



Skills & Gaps

A Capacity Needs Assessment of Dairy Chains in the Addis Abeba Milk-shed

Jan van der Lee, Abebe Tessama, Mengistu Nigussie, and Mekdes Asfaw

Wageningen UR Centre for Development Innovation, Wageningen, the Netherlands
in collaboration with SNV-Ethiopia, Addis Abeba, Ethiopia
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Preface

This report is the result of an assessment carried out in cooperation with SNV Ethiopia by the Wageningen UR Centre for Development Innovation as part of the project “Improving the Dairy Sector of Ethiopia”. This project is carried out within the Policy-Supporting International Research Program funded by the Ministry of Agriculture, Nature and Food Safety of the Netherlands.

I would like to thank the following people for making this research possible: Ir. Geert Westenbrink, Agricultural Counsellor at the Royal Netherlands Embassy in Addis Abeba, for support and guidance; the team of the Ethiopian Meat & Dairy Training Institute, for close collaboration – although we did not partner officially, we recognize the key position EMDTI plays as government-designated capacity building institute for the dairy sector; Mrs. Mahlet Yohannes and Mr. Mark Steen of SNV Ethiopia, along with their support team, for their advice, cooperation and support; project leader ir. Bram Wouters of Wageningen UR Livestock Research for his leadership and valuable input; team members Mr. Abebe Tessama, Mr. Mengistu Nigussie, and Ms. Mekdes Asfaw for good cooperation; and interviewees from many different organizations as well as individuals for their participation and valuable input.

I believe that this assessment of capacity development needs in the commercial dairy value chain in Ethiopia can make an important contribution in efforts to raise the effectiveness of commodity supply chains in Ethiopia in general and that of dairy products in particular.

Jan van der Lee

Wageningen, March 2010

Executive Summary

The context for dairy development in Ethiopia has been changing rapidly, creating new opportunities. Over the past five years, the demand and prices for milk products have increased, along with urbanization, population growth, infrastructure, and market access developments. National policy priority has become more favourable towards pro-poor, gender sensitive and ecologically sustainable commercialization of smallholder production systems. Policy envisions an increasing role for the emerging private sector. These developments challenge existing actors, particularly research and development organizations, to revisit their roles and usual mode of operation, in order to adapt and respond to the changing number and diversity of actors, demands and situations.

In 2009, Wageningen UR Centre for Development Innovation and SNV Ethiopia assessed capacity development (CD) needs in the commercial Ethiopian dairy sector. This study provides a holistic framework for understanding the CD needs of the value chain, going beyond technologies and individual skills, and acknowledging the importance of institutions; habits, practices and incentives; and policy and enabling environment. The study tries to shed light on dairy sector CD needs in Ethiopia, with emphasis on the more formal/commercial supply chains in the peri-urban areas. The study follows a milk-shed approach to focus interventions in areas with comparative advantages for commercial dairying. Focus was on milk sheds around Addis Abeba. Focus group discussions, field observations, semi-structured interviews and questionnaires were used. The 47 actors contacted included actors from the entire supply chain: input suppliers, dairy farmers, dairy cooperatives, milk collectors, milk processors, retailers, institutional consumers, and service providers.

The overall objective of this study was to assess the capacity development (CD) needs in the peri-urban commercial dairy chains. Specific objectives of the study included:

- To identify the CD needs at individual, organizational and institutional levels in dairy chains, including specific skill demands;
- To examine approaches currently followed to meet capacity needs, existing training capacity ("supply") and new initiatives;
- To identify gaps between supply and demand for CD services;
- To identify potential ways for provision of additional CD services and opportunities for joint future efforts in CD.

Capacity Development Needs

Interviews held with sampled employees and HR managers of dairy chain actors revealed that critical CD need areas **at individual level** include quality milk production techniques, milk processing & packaging technology, feed formulation and AI services. Dairy farmers would like to be advised on feed formulation, dairy farm management, production of quality milk, AI techniques, and processing technology.

Organizations identified CD needs in the areas of business planning, risk management, use of technology, and marketing strategy. Processors and collectors appear to be most

satisfied about their organizational capacity, while input suppliers and commercial farms see most need to improve.

At **institutional level**, main factors that prevent farmers from joining a dairy cooperative are distance to milk collection points (showing an issue with milk collection coverage) and delay in milk payments. Chain-wide, actors see the need to establish better coordination for introduction of innovations, involving relevant stakeholders/actors from planning up to implementation, and sharing information. A number of dairy processors achieve vertical integration through management of their own dairy farms, company-operated milk collection, processing, distribution, and retail networks. Dairy chain actors perceive that the Ethiopian government has given little attention to the development of the dairy sector. CD for dairy chain actors is considered to be left to international organizations and the private sector, with little institutional support. The dairy sector in Ethiopia does not promote the importance of consumption of dairy products to the public. At least part of the public seems to be aware of the quality issues associated with local dairy products.

Capacity development services provided

Formal institutions engaged in training of dairy professionals include a number of universities offering BSc, MSc and PhD level education on general animal production , dairy science, food technology, and veterinary science. Technical and Vocational Education and Training centres (TVETs) offer certificate-level vocational training in a range of vocational skills including animal husbandry.

Informal CD service providers include government agencies, NGOs and private firms. Government service providers play a dominant role in providing a wide range of CD services such as training, production support, input supply, extension, animal health services, and regulatory services. The focus is on short-term training that lasts for a maximum of six months. Informal education mostly is not much valued for career opportunities, as it often is offered by non-recognized institutions. Service providers target farmers, students, and employees of cooperatives, unions and private firms. They generally focus on general knowledge building, not targeting specific skills.

The number of service providers and the types of services provided to the dairy chain actors shows an upward trend over the years. The presence of plans and ideas for new initiatives is one of the promising signs of vigour in the dairy sector – investments in input supply, production, and processing will result in increased felt needs for CD.

Gaps between demand and supply

The gaps in CD services concern both the range and volume of services. CD service providers are not large enough to support significant increases in dairy production across the chain in multiple areas. This results in limited access to services for many chain actors. Gaps between demand and supply show themselves in three areas:

- **Profitability of production** - producing significant amounts of milk at a profitable rate. Selected priorities are listed below.
- **Quality of production** – producing good quality milk for urban consumers.

- **Sustainability of production** - ensuring long-term competitive production and satisfaction of consumer demand.

Filling the gaps

This assessment clearly shows that capacity development gaps reveal themselves at different levels of complexity. The needs at individual, organizational and institutional level are intertwined and are reinforcing each other. They can only be addressed successfully through an integrated approach.

Four main areas emerge as priorities for capacity development:

1. **Direction of development** - The transition to privatized market-oriented dairy value chains (“transformation from traditional to modern dairy business”) is ongoing and needs to be encouraged. Further development & implementation of a number of key policy institutions by relevant government agencies at local and higher levels is essential to create a conducive environment for increased dairy production and processing. Encouraging private investment in the sector to facilitate access to inputs and enhancing public-private partnerships are logical components. Pro-poor development of dairy production by smallholders requires further development of farmer organizations like cooperatives, set-up and maintenance of milk collection systems, and adequate input and service supply systems.
2. **Building capacity to produce quality products** – It is essential to address organizational development issues of chain actors concurrently, together with institutional development issues. To enable value chain actors to produce competitive dairy products, CD efforts need to focus on 4 areas:

Adequate dairy genetics – Important CD interventions range from training of AI technicians on AI techniques to a multi-stakeholder regulatory body for genetic resource policy. A dual service delivery system is preferred - private companies and government agencies operating alongside each other.

Feed – Enabling farmers to address the key bottleneck of feed availability requires an integral approach, engaging different stakeholders in developing local feed production, managing the number of livestock versus the available feed & land, encouraging formation of community bylaws regarding use of land and animal numbers, input supply, and culling of unproductive animals.

Credit services & CB for business management – To enable access to essential inputs and services, both the availability of these services and the value chain actors’ ability to manage these inputs are essential. Increased availability of key inputs - adequate financial services, know-how on dairy business, and technology - require strong actors delivering such services.

Milk quality control system - An effective milk quality control system needs to be put in place to boost the trust in Ethiopian dairy products vis-à-vis imported products. Quality control systems and quality-based milk payment schemes go hand in hand – producers and processors will only invest in quality if this offers a consistent

premium. Establishing a quality control system should include a number of essential CD activities, focused on both “hardware” and “software”: awareness raising, systems development and operation, extending testing facilities, and upgrading capacity of regulatory organizations.

3. **Cooperation and leadership in the value chain** – Increased cooperation and networking between actors in the chain is essential to achieve progress in the wide array of public, private and civil institutions that need strengthening. At the moment, the sector seems too fragmented to achieve this goal. Building on associations of value chain actors in the different segments, development of an apex organization (like a dairy board) would be a significant milestone. Such an apex organization could address lobby & advocacy to enlist policy support, joint learning & experience sharing, and leadership development.
4. **Strengthening of capacity builders** – Public and private CD service providers in Ethiopia need to significantly develop their own capacity to be able to provide sufficient, relevant, effective and reliable CD services. Increased use of value chain concepts will be beneficial in achieving this. The formal and informal education / CD organizations are in very different positions and hence need to look at different aspects for boosting their capacity:

Formal education systems – University curricula may need review and strengthening in aspects of value chain development and management. TVET and BSc curricula should be designed to serve the demand for technicians and managers along the value chain. The gap between TVET and college graduates needs to be filled.

Non-formal education / Capacity Development Services – The wide variation in situations in the country and identified CD needs warrant significant growth of informal CD services all along the value chain. Providers of informal CD services will benefit from recognition by certification. Institutes like EMDTI could augment formal education services with short-term courses and refresher courses for professionals. Active operational public-private-civil partnerships could make a large contribution to tailor CD services to the various chain actors. A strong farmer-to-farmer component is advisable. Private parties may benefit from targeting their services through farmer organizations, rather than targeting individual farmers.

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1. Introduction

1.1. Background

Ethiopia owns the largest livestock population in Africa, in 2005 estimated at a size of about 38 million cattle, 26.6 million goats & sheep, 5.3 million equines and 470 thousand camels (FAOSTAT). The country also has a diverse agro-ecology, with significant parts being suitable for dairy production. The development of the dairy sector in Ethiopia could contribute significantly to poverty alleviation and improvement in health and nutritional status of the whole community at large. The commercial dairy sector of Ethiopia is however in an infant stage.

Major factors contributing to low development of the commercial dairy sector in Ethiopia include limited capacity in the dairy sector; lack of improved dairy technology; poor infrastructure; lack of access to markets; feed shortages; and inadequate genetics. Due to the underdevelopment of the infrastructure in rural areas, only 5% of the total milk produced in the country is marketed as fluid milk. Studies on capacity development needs for the dairy sector in Ethiopia are scant.

Smallholder dairy development in Ethiopia can be an effective pathway out of rural poverty. As yet, this potential has not been fully exploited.

Crossbred and exotic dairy cattle constitute only 1.8% of the total population of milking cows in the country (Pratt et al, 2008). Input and output marketing systems for smallholder dairying are not well established. The country's milk production level increased by only 1.6% annually during 1966-2001 and thus did not keep pace with population growth. Per capita milk consumption as a result reduced by 0.8% annually, from 26 litres in the mid 1980s to about 16 litres in 2001 (Staal et al, 2008). Although the country recently recorded an annual growth rate of 3% in national milk production, it was achieved mainly due to increased herd size (60%) rather than by productivity improvements (Ahmed et al, 2004).

The context for dairy development in Ethiopia has been changing rapidly, creating both new opportunities and challenges. Over the past five years the demand and prices for milk and milk products (particularly butter) have increased along with increasing urbanization, population growth, improved infrastructure and improved access to markets (Tesfaye and Puskur, 2007).

In addition, national policy priority has changed in favour of pro-poor, gender sensitive and ecologically sustainable commercialization of smallholder production systems. Policy envisions an increasing role for the emerging private sector.

Further, new actors and relationships are emerging in the dairy sub sector (see Van der Valk (2009) for a description of main dairy supply chains). Existing actors, particularly research and development organizations, are under increasing pressure to revisit their roles and usual mode of operation, in order to adapt and respond to the changing number and diversity of actors, demands and situations.

This paper presents a diagnostic assessment of capacity development needs in the Ethiopian dairy sector (see Box 1 for definitions on capacity development). The study has been carried out in such a way that it provides a holistic framework for understanding the functioning of the system, going beyond technologies and acknowledging the importance of institutions; habits, practices and incentives; and policy and enabling environment. This study tries to shed light on dairy sector capacity development needs in Ethiopia. The emphasis is on more commercial supply chains in the peri-urban areas, as these peri-urban chains have a stronger market orientation. For capacity development, these commercial chains have the opportunity to be in the driver's seat, rather than being recipient of outside services. The study follows a milk-shed approach to focus interventions in areas with comparative advantages for commercial dairying. Milk sheds around Addis Ababa have been taken as case study area.

Box 1 - Capacity Development Definitions (Wageningen UR Centre for Development Innovation)

Capacity development (or capacity building) means putting into place the conditions that make change possible. This involves enhancing the capabilities of individuals and organizations as well as supporting multi-stakeholder learning processes. Training is just one part of capacity development. It also requires long-term partnerships that help create an enabling environment for individuals to put knowledge and skills into practice.

One thus could distinguish:

- **Capacity building** (CB) for individual level capacity development of knowledge and skills,
- **Organizational development** (OD) for organizational level capacity development of organizational competencies and strategies, and
- **Institutional strengthening** (IS) for capacity development for a group of actors (like the dairy sector), mainly focusing on policies and an enabling environment.

This report uses the term capacity building as this is a more familiar term. However, the findings include issues at all three levels. These have been distinguished in chapters 4 and 5 of this report.

1.2. Objectives of the study

The overall objective of this study was to assess the capacity development needs in the peri-urban commercial dairy chains in Ethiopia.

The specific objectives of the study were:

- To identify the capacity development needs at individual, organizational and institutional levels in dairy chains; this includes specific skill demands for a range of job positions in the dairy chains;
- To examine approaches currently followed to meet capacity needs; existing training capacity ("supply") and new initiatives;
- To identify gaps between supply and demand for capacity development services;
- To identify potential ways for provision of additional capacity development services, and identify opportunities for joint future efforts in capacity development.

The results of this needs assessment could be used to enhance the performance of the existing commercial dairy sector, with spin-offs to the traditional dairy sector. Improved capacity building through training and certification could lead to innovation in the sector, improving the origin and flow of knowledge/information, and providing incentives for behavioural change and co-ordination of sector actors (government, civil society, private sector (formal and informal)).

1.3. Experiences in dairy development

Many kinds of dairy development projects have been initiated in Ethiopia, with varying outcomes and impact on dairy development in the country. Among ongoing efforts in dairy capacity development, the following are worth mentioning:

- SNV's BOAM project engages in organizing private actors in the dairy sub sector, links them with sources of finance, and provides training opportunities; it also stimulates policy dialogue through its Consultative Group;
- ILRI-HPMS engages in supporting emerging private services through credit and capacity building, and facilitation of multi-stakeholder platforms;
- REFAC, the Research, Extension and Farmers Advisory Council, is promoted by the research system at zonal, regional, and national levels;
- Land O'Lakes promotes a milk shed development model and focuses program activities in production zones (milk sheds) capable of producing between 50,000 to 100,000 litres per day¹.

¹ This milk shed development approach aims to maximize collection and transport efficiencies to reduce costs and install quality assurance practices. Land O'Lakes facilitates the formation of strategic public-private alliances with, and foster dialogue and negotiations between stakeholders to build sustainable milk sheds (leading dairy processors, small business organizations (SBOs, i.e. farmer groups), financial service providers, input and service providers, local authorities and development partners. Critical to the success of this approach are strong vertical linkages—between farmers and SBOs, SBOs and processors and between processors and retailers/exporters—as well as strong horizontal linkages among SBOs.

Over time, a significant number of studies of dairy development in Ethiopia have been carried out. One of the most recent and comprehensive studies being undertaken by the Ethiopian government (MOARD) is the Livestock Development Master Plan study. The study has three phases, i.e. 1. Livestock data collection and analysis; 2. Master plan preparation for five sub-components (dairy, meat, hide and skin, fishery and apiculture); 3. Preparation of a development project for each sub-component (MOARD, 2007). This study clearly indicated that the livestock sector in general and the dairy sector in particular has received limited attention and actual support in the past.

It is also significant that most of the studies carried out focus on dairy production and productivity issues and give little attention to dairy capacity development aspects. Not only production & processing technology is an important asset in dairy development, but also the capacity in institutions (formal and informal) and organizations (including their attitudes, practices, and ways of working) for management and marketing, so that they can adapt to dynamic changes. Some of the studies carried out address dairy capacity development to some extent (Tesfaye et al, 2008).

2. Methodology

2.1. Data collection

The data collected in the assessment were obtained from different sources:

- review of past studies;
- field level data collection using instruments such as focus group discussions and field observations;
- interviews with dairy chain actors, CD service providers, and key resource persons.

The selection of dairy chain actors was made in such a way that actors from production up to consumption levels were all well represented. The actors from which data were collected included input suppliers, dairy farms, dairy cooperatives, milk collectors, milk processors, retailers, service providers, and institutional consumers. Nested sampling was used to select actors from selected milk sheds around Addis Abeba (Selale, Sebata and Chacha areas). The number of actors selected for assessment is indicated in Table 1.

It was assumed that a number of enabling organizations would be active in roles supporting the dairy sector in ways different from capacity development, e.g. policy makers, financing etc. However, the distinction between CD Service providers, Input Suppliers and Enabling organizations in practice was difficult to make, as Enabling organizations often provide capacity development services and production inputs as well (e.g. financial services). This should be kept in mind when reading results.

Table 1 Dairy value chain actors selected for assessment

Actors*	Number
Input suppliers	3
Large Scale Commercial Dairy Farms	4
Small Scale Commercial Dairy Farms (< 5 cows)	3
Dairy Cooperatives	
<i>Management teams</i>	8
<i>Farmers (coop members, 36 participants)</i>	4
<i>Farmers (non-coop members, 20 participants)</i>	2
Union of Dairy Cooperatives	1
Milk Collectors	2
Processors	6
Retailers	5
Capacity development service providers	9
Enabling Organizations	2
Total	47

* *These are primary functions/roles of actors. As single actors may perform multiple functions, the number of actors in some of the tables in this report may vary from this table.*

The primary method employed for data collection was a series of structured interviews with key actors/organizations in the dairy chain, using pre-tested checklists. Most of the key actors were identified prior to the appraisal, based on information available from various sources. Some additional actors were identified during the fieldwork. Actors interviewed at production level included commercial small-scale and large-scale dairy farmers², primary cooperatives and dairy union (dairy cooperative management, as well as members and non-members). Input suppliers included owners of veterinary clinics, AI technicians, and industries producing livestock feed. Processors included large farms with own processing facilities, cooperatives and commercial processors. Retailers included supermarkets and bulk consumers of milk products like hospitals. The fieldwork was conducted during July-August 2009. The quantitative information was systematically categorized, tabulated and summarized for analysis.

2.1.1. Focus group discussions

Focus group discussions (FGDs) with farmers were made as one of the key primary data collection instruments to solicit qualitative information that could not be easily captured through structured questionnaires. Accordingly, a wealth of information in this assessment was generated from FGDs that were held with 6 groups of up to ten dairy farmers (4 groups of cooperative members, 2 groups of non-members), and with 8 groups of primary cooperative leaders. The discussion was guided by a detailed checklist prepared for this purpose.

Actual field observation was also carried out at sites such as dairy retail shops, input suppliers, dairy farms and milk processing units. Observations at some sites have helped the assessment team to visualize and get a true picture of capacity and skill gaps in the dairy value chain.

2.1.2. Interviews

The interview with each actor was made using a structured questionnaire, but with room for additional elaboration. Questions were mostly of the open type. The interview was conducted by professionals having rich experience in the dairy sector in Ethiopia.

Semi-structured questionnaires were sent to respondents that have good access to internet. About five respondents replied through E-mail, many of whom were private consultants engaged in dairy development.

2.2. Data analysis

Data obtained from survey were coded, checked for consistency and entered into a Microsoft Excel database for analysis. Data collected through group discussions and key informant interviews, as well as from different secondary data sources were triangulated, analyzed and interpreted. Simple descriptive statistics such as percentage, average and cross tabulation were used for analysis and summarization of results.

² In this report, small-scale farmers are farmers with 1-4 dairy cows; large-scale farmers have 5 cows or more.

2.3. Validation and prioritization

A draft of this report was presented to two groups of stakeholders for validation and prioritization of recommendations:

- **Expert meeting** – a workshop with key resource persons from the dairy sector prioritized interventions and defined a number of strategic options for value chain capacity development.
- **Coordination group meeting** – these strategic options were presented to the 17th meeting of the Coordination Group for the Milk and Milk Products Value Chain (February 4, 2010), which gave feedback on the priority strategic options.

These steps facilitated completion and quality improvement of this final report.

Box 2 - EMDTI consultation process and services

The Ethiopian Meat and Dairy Technology Institute (EMDTI) was established in January 2008, making use of the former ILRI facilities available in Debre Zeyet. The objective of the institute is to provide capacity building, investment support, and market facilitation services in the meat and dairy components of the agriculture sector.

To focus EMDTI's services, a stakeholder consultation process was used. This pointed out that priority capacity building areas in the dairy and meat sector consist of:

Management level training

- Dairy farms - dairy farm establishment; feeds, feeding system and feed rationing; water supply and - quality; housing; waste management; milking and milk handling; breeding; farm management, recording, planning, and financial management; procurement, resource & equipment management;
- Dairy plants - milk collection, quality and handling; dairy plant operation (reception, record keeping, production planning/marketing, critical control points, dairy plant operation); processing/ packaging/storage, (incl. HACCP, waste management, labeling/branding); management of human, physical and knowledge resources); and marketing (pricing and negotiation for inputs and outputs)
- Cooperatives - milk marketing.

Operational level training

- Dairy farm milkers and farm attendants - feeding and watering; cleaning; reproductive management; basic animal health observation; milking; milk handling; basic personal hygiene; utensil washing; waste management;
- Foremen and record keepers (intermediate level) – same topics as for milkers, plus record keeping, resource management
- Dairy plant processing technicians - reception and record keeping; quality check; cooling; separation and standardization; pasteurization, homogenization and packaging; dairy products (cream, butter, cheese, yoghurt and fermented products); waste management; washing/cleaning and sanitization;
- Milk hawkers & staff of milk collection centers - milk handling and hygiene; milk quality check and chilling; milk transport.

Training courses & other services

EMDTI has prioritized development of training courses for the following subjects, starting with curriculum and manual preparation:

1. Dairy cattle management & clean milk production
2. Cheese manufacturing & quality control
3. Dairy farm establishment & management
4. Milk quality & health assurance.

So far, EMDTI has provided services including:

- Training on dairy cattle management and clean milk production supported by practical demonstrations (Three batches/over 75 trainees from different regions of the country)
- Training on clean milk production and handling and on operating churner and separator (one batch, Godino Dairy farmers' cooperatives)
- Training on cheese manufacturing and quality control supported by practical demonstrations
- Consultations on management to owners & managers of dairy farms, a farmers' union, dairy plants, dairy cooperatives; consultations on operational issues to level dairy farms (milkers, record keepers and attendants) and dairy plants
- Explanation and advice to domestic and international visitors to the Institute.

3. Findings – Needs & available services

3.1. Capacity development needs

Different dairy production systems in Ethiopia require different kinds of capacity development (CD) activities. The dairy system in Ethiopia is predominated by subsistence production and traditional processing techniques, spatially distributed across the country. This study focuses on the peri-urban commercial dairy chain and assesses the various kinds of CD activities required in this more formal dairy chain. It distinguishes between CD at individual, organizational, and institutional level. While this chapter describes needs (paragraph) and available services (par 3.2), chapter 4 matches needs and available services to identify the existing gaps in CD.

The information on CD needs was collected from a wide range of dairy supply chain actors, from both formal and informal dairy chains. However, in the Ethiopian context it is hardly possible to come up with accurate figures for the number of employees working in formal and informal dairy chains. Record keeping is weak in both private and government sectors. Nevertheless, from interviews held with sample employees and heads of human resource sections, the CD needs of employees working in the dairy chain has clearly been sorted out. To triangulate information from different sources, CD needs were also solicited from enabling organizations (Tables 2 and 3).

3.1.1. Individual level capacity building needs

Interviews held with sampled employees and HR managers of dairy chain actors revealed that at individual level, quality milk production techniques, milk processing technology, and availability of AI equipment are considered to be critical CD need areas. 76% of sample employees indicated the need for capacity development in milk & dairy processing technology & packaging². Quality of milk came in second with 41%. Other CD needs cited at individual level include skills in AI equipment & techniques, feed formulation, dairy barn design, waste management, and cooperative concepts and – administration.

Table 2 Unmet capacity development needs as identified by employees
(*n=17*)

Type of skill (or input) needed	Percent
Milk processing technology & packaging	47
Dairy technology ³	29
Milk quality	41
AI equipment	35
Feed formulation	29
AI technician training	24
Dairy barn design	18
Dairy waste management	12
Cooperative concepts, management and finance	12

³ The difference between “milk processing technology & packaging” and “dairy technology” may appear trivial to outsiders, but mattered to the respondents, dairy technology referring to processing for less formal markets that do not require packaging.

Table 3 Capacity Development needs as identified by enabling organizations (n=10)

Type of CD need	Percent
Milk quality	40
Milk processing	40
AI service	20
Feed formulation	10
Training AI technician	10
Dairy barn design	10
Dairy waste management	10
Cooperative management	10

Table 4 Dairy farmers' capacity development needs (n=5 groups of 10 farmers)

Topics on which farmers expressed need for skill improvement	Percent
Feed formulation	100
Dairy management	92
Quality milk production	92
AI Techniques	85
Processing technology	54

Table 5 Employee views: Ways to acquire skills, unmet needs, and willingness (n=41)

Employee working for	Ways skill acquired now	Unmet needs	Willingness to acquire skill training
Primary Cooperatives	On job practice Short-term training	<ul style="list-style-type: none"> • AI techniques • Milk quality testing • Dairy Feed composition 	Very much willing
Union	On-job training	<ul style="list-style-type: none"> • Business development • Marketing skill (promotion) • Customer handling 	Willing
Large Milk Processing Units	Formal training Short-term training	<ul style="list-style-type: none"> • Processing and packaging • Dairy technology 	Willing
Small Scale Processing		<ul style="list-style-type: none"> • Processing and packaging 	Willing

Consistent with the above, enabling organizations requested similar kinds of CD activities (see Table 3). The issues of milk processing and production of quality milk again come at the top of the list for individual level CD needs.

Dairy farmers were asked about aspects they would like to be advised on and unmet CD needs they have (see Table 4). All would like advice on feed formulation. Most of them

also would like to get CD in dairy management (92.3%), quality milk production (92%), and AI techniques (85%). Just over half of them mentioned processing technology (54%).

Strategies employers use to recruit and retain staff

Like any other sector, the commercial dairy chain faces staff turnover. However, since the sector is not well developed and staffed with low skilled employees, staff turnover is not seen as a major challenge. The strategies that employers use to keep skilled staff vary greatly among organizations, businesses and farms. For instance, the dairy union uses financial stimuli like salary increments and a providence fund, as well as on-job training for its employees.

How and where staff gets training.

In the majority of the cases, the management and professional staff working in organizations has acquired their skills from different institutions before joining the organizations. The major formal institutions engaged in training dairy and related professionals are Haramaya University, Hawassa University, Ambo University College, and Addis Abeba University (Debre Zeyet Veterinary faculty). They offer BSc and MSc level courses on general animal production or dairy science, while Addis Abeba University offers courses on Food Technology and Veterinary Science. The TVETs (Technical and Vocational Education and Training) and ATVETs (Agricultural TVETs) offer vocational training on a range of vocational skills. Tailor-made training for various types of staff, like floor workers in milk factories and midlevel staff, can be obtained from EMDTI and EIAR-Holetta centre (see paragraph 3.2 for more information on the supply side of CD services and Box 3 for more information on EMDTI).

Some additional short-term training occurs (see Table 5). Generally, CD providers in dairy production and processing are very few in number. Hence, employees have limited options for accessing skill training in the dairy sector.

Willingness to pay for skill training

The majority of the employees interviewed expressed high willingness to spare their time for skill training (see Table 5). Similarly, employers reported that they would allow their employee to attend skill training, provided the training is relevant for their business.

Regarding employers' willingness to pay for skill training, mixed results were obtained. Employers at the grass root level of the dairy value chain, such as primary cooperatives and individual dairy farmers, reported they hardly could afford to pay for skill training, as their financial means are very low. However, employers higher up in the dairy value chain, such as large scale producers/processors, expressed their willingness to pay for skill training, provided that the training would have a high impact on the performance of their business.

Employee satisfaction on skill training provided

The satisfaction level of employees about skill training provided by various CD providers varies. Some expressed they have benefited a lot from the training provided by CD

providers, particularly training provided by SNV⁴. The study team learnt that the variability in satisfaction of employees on skill training could be attributed to the fact that short-term training in the dairy sector in Ethiopia has no established standards. According to some key informants, the duration of training, content of training, support materials, and training methods are all set on an ad hoc basis.

3.1.2. Organizational level capacity development needs

Organizations involved in the dairy sector need capacity development just as individuals do. Organizational capacity has a great bearing on individual capacity and on overall performance of the dairy sector. Factors that contribute to the success of organizations working in the dairy sector include the presence of a clear long-term aim; a strong drive; a large share in the supply chain; a business plan; business management; profitability (cost/benefit ratio); proper accounting & auditing systems; use of up-to-date technology; risk management strategy; promotional & marketing strategy; human resource strategy; and networking opportunities through membership of associations.

The need for organizational development was assessed by asking interviewees to rate their organization's capacity in terms of these key parameters. Three ratings were set to prioritize CD need at organization level: "well covered", "could be improved", and "needs attention". The results of interviewees' ratings for "could be improved" and "needs

Table 6 Percentage of respondents expressing the need to improve aspects of their organization

Type of actor	Longer term aim	Business plan & management	Accounting & auditing system	Risk management	Use of technology	Promotion/marketing strategy	HR strategy	Membership of associations	Average score
Input suppliers (n=3)	83	67	83	100	83	100	100	100	90
Commercial farms (n=7)	86	76	71	95	100	29	29	29	69
Smallholder producers (n=21)	86	76	71	95	100	71	33	14	63
Processors (n=6)	50	67	50	100	83	50	67	33	46
Milk collectors (n=9)	67	67	33	56	56	33	22	33	64
Retailers (n=5)	40	80	40	60	100	80	40	40	60
Average (n=51)	69	72	58	84	87	61	49	42	65

Source: computed from assessment data

⁴ The study team was not able to assess whether this exception was due to the quality of SNV's services or a result of socially acceptable answering to a study team associated with SNV.

attention” are indicated in Table 6 (*please note that very few respondents selected “needs attention” as rating, apparently this seemed inappropriate to them*). The rating was meant to be made at two levels - individual actors and organizations - but the team got insufficient data for individual level. As a result, the rating refers to organization level only.

In terms of dairy actors, generally the majority of the interviewees reported that their organizations need improvement in terms of these key parameters:

- **Longer-term aim:** The majority of the interviewees was able to indicate their organization’s longer-term aim. However, this longer-term aim generally was not written down. Especially producers and dairy farms (86%), and input suppliers (83%) indicated that their longer-term aim needs improvement.
- **Drive⁵:** The motive for the majority of actors is profit making. The major reason for farmers to form cooperatives is to solve the milk marketing problem and to achieve economies of scale through collective action (see paragraph 3.1.3.1).
- **Contribution to supply chain⁴:** Respondents hardly were able to indicate their contribution to the supply chain. This may be caused by unfamiliarity with the concept of value chains.
- **Business plan:** Actors at grassroots level do not have clearly articulated written business plans. Usually, actors higher up in the value chain have a business plan, but are not able to implement the plan as stated in the document. About 80% of retailers and 67% of processors reported that their business plan needs improvement.
- **Cost-benefit ratio⁴:** The team could not obtain data on this variable. Even if the data were available, the majority of interviewees were reluctant to give the information.
- **Accounting and auditing system:** About 83 % of input suppliers and 71% of dairy farms as well as producers reported that their accounting and auditing system needs improvement.
- **Risk Management strategy:** Dairy production and investment decisions are characterized by a high degree of uncertainty and risk. Though risk cannot be completely avoided, its impacts can be minimized with appropriate risk management strategy in place. All input suppliers and processors, and 95% of dairy farms and producers reported that their organizational risk management strategies need improvement.
- **Use of Technology:** Dairy development in Ethiopia is constrained by a lack of appropriate dairy technology. Starting from producers up to processors, all use mostly traditional or outdated technology. So it is not surprising that all dairy farms and processors and above 80% of other dairy actors stressed the need for improvements in the skills to use current dairy production and processing technology.
- **Promotion & Marketing Strategy:** The majority of the actors also indicated that the promotion and marketing strategies of their organizations need improvement.

⁵ Results were not included in Table 6.

- **Human Resource Strategy:** Almost none of organizations interviewed have a human resource development strategy or plan. Employees are using skills acquired before joining the organization. All input suppliers and 60% of processors reported that there is need to improve their human resource development strategy.
- **Membership of associations:** Particularly input suppliers indicated the need to become part of an association, a sign of the lack of focused input supply to the dairy sector. This need was felt much less by producers and processors, likely due to membership of cooperatives (producers) and existence of various professional organizations for processors.

Overall, it appears that the processors and collectors are most satisfied about their organizational capacity, while input suppliers and commercial farms see most need to improve.

3.1.3. Institutional level capacity development needs

The research team learned that institutional aspects are affecting dairy development in a variety of ways. For instance, a malfunctioning milk quality control system causes farmers to loose out on consistent sale of milk at an attractive price. This paragraph describes a number of key institutions that came up during this assessment from discussions with actors and from observations. Additional institutions that need improvement, as identified by the study, are discussed in chapter 4.

Dairy farmers were asked to prioritize intervention areas that they see as essential to develop a competitive dairy sector. All focus group discussion participants unanimously ranked breed improvement as most important (1), followed by (2) improved veterinary services, (3) increased availability of livestock feed, (4) quality milk production, and (5) high milk production as priority intervention areas, respectively (Table 7). Of these, the first three can be considered key issues in production. Improved institutions in these areas are main contributors to achieving the fifth intervention, the resulting high milk production. The fourth, quality milk production, is dependent on whole chain management quality control and should affect the prices that farmers get for milk sold.

For a discussion of these factors see paragraph 4.1, where additional institutional gaps identified in this study are discussed as well.

Table 7 **Farmers' ranking on priority intervention areas in dairy development** (*n=5 groups of up to 10 farmers*)

Intervention Area	Rank
Breed improvement	1
Improved veterinary service	2
Increased livestock feed availability	3
Quality milk production	4
High milk production	5

Table 8 Reason for farmers to be member of a dairy cooperative – or not
(*n=7*)

Reason for being member of a cooperative	Percent
Improve market access & negotiate for better price	100
Achieve Economies of Scale	88
To avoid milk rejection during fasting period	50

(n=6 groups of up to 10 farmers)

Reason for not being member of a cooperative	Percent
Long distance from milk collection point	100
Delays in payment by cooperative as compared to direct marketing	67
Existing cooperative does not accept new member	17

Table 9 Average distance to market for farmers in response groups
(*n=7*)

Variable	Average distance to market	
	in km	in minutes
Longest Distance	8.6	62.5
Shortest Distance	0.3	11.9

Integration and coordination among chain actors

To alleviate input and supply issues, dairy farmers are organized into cooperatives. Major reasons for farmers being member of cooperatives are indicated in Table 8. The main reasons are to improve market access & negotiate for better prices (100%), to achieve economies of scale (87.5%), and to avoid rejection of milk during fasting period (50%).

Main factors that prevent farmers from joining a cooperative are long distance to milk collection points (100%) and delay in milk payments (87%), according to key resource persons in the sector.

A number of dairy processors achieve vertical integration through management of own dairy farms, company-operated milk collection, processing and distribution and retail networks (kiosks, supermarkets).

Infrastructure

Milk is a highly perishable product and should be collected and delivered to a market for sale in a timely manner. Good infrastructure development is an essential condition for this. Distance to the market is one critical factor that affects supply of fresh milk to markets by farmers. Dairy farmers were asked on the longest and shortest distances to markets as an indicator for the status of infrastructure. The longest distance from market was on average about 8.6 km (an hours walk) and the shortest distance was about 0.3 km (twelve minutes walk), with a maximum of 15 km (see Table 9). This can be considered to be a significant distance, which shows an issue related to milk collection coverage. Being too far from a milk collection point operated by a cooperative was the main reason for farmers not to be a member of a cooperative (see Table 8).

Policy environment

Dairy chain actors perceive that the Ethiopian government has given little attention to livestock development in general and the dairy sector in particular. Considering the conducive national policies recently put in place, this perception may be caused by limited enactment of policies by local government agencies rather than by absence of conducive policies. The national government recently has taken concrete steps in this area, e.g. by establishing EMDTI and by reviewing curricula of formal education institutions. Regional government are revitalizing agricultural extension services. However, capacity development for dairy chain actors is still perceived to be left to international organizations and the private sector.

Promotion of milk products

The dairy sector in Ethiopia does not carry out promotion activities to make the public aware of the importance of consumption of dairy products. The reasoning is that at the moment the commercial dairy chain anyhow is not able to meet the current demand for processed dairy products. Consequences for long-term demand growth are taken for granted. The only advertising happening is for brand-recognition.

At the same time, at least part of the public seems to be aware of the quality issues associated with local dairy products. This may be the reason why the top end of consumers opts for more expensive dairy products that often are imported or produced by niche marketers.

3.2. Capacity development services provided

3.2.1. Type of capacity development providers and their services

The full list of CD providers identified in the Addis Abeba area during this study is included in appendix 2. The type and kind of CD services that these service providers have available varies (see Table 10).

Generally, service providers could be classified as government agencies, NGOs and private firms (see box 3 for some examples). Government service providers are dominant and play a key role in providing a wide range of CD services such as training, production inputs, extension, livestock health services, and regulatory services. Government based service providers can be further grouped into higher institutions and field level development offices. The higher institutions focus on long-term training (formal education), whereas development offices focus on short to medium term training (informal education).

Types of services provided by CD organizations are shown in Table 10. Major CD services provided by CD organizations surveyed are: advisory services on dairy, training on dairy, preparation of dairy training manuals, AI training, and awareness creation. About 82% of organizations are engaged in advisory services on dairy and about 71% provide AI training and training on dairy.

The formal education mentioned in Table 10 comprises of the services of Universities (including former Agricultural Colleges), TVETs and ATVETs, leading to certificate, BSc,

Box 3 - Examples of service providers

The Ministry of Agriculture and Rural Development (MOARD) is a key government capacity building provider and engages in services such as Animal Health Services, Extension Services, Training, Artificial Insemination Services, Bull Service and Agricultural Technical and Vocational Education Training (ATVET).

The Ethiopian Animals Feed Industry Association is attempting to mitigate dairy feed shortages by providing forage seeds, training, and information to its members.

The NGO Land O'Lakes promotes a milk shed development model and focuses program activities in broad production zones (milk sheds) capable of producing between 50,000 to 100,000 liters per day¹.

Table 10 Types of capacity development services offered by CD service providers (*n=17*)

Types of CD services	Formal educ.	Non-formal	Other inputs	% of resp. *)
Higher education	X			24
(Access to) Formal education	X			24
AI training		X		71
AI credit		X		6
Provision of AI equipment			X	6
Provision of bulls and heifers			X	6
Provision of improved heifers			X	6
Dairy training manual preparation		X		41
Training on dairy		X		77
Advisory services on dairy		X	X	83
Techniques of livestock feed preparation		X		29
Awareness creation		X		53
Capacitating dairy cooperatives & unions		X		24
Information provision		X		6

**) Percentage of respondents mentioning item*

Table 11 Services provided by enabling organizations (*n=5*)

Types of Services provided by Enabling Organization	Percent*)
Saving and credit	40
Credit	60
AI service	20
Drug supply	20
Health service	20
Advisory service (<i>actually this is a CD service</i>)	60

**) Percentage of respondents*

MSc and PhD grades (see appendix 2 for more detail). Informal education mostly is not much valued for career opportunities, as it often is offered by non-recognized institutions (see 3.2.6).

The study showed that actors in the dairy chain perform multiple roles and functions. As already mentioned, an illustration for this is that some enabling organizations are also providing CD activities and inputs. Sixty percent of the enabling organizations interviewed provide advisory service to dairy chains (Table 11). Indeed, they play an enabling role in financing dairy projects and programs. No respondents mentioned policy making as CD services performed.

3.2.2. Target groups

Capacity development service providers target different audiences, which include farmers, students, and employees of cooperatives, unions and private firms. The majority of service providers target combinations of these target groups. The largest proportion targets farmers, employees of cooperatives and students (see Table 12).

3.2.3. Methods used by Service Providers

CD service providers are using a variety of methods in delivering services to their clients. The main methods used are shown in Table 14. Demonstration and lectures (both 88%) are the primary methods used in delivering CD services. About 71% used practical training methods and 53 % used study tours in delivering CD services. Use of websites is the least used method for CD services.

3.2.4. Duration of capacity development services

The duration of the CD service varies depending on the nature of the CD activity, available budget, and level of work experience of participants. Information obtained from few service providers indicates that the duration of the CD activity ranges from 7 to 1800 days (the latter is the duration for completing academic veterinary medicine education). Except the higher institutions that are engaged in long term training, the majority of capacity service providers focus on short term training that last for a maximum of six months.

3.2.5. Recognition by the Ministry of Education

Only two of the CD organizations surveyed are recognized by the Ministry of Education, as they are engaged in long-term CD activities. In Ethiopia, there are no opportunities to get recognition from the Ministry of Education for short-term training. Formal education thus offers a formal recognition that can be used as an asset in terms of career opportunities.

3.2.6. Skills targeted and skills acquired

According to the responses, capacity service providers generally do not target specific skills, but focus on general knowledge building. Exceptions are institutions like the Ethiopian National Artificial Insemination Centre, which targets AI skills. Types of skills

acquired by target groups are shown in Table 13. About 41% of the target group acquired dairy production and - management skills and 29% acquired milk quality, processing and market skill in addition.

Table 12 Target groups of capacity development service providers
(*n=17*)

Target Group for CD service	Percent
Farmers	71
Cooperatives	65
Unions	12
AI technicians	18
Members only (of Ethiopian Animal Feed Processors Association)	6
Private investors	35
Traders & exporters	24
Processors	12
Civil servants / Public sector (formal, non-formal)	12
Agricultural experts	47
Development agents	18
Students	24

Table 13 Type of skill acquired by capacity building beneficiaries
(*n=7*)

Skill acquired by client	Percent
Dairy production & management	41
Dairy production, management, quality control, processing & marketing	29
Concept note, business plan & project proposal preparation	6
Animal health	6
Extension & management skill, heat detection, insemination, pregnancy diagnosis, work planning skills, milk and milk products quality, processing & marketing	6
Market orientation, processing, technical, research	6

Table 14 Methods used by Service Providers
(*n=17*)

Methods used	Percent
Demonstration	88
Lectures	88
Practical training	71
Study tour	53
Interactive teaching	47
Coaching	35
Website	6

3.2.7. Growth of services provided over the years

The number of service providers and the types of services provided by them to the dairy chain actors show an upward trend over the years. The survey results reveal that most of the service providers interviewed appeared over the past five years. A decade or so ago CD services used to be provided by government organizations only. In more recent years, many NGOs and private sector parties are engaging in CD activities. The oldest service providers in dairy are Haramaya University and Ambo College, dating back to the 1940s (Table 15). The latest service provider started in the year of the assessment. Unlike the number of service providers, the types of services are not growing to meet the demand for services. Only a few types of services are provided to dairy chain actors (see Table 10).

The survey did not reveal which CD service providers used to exist, although one can assume that bilateral (Finish, Danish) and international (FAO, ILRI) projects as mentioned by Ahmed et al. (2004), used to provide valuable CD services during their implementation period. The current crop of dairy experts (mostly in their 50's and 60's) is a living witness to that.

It is important to note that interest in provision of CD services to the dairy sector is rising, from public, private as well as NGO sides. A number of initiatives and plans were shared by interviewees. These are included under "Strengths" in Table 16. Indeed, the presence of plans and ideas for new initiatives is one of the promising signs of vigour in the dairy sector – investments in input supply, production, and processing will be followed by increased needs for capacity development. Various actors seem to be anticipating this growing interest in CD services.

Table 15 Starting year of existing service providers

Service provider	Year*
Ambo Agricultural College	1940
Haramaya University	1950
Faculty of Veterinary Medicine, AAU	1982
MOARD	1985
Hawassa University	1989
Alage ATVET	1994
Land o' Lakes	1995
Holetta Agriculture research centre	1997
FAO – Asale project	2006
ILRI – IPMS project	2006
Ethiopian Animal Feed Industry Association	2008
Ethiopian Meat and Dairy Training Institute (EMDTI)	2008
Ada'a District LMA	2008
Selale District LMA	2008
Chacha District LMA	2008
FFARM PLC	2009

* Year CD service started

4. Findings - Gaps between demand and supply

4.1. Gaps in capacity development

The gaps in CD services concern both the range and the volume of services. CD service providers are not large enough to support significant increases in dairy production across the value chain. This results in the situation that many chain actors have limited access to services. The range of services available to dairy chain actors is limited as well. It did not always become clear in this assessment whether perceived gaps in services were due to limitations in geographic coverage and capacity of CD service providers or due to a total absence of particular types of services. Comparing demand and supply, it is apparent that both limitations play a role. This paragraph makes the distinction where justified.

Results are presented according to level of CD intervention – institutional, organizational or individual. The higher the level, the more difficult it is for single actors to make a difference and the more coordinated action is required.

4.1.1. Profitability of production

In order to be able to produce significant amounts of milk at a profitable rate, producers need to be able to access assets and services of good quality. The main bottlenecks for Ethiopian farmers (as elaborated in Table 16) are adequate genetics/dairy stock, veterinary services, feed & fodder, and the ability to manage these assets well for efficient production. These bottlenecks can be addressed at individual farmer level to a limited extent only.

Dairy genetics can be improved by good breeds, but require good breeding stock at the start, functioning AI services and a supportive livestock breeding policy.

Good animal health can be achieved by proper veterinary care, for which farmers are dependent on availability of qualified veterinary staff, drugs and proper national & regional control of infectious diseases.

Sufficient quality feed & fodder cannot be achieved without sufficient land, crop seeds, fertilizer, feed mills, and management of livestock numbers across the country.

All these will only result in efficient production if the farmer can manage these resources well, but also can access affordable credit, and is able to market his milk timely and at a good price.

In order to **produce significant amounts of milk at a profitable rate**, according to respondents the Ethiopian dairy sector therefore needs to work on key capacities outlined in Table 16. Priorities selected by the expert workshop are indicated with arrows.

4.1.2. Quality of dairy production

Milk quality control is perceived to be a major bottleneck. Ethiopia has no independent quality control agency that can carry out milk quality testing for the whole chain, like

Table 16 Summary CD intervention areas - profitability of production

CD need Target audience	Input suppliers	AI technicians	Veterinarians	AHW	Farmers	Farm managers	Cooperatives	Union of coops	Collectors	Small scale proc	Large scale proc	Retailers	Private investors	Technical experts	Priority
Institutional development issues															
→ multiplication of adequate dairy genetics															3
→ land tenure, management of livestock numbers vis-à-vis available feed															3
→ adequate credit provision															3
• rising demand for quality milk & milk products															2
• livestock breeding policy / program															2
• adequate milk price (cost/benefit ratio)															2
Organizational development issues															
→ appropriate services in animal breeding	0	0			0										3
→ attention to human resource development	0	0	0	0		0	0	0			0	0			3
→ technological and entrepreneurial capacities to succeed in a competitive market	0									0					3
• appropriate veterinary services			0	0	0										3
• milk collection schemes covering larger proportion of dairy farmers									0	0	0		0		3
• capacity to produce high quality feed	0				0	0									3
• popularizing forage planting	0				0	0									3
• know-how on dairy business management	0					0	0				0	0			2
• form and strengthen coops							0	0							2
• establish processing units (small/med./large)									0		0		0		2
• develop/promote small-scale proc.technology.	0						0			0					2
• well articulated marketing strategies						0					0				1
Individual capacity building issues															
→ on-farm feed and forage production															3
→ AI techniques		0		0	0										3
→ adequate business management skills, incl. accounting, marketing and customer handling	0						0		0	0	0				3
• Training on management of dairy cows					0	0									3
• milk hygiene and sanitation training					0				0	0	0				3
• knowledge in feed formulation	0				0		0								2
• support smallholders to acquire improved dairy breed (heifers) to increase productivity					0										2
• industrial concentrate production	0														1
• input procurement training						0	0								1
• intensive training in different aspects of dairy					0	0									1
• dairy production and processing technology													0		1
• processing and packaging of dairy products										0					1
• diversification/packaging of dairy products											0				1
• labour-intensive processing technologies									0						1

regular checks at farms, collection centres and processing plants. This situation causes many difficulties for small farmers: Usually, smallholder farmers get a lower price for their produce in the collection centres, due to untested quality of their milk. The milk processing plants have purchase agents at production level that collect and bulk milk. The purchase agents are not always adhering to quality regulations. They sometimes collect poor quality milk that is rejected by dairy cooperatives, or reject good quality milk when demand quotas are met.

A number of key components of such a quality control system are lacking, including adequate collection centres, milk cooling system, transportation and processing system, payment according to milk quality, workers skilled in dairy technology, improved processing equipment at smallholder/primary cooperative level, and basic sanitation and hygiene along the chain.

In order to **produce good quality milk** for urban consumers, according to respondents the Ethiopian dairy sector therefore needs to work on key capacities outlined in Table 17. Priorities selected by the expert workshop are indicated with arrows.

Table 17 Summary CD intervention areas - quality of production

CD need	Input suppliers	Farmers	Farm workers	Coop employees	Collectors	Small scale proc	Processor employees	Retailers	Priority
Institutional development issues									
→ infrastructure development									3
→ appropriate quality control system									3
• fair prices for quality milk									2
• stimulate demand for consumption of quality milk products in major cities and towns through increasing awareness on value of milk for health and growth									2
Organizational development issues									
→ milk cooling system for collection, transport, distribution				0	0		0	0	3
→ adequate dairy processing technology	0			0		0	0		3
• sufficient & clean collection centres				0	0		0		2
• transportation and processing system					0		0		2
• appropriate services in quality control		0		0	0		0	0	2
• adequate milk production technology	0		0						2
Individual capacity building issues									
→ maintaining proper milk hygiene		0	0		0		0	0	3
→ proper use of dairy technology		0					0		3
• training milk quality testing					0		0		2
• processing skills							0		2
• training on simple identification of milk quality								0	1

4.1.3. Sustainability of dairy production

Horizontal coordination among chain actors is not well developed. A number of sector associations exist, but none of them covers a significant part of their respective potential members:

- EMPPA (Ethiopian Milk Producers & Processors Association)
- EVA (Ethiopian Veterinarian Association)
- ESAP (Ethiopian Society of Animal Production)
- EAFPA (Ethiopian Animal Feed Processors Association)
- EAFIA (Ethiopian Animal Feed Industry Association).

Collaboration between farmer cooperatives is very limited. This research came across only one secondary cooperative (Selale Union of Dairy Cooperatives) and no tertiary cooperative (at zonal or federal level). Several attempts have been made to create platforms for interaction between actors in the commercial dairy chain (ILRI, SNV, Land O' Lakes). However, the non-participation of the two major processors and the lack of cooperation between the different platforms prevent these platforms from becoming a significant force in institutional change.

The role of the Ethiopian Animal Feed Industry Association in dairy sector development is

Table 18 Summary CD intervention areas - sustainability of production



CD need	Priority
Institutional development issues	
→ encourage private investment in the sector	3
→ enhance public private partnerships	3
→ collaboration and coordination between public, private and civil partners	3
• collective action to advocate the needs of the sector	2
• policy dialogue among stakeholders	2
• develop dairy development policy	2
• knowledge management and capacity development, not just doing projects	2
• balance People, Profit, Planet sustainability aspects	2
• dairy waste management approaches	2
• quality control of CD services	1
Organizational development issues	
→ transformation from traditional to modern dairy business	3
→ strong awareness creation on the value of milk and the potential of the sector	3
• formation of industry institutions like dairy boards, authorities & associations	2
• training on cooperative business management	2
• nurturing of grassroots leadership	2
• strengthen dairy input supply and services	2
• support to livestock development & extension agencies	2
• school nutrition program	1
• certification of CD services	1
• staff development plan	1



worth mentioning. The association, though young, is playing a crucial role in mitigating dairy feed shortages for its members and dairy producers, i.e. by providing forage seeds, training and information to its members.

As the Ministry of Agriculture and Rural Development has no department dedicated to livestock or value chains, interaction with the ministry on dairy issues is difficult. The Ministry of Education is responsible for formal education, including colleges and universities for animal sciences. This ministry does not concern itself with non-formal and private education on dairy-related skills.

In order to **ensure a competitive production in the longer term**, to satisfy the demand of urban consumers, according to respondents the Ethiopian dairy sector therefore needs to work on key capacities outlined in Table 18. Priorities selected by the expert workshop are indicated with arrows.

Table 19 SWOT analysis of capacity development in peri-urban dairy sector

 Strengths	 Weaknesses
<p>CD service delivery</p> <ul style="list-style-type: none"> ➔ Establishment of dairy specialized institutes like Ethiopian Meat and Dairy Technology Institute (EMDTI) ➔ Private and NGO actors provide specialized training on dairy development ➔ Private suppliers provide producers alternative source for services, relatively more responsive in terms of timeliness and more efficient than public services ➔ Dairy cooperatives play crucial role in facilitating access to inputs & services and offer marketing opportunities • NGOs have structural and financial flexibility for CD approaches & service delivery • MOARD covers wide area, provides many kinds of services, has many clients (through LMAs) • Number of institutions involved in CD is rising over time <p>Approaches of actors</p> <ul style="list-style-type: none"> • NGOs: Strong poverty, gender focus, participatory approaches • NGO capacity to mobilize resources and technical support through networks and linkages <p>Human resource availability</p> <ul style="list-style-type: none"> • Availability of highly skilled experts at Universities • Opening dairy science specialization in Hawassa university 	<p>CD service delivery</p> <ul style="list-style-type: none"> ➔ Limited access to knowledge and disconnected from relevant sources ➔ Lack of capacity and lack of innovation lead to provision of conventional and theoretical trainings • Lack of standards for CD activities, especially for short-term training • Weak use of ICT • Limited staff and technical capacities for effective implementation of integrated CD development activities • High reliance on supply-driven external support; often poor organizational quality & lack of integration <p>Scope of services</p> <ul style="list-style-type: none"> • CD services limited in scope and space; profit-orientation rather than client orientation • Member-focus in services • Habit of maintaining business as usual <p>Coordination & networking</p> <ul style="list-style-type: none"> ➔ Lack of coordination of CD activities in dairy development, resulting in duplication and fragmentation, and little influence on policy makers ➔ Weak linkages between private, public & civil CD actors • Lack of harmonization of approaches between CD service providers • Private service providers often not seen as important stakeholders by other actors • Private service providers constrained by lack of access to knowledge and resources

 Opportunities	 Threats
<p>Growing demand from dairy sector</p> <ul style="list-style-type: none"> ➔ Emergence & development of new actors (producers, cooperatives, unions, processors, etc) in the dairy sector, many of whom are private ➔ Presence of newly emerging private service providers • VC actors make effort to boost milk production, despite limited technical and institutional backup • VC actors are willing to allow staff to participate in CD when opportunities arise • Mushrooming of dairy processing business • Establish private Livestock Production & Product Improvement Service (PLC) • Dairy unions have plan to establish processing plants <p>Support to dairy sector</p> <ul style="list-style-type: none"> ➔ Government willingness to commercialize dairy by increasing role private sector, and to create enabling policy environment ➔ Increased public investment in transport, information & communication technology (ICT) and knowledge creates new opportunities for CD service delivery • Donor readiness to fund CD activities • Increasing focus on dairy sector • Policy focus on sustainable commercialization of smallholder dairy • MOARD extension department plans to develop a proposal to solicit dairy development funds from donors • Administrative and management decentralization • On-going Business Process Re-engineering in public organizations 	<ul style="list-style-type: none"> ➔ Scant supply of skilled human power and competition among actors over them ➔ Lack of Human Resource Capacity Development plan by the private sector ➔ Weak leadership (limited vision and lack of common representation) and coordination among the chain actors ➔ Low capacity of the capacity building institutions to produce quality and capable human resource • VC actors display limited effort to look for opportunities in CD • Excessive focus of chain actors on immediate benefits rather than sustainability • Limited experience sharing among staff of VC actors once CD obtained • Strong competition between private dairy firms prevents cooperation • Knowledge - & physical infrastructure limitations make CD service delivery expensive

4.2. SWOT analysis of capacity development in the dairy chain

Table 19 summarizes Strengths, Weaknesses, Opportunities and Threats (SWOT Analysis) with regard to capacity development efforts for the commercial / peri-urban dairy sector. Priorities selected by the expert workshop are indicated with arrows. Selected strategic options include:

Top priority:

- Ensure strong leadership and coordination practices along the value chain actors to create trust among the chain actors
- Enhance the capacity of the value chain actors (input suppliers, producers, cooperatives, processors, etc.,) in dairy value chain development and management of the dairy value chain, embracing and utilizing the improved public infrastructure

- Enhance the capacity of capacity building institutions to provide relevant, reliable and quality capacity building/training and education services to VC actors and stakeholders.

High priority:

- Create mechanisms whereby the government policy is well shared /addressed among public –private actors
- Engage the VC actors (producers, cooperatives, processors, etc.) in CD processes so to enable them produce and supply quality dairy products that are competitive in the market
- Improve the capacity of dairy VC actors to develop, invest and implement HR capacity development plan
- Large-scale production of well trained HR in technical, leadership, etc., capacities and avail at different levels.

5. Conclusions & recommendations – Filling the gaps

This assessment clearly shows that capacity development gaps reveal themselves at different levels of complexity. The needs at individual, organizational and institutional level are intertwined and are reinforcing each other. They can only be addressed successfully through an integrated approach.

Though Ethiopia has a large population of livestock and a suitable agro-ecology, the commercial dairy sector is still in an infant stage. The dairy sector receives insufficient CD support. The overall assessment results revealed that there is a large gap between supply and demand for CD in the peri-urban dairy value chain. Although this assessment focused on peri-urban, commercial dairy chains in the milk-sheds around Addis Abeba, interaction with a range of key resource persons indicates that these conclusions apply to other milk sheds as well. The four paragraphs in this chapter describe the priority interventions selected from the previous chapter.

5.1. Direction of development

The transition to privatized market-oriented dairy value chains (“transformation from traditional to modern dairy business”) is ongoing and needs to be encouraged. It offers a range of advantages, including income opportunities for small-holders; supply of much-in-demand quality food products; off-farm employment; import-substitution, and eventually export opportunities.

Further development & implementation of a number of key policy institutions by relevant government agencies at local and higher levels is essential to create a conducive environment for increased dairy production and processing. Such policies include policies on taxation, importation, breeding, private investment, land tenure & management of livestock numbers vis-à-vis available feed, milk quality control system, and sustaining a rising demand for safe & healthy milk & milk products. Encouraging private investment in the sector (to facilitate access to inputs) and enhancing public-private partnerships are logical components.

That policy development & implementation go hand in hand with development of the capacity of stakeholders to utilize conducive policies and that all this requires a coordinated approach is argued below.

Smallholder dairy producers are just one among many actors in the dairy chain. However, pro-poor development of dairy production by smallholders clearly has proven itself an effective strategy for sustainable development of the dairy sector in many places. It does require development of farmer organizations like cooperatives, set-up and maintenance of a milk collection system, and adequate input and service supply systems.

5.2. Building capacity to produce quality products

To enhance the capacity of all value chain actors and to enable them to produce competitive dairy products, CD efforts in production and processing need to focus on four areas. These cover the key bottlenecks for farmers (feed, breeding, veterinary

services, management). They should not be addressed by farm-level input & service supply only. It is essential to address both organizational and institutional development issues of input & service suppliers, cooperatives, and processors concurrently.

A. Adequate dairy genetics

Appropriate services in animal breeding are essential for good production. Important CD interventions range from training of AI technicians on AI techniques to a multi-stakeholder regulatory body for genetic resource policy. Multiplication and ongoing infusion of adequate dairy genetics is key. International experience shows that a dual service delivery system is preferred - private companies and government agencies operating alongside each other, giving clients a range of choices.

B. Feed

Availability of feed is a key bottleneck for any kind of livestock production in Ethiopia, and for high productive dairy in particular. Enabling farmers to address this issue cannot be limited to technical training, but requires an integral approach with elements like:

- Engage different stakeholders on developing local feed production
- Manage the number of livestock versus the available feed & land at regional level
- Encourage formation of community bylaws regarding use of land and number of animals and to reserve grazing areas for forage production
- Provide inputs e.g. forage seeds, fertilizer, insecticides and pesticides
- Cull unproductive animals (based on records, could be linked to access to credit or inputs, see next item).

C. Financial services & Capacity Building for business management

To enable access to essential inputs and services, both the availability of these services and the value chain actors' ability to manage these inputs are essential. They concern technology (for production, processing, & packaging), assets (land, water, electricity), and know-how on the different steps of dairy business. Key inputs areas are:

- Adequate financial services
 - establishment / strengthening of saving and credit institutions
 - subsidized long-term agricultural loan system or agricultural water & electricity (discussions pointed to need for clever and strategic use of subsidies)
 - enable land and water acquisition
 - insurance system
- Know-how on dairy business
 - CB for adequate technological and entrepreneurial capacities (business planning, risk management, use of technology, marketing strategy).
 - Strengthening the extension system, colleges & universities (see below)
- Increased availability of technology input providers to supply
 - productive dairy stock
 - feed mills
 - small-scale processing equipment for cooperatives and farms,
 - chilled milk storage and transportation equipment,
 - additional large-scale milk processing capacity.

D. Milk quality control

An effective milk quality control system needs to be put in place to boost the trust in Ethiopian dairy products vis-à-vis imported products and for public health reasons. Quality control systems and quality-based milk payments schemes go hand in hand – producers and processors will only invest in quality if this offers a consistent premium. Establishing a quality control system should include a number of essential CD activities:

- awareness raising on the need and advantages of such a system with a broad range of value chain actors and enabling organizations
- development, testing and operation of an actual system of quality control and a quality-based milk payment system; follow a stepwise approach, evolving from simple testing and payment to more advanced levels
- boost decentralized laboratory / testing facilities
- upgrade capacity of Quality & Standards Authority and MOARD as regulatory organizations; while it would be the role of government agencies to ensure that quality control takes place, actual checking can be carried out by the private sector under supervision of the regulatory authorities.

5.3. Cooperation in the value chain

Increased cooperation and networking between actors in the chain is essential to achieve progress in the wide array of public, private and civil institutions that need strengthening. At the moment, the sector seems too fragmented to achieve this goal. Coordination efforts made seem to be duplicating rather than strengthening each other. Some major players have not been involved so far.

Institutional strengthening clearly requires additional efforts to achieve coordination and networking between different stakeholders. Not only should existing efforts be synergized, but inclusion of farmer organizations, large processors, and public input & service suppliers is essential for effective sector development. Building on associations of value chain actors in the different segments, an apex organization (like a dairy board) would be a significant milestone. Such an apex organization could address:

- **Lobby & advocacy** - The level of political will to support dairy development will be a key factor in determining the effectiveness of efforts to develop the sector. Existing support levels are not likely to change without coordinated sector action.
- **Learning** – Significant development of the dairy chain requires that involved stakeholders pay sufficient attention to joint learning, experience sharing, and knowledge management.
- **Leadership development** – Focus on leadership development opens opportunities for further strategy development and cooperation. It should be regarded as an essential foundation for joint action in the dairy sector.

5.4. Strengthening of capacity builders

Next to increased coordination, public and private CD service providers in Ethiopia need to significantly develop their own capacity to provide sufficient, relevant, effective and reliable CD services (education, training, advisory services, extension systems).

This study revealed that most actors in the dairy chain do not make use of value chain concepts to look at their business. Coupled with the value chain issues identified by Van der Valk (2009), the conclusion can be drawn that raising the level of knowledge on value chain concepts could help to develop the chain and supporting services. The formal and informal education / CD organizations are in very different positions and hence need to look at different aspects to boost their capacity:

Formal education systems

- As value chain concepts are particularly relevant for management and higher-level technical staff, education on value chain concepts will be most relevant for BSc and MSc level education. University curricula may need review and strengthening in aspects of value chain development and – management.
- For technicians working in different parts of the chain, a general understanding of value chain concepts may be beneficial, particularly regarding upstream- and downstream linkages. More important is that TVETs and BSc curricula are designed to serve the demand for technicians all along the value chain – from input & service supply to farm management, collection, product development, processing & packaging, logistics, marketing and retail. Many of these issues are generic across agricultural commodities. However, techniques like animal health care, animal feeding & management, and AI require specific education and skill development.
- TVET graduates should be able to fill essential technical and lower level management positions along the value chain. Particularly important are the areas of extension, artificial insemination, animal health care, feed formulation, food processing, and marketing. Inclusion of practical technical skills is essential.
- TVETs and college graduates are not likely to cater to the need for midlevel technicians and managers. This gap needs to be filled by *TVET-plus* like education services.

Non-formal education / Capacity Development Services

- While formal education has an important role to play, organizational development needs coupled with the wide variation in situations in the country warrant significant growth of informal CD services all along the value chain.
- Providers of informal CD services will benefit from recognition by certification, which could be provided by the Ministry of Education, the Ministry of Capacity Building and/or the Ministry of Labour and Social Affairs.
- Institutes like EMDTI could augment formal education services with short-term courses and refresher courses for professionals.
- Grassroots Development Agents of MOARD are an important resource base for CD to farmers. In general, on top of their TVET education they need significant training and facilitation to be in the position to provide targeted services.
- Significant investments in OD of primary and secondary cooperatives by civil and public actors are needed to make appropriate CD services reach smallholder dairy farmers. Private parties may benefit from targeting their services through these farmer organizations as well, rather than targeting individual farmers.

- New models of knowledge generation and exchange need to be employed for technical advice to smallholder farmers. A strong farmer-to-farmer component is advisable. In each milk shed, successful farmers with sound technical knowledge could be identified as potential farmer-to-farmer trainers. To be effective, these farmers should be intensively trained, on-farm rather than on-station (exchange of experience with successful farmers). Relevant topics include heat detection, calf rearing, feeding, hygienic milking, and basic detection of health disorders.

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Appendix 1 – List of Abbreviations

AI	Artificial Insemination
ATVET	Agricultural Technical and Vocational Education and Training
BSc	Bachelor of Science
CD	Capacity Development
Coop	Dairy cooperative
EAFIA	Ethiopian Animal Feed Industry Association
EAFPA	Ethiopian Animal Feed Processors Association
EMDTI	Ethiopian Meat & Dairy Training Institute
EIAR	Ethiopian Institute for Agricultural Research
EMPPA	Ethiopian Milk Producers & Processors Association
ESAP	Ethiopian Society of Animal Production
EVA	Ethiopian Veterinarian Association
FAO	Food & Agriculture Organization of the United Nations
FGD	Focus Group Discussion
ICT	Information & Communication Technology
ILRI	International Livestock Research Institute (CGIAR)
IPMS	Improving Productivity & Market Success project (ILRI)
IS	Institutional Strengthening
LMA	Livestock & Marketing Agency
MoARD	Ministry of Agriculture and Rural Development
MoARD-AED	MoARD Agricultural Extension Department
MSc	Master of Science
NGO	Non-Governmental Organization
OD	Organizational Development
PhD	Doctor of Philosophy
PLC	Private Limited Company
Proc	Processor
SBO	Small Business Organization
SNV	SNV Netherlands Development Organization
TVET	Technical and Vocational Education and Training
VC	Value Chain



Appendix 2 – Providers of capacity development services to the dairy chain in Ethiopia

Organization type	Organization	CD services provided
Local Government agencies		
	Regional Livestock & Marketing Agencies	staff training
	Zone Livestock & Marketing Agencies	Training, Extension services
	District Livestock & Marketing Agencies	Extension services
Universities		
	Haramaya University	BSc/MSc Animal Science
	Awasa University	BSc/MSc Animal Science
	Jimma University	BSc/MSc Animal Science
	Ambo Agric University	BSc/MSc Animal Science
	Addis Abeba University	BSc/MSc Food Technology BSc/MSc Veterinary Science (Debre Zeyet)
Vocational education		
	TVET	
	ATVET	
Training & Res institutes		
	Ethiopian Meat & Dairy Technology Institute Debre Zeyet	formal training informal training advice
	Holetta Agricultural Research Centre	informal training research
International & UN organizations		
	ILRI - IPMS	Farmer training, extension services Staff training Organizational Dev of coops Institutional strengthening
	FAO-Asala	Coop formation and - OD Extension services
	UNDP	Coop formation and OD
International NGOs		
	SNV	Org Dev coops Org Dev processors Institutional strengthening
	Land O' Lakes	Org Dev of coops Org Dev of processors Institutional strengthening Extension services
	Send-a-cow & Heifer Int.	
	Save the Children	coop formation
Local NGOs and religious social organizations		
	(none encountered)	
Consultancy firms		
	Many firms	Advisory services
	Many free-lance consultants	Training, Advisory services

Appendix 3 – Interview Formats Used

1. INTERVIEW FORMAT FOR CAPACITY NEEDS ASSESSMENT DAIRY VALUE CHAIN

[tailor made forms were used for input suppliers, commercial farms, milk collectors, processors]

A. What is your organizations'	How strong do you rate your organization on this item?		
	well covered	could be improved	needs attention
- Longer term aim :			
- Drive (what drives your business) :			
- Legal status :			
- Contribution to supply chain :			
- Business plan :			
- Business management :			
- Cost/benefit ratio :			
- Accounting & auditing system :			
- Risk management strategy :			
- Use of technology :			
- Promotional & marketing strategy :			
- Human resource strategy :			
- Membership of networks / associations: <i>(please mention names of networks / associations)</i>			

B. What does your business/organization do to develop its human resources?

- How do you recruit?
- How do you train / develop?
- How do you prevent turnover?

C. What kind of staff development or organizational development would most benefit your business/organization?

D. What improvements within your business/organization would have most impact on its results?

E. What are the main factors that limit the success of your business/organization?

F. What could be done better to promote the development of the dairy sector?

QUESTIONNAIRE FOR SPECIFIC CAPACITY NEEDS OF EMPLOYEES WITHIN YOUR BUSINESS *(where possible, to be filled in by HR / personnel coordinator / supervisor)*

A. Interview questions *(in case of one-man business, please adjust questions accordingly)*

- No of staff in farm/business/organization?
- How many staff are leaving per year?
- How many new recruits needed per year?
- What recruits are hard to find? / What skills are hard to recruit?
- What skills / knowledge missing in new recruits?
- What ways can your staff acquire necessary skills? Who should pay for the training time (employer or employee)?
- What outside training have your employees attended? Who provided the training (organization)? How satisfied were you?

B. Information on available skills for individual positions *(please fill in for relevant positions only)* *(hard skills – technical, admin & finance skills; soft skills – communication, management skills)* *[Types of employees were filled in according to type of company]*

Type of employee	No of such staff in bsns	Does what	Education level	Hard skills		Soft skills		Current skill gaps (+no of staff)
				Skills needed for job	Where acquired? (+no of staff)	Skills needed for job	Where acquired (+no of staff)	

C. Questions for employees of value chain actors

- o What is your contribution to the business/organization? What tasks do you perform?
- o What educational background and skills do you have that enable to do this job?
- o What skills have you learned while working in this business/organization?
- o What additional skills do you think you need to perform your work better?
- o How much of your free time are you willing to contribute to get additional training?

2. FOCUS GROUP DISCUSSION GUIDELINES FOR FARMER GROUPS

1. Why did you become member of a dairy cooperative? If not, why not?
 2. To whom do you usually sell milk?
 3. How long do you travel to sell milk and/or how much time does it take?
 4. Is there any support you got on livestock production?
 5. If 'yes' to Q4, who provided the support?
 6. How many times did a development agent (DA) visit you/your farm last year?
 7. Did the DA give you any support regarding dairy production?
 8. If 'yes' to Q7, was the support from the DA sufficient?
 9. If the support from the DA was not sufficient, what kind of support do you need regarding dairy production?
 10. If you do not find a buyer for the milk, what do you do?
 11. While selling milk, what are the key issues you take care of?
 12. List key factors one should pay attention to in dairy marketing.
-

3. INTERVIEW FORMAT FOR PROVIDER OF CAPACITY BUILDING SERVICES

A. What capacity building services does your organization provide that are relevant to the dairy value chain?

Service provided	To whom (target group)	Since what year?	No. of clients / year	Methods used 1)	Skills acquired by participants 2)	# of days that activity takes 3)

Explanations:

1) What type of methods are used in the capacity building program? – e.g. lectures, interactive teaching, coaching, internship, demonstrations, hands-on training, study tour

2) What are the skills acquired during the capacity building? (e.g. ability to process feed, to do AI, or to market dairy products)

3) How long does the CB activity take? (days/months/years or range between shortest & longest)

B. What unmet needs for capacity building do you see among actors in the dairy value chain? What plans do you have to meet them? What partnerships would you consider to meet them?

C. Are you aware of other assessments that have been done to identify the need for capacity building in the dairy sector?

D. Are your services recognized by the Ministry of Education or another Ministry? If not, how are you going to get appreciation from employers?

E. In your view, what are the main issues that hamper the growth of the dairy sector?

F. What could be done better to promote the development of the dairy sector? (i.e. in areas of human resource development, organizational development, institutional strengthening)

4. INTERVIEW FORMAT FOR ENABLING ORGANIZATIONS

1. What is your organization's role in the dairy sector?

2. In your view, what are the main issues that hamper the growth of the dairy sector?

3. What could be done better to promote the development of the dairy sector? (i.e. in areas of human resource development, organizational development, institutional strengthening)

4. What unmet needs for capacity building do you see among actors in the dairy value chain? How could those be met? What partnerships would be important to meet them?

5. Are you aware of other assessments that have been done to identify the need for capacity building in the dairy sector?

Appendix 4 – Participants expert meeting

The following experts participated in the workshop on February 2, 2010 that validated & prioritized the findings of the assessment:

Participant

1. Dr Edmealem
2. Dr Ameha
3. Desalegn G/Medhin
4. Yirdaw W/Semayat

5. Belete Wakbeka
6. Sorsa Debela
7. Dr Emiru Zewdie
8. Dr Azage Tegegne
9. Asfaw Tolessa
10. Marc Steen
11. Jorgen Greiling
12. Meskerem
13. Abebe Tessama
14. Jan van der Lee

Organization

- MOARD-AED
- EIAR
- EMDTI
- Ethiopian Animal Feed Industry Association
- Cooperative Bank of Oromia
- FFARM PLC (Facilitator)
- ALPPIS
- ILRI/IPMS
- Land O'Lakes
- SNV
- SNV
- SNV
- consultant
- Wageningen UR

Regrets

- Awudework Berhanu – Association of Ethiopian Micro Finance Institutions
- Dr Girma Zewude – Faculty of Veterinary Medicine, Addis Ababa University
- Mohammed Haji Hassen & Ato Hussien – MOARD
- Mengistu Nigussie and Mekdes Asfaw – consultants

