both local and foreign) is investing in dairy production and processing. Dairy development activities have also been carried out by several donor-funded value chain development projects. These projects are now at a crossroads and need to formulate future activities (SNV-BOAM, FAO, IPMS-ILRI and Land O'Lakes).

This is therefore the right time to organize a national dairy workshop with the aim of making an inventory of best practices and lessons learnt by various stakeholders, and to define directions for further development. The workshop should enable dairy sector actors to coordinate dairy development activities better and to develop clearer and more coherent policies for the Ethiopian dairy sector. The demand for liquid milk and packaged dairy products is expected to increase and requires a transition from traditional production to industrialized production. On the other hand, the demand for traditional products (butter, *ayib* (cottage cheese), etc) is expected to remain high in both rural and urban areas.

The purpose of this background paper for the national dairy workshop in November 2010 is to provide a common understanding of the present state of dairy development in Ethiopia and a starting point for discussions. The paper summarizes general characteristics of dairy development worldwide that the Ethiopian dairy sector could learn from, key characteristics of the Ethiopian dairy sector, perspectives, possible development paths, major challenges and possible solutions. It uses value chains as central concept: The supply route of products from producers to consumers, how farms, using inputs and services, produce milk that is collected, processed, distributed, marketed, and consumed. These dairy chains are being commercialized and formalized in both pastoral and highland systems. Since more experience and information is available on value chain development in the highlands, this paper deals primarily with the highlands (Van der Valk and Tessama, 2010; Van der Lee et al., 2010; Vernooij et al., 2010).

2. General characteristics of dairy development worldwide

2.1 Common development paths

Worldwide, milk is mainly produced by small to medium sized family farms. Unlike industrialized poultry and pig farming, industrial dairy farming has not been very successful so far (failing in the former communist states, for example). Often this is related to requirements for land and labour. Countries range from those without any dairy tradition (such as Southeast and East Asian countries) to those with a long dairy tradition (such as South Asian and North-western European countries). In Western countries, most milk is processed and marketed through industrialized, strongly regulated dairy value chains.

In many developing countries with a dairy tradition, traditional dairy products are produced (e.g. yoghurt and cheese in Turkey) while a transition is taking place to "westernized" consumption patterns. This results in an increasing demand for processed and packed dairy products, both "western" and traditional dairy products. For example, in India, traditional dairy products are being produced in modern dairy plants.

Ethiopia is a country with a long and strong dairy tradition: production of butter and *ayib* in the highlands, and of milk as a staple food in the pastoral areas. Transition to "westernized" consumption patterns and demand for processed and packed dairy products is just starting.

³ See *Agriculture & Rural Development section of the Growth & Transformation Program of Ethiopia, 2011-2015*

2.2 Lessons from the past

Dairy development in developing countries has often been stimulated with two main motives:

- to supply milk to urban consumers or to export dairy products in order to save/generate foreign exchange and to become more self-sufficient; this includes developing formal dairy value chains: the focus is on “pull factors” (increasing demand for dairy products);
- to contribute to rural development by improving the nutritional status, income and employment opportunities for the rural population: the focus is on “push factors” (the need to increase supply).

Particularly in the nineteen seventies and eighties, smallholder dairy development projects were initiated in many developing countries. These “rural development oriented” dairy projects were funded by governments in collaboration with donors, NGO’s etc. In these projects the marketing side was often neglected, so that although they were successful in increasing milk production, their orientation to “push” factors became their weakness. An example of such projects was the SDDP project in Ethiopia, which succeeded in improving the milk production at farm level, but not in creating sufficient outlet for the produce (Redda, 2002).

A model based on the “pull” approach is the “Amul model” from Gujarat State in India, in which milk collection was organized by, for example, establishing village cooperatives, which bulk milk for marketing in urban areas (Delhi, Mumbai etc.) and provide additional services. This cooperative model has been replicated all over India through Operation Flood, and in many countries in Southeast Asia and Africa, with varying degrees of success.

Lessons to be learnt from these earlier experiences are that:

- Dairy development should be approached in an integrated way: all aspects of the dairy value chain should receive attention at the same time, identifying the most limiting factors for development;
- When defining options, the local context should be taken into account: culture, tradition, experience, level of education etc.; lessons from other countries and areas should be translated to the local context.

2.3 Some global trends affecting dairy development

The starting point in terms of dairy development differs from country to country and within a country from area to area. Nevertheless some global trends can be identified:

- **The demand for dairy products is increasing.** This is partly linked to population growth, but in many countries relates primarily to changing food habits. Increasing consumption of dairy products in Southeast and East Asia, for example, is the result of urbanization and income growth, in combination with and facilitated by the penetration of supermarkets in urban areas.
- **Protection of the dairy sector is dwindling.** The dairy sector in many countries was heavily protected (e.g. in the EU, USA and many developing countries), but protection has decreased as a result of WTO and recent bilateral free-trade agreements. Many developing dairy markets, however, need a certain level of protection to build up their (formal) dairy value chain. In many cases the competitiveness of the local dairy chains is already low, due to relatively high production costs (feed quality and breed quality in relation to climate), high transaction costs in the chain (e.g. high costs for milk collection due to small scale of production and infrastructure gaps), relatively high losses due to poor milk quality, poor processing, handling and distribution, and low efficiency in terms of resource use in the entire chain (production, collection, processing and distribution). Too much protection can increase inefficiency in the dairy value chain, while too little hampers the development of more efficient local chains and will result in more imports (and a drain on foreign exchange).

Further development of the local Ethiopian dairy value chain will therefore require a certain level of market protection to build up import substitution potential.

- **Increase of foreign investments.** As in other sectors, foreign investment in the dairy sectors of developing countries is on the rise, not only by multinational dairy companies in the processing and marketing segment, but also by a range of actors in the production segment. These investments come from both private and public sources.
- **Emphasis on sustainable production and processing systems.** Capturing the opportunities of high-value agricultural commodities like dairy requires careful balancing of social, economic and ecological aspects, if major negative consequences are to be avoided. Applying a triple bottom line or triple P sustainability approach (*people-profit-planet*) is increasingly common-place and important for the social acceptability of dairy. In milk production, emphasis needs to be placed on trade-offs between economic and environmental sustainability. Climate change calls for reduction of greenhouse gases, and proper use of energy, water, and essential minerals. In milk processing, the emphasis lies on reducing water pollution and efficient use of energy. The inclusion of smallholder farmers in value chains, mentioned below, is part of the equation too.

2.4 Challenges related to dairy development worldwide

Dairy development faces two main challenges. The first is to provide the **institutional development** required at various levels to support commercial milk production. Institutional support needed includes: enabling government policies, veterinary services, education and extension to provide farmers with knowledge and advice, well functioning markets so that all actors in the chain get a fair share, farmers' organizations for advocacy etc.

The second challenge is to **include smallholder dairy producers**, who are key to the growth of dairy production, in modern dairy value chains. Their transition from production for subsistence and local markets to production for urban markets is an essential process. Specifically, this value chain development process requires: providing adequate services and inputs (feed, veterinary services, genetics), improving the quality of raw milk, improving the efficiency of milk production and collection, and reducing transaction costs otherwise. Three resource conditions often limit this transition from semi-subsistence to commercial farming. The first is the availability of smallholder credit facilities (for purchase of cattle, feed, equipment etc). The second is the access to land, often limited by agricultural and land policies and by competing claims on land (e.g. for food-feed-fuel). The third is the physical infrastructure required for stimulating commercial production and marketing of quality milk (all-weather roads, clean water, and electricity supply).

3. Outlook for the Ethiopian Dairy Sector - characteristics, trends and opportunities

Several papers have described the historical development of the Ethiopian Dairy Sector, its strengths and its limitations, and have provided suggestions for improvement. This paragraph provides a summary of key characteristics and trends, and identifies opportunities (see Annex 1 for more information):

3.1 Demand for dairy products

Consumption of dairy products in Ethiopia is dominated by traditional products like butter and *ayib* (cottage cheese). More than 82% of milk produced is estimated to be consumed at farm level. Liquid milk is marketed directly to consumers, through farmers groups (cooperatives), through private collectors, and directly to processors (milk collections centres). Per capita consumption of dairy products is low in comparison to other countries in the region. The farm gate milk price has increased over the past years, but (feed) costs have also increased

considerably over the same period.⁴

The commercial dairy chain is mainly developed around Addis Ababa and is still small in comparison to total production (about 2%); here to, liquid milk is marketed through both formal and informal channels.

The demand for dairy products of good quality is expected to rise. How this increasing demand will be divided over 'traditional' and 'western' dairy products remains to be seen. This expected increase in demand is due to:

- Population growth (present growth rate is 2.6%)
- Economic growth: this will result in larger middle and higher income classes that consume more dairy and other animal products and are more quality conscious
- Urbanization: economic growth will result in a higher urbanization rate, which already is around 4% per year (ESA, 2010); urbanization results in changing consumption patterns and longer chains in which quality becomes more critical.

Increase in rural demand will likely be caused mainly by population growth, while urban demand for milk and milk products will be driven by economic growth and urbanization.

3.2 Protection and policies

The Ethiopian Government's policy aims at developing a market-oriented economy, supporting investors, and linking up small-scale producers to markets. According to Staal et al. (2009), policies pursued by the various regimes in the past have significantly impacted the performance of the dairy sector. Imports of dairy products are now rising (valued at 9.3 million US dollars in 2009), indicating a demand for quality westernized products and relaxing rules for import.

Competition with the world market in the long term will only be possible if more efficient ways of milk production are developed and if product quality of local dairy products can be ensured through effective quality control mechanisms. Import tariffs to a certain level can provide the windfall in which the dairy sector can develop sufficient robustness to compete with and substitute imports. However, production costs have to be competitive. The economic prospects for milk production are very closely related to developments in feed costs, which are rising due to pressures on access to land and the competition between feed and food production.

3.3 Business and investments

The present market-oriented business environment offers new opportunities for dairy development with strong involvement of the private sector and foreign investors. The Ethiopian government expects that agriculture will remain the main source of the country's economic development and will give priority to accelerating the contribution of the private sector in the market-oriented development of high value agricultural commodities like dairy³. Several donor funded development projects already contribute to better market access, development of the commercial dairy value chain, and capacity building. Successful initiatives deserve up-scaling.

Provision of private services and inputs to commercial dairy farmers is increasing (feed, AI), as a combined result of government privatization policy for input & service supply and increasing interests by investors, both local and foreign (i.e. investments in dairy processing and feed production).

3.4 Contribution to sustainable development

Applying a triple bottom line (*people-profit-planet*) approach to the Ethiopian dairy sector garners the following insights:

⁴ Three main milk production systems can be distinguished in Ethiopia: 1) Urban production systems (commercial marketing of liquid milk); 2) Peri-urban systems (commercial marketing of liquid milk/traditional products); 3) Rural milk production systems, be it sedentary or pastoral (subsistence and marketing of traditional products).

- *Inclusion of smallholders in commercial chains* – While large dairy farms have advantages in terms of production efficiencies and management, smallholder/family farms appear to be more resilient through higher flexibility in labour and capital demands. To include smallholders in commercial chains, they need to pool their demand for inputs & services as well as sale of their produce. One way of doing this is to encourage farmers to join forces in primary and secondary cooperatives / producer organizations for joint purchasing and/or joint selling.
- *Income* - Dairy development contributes to generation of important additional income in the rural areas, which should be compared to cash income from traditional dairy production (from the sale of butter & *ayib*). Higher sales of milk generally lead to improved nutritional status in the rural areas. Commercial milk production creates regular cash income and provides employment opportunities (milk collection, processing etc), but not necessarily in the rural areas.
- *Balancing supply and demand* – Value chain development needs to tackle the challenges of high seasonal fluctuations in supply and demand. Seasonal fluctuations in supply (dry season) and demand (fasting seasons) affect the liquid milk chain and marketing opportunities of farmers producing liquid milk. Commercial processing needs to manage these fluctuations through adequate product diversification and utilization of market opportunities. Healthy competition among processors is to be preferred over shifting the burden to producers or consumers.
- *Environmental impact* – Livestock production in general, and dairy production in particular, is both contributor and subject to environmental issues. Livestock waste can be a source of pollution, especially in urban areas. Methane emissions from ruminants are a major source of greenhouse gasses that cause climate change. Overgrazing leads to environmental degradation. At the same time climate change affects the productivity of agricultural systems. The challenge is to identify *win-win* or *win-win-win* solutions - better products, better incomes and less environmental impact. Examples include: a decrease in the number of animals leading to an increase in productivity, as more feed becomes available per animal; a higher productivity per animal due to better management and a decrease in losses of milk between cow and factory, leading to lower costs and less waste due to a lower resource input per unit end product; bulking and delivery arrangements between cooperatives and processor leading to more reliable sourcing for the processor and more stable incomes for farm households.

4. Major challenges and possible solutions for dairy development in Ethiopia

In the context of significant opportunities and constraints, stakeholders in the dairy sector in Ethiopia face the task to agree on common directions for dairy development. The first and foremost challenge is to formulate a clear vision and strategy. Following a clear vision, several practical challenges can be addressed, as outlined in this paragraph.

4.1 A vision for the future

Will Ethiopia be able to meet the rising local demand and maybe even think of export, or will it need to fill supply gaps with imported milk powder? Figure 1 shows the main options and indicates what kinds of direction other countries have opted for.

The different directions in figure 1 are not necessarily “better” or “worse”, but they do have different consequences, both in terms of the instruments to be employed and in terms of the effects on the current producers and processors. Each development path requires its own intervention strategy. Figure 2 outlines the issues to be tackled as a result of two choices: production for urban or for rural consumers and production in a less or more protected market. Whichever path is taken, it is clear that the major challenge to the further development of the local dairy value chains will be to produce good quality dairy products at low costs.

Figure 1 – Possible pathways towards 2020 for the Ethiopian Dairy sector

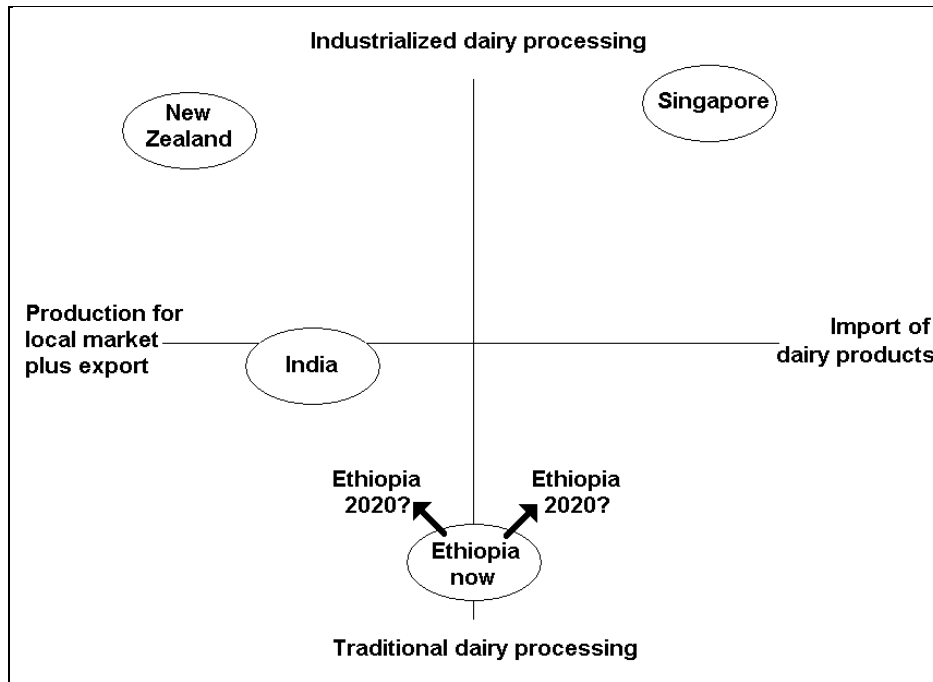
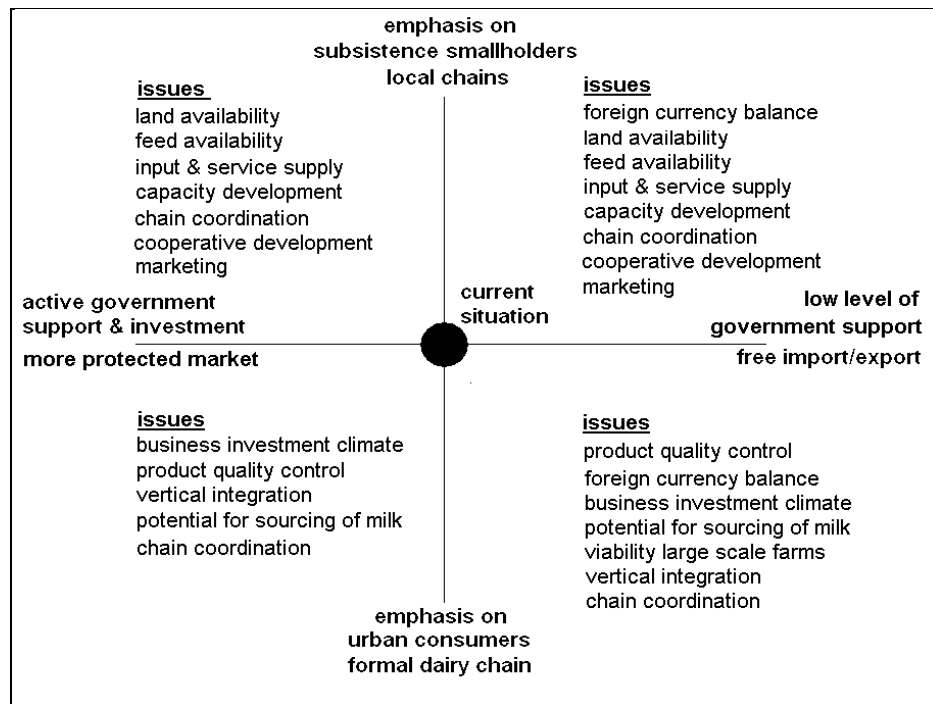


Figure 2 – Main issues to be addressed for different development paths (Ethiopia)



A comprehensive dairy development strategy with a guiding vision should create an environment that enables various chain actors to invest in their part of the value chain and to establish appropriate linkages with other actors. Such a strategy should provide clarity on the following issues:

- a. The choice between developing the traditional sector, the commercial dairy sector, or a combination of both.
- b. The basis for further development of the commercial dairy sector (supply of milk to urban areas): should it be based on transition of smallholders to commercial milk production, on large-scale commercial milk production or on a combination of both?
- c. The type and extent to which policy instruments are used: protection (tariffs), tax facilities, subsidies, land policies etc.
- d. The roles and responsibilities of public and private actors in dairy development (traditional and commercial sector).
- e. Establishment and strengthening of essential institutions (veterinary service, AI system, food quality control, market supervision etc.).
- f. The setup of education, training, and advice services: staff needs education on the skills for various parts of the chain (creating critical mass) and the knowledge of existing staff, farmers and other stakeholders needs updating.

Assuming a (partial) choice for development of commercial dairy value chains to cater to more urban consumption, specific challenges are included in the following paragraphs.

4.2 Market

- a. Provision of a reliable market for liquid milk: many peri-urban farmers are still discouraged by the seasonal fluctuations in demand and lack of market outlets. Possible solutions include:
 - *producing long shelf life dairy products (UHT, milk powder etc.)*
 - *combining production of liquid milk and traditional dairy products.*
- b. Increase of consumption of dairy products in urban areas. Possible solutions include:
 - *improving the distribution system and promotion of dairy products in the urban areas*
 - *diversifying the product range.*
- c. Inclusion of small-scale producers in the formal dairy chain. Specific challenges include the transaction costs involved in the collection and quality control of small quantities of milk. Solutions include:
 - *formation of farmers groups/associations (primary and secondary cooperatives)*
 - *quality-based milk payments*
 - *chain-embedded services to farmers.*

4.3 Milk collection and milk processing

- a. Cost-effective collection schemes - Milk produced by smallholders for urban supply requires an efficient collection scheme. Schemes can be operated by processors, private collectors, or farmers groups. Collection by farmers groups (cooperatives) can increase their negotiating power in relation to the processors and provides the opportunity to accumulate capital for additional activities.
- b. Milk quality - Improvement of milk quality will result in lower losses in the chain. At small holder level, cooling of milk at central points could improve milk quality and intake of milk (collection of evening milk).
- c. (Small-scale) Milk processing - Small-scale milk processing is taken up by several entrepreneurs but also by cooperatives. In a market-oriented business environment

some will make it, others will fail. A major challenge will be to avoid too much waste of scarce capital resources and provide proper business guidance. Transparent market conditions are required for fair competition and fair shares for the different parts of the value chain (producers, collectors and processors).

4.4 Milk production

Costs of milk production - A major challenge for the commercial dairy sector will be to keep the costs of milk production low. Costs of milk production largely depend on feed costs. Feed quantity and - quality are major factors limiting milk production. Possible solutions:

- a. Formulation and implementation of improved farm management packages adapted to local situations with emphasis on:
 - *Improved forage production either at farm level or by outsourcing (large scale)*
 - *Better balanced feeding (better quality concentrates etc)*
 - *Better animal management (disease prevention)*
 - *Use of improved breeds (crossbreds): more output per unit feed*
- b. New technical and institutional innovations regarding forage production (e.g. contract systems etc.).

4.5 Input & service supply

- a. Availability of improved genetics (improved cattle/ crossbreds) - The limited availability of crossbreds and the price hampers the entrance of "new" farmers into commercial milk production. Possible solutions:
 - *Breeding crossbreds on a commercial scale, making use of new techniques like sexed semen*
 - *Improvement of AI services (privatization of the services)*
 - *Implementation of good breeding policies, also in relation to selection and preservation of indigenous breeds*
 - *Selective imports of cattle.*
- b. Provision of reliable and cost effective inputs and services - For semi-commercial and subsistence farms, veterinary services are the primary need (vaccines etc). For commercial milk production, AI, feed supply, and veterinary services are the most essential. Credit supply could be linked to milk sales Worldwide there is much experience with linking milk marketing (milk collection) with provision of inputs and services (cooperative model, business hubs linking private suppliers with farmers).

4.6 Coordination and leadership

Against the backdrop of ongoing privatization, coordination and leadership in the sector becomes a vital issue. Development of efficient formal dairy value chains requires coordination among the various actors in the chain. A dairy board or other kind of coordinating and (self-) regulating authority needs to be established, with a certain level of supervision by the government. The roles of different actors needs to be redefined, outlining responsibilities of chain actors and chain enablers in organizing appropriate support mechanisms, research, capacity building, consumer awareness raising, etc. Some issues that require attention:

- *Integrated value chain development approach to address key bottlenecks; pilot projects for multiple "model value chains" addressing all aspects of the chain; define stages of development for different milk sheds and use as basis for interventions; increasing vertical integration between input suppliers, dairy farms, milk collection, processing, distribution, and retail*
- *Strengthening of producer groups (primary cooperatives or producer associations, cooperative unions) to be able to act as service providers (farm advice, inputs, credit, animal health services, milk collection)*
- *Formation and strengthening of associations and stakeholder groups, for lobby,*

advocacy, and representation (e.g. input suppliers, processors, professionals)

- *Increasing the access of farmers to value chains, through extension of milk collection points, quality-based milk payment schedules etc.*
- *Coordinate introduction of innovations, sharing of information, exchange and learning from best practices.*

5. Conclusion

As agriculture will be the main source of the country's economic development and as smallholder farmers' agriculture will continue to be the main source of agricultural development, the opportunities offered by dairy sector development should be caught. The market for processed products is likely to increase and offers opportunities to take advantage of the benefits of local dairy production (income generation, import substitution, better nutrition etc).

To be successful, dairy development requires an integrated approach that considers issues throughout the whole value chain, captures the interests of the private sector, includes smallholder farmers in commercial chains, and reduces the environmental impact of animal production. The required transitions can only be achieved if the sector acts collectively and adopts an attitude of learning from best practices and capitalizes on diversity.

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ANNEX – TRENDS AND FIGURES ETHIOPIAN DAIRY SECTOR

General

- The livestock sector in Ethiopia contributes about 12% to national GDP and 26% to agricultural GDP. The share of livestock to the agricultural GDP has declined during the last decades (CSA, 2009).
- Ethiopia has the largest cattle population in Africa (estimated at about 49 million heads) of which are about 55% females. 99% of cattle population consists of local breeds (CSA, 2009).
- Estimated total milk production in Ethiopia in 2008/2009: 2.76 billion litres from cattle, 162 million litres from camels (CSA, 2009).
- Average consumption of milk per capita is about 19 kg/year. Consumption rate is low compared to other African countries and world average and has declined during the last decades due to population growth and limited increase in dairy production.
- Imports of dairy products increased from 3.1 million USD in 2001 to 9.3 million USD in 2008 (Haile, 2009). Limited quantities of milk and butter are exported (milk to Somalia and butter mainly to Djibouti, South Africa); total value < 100,000 USD in 2008.

Milk production systems

- Milk production systems in respect to market situations can be broadly categorized into three systems (Redda, 2002):
 - Urban production system (within the cities and regional towns)
 - Peri-urban milk production system (proximity to Addis Ababa and regional towns)
 - Rural milk production systems (rural highland and pastoral areas).
- The urban and peri-urban milk production systems produce mainly liquid milk (2% of national production) marketed through informal and formal market channels to the urban areas. The rural milk production system produces milk for home consumption and market traditional dairy products like butter, *ayib* etc. (98% of national production) through informal market channels.
- The subsistence type of production in the rural areas is the most dominant system of production and counts for 98% of total milk production (Staal and Shapiro, 1996). In the pastoral areas milk from cattle, shoats and camels is mainly used as staple food and relative small quantities are marketed among others camel milk. Milk production from local breeds in the subsistence production system is estimated at 1.9 litres per cow per day with a lactation length of about 190 days. (Haile, 2009).

- In the mixed farming systems in the highlands the livestock system is mainly directed at production of oxen for draft. Milk is an additional product of which a large part processed in butter and *ayib*. It is mainly used for home consumption, surplus is sold.
- In the urban and peri-urban areas (particularly in the Addis Ababa milk shed) there are specialized farms (mainly urban areas) and small holder mixed farms which produce milk on a commercial basis (mainly from cross-bred and grade cows) and sell liquid milk via informal and formal market channels to the urban centres. Milk production from crossbred and grade cows amount to milk ranges from 1100 to more than 2500 kg milk per cow per lactation with a lactation length of more than 200 days.
- Employment: Staal et al. (2008) estimated that the urban/peri-urban production system creates annually 4.4 million labour days or 14-16 thousand full time jobs. Traditional small holder mixed farming systems generate much work but less income per unit of milk. In both systems much of the work is done by children (herding) while in the traditional system women are mainly involved in traditional processing and marketing
- Milk prices and cost prices of milk production have increased considerably during the last years. Price developments related to the value chain supplying raw milk for the urban areas (Haile, 2009):
 - Milk price at factory gate: from 4 birr/litre in 2005/2006 to 8 birr/litre in 2008/2009 (100% increase)
 - Average feed price (dairy cow feed) from 1 ETB per kg in 2005/2006 to 3 ETB per kg in 2007/2008 (200% increase in 2 years)
 - Cost of packaging material increased with more than 200% between 2006/07 and 2008/09.

Collection and Processing

- The major part of the milk is consumed directly or processed at home into traditional products like butter and *ayib*. More than 82% of milk produced is used for home consumption, 6.6% sold, 0.4% for wages in kind and the rest processed into butter, cheese etc. Of total butter production about 36% is sold (marketed), (CSA, 2009).
- Liquid milk for urban consumption (about 2% of national milk production) is either collected and processed in a formal dairy value chain or marketed by informal channels (direct sales of producers to consumers, restaurants, etc.)
- In the commercial liquid milk chain milk is collected at collection points and in most cases transported to dairy plants without cooling. Milk collection in urban and peri-urban areas is either organized by primary cooperatives who then market to commercial processors, or directly by

commercial dairy plants themselves (Lame (Shola), Sebata (Mama)). This is the formal part of the commercial liquid milk chain. A large part is marketed through the informal channels: direct sales from producers to clients or by means of middle men (private collectors).

- At milk collection points (commercial processors, cooperatives) some basic quality tests (alcohol test, lacto densimeter) are carried out. Milk sold through the informal channels is not subject to quality tests.
- There are 7 commercial milk processors in the milk shed of Addis Ababa which produce dairy products in an industrial way and 3 milk processors far away from Addis (1 each in Dire Dawa, Tigray and Gondar regions). Besides some operating their own dairy farm most of the processors source their milk from urban and peri-urban dairy farmers either directly or via cooperatives. Except for the two largest milk processors (Lame and Sebata Agro Industry) the commercial milk processors produce dairy products with short shelf life (pasteurized milk, yoghurt etc). The variety of dairy products produced is limited.
- Costs of processing and packing are much influenced by the costs of packing materials. Devaluation and import tariffs increased costs of packing materials which were more than 200% higher in 2008/09 compared to 2006/07 (Haile, 2009) while imports were delayed due to foreign exchange limitations.

Market (retail, consumers)

- Rural consumers consume fresh milk and traditional products like butter and ayib. A considerable part of the traditional butter is marketed through informal market channels and reaches also the urban consumers.
- Urban consumers belong to middle and high income households who buy packed dairy products but a large number prefer to buy raw unpasteurized milk from private collectors or urban producers because of price and higher butter fat content. Also institutional and large commercial buyers (colleges, hospitals, restaurants) buy most of the milk through the informal channels.
- The main competition for locally made and packed dairy products comes from imports of powder milk, butter and cheese.
- The main outlets of the commercial processors are supermarkets while also products are marketed via kiosks, small shops etc. The number of supermarkets in Addis is growing (about 70 at the moment).
- A major market challenge is the fluctuating demand for dairy products due to the fasting periods of the Christian Orthodox community. Demand for dairy products during the major fasting periods (Easter, August, December) can drop by 25% or more.

Input suppliers and services

- Transformation from public to commercial supply of inputs and services is in process; examples include set up of private AI services (ALPPIS), veterinary drugs, and commercial feed supply with foreign investments (AKF Koudijs). Veterinary and AI services are still mainly supplied by government.
- Government extension services work through Farmers Training Centres with 3 development agents (DA) per woreda linked to these centres. One DA is specialized in livestock production.
- Several NGO's offer farmers' training and training of staff of cooperatives etc.
- Micro finance institutions offer opportunities for credit supply particularly for small holders, but loan conditions often are not matching their needs.
- Credit supply linked to milk sales (cooperatives, private collectors) is not well developed yet.

Enabling environment

- Government policy: dairy development is incorporated in the MDG Goal of the MoARD. At present dairy development is identified at national but also state level as a priority for development. However, there is a lack of a comprehensive dairy development policy indication roles and responsibilities of the various stakeholders.
- The present market oriented development policy offers opportunities for local and foreign investments and market oriented dairy production. This is reflected in the increase of processors and foreign investments.
- Several donor funded development projects (SNV-BOAM, IPMS, Land O'Lakes and other NGO-supported projects) contribute to market access and development of the formal dairy value chain and capacity building of institutions and actors in the chain.

Based on several papers, including:

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