Smallholder Dairy Value Chain Interventions

The Kenya Market-led Dairy Programme (KMDP) – Status Report

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This report describes the smallholder dairy value chain component of the Kenya Market-led Dairy Programme (KMDP) implemented by SNV Kenya (2012–2016). It looks at the responses of collection and bulking enterprises, processors and farmers to KMDP's interventions. These cover five themes: Capacity building in governance and financial management, training and extension, fodder development and preservation, business development through linkages with input suppliers and service providers, and milk procurement and milk quality.

Keywords: Dairy value chain, Kenya, smallholder, commercialization, fodder, milk quality, producer organization

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We are equally grateful for the dedication of all KMDP staff and local capacity builders in the field. Working in the field daily can be both challenging and interesting, but we all know that our hard work will pay off.

Once more, we are convinced that documentation of and information sharing about current development projects is key to ensuring future successful projects!

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List of abbreviations and acronyms

AGM	Annual General Meeting
B2B	Business to Business
BDS	Business Development Services
CBE	Collection and Bulking Enterprise
CCIA	Cooperative Consultancy Insurance Agency
CDI	Wageningen UR Centre for Development Innovation
CFP	Commercial Fodder Producer
DFCS	Dairy Farmers Cooperative Society
GoK	Government of the Republic of Kenya
JC	Junior Consultant
KCC	Kenya Cooperative Creameries
KMDP	Kenya Market-led Dairy Programme
KPI	Key Performance Indicator
KSh	Kenyan Shilling
LCB	Local Capacity Builder
LSF	Large-Scale Farmer
MCDFCU	Meru Central Dairy Farmers Co-operative Union Ltd
MoU	Memorandum of Understanding
MSF	Medium-Scale Farmer
MSI	Milk Sales Income
PDTC	Practical Dairy Training Centre
QBMP	Quality-Based Milk Payment
SACCO	Savings and Credit Cooperative
SNV	SNV Netherlands Development Organisation
SPE	Service Providers Enterprise
T&E	Training and Extension
Wageningen UR	Wageningen University & Research

Summary

The Kenya Market-led Dairy Programme (KMDP) is a 4.5-year programme funded by the Embassy of the Kingdom of the Netherlands and implemented by SNV Netherlands Development Organisation in collaboration with stakeholders in the dairy industry. The overall goal of KMDP is to contribute to the development of a vibrant and competitive private sector-driven dairy sector in Kenya, with beneficiaries across the value chain.

KMDP has two pillars, or strategic intervention levels. The first pillar is the smallholder dairy value chain, which has the objective to increase efficiency, effectiveness and inclusiveness in this production and marketing channel. The second pillar concerns systemic issues in the sector, where the objective is to promote and support interventions and innovations in feed and fodder supply, milk quality, practical skills development and the policy or regulatory environment. Work in the second pillar partly supports work in the first pillar and partly addresses issues in the enabling environment and supporting systems.

In the smallholder dairy value chain, KMDP has engaged with eighteen farmer-owned milk collection and bulking enterprises (CBEs), dispersed over three main milksheds in Kenya: North Rift region, Central region, and Eastern region (Meru). In addition, KMDP works with two processors that receive and process milk from a number of the eighteen supported CBEs.

This report describes the work of KMDP in the smallholder dairy value chain. It looks at the response of CBEs, processors and farmers to KMDP's interventions, which cover five themes:

1. Capacity building of CBEs in governance and financial management;
2. Training and extension activities for farmers;
3. Fodder development and preservation at CBE- and farmer level;
4. Business development through linkages with input suppliers and service providers;
5. Milk procurement and milk quality along the value chain.

Important sources of information and input for this report included the detailed study reports on KMDP interventions in the CBEs run by four Dairy Farmers Cooperative Societies (DFCSs): Kiplombe and Mumberes DFCSs in North Rift region and Naari and Nkuene DFCSs in Eastern region. In addition to that, lessons learned from the work in fourteen other CBEs were incorporated.

The KMDP interventions in the five areas have stimulated processors, CBEs and farmers to change. Some key responses and changes in each area as described and discussed in this report include:

Governance and financial management

- The general interventions in CBE governance and management have resulted in board members and management becoming aware of what they did not (and needed to) know. The CBEs that have been demanding more assistance have received tailor-made support, which has helped them to improve and solve small issues, eventually leading to significant results.
- More services are now provided in-house by CBEs or are being outsourced if in-house provision was not justifiable. Provision of these services has led to varied degrees of adoption and implementation of other good governance practices. Overall, the data on the eighteen CBEs show an increase in key performance indicators such as number of active milk suppliers, milk intake, milk sales and profitability.
- CBEs have reacted differently towards interventions, which can be explained by a number of factors; the key one is leadership and another is the specific history of the CBE with respect to support from (development) organizations or institutions.

Training and extension

- CBEs made significant investments in their capacity to provide training and extension (T&E) services to their farmers, overcoming initial resistance by members who saw T&E as 'spending money without knowing what it will bring'. Most CBEs now have all T&E structures in place and experience the benefits of the T&E unit, but performance is not yet optimal. T&E services facilitated by the processor Meru Central Dairy Farmers Co-operative Union (MCDFCU) have proved to be more sustainable, but also require good collaboration between the processor and the affiliated society to realize efficiency and effectiveness.
- Farmers engaged in the project interventions responded well and started investing in their dairy farms, ranging from small and short-term investments to large and long-term investments. These farmers have gone through a change process that needs to be emulated by others. For farmers to implement what they have learned in training takes time and depends on household decision-making and priority setting, financial situation, knowledge level and competitive incentive.
- The fact that KMDP has focused on those farmers who are willing to contribute to interventions is now starting to change the mindset of other farmers and has engaged those farmers who are serious about investing in dairy farming. Nevertheless, the extent of spillover effects – the amount of uptake of KMDP interventions by farmers who were not specifically targeted – is hard to measure and depends on the degree of sharing that lead farmers carry out.
- The role of processors in providing T&E services in CBEs is increasing, as processors do notice the resulting upward trend in milk intake volumes by their plants. For example, MCDFCU found that other processors now are also willing to invest in T&E activities, in order to enhance their ability to compete.
- Nevertheless, the organization of T&E activities by processors has been challenging. Good collaboration between the processor and producer group is needed, as are transparency and the division of responsibilities.

Fodder development and preservation

- Fodder demonstration plots have contributed to positive promotion of fodder crops among farmers. One important lesson was that lucerne was not always the best choice of protein crop, due to low pH in soils.
- Fodder preservation (e.g. maize silage) was adopted quickly by farmers. The amount of silage made and recorded by service provider enterprise (SPE) groups has been increasing since their establishment, though the level of adoption varies between farmers in different regions. Farmers from CBEs in Central and Eastern regions, where farm sizes are smaller, adopted these fodder preservation practices faster than farmers in North Rift region, where farmers practise paddocking rather than zero-grazing. The cultural background of a farmer also affected the level of adoption.
- The SPE groups – the young farmers who are making silage as an enterprise – have been more successful in Eastern region in terms of amounts of silage made. Members of SPE groups in Eastern region are located closer to the farmers, are better coordinated by the original SPE group and are more involved with CBEs.
- Focusing on a limited number of farmers to promote fodder establishment and preservation assumes spillover effects, which are hard to measure. However, the growing demand for SPE services is a good indicator of adoption, as is the ongoing investment of SPEs and CBEs in chaff cutters and pulverisers. In most CBEs, farmers are encouraged to visit demonstration plot farms, and some demonstration plot farmers have taken the initiative to extend these invitations so other farmers can learn from them. This gives an opportunity to further explore other ways of promoting spillover effects.
- Linking smallholders/CBEs to commercial fodder producers (CFPs) has helped farmers to address the fodder gap to some extent. This is mainly a hay market, where the cost is high in relation to (low) nutritive value of the hay. Farmers usually buy directly from CFPs, and business linkages between CFPs and CBEs are not yet common practice.

Linkages with input suppliers and service providers

- Supporting CBEs by enhancing linkages to input suppliers and service providers appeared to be a challenging task, for which KMDP tested various approaches. Sustainable business relations have proved to depend on mutual understanding and meeting expectations of stakeholders involved.

Milk procurement and milk quality

- Processors will only start investing in better quality milk when the market demands it, or when authorities enforce regulations. In general, processors have made limited efforts to improve the quality of milk collected from smallholder farmers but have posted trained graders at loyal CBEs and have sent experts to smallholder farmers to investigate causes of milk spoilage. The processors invest in those CBEs that have proved to be loyal suppliers or in areas where competition is high.
- Reasons that processors are sceptical about investing in milk quality at CBE level include lack of incentive to improve milk quality as the market is not demanding better quality milk and the risk of CBEs diverting milk to other marketing channels such as milk bars. On the other hand, smallholder farmers are sceptical about investing in quality milk due to lack of payment incentives and risk of rejection in glut periods.
- Processor Happy Cow Ltd is implementing a milk quality tracking and tracing innovation pilot with two CBEs, co-financed by KMDP. The ambition of Happy Cow is to produce excellent quality cheeses and yoghurts. Its concern with food safety issues has led to the willingness of this processor to invest in this venture, ahead of its peers in the sector.

The report concludes with recommendations in the themes of:

- *CBE governance*
  - Supply-driven interventions should only be carried out as pilots that can be monitored well and that connect to the approach of the relevant dairy value chain actor;
  - Governance and management support to CBEs should focus on what they need, be offered only to those CBEs that are actively requesting support, and make proportional contributions;
  - Farmers should be encouraged to vote for board members based on their expertise and ideas instead of their background; board members should be encouraged to employ qualified staff.
- *Market dynamics*
  - CBEs need to be encouraged to improve their competitive position through good service delivery systems;
  - To improve milk quality along the dairy value chain, the processor should be attuned to the market or have a strong ambition to create a product with high added value;
  - Linkages for business-to-business relationships between CBEs and input suppliers should be tailor-made and be implemented with proper due diligence in place.
- *Increasing milk production and milk quality*
  - The introduction of T&E units should be followed by running the T&E unit as a profit centre;
  - The lead farmer approach should be scaled up;
  - The T&E officer should encourage lead farmers to become trainers of trainers;
  - Add focus on issues like planning, access to finance and business attitude;
  - Demonstration plots should be scaled up, taking into account lessons learned;
  - SPE-models should be scaled up, and SPE groups should be encouraged to increase their service offer;
  - Linking CBEs with commercial fodder producers should be encouraged only when minimum conditions are met.

1 Introduction

This introduction describes the Kenya Market-led Dairy Programme (KMDP), its lead organization and partners and the structure of this report.

1.1 Kenya Market-led Dairy Programme

KMDP is a 4.5-year programme funded by the Embassy of the Kingdom of the Netherlands in Nairobi. The program started 1 July 2012 and is implemented by SNV Netherlands Development Organisation (SNV) in collaboration with stakeholders in the dairy industry and a range of partners. The overall goal of KMDP is to contribute to the development of a vibrant and competitive dairy sector, driven by the private sector, with beneficiaries across the value chain. KMDP has two pillars, or strategic intervention levels:

I. ***Dairy value chain****: Increase efficiency, effectiveness and inclusiveness of smallholder dairy value chain*

In the smallholder-dominated dairy value chain, KMDP works in a number of milksheds with farmer-owned dairy companies (also referred to as collection and bulking enterprises [CBEs]) and processors. KMDP uses the term CBE for these producer organizations, while in some other programs they are referred to as "dairy hubs" (e.g. in the East Africa Dairy Development project). Currently, KMDP collaborates with two processors and eighteen CBEs in Eastern, Central and North Rift regions and facilitates design and implementation of more inclusive business models. The emphasis is on enhanced CBE governance and management (including financial management), creation of embedded training and extension (T&E) units in CBEs, facilitation of formal and credible arrangements between CBEs and input suppliers and promotion of year-round availability of fodder.

II. ***Sector issues****: Promote/support interventions and innovations that address systemic issues*

Under this pillar KMDP facilitates innovations and interventions that address systemic issues related to, for example, commercial fodder supply and contracting services, milk quality (e.g. piloting a quality-based milk payment [QBMP] system), practical dairy skills development/training and transitioning of the sector from smallholder subsistence dairy production to commercial dairy entrepreneurship with dairy as a core business. In doing so, KMDP is engaged in activities with medium- and large-scale dairy farmers (MSFs/LSFs) and commercial fodder producers (CFPs). The objective of this pillar is to fast-track innovations and adoption of best practices in total farm management, which is expected to also have spillover effects on smallholder farmers and CBEs, through promotion of business linkages, field days, demonstrations, training and enhanced dairy service infrastructure.

Within these two pillars, KMDP has defined various intervention areas or agendas. Over the course of 2015 these agendas have been documented in Status Reports. This Status Report on KMDP's dairy value chain interventions focuses on the KMDP activities in the first pillar and on spinoffs of second pillar interventions on the dairy value chain. The Status Reports give factual descriptions of KMDP's activities and approach for the main intervention areas and give testimony of the visible and potential impact and relevance for both the clients and the Kenyan dairy sector. Case studies will be drawn from the Status Reports for more in-depth analysis and for sharing and learning.

1.2 SNV Netherlands Development Organisation/SNV Kenya

KMDP is implemented by SNV Kenya. SNV is an international not-for-profit development organization that provides capacity development services to nearly 2,500 organizations in thirty-six countries worldwide. SNV engages with stakeholders at different levels in local economies and agricultural value chains, with the objective to help enhance competitiveness, incomes and employment by inclusion of small- and medium-

sized farms and enterprises. In East and Southern Africa, SNV has programmes in Ethiopia, Kenya, South Sudan, Uganda, Tanzania, Rwanda, Zambia, Zimbabwe and Mozambique. In Kenya, SNV Kenya focuses on horticulture, dairy and extensive livestock, water and sanitation and renewable energy (biogas).

1.3 Partners in the programme

SNV has involved a wide range of partners and consultants in the KMDP programme, through various contractual arrangements. The second pillar of the programme is working with various industry associations, farmer organizations and Kenyan and Dutch companies. Technical assistance to the project was provided by Q-Point, DTC, The Friesian, PUM (an organization of Dutch senior experts), Vetvice, CowSignals, Fieten and individual consultants. The Wageningen UR Centre for Development Innovation has been enlisted for technical support in monitoring and evaluation, documentation and strategy advice. KMDP also collaborated with a number of other projects, some requiring significant time input; these include the FDOV PASIFIK project with SoilCares, the FDOV Milk Fortification project with DSM and Gain, the NICHE-127 Dairy Train project with Egerton University and DTI, the NICHE-214 project with Baraka Agricultural College, the DDDP Training Project with Q-Point and the Netherlands Managers Training Program with NABC. More details on these partnerships are described in the other Status Reports of KMDP (SNV Kenya 2015a, 2015b, 2015c, 2015d; Ettema 2015).

1.4 Methodology and structure of this report

This Status Report describes the work of KMDP in what is called the smallholder dairy value chain. Important sources of information and input for this report included the detailed study reports compiled by the first author of this report about four dairy farmers' cooperative societies (DFCSs) under the KMDP programme: Kiplombe DFCS, Mumberes DFCS, Naari DFCS and Nkuene DFCS (Rademaker 2015a, 2015b, 2016a, 2016b). Lessons learned from the work in fourteen other CBEs were also incorporated into this report, after being analysed with the KMDP smallholder dairy value chain team and management.

The structure of this report is as follows: Chapter 1 gives background information about KMDP and SNV. Chapter 2 provides a description and analysis of the Kenyan dairy sector (strengths/weaknesses). Chapter 3 offers a summary of KMDP's approach to dairy development and what it must consider in its support of actors in the smallholder dairy value chain. Chapter 4 provides background information on the establishment, development and service provision functions of CBEs. This chapter also gives a general description of the governance and management structure of these CBEs. Chapter 5 provides information about the eighteen CBEs and two processors that are supported by KMDP. In this chapter, the criteria and process that led to the selection of these are also described.

In Chapter 6 a summary is given of the gaps identified by the KMDP team at the beginning of the programme, with regard to the functioning of these CBEs. This analysis formed the basis for KMDP's approach (demand-driven, cost-sharing) and for the set of interventions that KMDP offers to the CBEs. This chapter also describes resources used by KMDP to deliver the related outputs: A combination of KMDP senior advisors, local capacity builders (LCBs) or dairy consultants contracted by KMDP, CBE T&E staff, CBE board and management, input suppliers and service providers. Chapter 7 provides a reflection on which interventions led to a significant positive response and behavioural change with the clients (CBEs and farmers), how this impacted on the business profitability and which interventions did not generate the same response. The methodology used combines information from a range of sources: A self-reflection from the KMDP dairy value chain team, findings from KMDP's Strategic Review Mission (October–November 2015), interviews with key resource persons including CBE management and lead farmers), findings of the four detailed CBE study reports (Rademaker 2015a, 2015b, 2016a, 2016b) and lessons learned from the work in the other fourteen CBEs under KMDP. Chapter 8 presents a synthesis of the findings, with the objective of better understanding the "why" with regard to responsiveness of CBEs and farmers to KMDP interventions. Finally, Chapter 9 gives recommendations for future engagement with CBEs by development partners.

2 Kenya dairy sector profile

According to the concept of the dairy sector lifecycle described in one of the studies undertaken during KMDP's Implementation Phase (BLGG Group 2013), Kenya is currently emerging from Phase I: Start-up. Some segments have already entered Phase II: Growth. In contrast, developed dairy economies in Western Europe, North America and Oceania are considered to be in Phase III: Maturity. This chapter offers a summary of the structure of Kenya's dairy sector and the main features that show an industry in transition from the Start-up phase to the Growth phase (see also van der Lee et al. 2014).

2.1 Profile of Kenya's dairy industry

In the mid-1990s, the World Bank's Structural Adjustment Programs led the Government of the Republic of Kenya (GoK) to discontinue services and input supply systems to the dairy industry. The national milk supplier, Kenya Cooperative Creameries (KCC), collapsed. The GoK's involvement and investment in dairy T&E and in service provision have been greatly reduced since this time. While Kenya's dairy industry has been driven largely by the private sector since the liberalization of the industry from the late 1990s onwards, the private sector has not yet been able to fill this gap. The GoK's support to the dairy industry now focuses on conducive fiscal policies (a zero tax rate on imported dairy equipment and VAT exemption on loose processed milk) and protectionist measures through the imposition of a duty of 60 percent on imported milk and milk products.

Dairy is the largest agricultural sub-sector and contributes 4 percent to GDP (MoLD 2010). The sector is dynamic, with high growth figures of marketed milk and investments by dairy societies and processors in, among other things, the cold chain, production of extended shelf-life milk, ultra-high temperature treated milk and milk powder.

The sector currently provides income and employment to over 1 million people across the dairy value chain: Farmers and their family members, farm workers, transporters, traders and vendors, employees of dairy societies, milk processors, input suppliers and service providers, retailers and distributors. In terms of nutrition and food security, milk is consumed daily by almost all Kenyans, with an average annual milk consumption per head of population of 115 litres (KDB 2012).

About 80 percent of Kenya's total milk production (~ 5 billion litres[1] in 2011; KDB 2012) is produced by smallholders, and this largely explains the significant number of people who derive income from the sector. The smallholder dominance, however, also poses huge challenges to the industry, in terms of cost of production, service delivery and training, ability and willingness to invest in enhanced dairy production, collection and chilling, seasonal fluctuations in supply, and milk quality. Yet there is a growing segment of farmers who invest in modern and fully commercial dairy production; apart from the medium-scale farmers (MSFs: 15–50 lactating cows) and large-scale farmers (LSFs: 50–500 lactating cows), some of these are smallholders (3–15 lactating cows), who focus on dairy as their core business and invest in expansion and improvement of their herd and improved farm management.

Kenya has about thirty active milk processors, of which the largest are Brookside, New KCC, Githunguri and Daima, together processing 85 percent of the 1.5 million kilograms of milk that are processed daily. The market leader is Brookside, in which Danone has held a 40 percent stake since 2014. Brookside applies a strategy of taking over other brands to increase market share, in both Kenya and the wider East Africa region. Although the market for processed milk and milk products has been growing steadily over the past

[1] Farmers produce milk in litres, but after pouring it in the cooling tank it is measured in kilograms. One litre is around 1.03 kilogram; the difference is ignored because of losses that might occur during transport.

ten years, an estimated 70 percent of all marketed milk still finds its way to the consumer through the raw milk market (marketed milk is estimated to cover 50 percent of total milk produced). This creates distortions in the playing field for the formal market and is an impediment to its growth.

2.2 The sector's strengths and weaknesses

The industry's growth and competitiveness are constrained by low productivity at the farm level, seasonality in milk production, milk quality issues, huge knowledge and skills gaps at all levels in the dairy value chain, sub-standard service provision and input supply, high fragmentation of the supply chain, lack of inclusive business models, absence of effective institutions for sector governance and lack of clarity on a common vision for enhanced growth and competitiveness by dairy value chain actors and government. The sector lacks an effective dairy infrastructure with regard to training institutions for skills development, provision of quality inputs and services, policymaking and sector governance. In contrast, dairy economies that are in the Growth and/or Maturity phases are characterized by robust dairy service infrastructure and support structures, with actors working together around a common vision for sector growth (BLGG Group 2013).

In summary, the Kenyan dairy industry has clear strengths and weaknesses:

Key strengths

- Robust private sector–driven processing industry, built up over the last 20 years;
- Nationwide availability and steadily increasing variety of dairy products for all consumer groups;
- Ongoing investments in value-added products, including long-life milk and milk powder;
- An emerging dairy export sector;
- High demand for processed milk and milk products due to a growing urban (lower and) middle class; the processing industry is a pull factor for higher milk production;
- 365 days/year milk collection by traders, dairy societies and processors in all high potential dairy production areas from hundreds of thousands of smallholders;
- Emerging segment of commercial dairy farmers with ability to invest and innovate;
- A wide distribution network and good access to commercial input suppliers and service providers;
- Conducive trade policies (zero-rating, import duties on milk products);
- Available dairy genetic base that can be improved upon with proper breeding policies.

Key weaknesses

- Low skills and knowledge level of almost all farmers (small-, medium- and large-scale);
- Low level of commercialization by smallholders (dairy not the core business);
- High cost and seasonality of raw milk production due to low ability/skills to produce and preserve quality fodder;
- Inefficient and high cost of milk collection and cold chain development (hence: High cost and low quality of milk at factory gate);
- Lack of loyalty between value chain actors and high fragmentation;
- Lack of credible input suppliers and service providers ("pushing products");
- Large raw milk market and lack of level playing field for the formal sector;
- Oligopolistic nature of the processing industry (Brookside acquiring other brands);
- Lack of clarity on a common vision among stakeholders about how to steer the dairy industry into a more sustainable growth path;
- Ineffective sector regulation: Policies in place, but not enforced on the ground.

For a more detailed description of the sector, see Makoni et al. (2014).

3 KMDP's approach to dairy sector development

KMDP's overall goal is "To contribute to the development of a vibrant dairy sector with beneficiaries across the value chain". This means that KMDP is engaged in sector development and has a mandate to work with dairy value chain actors (farmers, CBEs, processors), dairy value chain supporters (input suppliers and service providers) and dairy value chain facilitators (policymakers/regulators). It also means that KMDP is not only working for the interest of farmers, but is also concerned with the ability of (low-income) consumers in both rural and urban areas to purchase good quality milk and dairy products at an affordable price.

3.1 KMDP's principles

KMDP acts according to the following principles (see SNV Kenya 2015e for more detail):

a. Private sector-driven and market-led

Development of the dairy sector and investments in it (including support by KMDP) should be market-led and driven by the private sector: Dairy is business. In this view, the private sector includes farmers and farmer-owned CBEs, with processors and CBEs playing a key role in shaping the industry and investing in the supply chain for enhanced productivity and quality of milk.

"Market-led" or "demand-driven" means that KMDP's clients are expected to be proactive, to take the lead, to invest in interventions that are focused on improving efficiency and competitiveness and to run their operations as profitable businesses. The role of the government is then to create a conducive enabling environment in terms of, for example, fiscal and other policies that assure investments and healthy competition by the private sector, be it local or international. This includes phasing out the raw milk market, enforcing quality standards across the industry, and investing – with the private sector – in practical dairy training and education.

b. Inclusive business models

KMDP supports development of inclusive business models by CBEs, processors, input suppliers and service providers. Inclusiveness here is not identical to roping smallholders in to market systems. It includes all investments in the dairy value chain (from grass to glass) that enhance efficiency, productivity and quality of services and products. Inclusiveness in the dairy value chain works two ways: Towards the farmers (profitability) and towards the consumers (affordability/access). Inclusiveness promotes mutual trust and information sharing, which are key parameters in driving business linkages and collaboration, both vertically and horizontally.

c. Sector competitiveness

KMDP's support is geared towards enhanced competitiveness of the Kenyan dairy sector, with particular focus on the formal market for processed milk and milk products as the driver for growth. Competitiveness has the following dimensions:

- Productivity (cost price of raw milk);
- Consistency (year-round supply, quality);
- Efficiency (collection, processing, marketing);
- Affordability (food security, nutrition);
- Quality (food safety).

The most prominent bottlenecks that hamper enhanced competitiveness of the dairy sector include:

- Lack of practical skills at farm/milk production level;
- Limited access to and availability of quality fodder;
- Low milk quality.

d. Formal market

KMDP sees the formal channel for processed milk as the driver of growth and advocates for consolidation of fragmented supply chains, phasing out of the raw milk market, and stronger – inclusive – business relations between processors and farmers or CBEs. KMDP is very cautious about CBEs engaging in milk processing and other business models that require specialist knowledge, robust management capacity and economies of scale to be commercially viable.

e. Innovation and best practice

Enhanced competitiveness usually goes hand in hand with the ability to innovate and to invest in – and apply – best practices, new technologies and business models that enhance efficiency, reduce cost prices and boost levels of production along the dairy value chain. KMDP acknowledges the need and opportunities for the Kenyan dairy sector to innovate at all levels in the chain. By doing so, KMDP addresses systemic issues that hamper growth and competitiveness of the industry, such as the skills gap, low milk quality and lack of good quality fodder, to name some areas where KMDP provides support.

f. Dairy sector transitioning

KMDP's analysis is that for long-term sustainable growth, the dairy sector in Kenya needs to transition from smallholder semi-subsistence farming to an industry that – for the supply of raw milk – relies on fully commercial dairy farming systems and professional and inclusive milk collection and marketing organizations. These organizations could be owned by smallholders, MSFs or LSFs. It is for this reason that KMDP works with all categories of dairy farmers, provided that these farmers and their membership organizations follow an inclusive business approach and are willing to invest in "dairy as business" and in knowledge and skills development.

3.2 Involvement of medium- and large-scale farmers

Kenya has a fast-growing segment of farmers or investors (telephone farmers) who own or invest in a dairy farm with twenty cows or more (Leenstra, 2014). These MSFs and LSFs often sell and deliver milk directly to the market (processors, end consumers) and are usually not part of the smallholder dairy value chain, which is anchored around CBEs. KMDP supports this segment of farmers because of their growth potential and importance for spurring sector transformation (see also KMDP *Status Report Medium Scale Farmers and Commercial Fodder Producers*, Ettema 2015).

These farmers usually have resources (land, capital) and are willing to invest in expansion/improvement of the herd, cow housing, training of farm managers, on-farm (mechanized) fodder production and preservation and other innovations. They can fast-track the development of a professional dairy support infrastructure that – once in place – will also benefit the smallholder supply chain. Through their political and business networks, these farmers can also push for policy reforms that will benefit the dairy sector as a whole. Interestingly, a number of the more successful commercial dairy farms have gone into training (of smallholders) as a side business and position themselves as Practical Dairy Training Centres (PDTCs). Lastly, these MSFs have the potential to supply smallholders directly with inputs and services, for example, supplying fodder and heifers or leasing farm machinery for fodder production and preservation. Some MSFs have started bulking milk from smallholder dairy farmers around them, becoming a guaranteed market for smallholders' milk.

3.3 Work with smallholders

The smallholder supply chain is characterized by many inefficiencies at all levels, from farm to factory. As most milk is currently being produced and marketed by smallholders, these inefficiencies threaten the sustainability of the sector and its ability to compete in the international market. Factors contributing to these inefficiencies include:

- Low skills level to manage farms and CBEs;
- Small farm units: Limited ability to grow fodder on-farm and to expand the dairy herd;
- Low ability to invest and/or low motivation to invest (farming used as a livelihood strategy);
- High cost of service delivery, including training and credit (per farm unit and per kilogram of milk);
- Low ability to attract input suppliers / service providers to invest in a quality dairy service infrastructure;
- High cost of raw milk collection and cold chain development;
- Low ability to create economies of scale.

Although the raw milk supply chain is dominated by smallholders, there remains both need and scope to support this segment of farmers and their producer organizations (CBEs). There are some important considerations:

- Currently, most milk is still being produced and marketed by smallholders.
- In the short and medium term, these CBEs remain important for food security at the household and national level.
- In the absence of vigorous growth in off-farm employment opportunities, smallholder production systems are important to create income and employment in rural communities and to absorb rural youth, whether farming is done as a livelihood strategy or as a fully commercial enterprise.

There is scope to increase productivity and competitiveness in smallholder milk supply chains with relatively modest investments and enhanced skills. Within the CBE membership there is a growing segment of commercial dairy farmers and educated members, who are expected to play an important role in transitioning these farmer organizations into more professional businesses, with enhanced governance and management capacity.

Processors and CBEs increasingly see the need and opportunity to develop more inclusive business models, including stable prices. Through enhancement of farmers' dairy management skills and the availability of quality services and inputs, productivity and volumes are expected to increase and cost price of milk (raw and processed) can be reduced.

4 Milk collection and bulking enterprises

4.1 The development of milk collection and bulking enterprises (CBEs)

The history of the development of the farmer-owned and -managed CBEs, or bulking hubs, in Kenya dates back to the dairy industry crisis of the 1990s, following the liberalization of the agriculture sector. The concomitant collapse of the then monopolist KCC compounded the milk-marketing crisis effects that led to the development of the CBEs, as smallholder dairy farmers tried to survive under the challenging milk-marketing environment. With the collapse of KCC, new small milk processing firms sprang up, providing the opportunities for smallholder dairy farmers to sell their surplus milk.

The term "CBE" is used to cover both the cooperative model of farmer organizations (DFCSs) and the model whereby farmers are shareholders in a public company. Both are common in the Kenyan dairy sector. The initial set up of the CBEs mainly centred on milk bulking and cooling, which was seen as an important activity to link the member farmers to the market, either by selling milk directly to end consumers or through contracted supply to milk processors.

This suddenly gave smallholder dairy farmers a formidable voice in dealing with the market environment. Affiliated smallholder farmers could benefit from a CBE's greater buying power: A CBE can generate better prices for milk instead of being exploited by informal milk-marketing channels through poor prices and sometimes non-payment at all. It can obtain discounts from input suppliers by placing bulk orders, and it can take advantage of public grants and/or support from (international) organizations and government, including county governments. Profit made by CBEs should be used to further invest in favour of the affiliated members.

The cooperative model in Kenya has gone through a dynamic period, after near collapse in the 1990s and a period of revival thereafter. One major explanatory factor for the dynamic period could be attributed to the Kenyan policy environment that has been impacting on farmer organizations and cooperative societies, including DFCSs.

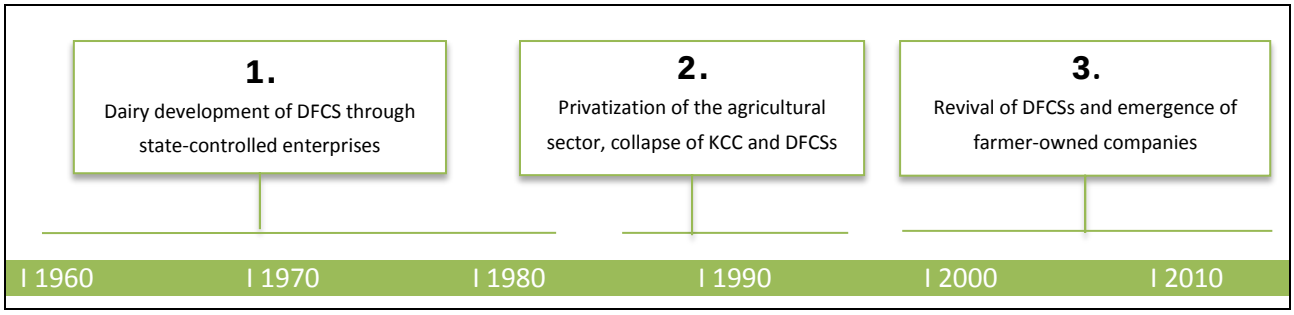


***Figure 1**: Timeline of dairy cooperative development*

Figure 1 summarizes the three periods that mark the development of DFCSs:

- Between the 1960s and early 1980s, Kenya's dairy industry developed through state-controlled enterprises. During these years collective action was promoted, and the GoK supported DFCSs by offering low-cost artificial insemination and animal health services and a fair price for milk (Kurwijila and Bennett 2011). Farmer participation in governance and management of these state-controlled DFCSs was low, and cases of mismanagement and corruption abounded;

- During the late 1980s, the International Monetary Fund and the World Bank started to demand structural reforms from the GoK. The nation was faced with budgetary constraints. The state had to minimize (financial) support to, among others, DFCSs. In the early 1990s, the dairy industry crisis followed the liberalization of the agricultural sector. Most of the DFCSs appeared to be unprepared for privatization; it was a challenge for them to survive in the milk-marketing environment. The growth in development of DFCSs ceased, and many DFCSs collapsed due to issues such as politics and mismanagement (Owango et al. 1998);
- After the collapse of KCC in 1999 and the introduction of free-market economic policies, smallholder dairy farmers came together, some to re-establish their DFCSs, others preferring to set up public companies, a legal entity in which the farmers are shareholders. Whereas the former falls under the Co-operative Societies Act (National Council for Law Reporting, 2012), the latter form of legal entity is governed by The Companies Act 1978 (rev. 2009). In theory, DFCSs are not allowed to make profit, and it is more cumbersome to reinvest earnings. Over time CBEs developed other member services apart from milk collection and marketing, to increase loyalty and milk supply. These include artificial insemination, animal health services, agro-vet shops, feed stores, milk transport services and financial services, which are usually paid through the CBE's check-off system (credit through supply of milk). With the inclusion of these services and the increasing demand for milk, the CBEs are now professionalizing, some evolving into strong "dairy business hubs" (Omondi et al. 2014; Land O' Lakes 2014).

4.2 Typical management structure of a DFCS

Most CBEs are owned by smallholder dairy farmers that are members of a DFCS. The members, through the annual general meeting (AGM), delegate management of their cooperative society through a governance and management structure (see Figure 2), taking into account the cooperative's values of self-help, democracy, equality, equity and solidarity.

The governance structure is composed of a management board, usually with five to thirteen positions, elected at the AGM by members who represent certain milk-catchment regions. The board themselves elect their management officials, comprising the chairperson, vice-chairperson, secretary, vice-secretary and treasurer. The committee also elects a supervisory committee comprising three members: A chairperson, a secretary and a member. The other members become ordinary members. In advanced DFCSs, several board sub-committees are formed to address certain thematic issues, such as finance, T&E, stores, welfare and transport.

The management board role is to provide oversight of the management of the DFCS. It has to report to its affiliated farmers at least once a year. The management board sets policy direction and vision of the DFCS. It manages partnerships for the overall good of the DFCS and the farmers. It recruits, appoints and appraises the DFCS manager/CEO. The manager/CEO acts with support of the management board. Roles of the manager/CEO include recruiting management staff such as the assistant manager, finance manager and other heads of departments; hiring additional staff; implementing programmes and business development; and keeping up with administration. The supervisory committee acts as the internal auditor of the DFCS. It checks the work of the management board and the management. The supervisory committee reports its findings and recommendations to the management and in the AGM.

CBEs – whether cooperative societies of farmer-owned companies – are prone to governance issues, as the management board consists of (elected) members, who usually have limited education levels, lack of business background or who use the CBE as a political platform.

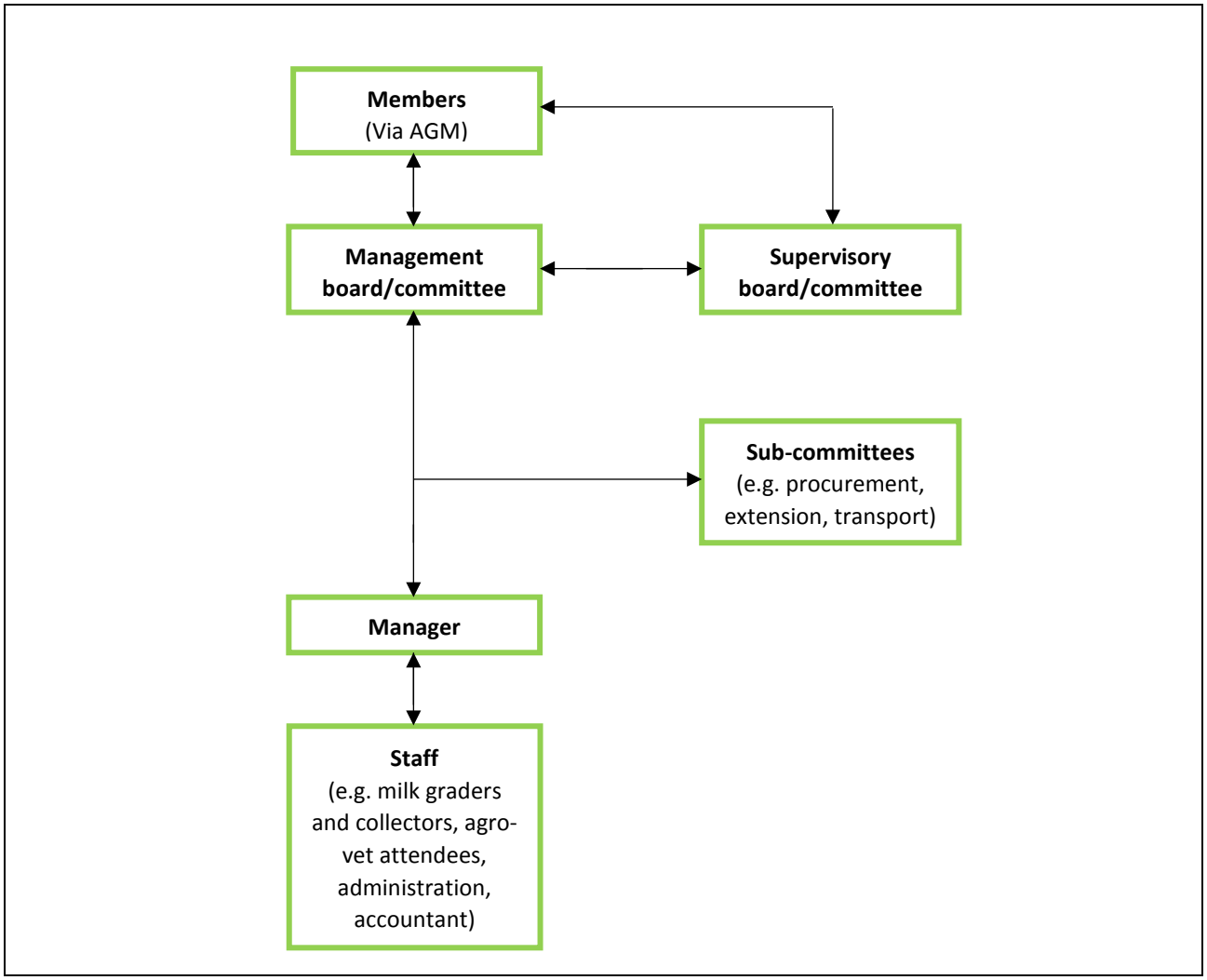


***Figure 2**: Typical DFCS organization structure*

5 KMDP's clients in the smallholder dairy value chain

In its smallholder dairy value chain work, KMDP works with CBEs and processors as clients. Initially KMDP started to work with seventeen CBEs spread over three milksheds. In consultation with a processor (Happy Cow Ltd), one more CBE (Olenguruone DFCS Ltd) was added in 2015, bringing the total number of CBE clients to eighteen. Moreover, KMDP works with two processors: Meru Central Dairy Farmers Co-operative Union Ltd (MCDFCU) in Eastern region, since the start of the implementation period in April 2013, and with Happy Cow in the North Rift region, since the signing of the Assignment Agreement in October 2014. Through these clients, KMDP is able to support the livelihoods of dairy farmers in these regions, in a way that honours the principles laid out in Chapter 3.

5.1 Collection and bulking enterprises

A comprehensive overview of the eighteen client CBEs can be found in Appendix 1, Tables 1–18. The tables include data on nine key performance indicators (KPIs), namely milk intake, number of active milk suppliers, number of registered members, average buying price (or farm gate price), average selling price, income from milk sales, payments to milk suppliers, number of services offered and investments made in T&E. The tables show the data for 2012, 2013, 2014 and 2015, whereby the percentage change between 2012 and 2015 is calculated. Figure 3 provides a map with the locations of the eighteen client CBEs. Together, they command a membership of over 70,000, with an average of about 42 percent of these being active milk suppliers, that is, farmers who can supply milk at any given moment (Table 1).

5.2 Processors

5.2.1 Meru Central Dairy Farmers Co-operative Union Ltd profile

MCDFCU was registered under the *Co-operative Societies Act (*National Council for Law Reporting, 2012*)* on 23 May 2005. Prior to that, it was an activity of the former giant union known as Meru Central Farmers' Co-operative Union (MCFCU). The registration of a new union was necessitated by a restructuring process that was spearheaded by the Ministry of Cooperative Development and Marketing, which was aimed at improving efficiency and effectiveness of the former giant union.

MCDFCU is formed by twenty-six DFCSs and has around 40,000 members. Its core business is milk processing and marketing: It receives milk from the twenty-six DFCSs as well as from forty self-help groups and eight non-affiliated societies. The main area of operation of MCDFCU is Meru County, especially the sub-counties Imenti North and South. It also collects milk in Tharaka Nithi County that is part of the former Greater Meru District, and socio-economically and culturally similar. In addition MCDFCU has contracts with some cooperatives outside the Meru region (close to Nyeri) for supply of raw milk. MCDFCU also offers artificial insemination, supply of animal feeds and field extension services to the members of its affiliated DFCSs.

The full case study of MCDFCU included in Appendix 2 further describes how the GoK, the Finnish International Development Agency and the Dutch (co-) funded National Dairy Development Project (NDDP) have been instrumental in establishing the processing facilities in Meru and the zero-grazing system based on Napier grass, that is primarily used by the smallholder dairy farmers in the County. It also describes how the period of 2000–2011 saw a near collapse and restructuring of the MCDFCU with a revival between 2012 and 2015.

With a new CEO and Board and financial restructuring, the Union started an aggressive milk procurement strategy that saw milk intake increase from 30,000 to 90,000 kilograms/day in this three-year period, paralleled by investments in training & extension. Besides, MCDFCU invested in two extended shelf-life processing and packaging lines with a capacity 300,000 kilograms per day. This enabled MCDFCU to move from pasteurized fresh milk to 30- and 90-day shelf-life milk for markets in Meru, Isiolo and other parts of Northern Kenya and the large urban centres of Nairobi and Mombasa.

MCDFCU's growth ambitions are therefore high, as it wishes to increase milk intake to 300,000 kilograms over the next4-5 years. MCDFCU offers the highest price compared to competitors for raw milk year round and therefore it is the price-setter in the County. Access to the market remains crucial, even with prolonged storage capacity of extended shelf-life milk.

Table 1

KMDP clients (CBEs and milk processors) status as at 31 December 2015.

No	Client name	Type	Region	County	Current member-ship	Active member-ship	Partner-ship period
1	Ainabkoi DFCS Ltd	Cooperative	North Rift	Uasin Gishu	375	793	2013-2016
2	Mumberes DFCS Ltd	Cooperative	North Rift	Baringo	4,436	1,412	2013-2016
3	Kiplombe DFCS Ltd	Cooperative	North Rift	Baringo	2,051	408	2013-2016
4	New Ngorika Milk Producers Ltd	Company	North Rift	Nyandarua	2,006	1,400	2013-2016
5	Olenguruone DFCS Ltd	Cooperative	North Rift	Nakuru	2,871	2,015	2015-2016
6	Kiambaa DFCS Ltd	Cooperative	Central	Kiambu	4,800	1,550	2013-2016
7	Ndumberi DFCS Ltd	Cooperative	Central	Kiambu	5,400	1,200	2013-2016
8	Kitiri DFCS Ltd	Cooperative	Central	Nyandarua	2,220	749	2013-2016
9	Tulaga DFCS Ltd	Cooperative	Central	Nyandarua	3,000	2,259	2013-2016
10	MUKI DFCS Ltd	Cooperative	Central	Nyandarua	17,500	7,370	2013-2016
11	Slopes DFCS Ltd	Cooperative	Central	Nyeri	2,580	2,325	2013-2016
12	Uruku DFCS Ltd	Cooperative	Meru	Meru	2,143	612	2013-2016
13	Naari DFCS Ltd	Cooperative	Eastern	Meru	4,072	542	2013-2016
14	Nkuene DFCS Ltd	Cooperative	Eastern	Meru	3,753	1,723	2013-2016
15	Kithirune DFCS Ltd	Cooperative	Eastern	Meru	1,423	772	2013-2016
16	Githongo DFCS Ltd	Cooperative	Eastern	Meru	2,401	792	2013-2016
17	Mbwinjeru DFCS Ltd	Cooperative	Eastern	Meru	650	540	2013-2016
18	Muthiru DFCS Ltd	Cooperative	Eastern	Tharak Nithi	8,456	3,223	2013-2016
	Total				**70,137**	**29,685**	

5.2.2 Happy Cow Ltd profile

Happy Cow is a medium-sized milk processing company based in Nakuru. It is a private company, producing a range of dairy products for the local market, and specializes in the production of yoghurts and cheeses. Happy Cow products are available in all major supermarket chains in Kenya and are also exported to neighbouring countries at a modest scale. Happy Cow processes an average of 12,000–15,000 kilograms of milk per day. Happy Cow sources milk from a number of CBEs, notably from Olenguruone DFCS and New Ngorika Milk Producers Ltd (see the CBE profiles in Table 1 and Appendix 1).

Happy Cow is piloting implementation of a milk quality tracking and tracing system followed by a quality-based milk payment (QBMP) system, as it wants to strengthen its business model by improving the raw milk quality and its end products towards complying with standards set by the Kenya Bureau of Standards.

The expected results are reduced production losses in the factory and higher quality and increased shelf-life of products. Olenguruone DFCS and New Ngorika Milk Producers Ltd will benefit from the QBMP, as farmers and CBEs are paid a premium for higher quality milk and will experience less rejected milk. Usually such systems also lead to enhanced extension services that increase productivity at farm level.

In its smallholder dairy value supply chain, Happy Cow notices that its CBEs have poorly organized milk collection, milk testing and cooling infrastructure.

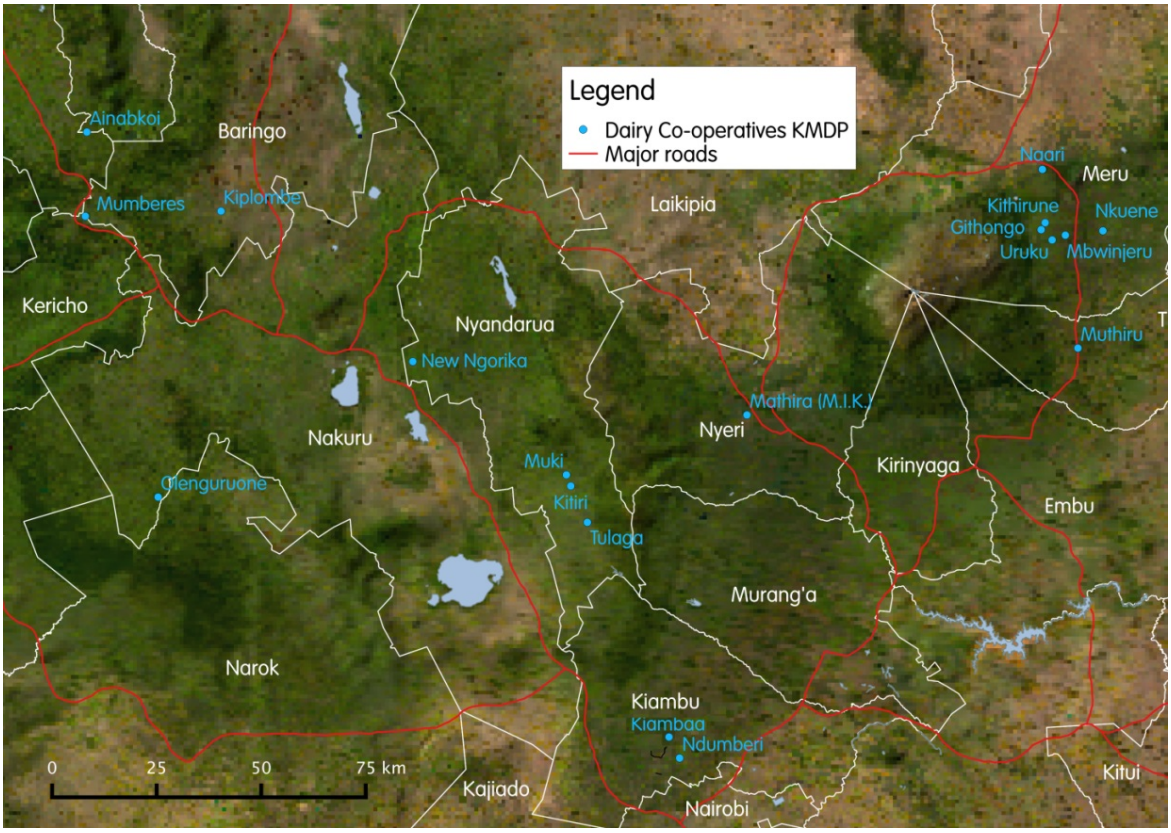


Figure 3: *KMDP client CBEs location map (CBEs in blue)*

6 KMDP interventions in the dairy value chain

KMDP has allocated a substantial part of its budget to support the smallholder dairy value chain. KMDP's interventions here aim to address the following weaknesses observed in these CBEs:

- Poor governance and management, which is mainly due to i) limitations in skills of the management committees and management staff in steering the CBEs as business entities, and ii) limitations in systems for accountability and transparency of their businesses. Their service delivery generally leaves much to be desired. As a result of these issues, most CBEs are faced with poor business growth and low profitability;
- Inadequate smallholder dairy farming skills due to a lack of or only rudimentary investment by CBEs and milk processors in T&E;
- Weak linkages and relationships with input service providers, with no long-term plan for relationship building or structured partnerships for mutual benefits;
- Seasonal and high cost of milk supply due to limited fodder production and preservation.

The above challenges were prioritized by KMDP and its clients and are being addressed to varying degrees by the clients described in the previous chapter over the course of the program period.

6.1 KMDP's approach and delivery model

Through the demand-driven approach outlined in Chapter 3, partnership with each client is arranged through a memorandum of understanding (MoU) that is signed by both parties and details the rules of engagement. Attached to the MoU are annual work plans that are discussed and agreed between KMDP and the client. The work plans stipulate the contribution each partner will make to realize the proposed activities. MoUs are renewed annually upon request of the client. Annual review meetings of the work plan are conducted to identify areas of success, challenges and lessons learned that will aid in the following annual work plan.

Over the course of implementation KMDP has engaged and built a team of mainly local experts to operationalize and implement this part of the programme (i.e. the Dairy Value Chain Agenda). These include:

- KMDP team leader – spends significant time developing and implementing this agenda;
- KMDP dairy value chain coordinator – coordinates strategy implementation in the three regions and supervises the milkshed coordinators;
- Three KMDP milkshed coordinators for North Rift, Central and Eastern regions – coordinate dairy value chain activities in each milkshed and directly supervise the local capacity builders (LCBs) who are contracted for implementation. These LCBs include:
  - Star Consultants – one lead consultant and two junior consultants (JCs) for farmer T&E – deliver on the T&E sub-agendas of the CBEs in North Rift region;
  - Policy and Market Options – one lead consultant in the position of milkshed coordinator, one consultant for milk quality, four JCs for farmer T&E – deliver on the sub-agendas of the CBEs in Eastern and Central regions;
  - Mambo Dairy Enterprises & Consultancy Services – one lead consultant for farmer T&E – delivers on the T&E sub-agenda of the CBEs in Eastern region;
  - Shedwin Agribusiness Ltd – one lead consultant for farmer T&E – delivers on the T&E sub-agenda of the CBEs in Nyandarua county of Central region;
  - Livestock Network – one lead consultant for farmer T&E – delivers on the T&E sub-agenda of the CBEs in Kiambu county of Central region;
  - Perfometer Agribusiness – five consultants – deliver on fodder development, SPE groups and SPE network – the entity promoting and training SPE groups - and linkages of CBEs to commercial fodder

producers (CFPs) in all three regions, as well as working in the second pillar of KMDP; this requires close coordination with the milkshed coordinators;

- One business development service (BDS) advisor – supporting CBEs with financial management.

6.2 KMDP's interventions

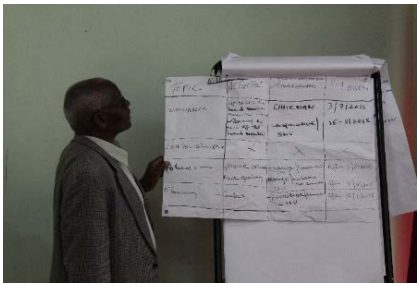
With the above team in place to support the CBE and processor clients, over the past three years KMDP has implemented a number of demand-driven activities. The description below summarizes the activities carried out in relation to each strategic intervention area.

6.2.1 Governance and financial management support

To deliver on governance and financial management support, KMDP is implementing the following strategies:

- The CBEs are advised by core KMDP staff on areas of governance, financial management, hiring of qualified staff, business-to-business (B2B) linkages and strategies for dealing with milk processors, building farmer loyalty and other issues. The advisory support of core KMDP staff takes place during formal and informal meetings. Coaching and mentorship by milkshed coordinators is considered a key activity;
- Needs assessments of all the seventeen initial CBEs were carried out with the board and management in 2013 and 2014. KMDP contracted the services of the Cooperative Consultancy Insurance Agency (CCIA) – a branch of the Cooperative Bank of Kenya. CCIA developed the training content and a plan for training the management and board of all seventeen CBEs. CCIA then implemented the training plan and trained representative board and management staff at various times in 2013 and 2014. The training focused on aspects of governance and budgeting;
- In addition, KMDP supported CBEs to develop their management systems and strategic and business plans; to carry out business assessments; to develop policies on financial management, human resource management, procurement and milk quality assurance; and to develop a code of ethics and board charter. KMDP engaged local consultants and in-house staff to develop and strengthen these policies;
- From 2015 onwards, a more tailor-made approach was followed to address emerging issues related to governance, financial management and systems for each CBE. This shift started by running workshops on a region-by-region basis, enlisting local consultancy support: One workshop in North Rift region, two in Central region and one in Eastern region. The training involved management staff and board members from all eighteen CBEs. KMDP used local consultants in each milkshed with an aim to build relationships with the CBEs for the post-KMDP implementation period. Exchange visits to other CBEs with good board and management performance were engaged to facilitate best practice sharing and learning;
- KMDP further facilitated CBEs getting access to financial services. In 2013, KMDP entered into a partnership with Chase Bank and Rafiki Microfinance to facilitate access to finance, as part of the work KMDP does to build the capacity of the CBEs around financial management and business plan development. KMDP engaged a financial management or business development (BDS) consultant to provide tailor-made financial support services to each CBE, based on their demand and their situation. More focus will be given to this in 2016.





***Photos 1–3**: The Central region CBE governance and management workshop in 2015, organized and facilitated by KMDP*

Through its BDS advisor, KMDP has further supported CBEs to analyse the various service delivery units within the enterprise and to advise them on profitability and quality of services provided (see also section 6.2.4). In 2015, two CBEs were supported to analyse their services/business units and were advised about what actions they should take next. Where KMDP and CBE identify strategies to make services profitable, the loss-making is addressed internally. But where it is evident that the CBE is not capable of making the required changes, CBEs are advised to liaise with a private service provider, to be contracted with proper service contracts, which then can provide quality and affordable services on a continuous basis. KMDP advises the CBEs about which reputable input suppliers and service providers to use through critical analysis of their services, scale of their operations and ethical practice.

6.2.2 Training and extension support

KMDP uses the following strategies to deliver training and extension support:

- KMDP encourages CBE management to hire its own T&E staff with requisite budgets to run a good farmer training programme. KMDP initially co-sponsored the salaries of T&E staff for some CBEs and organized employment of LCBs and JCs, who were initially fully paid by the programme. KMDP co-sponsored (50/50 basis) purchase of motorbikes to enable T&E staff to reach out to as many farmers as possible;
- The LCBs and JCs also focused on on-the-job coaching and mentoring of CBE T&E staff so that they are able to perform their tasks well, including coordinating and ensuring quality control of farmer training and networking with other input suppliers and service providers. The LCB/JCs promoted effective T&E farmer training methodologies, such as on-farm demos, exchange visits, farmer field schools, and field days, presentations by input suppliers and service providers and use of Practical Dairy Training Centres (PDTCs). A number of these methodologies have been carried out continuously in each CBE;
- Annual training calendars are being developed by the CBE T&E unit and by a number of input suppliers and service providers in an annual multi-stakeholder meeting, after which training sessions by input suppliers and service providers are being carried out;
- In 2015, KMDP and the CBEs identified ten lead farmers in each CBE who have shown adoption of “good dairy farming practices” and are producing over 30 litres of milk per day. The farmers were taken to PDTCs for a week of training. Thereafter, the lead farmers were given technical support through regular farm visits, so that they are challenged to increase their daily milk production (total and per cow). This support is being continued in 2016;
- KMDP is supporting the extension department of MCDFCU in recruiting and training extension officers for the twenty-six affiliate societies. A matching grant of KSh 1 million was made available to the union, as was additional support for the purchase of motorbikes for the extension programme and for the annual field days organized by the union. MCDFCU’s annual farmer field day brings together over 10,000 farmers. At the CBE level, KMDP is supporting five CBEs affiliated to MCDFCU: Githongo, Naari, Nkuene, Kithirune and Uruku DFCSs.



***Photos 4-6**: (Lead) farmers attending training at Mawingu Practical Dairy Training Centre (PDTC) early 2015*

6.2.3 Fodder development and preservation support

Fodder development has been taking place under a planned approach, with critical steps already taken towards ensuring improved adoption of various fodder varieties. Technical support for fodder development in the Dairy Value Chain Agenda was provided by Perfometer Agribusiness. The steps included:

- Initial demonstration pilots for a range of fodder varieties (energy-rich and protein-rich) were carried out in all CBEs in 2013 and 2014. The idea was to determine what fodder does well and where and to train farmers in the various agronomic practices. KMDP provided fodder seeds and technical assistance through Perfometer and the LCB/JCs in the respective regions; farmers provided land, labour and other inputs; Perfometer received technical assistance from PUM experts;
- In 2015, the focus was on protein-rich fodder on a larger scale, using fodder plots that ranged from 0.25 to 1 acre. KMDP again provided fodder seeds and the technical assistance through Perfometer and the LCB/JCs in the respective regions, and farmers provided land, labour and other inputs. Three protein-rich fodder demonstration plots were implemented in all eighteen CBEs with varied results and successes. In 2016, a more in-depth assessment of lessons learned will be made to advise farmers in each region and to inform the way forward;
- With the aim of ensuring holistic promotion of the fodder adoption in the CBEs, in 2014 each of the first initial seventeen CBEs were helped by Perfometer/Dairy Value Chain team to develop fodder strategies/plans. Three workshops were carried out in each milkshed. As a result, each CBE developed its own fodder development strategy with several possible aims: To increase availability of fodder seeds in their agro-vet shops, to enhance linkages to credible fodder seed suppliers, to increase on-farm fodder production and availability among smallholder farms, to increase fodder quality, and/or to develop/strengthen linkages with CFPs for supply of hay to CBEs;
- KMDP has introduced fodder preservation strategies in the CBEs. In the Eastern and North Rift regions, Perfometer supported KMDP-recruited youths. Selection was done based on interest to provide fodder preservation services to farmers as an SPE group under the SPE network. The youths were given thorough training on fodder preservation and were also trained in entrepreneurial skills, in order to be able to provide services to farmers at a fee. Monitoring by the Perfometer team is currently starting to be weaned off, and the KMDP dairy value chain team is serving as a first point of contact. The SPE groups are located close to the farmers and therefore provide them with easy access to silage preservation services. The eventual aim is to support the SPE groups in each milkshed to form and register as legal entities so they can engage with public agencies in their counties for support.

6.2.4 Linkages with input suppliers and service providers

Service delivery is key to strengthening the loyalty among a CBE and its farmer membership. CBEs under KMDP are strengthening their service delivery beyond milk marketing, operating as “one-stop shops” for farm inputs and other farmer needs. These inputs and services include farm inputs, financial services (credit, loan guarantees and check-off system), artificial insemination and animal health services and T&E services. These services are being offered either through CBE-owned and -managed business units or through an arrangement with a private input supplier. The CBE usually offers services and inputs on credit against milk through the check-off system.

KMDP has been in the forefront of linking CBEs to input suppliers and service providers for B2B linkages and provision of training services to farmers. KMDP used the training workshops to invite the various input suppliers and service providers to make presentations and train farmers on their products and services. The presentations provided an opportunity for the management of CBEs to seek clarity on their products and services.

KMDP’s role was to identify credible input suppliers and service providers that can work with the CBEs (either through MoUs or partnerships) to provide a win/win situation for all parties. The input suppliers and service providers that participated include SoilCares Kenya Ltd, Antipest-Vital, Unga Farmcare EA, Chase Bank, Coopers Kenya, Kenya Seed Company Ltd, Ashut Ltd, biogas entrepreneurs and SCOPEinsight.

***Photos 7- 8**: SoilCares demonstrates soil sampling and soil analysis; Chase Bank gives a powerpoint presentation to explain financial benefits and services they offer for smallholder farmers.*

6.2.5 Milk procurement and milk quality

CBE level

Milk procurement in most CBEs is characterized by a range of issues along the chain: Poor on-farm milking hygiene and storage, high somatic cell counts depicting chronic mastitis infections in the dairy herds, prolonged periods of time between milking at farm level and bulking and chilling of milk at CBE level, poor milk handling and transportation, inadequate testing or no testing at all, poor cleaning of milk-handling equipment, use of unqualified and poorly trained milk graders and transporters, adulteration of milk and lack of milk traceability among the milk suppliers. The CBEs also lack a milk quality policy/manual that guides the implementation and enforcement of milk procurement and milk quality assurance procedures.

KMDP's interventions included training on standard milk quality policy for all eighteen CBEs and follow-up to customize the milk quality policies. KMDP occasionally engaged with the CBEs to advise on a number of issues: To address prolonged milk procurement and transportation time to improve milk quality; on the most economical means of transportation of milk to the CBEs; on the use of aluminium containers and approved food-grade Mazzi containers, discouraging the use of non-food grade plastic containers; hiring of qualified milk graders; and the need to continuously train milk graders on the job and expose them to better milk-handling practices elsewhere. KMDP has also been keen to link CBEs to suppliers of milk-chilling equipment and other facilities.

In 2015 KMDP appointed a milk quality consultant, who supports CBEs in developing milk quality policies and standard operational procedures and trains milk graders and transporters.

***Photos 9–11**: Milk quality - good practices: Farmers of Mumberes DFCS wait with their milk in the shade for the milk truck to come; Muthiru DFCS marks the different milk-collection cans; transport staff of Mbwinjeru DFCS pour milk through a sieve before it enters the milk-cooling tank.*

Processor level

KMDP is supporting MCDFCU to improve quality by facilitating a hazard analysis and critical control points assessment as a pre-audit for ISO-certification of the processing factory (ISO 22000). It is expected that the results of this assessment will set in motion improvements in the quality control and quality assurance systems and processes that MCDFCU needs to act upon to move towards ISO 22000 certification. Eventually, the certification will strengthen MCDFCU's food safety management system and will enhance its product quality and position in the market.

Happy Cow started partnering with KMDP to develop a proposal for a two-year pilot project targeting implementation of a milk quality tracking and tracing system in its supply chain – to be followed by a QBMP system – which includes milk collection from New Ngorika CBE and Olenguruone DFCS. The project proposal writing and design was facilitated by an international dairy consultant from The Friesian company from the Netherlands. The proposal received co-funding from the Netherlands Embassy in Nairobi through a topping-up of the KMDP budget. KMDP is responsible for fund management.

Happy Cow reached an understanding on project implementation with the two CBEs, and the project began at the end of 2014. During the first year of implementation, Happy Cow expanded their central laboratory and built decentralized labs at the CBEs, purchased laboratory equipment for the central and decentralized labs, trained lab technicians, selected the parameters for quality control and carried out a baseline survey. Furthermore, a supply chain survey was done with the help of an expert from DTC in the Netherlands, and the work plan for further project implementation was developed and agreed upon. The latter mainly involves a list of actions required to reorganize and sanitize the chain, including investments in the cold chain and training of farmers, transporters, graders, tank attendants and lab technicians along the chain.

7 Client and farmer responses and performance

As described in Chapter 6, KMDP intervened in the CBEs with a focus on five areas: (a) Governance and management, (b) training and extension, (c) fodder, (d) linkages with input suppliers and service providers, and (e) milk procurement and milk quality. The overall objective of these interventions is to improve chain linkages and to enable CBEs to improve their governance, management practices and service delivery, leading to enhanced farmer loyalty and improved dairy farm milk production and productivity. This chapter discusses the responses by processors, by CBEs and by farmers (through CBEs) and the changes noticeable in their functioning.

7.1 Responses to interventions

The KMDP interventions targeting five areas have triggered processors, CBEs and farmers (through CBEs) to change, though various degrees of change have been noticeable. The following sections describe the responses and changes in each area.

7.1.1 Changes in governance and financial management

Responses and changes in governance and management in the CBEs are often mixed, with various degrees of adoption of good practices. The two approaches used by KMDP generated different responses from the CBEs. The more generic approach that was used for all eighteen CBEs (to sensitize CBE governance to know what they did not know) focused on the general weaknesses in CBE governance practices. Capacity building of all eighteen CBEs with the same training on BDS and governance resulted in some CBEs being more responsive than others in applying acquired skills and knowledge to improve their governance and management practices. The tailor-made approach that is now used to target specific issues the requesting CBE is dealing with has led to more significant changes in the CBEs.

The generic approach has led to two CBEs actively asking for various services, which is taken as a sign of willingness to change. In the tailor-made approach, KMDP services focus on those CBEs that ask for capacity building at CBE level on specific issues. This approach gave a much higher response, and in 2015 and 2016 KMDP's BDS advisor had supported six CBEs on various issues to do with financial management. Although the CBEs are not yet willing to share all their financial documents with the BDS advisor, they have become more proactive in seeking management support. Also, SCOPE Insight – supported by KMDP – was able to provide capacity assessments for two CBEs in 2015: Olenguruone and Naari DFCSs.

In 2014 and 2015 KMDP assisted four CBEs with hiring a consultant to prepare their strategic plans. Ainabkoi DFCS later employed the same consultant for another two assignments, developing the associated terms of reference and bearing all the costs itself (compared with the 30 percent subsidy it had received from KMDP earlier). Mumberes DFCS also took the initiative to hire this consultant to make sure that the management board members and the manager of Mumberes DFCS were trained and that all board members were at the same level.

The initial (generic) approach resulted in adoption of structures and systems, but actual implementation was slow; changes remained modest. CBEs did adopt governance policies and other management tools. By the end of 2015, thirty-six policies had been developed and approved by CBE management boards as reference documents for managing CBE operations, including human resource management. However, clear and very visible improvements in governance and management are still lacking; for example, CBEs installed T&E committees, but the functioning of these committees is questionable.

Effective implementation of policies has been hindered by the low education levels of board members and staff and by bureaucracy in the CBE, among other things.

In contrast, the second (tailor-made) approach has led to more concrete results: The close guidance of the KMDP's BDS advisor helped Naari, Olenguruone and Mbwinjeru DFCSs to put improved structures and systems in place (e.g. an organizational chart; human resources documents; cash- and credit-sales book and excel worksheets for agro-vet stocks). Naari DFCS employed an accountant, bought two computers and solved problems with milk losses, resulting in increased milk income for the society. Olenguruone DFCS also benefited directly, doing internal controls through which it solved issues, such as the daily loss of 100 kilograms of milk, and established an annual budget and a monitoring system.

Most CBEs have made investments that have significantly contributed to the expansion of the number of services offered, for example, reconstruction of office buildings, cooling tanks and pasteurizers. Half of the CBEs have improved their service delivery systems, resulting in increased numbers of farmers using the various services offered from 8,000 to more than 24,000 across the year 2015 (SNV Kenya 2016).

Table 2 shows that:

- All eighteen CBEs are offering milk-marketing services, agro-vet shops and T&E services themselves, with the last services having been the direct result of KMDP interventions;
- Currently, CBEs are becoming more aware of the relationship between offering services and creating farmer loyalty. Farmers are now starting to seek artificial insemination and animal health services. These type of services require clear agreements and close monitoring. In one-third of the CBEs, these services are outsourced;
- Financial services can only be offered effectively when a CBE is in the financial position to give advances or when it has established its own Savings & Credit Cooperative (SACCO). In most cases this service is outsourced to a SACCO that is independent of the CBE, whereby the CBE guarantees loans to its members to increase members' access to loans from the SACCO.

Table 2

Service delivery/business units status – CBEs – 2015.

Type of service:	No. of CBEs offering service in-house:	No. of CBEs where service is outsourced:
Milk marketing	18	-
Milk transport	17	1
T&E services	18	-
Agro-vet shop	18	-
Artificial insemination services	13	5
Animal health services	12	6
Financial services	4	14

One of the focus areas in working with the CBEs is convincing management boards to employ qualified staff. This remains a challenge in most CBEs, because board members are not always willing to pay the higher salaries that qualified staff ask for, or they may be reluctant to delegate responsibilities. The result is that CBEs are often managed by staff who may lack qualifications and responsibility. For example, one of the CBEs under Meru Central Union has changed its manager five times over the past three years, and still the current manager does not have qualifications or experience in management. In another CBE in Central region over the past four years both management and board members were changed three times, with each time a new chairperson taking charge. In many CBEs, the board constantly interferes in the day-to-day running of the CBE, with the chairperson acting as manager and overruling decisions made by the management.

Of course these staffing and governance issues reflect on the financial performance of the CBE (see section 7.2). One common problem is that of making heavy investments without properly understanding the market. For example, one of the CBEs in Central region invested in a yoghurt plant worth KSh 90 million, only to see yoghurt sales turn out lower than expected with the result that it has invested in a loss-making business activity. The same happened to a CBE in Kinangop area that invested in a feed mill.

Such inadequate investment decisions – together with issues in staff management, staff behaviour and staff performance – have resulted in some CBEs running losses. In a number of cases it was noted that "free money" from NGOs and/or (county governments) existed, which triggered CBEs to invest in business activities without doing proper feasibility studies. The effective running of service units such as agro-vet shops also requires significant levels of management control to prevent problems of graft.

Nevertheless, a number of CBEs did employ qualified staff; for example, in 2013 Mumberes DFCS employed a manager with a Bachelor of Business Management and with management experience in other companies; the assistant manager obtained a Diploma of Business Management; and the accountant has a Bachelor of Commerce. This is reflected in an improved financial position of the CBE.

7.1.2 Changes in training and extension

KMDP had made it a condition that CBEs must establish a T&E unit (including T&E board sub-committee and T&E staff) directly after signing the MoU. Despite agreeing to this condition, most CBEs reacted hesitantly to the introduction of T&E services by KMDP. The boards of CBEs that already had thin margins were sceptical about employing a T&E officer and releasing a T&E budget; it was an investment in an initiative they were not familiar with. At first both CBEs and farmers, who ultimately decide what the CBE will invest in, had to be convinced of the benefits of a T&E unit. Some CBEs decided to establish part of the required T&E unit within a few months after signing the MoU with KMDP. These CBEs employed a T&E officer based on a 50/50 percent cost-sharing basis. Other CBEs needed more time to accept the change. After a full-time intern was placed in these CBEs to regularly organize T&E activities with the LCB, farmers and CBEs started to see the benefits, which are related to higher milk production and intake and enhanced farmer loyalty.

Currently, all eighteen CBEs have started to invest in a T&E unit, even though levels of implementation still vary. After realizing the importance of T&E, all CBEs hired T&E staff, purchased a motorbike with co-financing from KMDP and/or obtained other T&E equipment (see Table 3). They reserved a T&E budget to enable T&E officers to do field work. Most CBEs have established a T&E committee. Unlike the other CBEs, the five CBES affiliated with MCDFCU were provided with a T&E officer by their milk processor.

Table 3

Investments in T&E by the eighteen CBEs in 2015.

CBE Name	2013 Budget	2014 Budget	2015 Budget	T&E Staff 2015	Equipment
Kiambaa	674,232	1,200,000	600,000	1	1 motorbike
Kitiri	282,000	312,000	360,000	1	1 motorbike
Tulaga	285,000	320,000	752,280	2	2 motorbikes
Slopes (MIK)	120,000	180,000	204,000	1	1 motorbike
MUKI	1,200,000	2,956,500	6,350,198	4	3 motorbikes, 1 vehicle
Ndumberi	551,400	623,500	400,000	3	2 motorbikes
Githongo	1,450,200	1,531,800	980,000	1	1 motorbike, AI tanks
Kithirune	900,000	1,110,000	572,100	2	1 motorbike, AI tanks
Uruku	2,553,500	2,673,200	2,880,000	1	T&E car, AI tanks
Naari	160,000	186,035	612,725	2	AI tank
Nkuene	1,535,000	1,650,000	1,400,060	2	1 motorbike, AI tanks & semen
Mbwinjeru	205,800	480,600	706,800	1	AI tank & semen
Muthiru	1,650,000	1,831,200	2,197,248	3	2 motorbikes, AI tanks & semen
Ainabkoi	0	183,000	290,000	1	2 motorbikes
Mumberes	200,000	592,000	821,880	1	2 motorbikes
Kiplombe	120,000	1,142,700	969,000	1	2 motorbikes
New Ngorika	0	1,120,000	990,000	1	2 motorbikes, 1 vehicle
Olenguruone	-	240,000	1,036,000	3	3 motorbikes, AI tanks
Totals	**11,887,132**	**18,332,535**	**22,122,291**	**31**	

The establishment of the T&E units has resulted in an significant increase of trainings and a continuous growth in the number of farmers attending these training sessions. While CBE farmer trainings were originally organized sporadically by milk processors, currently CBEs get daily training sessions carried out by T&E officers in collaboration with KMDP LCBs. Table 4 shows a significant increase between 2014 and 2015 of

farmers attending almost all training activities. More than once, T&E officers have complained that they cannot keep up with the number of farmers requesting assistance. An exception to this general increase was noted in the North Rift region, where the number of farmers attending farmer field schools decreased due to poor leadership among farmers and a shift in methodology by KMDP.

It is difficult to determine the impact of on-farm demonstrations, farmer field schools, field days and presentations to farmers on the decisions they have to make. None of the CBEs has the capacity to monitor which farmers have attended what training. Nevertheless, the most active and willing farmers, also called lead farmers, are the ones who are known for attending the most trainings and exchange visits, and who were sent – with KMDP support – to PDTCs for a week of training. These farmers have shown a high response rate in adopting good dairy farming practices, even though they have limited resources to invest. An estimated 50 percent of them have started to construct new cow barns. Lead farmers in Eastern region, where land is scarcer, have started to build zero-grazing units and hay stores, while farmers in the North Rift region have started paddocking and constructing calf pens and cow barns.

The motivation for lead farmers to change and adopt improved farm management practices is mostly created by seeing good examples. The KMDP team has seen how farmers who participate in exchange visits and/or PDTC trainings are inspired and develop a vision for their own farms. Joshua Rono, one of the lead farmers of Mumberes DFCS, has developed a habit of copying one best practice observed on each exchange visit he attends. Currently, farmers in Mumberes DFCS have been talking about Joshua's zero-grazing unit (Joshua's 'first project'), about which Joshua has received regular requests from farmers who want to visit his farm.

***Photos 12–15**:* *Pictures of lead farmers implementing good dairy farming practices: Milking with machines in Kiambaa DFCS; a good zero-grazing unit; individual calf pens; and keeping records in Naari DFCS.*

Table 4

Farmers attending T&E activities.

	2014 (17 CBEs)	2015 (18 CBEs)
On-farm demonstrations (fodder and non-fodder)	2,156 farmers	2,466 farmers
Exchange visits	1,790 farmers	2,534 farmers
PDTCs	91 farmers	150 farmers
On-farm visits	1,632 farmers	2,119 farmers
Field days	10,383 farmers	4,542 farmers
Presentations	1,612 farmers	3,442 farmers
Farmer field schools	1,308 farmers	899 farmers

All lead farmer groups are now attending rotational lead-farmer visits (some weekly, others every two or four weeks) and in most cases have registered themselves as self-help groups (or are in the process of doing so). Almost all have started to save for future joint investments. In every group a few lead farmers have been active in receiving visits from neighbouring farmers to teach them about their farm and share their experiences. For example, a lead farmer from Mumberes DFCS received a request from a friend in another area to allow fifteen farmers from another DFCS to visit his farm and to teach them about it. Other lead farmers are said to be willing to start getting visits from other farmers who are eager to learn; some are not ready to invite peer farmers yet, because they have not invested sufficiently in their farm to serve as a good example. However, most lead farmers who have invested in their farms are willing to receive other farmers for learning, and some have started asking small fees from visitors.

***Photos 16-17**:* *Members of lead farmer groups in every CBE visit each other regularly to consult and learn from each other. They receive training and are awarded with certificates after attending a number of training sessions.*

7.1.3 Changes in fodder development and preservation

The on-farm demonstrations, the establishment of fodder demonstration plots and the training by (crop) input suppliers have helped to show farmers the benefits of establishing and preserving fodder crops. Data show that input suppliers are selling significantly more fodder seeds (regularly resulting in produce being out of stock), and that tonnage of silage and number of farmers making silage have significantly increased in most of the CBEs. Getting farmers to establish and preserve new fodder crops was difficult at first in all three milksheds. Especially in Eastern region, resistance to the idea of using maize (usually meant for human consumption) for animal feed was hindering the adoption of making silage. However, this changed dramatically. The aim of annual fodder demonstration plots was to show farmers a number of different fodder crops. Farmers' attitudes changed during the period 2013–15 from being hesitant to very responsive. In total, KMDP facilitated 162 fodder plots. The strategy in 2015 was adjusted to limit the number of fodder demonstration plots to three per CBE, with a minimum size of 0.5 acre each. In 2016 KMDP will evaluate this intervention, but lessons learned so far are that farmer response is generally good, and fodder establishment and preservation have led to higher milk production and reduced seasonality of milk supply. One important lesson learned is that lucerne is a difficult crop to manage for smallholders and should only be recommended in soils with a pH of 6.0 and above.


***Photos 18–20**: Demo farmer in Ainabkoi CBE piloting Sorghum; demo farmer in Kiplombe piloting Lucerne and Desmodium; demo farmer in Ainabkoi CBE piloting purple vetch.*

Challenges encountered by farmers with regard to fodder establishment are related to weather conditions (poor rains), lack of certified seeds and insufficient fodder expertise of KMDP LCBs.

Table 5 gives an overview of lead farmers in Kiplombe DFCS and their fodder investments. Since 2014 these farmers have endured long and unpredictable droughts, yet still they invested in fodder, as did the lead farmers from all other seventeen CBEs.

Table 5

Fodder investments by Kiplombe DFCS lead farmers in 2015.

Lead farmer	Fodder investments	Amount of fodder preserved	Amount of fodder bought
1.	3 acres sorghum 1 acre maize 0.175 acre lucerne	30 tonnes sorghum silage	50 bales Boma Rhodes
2.	1 acre sorghum 7 acres Boma Rhodes 1 acre lucerne	20 tonnes maize silage 4 acres paddocks 100 bales Rongai grass	90 bales of hay
3.	4 acres Boma Rhodes maize, lucerne, *Desmodium*	Maize silage	
4.	3 acres Boma Rhodes, maize	60 tonnes of maize silage 400 bales Boma Rhodes	
5.	0.175 acres Napier grass, 0.5 acre oats, 0.5 acre vetch		
6.	0.5 acre Columbus grass 0.5 acre sorghum 0.5 acre Boma Rhodes	10 tonnes silage	
7.	0.25 acre Napier grass		50 bales Boma Rhodes
8.	12 acres Boma Rhodes 1 acre sorghum 0.5 acre lucerne 0.5 acre Napier grass	100 bales of hay	
9.	3 acres Boma Rhodes 4 acres maize	30 bales Boma Rhodes	80 bales of hay

Photo 21: *This lead farmer (Kiplombe DFCS) smiled and said: "I established and preserved sufficient fodder in 2014 to feed my cows during the drought in 2015. Milk prices increased and my milk production remained constant" (September 2015).*

Photo 22: *This lead farmer (Kiplombe DFCS) receives help from her sons in making silage. She is exchanging a pulverizer with neighbours to keep costs low (September 2015).*

The demonstration farmers have attracted the attention from many farmers in their society. The plots, as well as the active lobbying by demonstration farmers themselves, T&E staff, KMDP staff and input suppliers, have contributed to the increased adoption of fodder crops by farmers.

In Meru KMDP staff noted that farmers are quickly adopting maize silaging. They either expand maize production in their own farm or they lease unused land from others (often in the lower parts in Meru, which is considered the "maize and beans belt"). Some uproot coffee. Others manage to increase yields per acre, or use one season for fodder maize and one season for maize for human consumption. Some have even gone to three maize crops per year using irrigation, assuring both food and feed security. The adoption of fodder establishment has also resulted in an increase of farmers making silage. Initially, farmers were assisted by T&E officers and KMDP staff, but the demand for silage created a market for service providers in the form of the SPE network.

Photos 23–24: *Silage making in one of the CBEs*

The introduction of SPE groups in every CBE has contributed to an increase in silage making. In November and December 2014, the first batch consisted of 339 tons of maize silage preserved for forty-six smallholder farmers around Eastern region and made by thirty-eight SPE network members who earned around KSh 9,000 per person. In 2015, 4,598 tons of maize silage was preserved for over 1,500 smallholder farmers spread over the three milksheds. These data likely underestimate actual amounts of silage made. Firstly, some SPE groups are not keeping proper records, often hiding the real amounts of silage made by individual SPE members, so these individuals can keep the money to themselves. Secondly, farmers not willing to pay for SPE services make silage themselves. These amounts of silage are not tracked and therefore not included in the total amount of silage made.

The SPE groups have shown varying performances after support from KMDP diminished. Out of ninety-two youths trained by KMDP to start silage-making businesses, sixty are still active and see a growing demand for their services. For example, the SPE group of Mbwinjeru DFCS consists of active group members who keep proper records, invest in the silage business as a group and have built a good reputation among smallholders. In late 2015, KMDP supported this very enterprising SPE team in Mbwinjeru DFCS with a fodder pulveriser purchased on a 50/50 percent arrangement. The group is now providing services to Mbwinjeru DFCS farmers with increased efficiency and effectiveness. Now the group is even being challenged to meet the demand for its services.

***Photos 25-26**: Members of SPE group "Mbwinjeru", also known as Biidii ltd., are developing their silage making enterprise to a competitive business.*

More evidence that farmers and CBEs acknowledge the importance of fodder is that they purchase fodder from commercial fodder producers (CFPs). In 2013, MCDFCU took the initiative to buy 7,220 bales of hay to sell to affiliated CBE farmers. In that same year CBEs like Tulaga, Kiambaa and Kitiri DFCSs were also buying hay in bulk from CFPs. In 2014 and 2015, CBEs like Naari and Nkuene DFCSs ordered bales from CFPs, but soon farmers complained about high prices for low quality hay. In general, it can be stated that the hay market in Kenya is characterized by low quality hay that does not represent value for money.

Since 2014, CBEs like Kiplombe and MUKI DFCSs have been investing in their own hay production. Management and development of these fodder plots was challenging, but eventually CBEs managed to make some profit from the sale of fodder from their own plots.

***Photos 27-28**: Naari DFCS buys hay bales in bulk to resell to its members*

7.1.4 Changes in linkages with input suppliers and service providers

KMDP helps CBEs explore what products and services different companies offer and the quality of these products and services. Direct contact with the manufacturer or wholesaler helped CBEs to buy at lower prices than if they had gone through intermediaries. The CBEs use a check-off system, which makes them attractive customers for input suppliers and service providers, whose salesforce needs to achieve a sales target within a certain period. However, CBEs are also known for delayed payments and red-tape and therefore not all input suppliers are eager to connect with them, and certainly not to supply on credit.

Farmers have benefited from an increase in trainings organized by input suppliers. Though some farmers complain about input suppliers spending most time marketing their products, farmers also appreciate the additional information they receive regarding product utilization as well as improved farm management. The availability of seeds for farmers is influenced by two factors: Whether (international) suppliers are able to deliver products (in practice requested products are often out of stock) and whether the CBE is financially stable to fulfil financial obligations to stock seeds for their members. In general farmers have benefitted from enhanced availability and choice of inputs in the CBEs' agro-vet shops.

The linkages facilitated between CBEs and input suppliers and service providers resulted in outcomes varying from contractual deliveries to linkages that did not lead to any business. Linkages with two seed suppliers (Kenya Seeds Company and Leldet Seeds Ltd.) resulted in concrete results in 2014. Three CBEs in North Rift region have received an 'agent/distributor' status for KSC products. In 2014, these three CBEs bought fodder- and crop seeds worth KSh 3.1 million; this amount decreased to KSh 1.6 million in 2015 due to competition from other companies as well as slow communication due to CBE bureaucracy. The link with Leldet Seeds led to a series of on-farm demonstration training sessions about sorghum fodder varieties for farmers from four CBEs in North Rift region. The linkages facilitated with most input suppliers and service providers have led to informal as well as formal agreements. CBEs make tailor-made agreements with each input supplier separately. The demand for a product among farmers and the influence of the CBE's governance (the board has the final say) determine whether products are sold in the agro-vet shop.

The linkage between CBEs and SoilCares through thirty-two awareness-creation events on the use of soil sampling has led to 265 soil samples for farmers over the last quarter of 2014. In 2015, some 3,000 farmers have been encouraged to do soil testing. In total, fourteen CBEs have signed MoUs with SoilCares, and in a few CBEs farmers have been trained to carry out soil testing by SoilCares staff. However, the results of soil testing and the extent to which this information is used by smallholder farmers are not available. The communication between SoilCares and CBEs linked with SoilCares through KMDP shows some challenges, stemming from different expectations.

7.1.5 Changes in milk procurement and milk quality

KMDP has been using two approaches to address milk procurement and milk quality issues: A generic approach targeting all eighteen CBEs; and a more tailor-made approach targeting two CBEs that are connected to the processor Happy Cow.

Some changes have been noted in CBEs in general. Firstly, all but one CBE (Nkuene DFCS) are using cooling tanks to store milk after collection. Secondly, there has been a slight increase in the number of farmers investing in aluminium cans; for example, Mumberes DFCS' manager indicates that an estimated 80 percent of their farmers are now using aluminium cans. The reasons farmers are investing are the awareness of hygiene and the social pressure from lobbying CBEs' management, milk-collection leaders and/or other farmers. Thirdly, the grader training has helped to increase graders' knowledge, and policies have helped to provide a structure in the organization.

Although CBE staff and farmers are convinced that improvements have been made, the generic approach has not led to significant improvements in milk quality. KMDP staff found it hard to convince farmers and CBEs to invest in equipment and practices to improve the quality of a product if that quality is not appreciated and rewarded by the market.

The second, more integrated approach to encourage New Ngorika Milk Producers Ltd and Olenguruone DFCS and thus affiliated farmers to improve milk quality appears more promising. The two CBEs are partnering with Happy Cow in a pilot that aims to set up a milk quality tracking and tracing system and a QBMP system. This project is co-financed by KMDP and includes investments and corrective action at all levels in the milk supply and collection chain. Some of the investments made at CBE levels are purchase of aluminium cans and food-grade Mazzi containers to transport milk from the farm to the milk coolers, construction of milk-collection points close to the farmers, construction of laboratories and installation of milk testing equipment and investments in the cold chain. The two CBEs have also invested in a hot water system for improved cleaning of the milk cans.

This pilot offers high potential for policy influencing and lobbying. Happy Cow actively shares the results and systems being put in place with peer processors (e.g. Githunguri) in an attempt to put this systemic issue on the agenda of the Kenya Dairy Processors Association and the Kenya Dairy Board.

7.2 Progress on CBE performance

Generally speaking, the CBEs have performed well in regards to their KPIs over the period 2012–2015. In this section the following KPIs are presented: Registered members, active milk suppliers, milk intake, milk sales, farmer payments and profitability.

7.2.1 Member loyalty

Table 6 shows that the number of active milk suppliers has increased by 36 percent between 2012 and 2015 across the eighteen CBEs. This average conceals a wide range: There was a decrease of 37 percent for Ndumberi DFCS to an increase of 600 percent for New Ngorika Milk Producers Ltd. The decrease in Ndumberi DFCS could be explained by internal leadership wrangles, resulting in members signing up with Kiambaa DFCS. The increase in active milk suppliers in New Ngorika Milk Producers Ltd is caused by a range of factors: Well-performing CBE management, increased farm-level reach by T&E staff, investment in a milk-chilling tank through the Happy Cow project and support by the Finance Innovation for Climate Change Fund project by DFID that enables farmers to acquire loans to purchase dairy cows. These factors together have led to increased farmer loyalty (SNV Kenya 2016).

Figure 4 below gives more detail of the changes in number of active milk suppliers per CBE. This figure shows that eleven CBEs have recorded a positive growth in the number of active milk suppliers, with nine of them recording an increase of over 10 percent. Looking at registered members rather than active members, fourteen CBEs recorded an increase, with eleven of them recording an increase of over 10 percent.

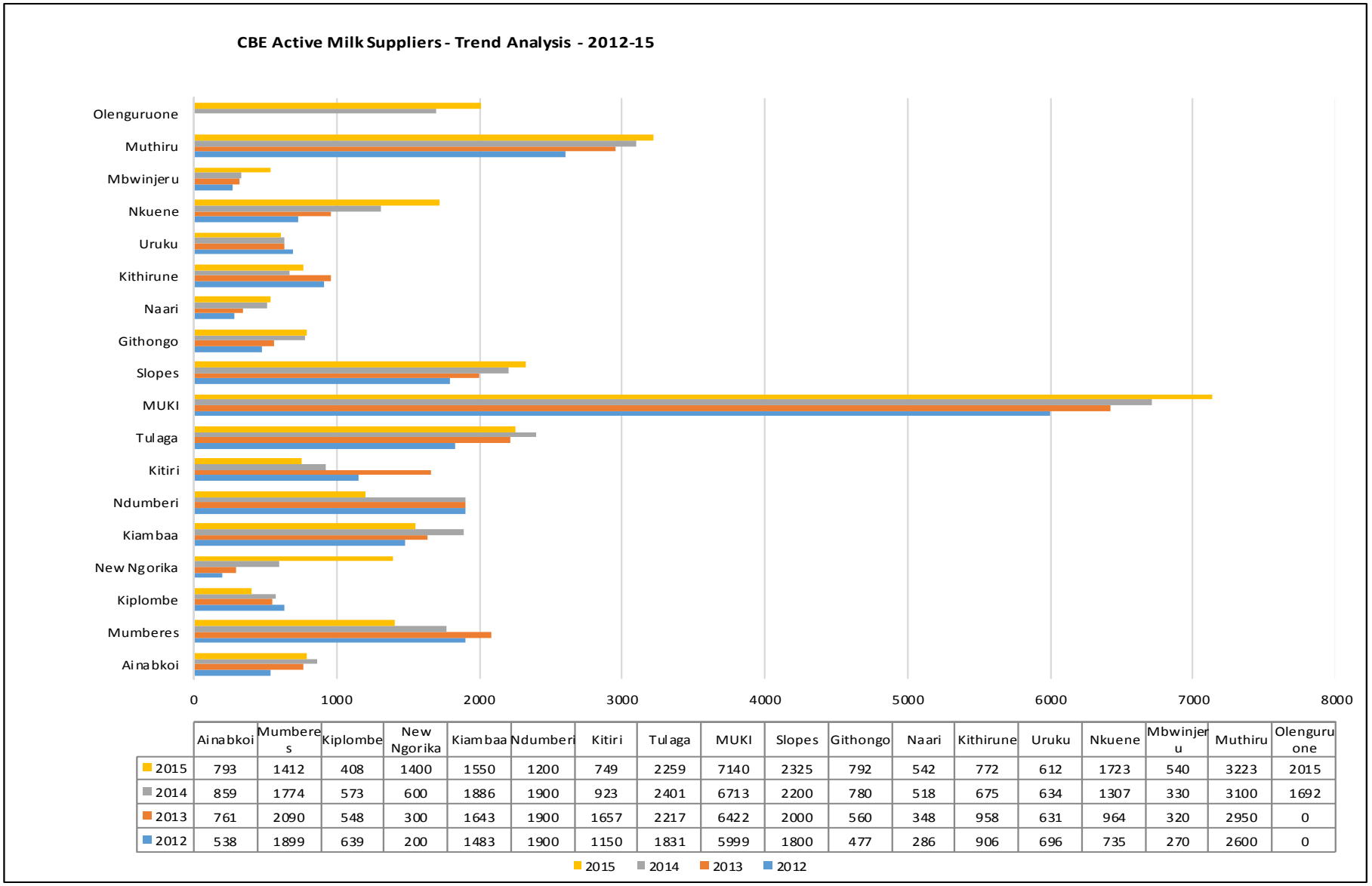
7.2.2 Milk intake and sales

The eighteen CBEs taken together recorded a total annual milk intake of over 69 million kilograms in 2015, compared to 49.8 million kilograms in 2012 (40 percent increase from 2012 up to 2015). The 69 million kilograms of milk represent a value of KSh 2.62 billion at an average price of KSh 38 per kilogram (or EUR 23.8 million at an exchange rate of € 1 = KSh 110). The average annual milk intake per CBE was 2.9 million kilograms in 2012 and 3.9 million kilograms in 2015, with a range of 0.5–12.9 million kilograms in 2012 and a range of 0.8–20.5 million kilograms in 2015, an increase of about 35 percent.

Nevertheless, four CBEs have recorded a negative annual milk intake ranging from −425 percent to −7 percent between 2012 and 2015: Ndumberi, Ainabkoi, Kiplombe and Kitiri DFCSs. The other fourteen CBEs have recorded positive growth ranging from 17 percent to 390 percent for Muthiru and Mbwinjeru DFCSs respectively over the period 2012–2015. The latter has recorded a 100 percent increase in the number of active milk suppliers.

Figure 5 shows how milk intake developed for the individual CBEs. The decreases can be attributed to stiff competition from other CBEs and milk processors, as well as poor service delivery (including delayed farmer payments) and management issues eroding farmers' trust. The increases can be explained by an increase in the number of active milk suppliers (caused by good service delivery, timely payments and better milk prices) and the increase of milk production per milk supplier. The latter appears to have a positive correlation with T&E services and increased investments in fodder establishment and preservation, although this was not statistically validated.

These developments are illustrated by the example of Geoffrey Imathiu, one of the lead farmers from Naari DFCS, who states that before 2013 he was producing ten kilograms of milk daily from three cows; currently, he is producing sixty kilograms of milk daily from four cows.



	Ainabkoi	Mumberes	Kiplombe	New Ngorika	Kiambaa	Ndumberi	Kitiri	Tulaga	MUKI	Slopes	Githongo	Naari	Kithirune	Uruku	Nkuene	Mbwinjeru	Muthiru	Olenguruone
2015	793	1412	408	1400	1550	1200	749	2259	7140	2325	792	542	772	612	1723	540	3223	2015
2014	859	1774	573	600	1886	1900	923	2401	6713	2200	780	518	675	634	1307	330	3100	1692
2013	761	2090	548	300	1643	1900	1657	2217	6422	2000	560	348	958	631	964	320	2950	0
2012	538	1899	639	200	1483	1900	1150	1831	5999	1800	477	286	906	696	735	270	2600	0

***Figure 4**: Development in number of Active Milk Suppliers of 18 CBEs between 2012 and 2015.*

Table 6

Key performance indicators for all eighteen CBEs, 2012–2015.

KPI	2012	2013	2014	2015	% change 2012–2015
Registered members	51,699	56,717	61,496	70,137	+36%
Active members	23,409	26,269	27,173	29,455	+26%
Milk intake (tonnes)	49,881	56,139	62,134	69,778	+40%
Milk sales (M KSh)	1,681	2,048	2,401	2,705	+61%
Farmer payments (M KSh)	1,450	1,735	2,122	2,418	+67%
% Farmer payment	86%	85%	88%	89%	+3%
Selling price (KSh/litre)	33.70	36.50	37.40	38.80	+15%
Buying price (KSh/litre)	29.10	30.90	33.10	34.70	+19%
Available for operations and profit (KSh/litre)	4.60	5.60	4.30	4.10	

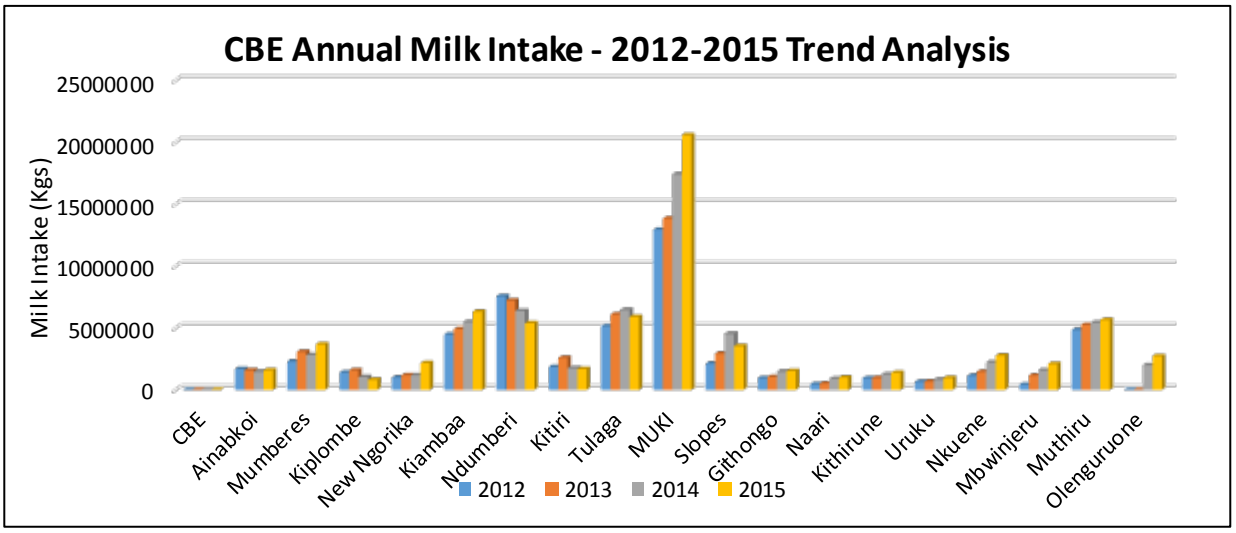


***Figure 5**: The annual milk intake of eighteen CBEs between 2012 and 2015.*

The annual milk sales income (MSI) across all eighteen CBEs increased from KSh 1.7 to KSh 2.7 billion, a growth of almost 60 % from 2012 to 2015. This is attributed mainly to increased milk intake and the selling price, which has increased from an average of about KSh 33.70 in 2012 to KSh 38.80 in 2015 (see Table 6).

The average MSI across the eighteen CBEs increased from KSh 93 million in 2012 up to KSh 150 million in 2015. In 2012 there was a range from KSh 16.1 million (Naari DFCS) to KSh 408.7 million (MUKI DFCS); in 2015 the range increased from KSh 37.9 million (Uruku DFCS) to KSh 759.3 million (MUKI DFCS). Nevertheless, in 2015 Ainabkoi, Kiplombe and Ndumberi DFCSs recorded a decrease in MSI over the period of −2 percent, −30 percent and −3 percent respectively. This is mainly attributed to decreased milk intake. All the other fifteen CBEs recorded positive MSI growth ranging from 16 percent to 387 percent in Kitiri and Mbwinjeru DFCSs respectively.

Farmer payments increased by 67 percent across all the eighteen CBEs together from 2012 to 2015 and by 13 percent from 2014 to 2015. Total farmer payments per CBE ranged from KSh 26.3 million to KSh 705 million for Kiplombe and MUKI DFCSs respectively in 2015 compared to a range from KSh 13.6 million to KSh 387 million for Naari and MUKI DFCSs in 2012.

Of the total MSI, the proportion that was paid to farmers increased from 86 percent in 2012 to 89 percent in 2015. This is attributed to a number of factors, such as competition from other actors, improved efficiency in CBEs (less wastage and unnecessary costs), increased milk intake and economies of scale, hence resulting in higher income. The increase in both selling and buying price pushed up the farmer payments and MSI results.

Dairy farmers are buoyed by these developments, and more and more farmers are venturing into the dairy business as a result. This momentum can only be supported by increasing consumer demand for milk both locally and regionally – in the East Africa Community and the countries in the Common Market for Eastern and Southern Africa.

7.2.3 Profitability

Milk intake, milk sales, and farmer payments have developed, but the bottom line of their sustained success is profitability. This is always a difficult issue to assess properly, especially with the cooperative type of DFCSs. These lack strong and forensic auditing of their books by the Department of Cooperatives, which is responsible for overseeing their operations. According to the Cooperative Societies Act (National Council for Law Reporting, 2012), cooperatives are not supposed to declare profits in their financial statements and are expected to pay out end-of-year profits or retained earnings to the members. As a result, cooperatives are tempted to invest hastily in projects that have not undergone proper feasibility analysis. Eventually this eats into the core business of the CBEs, thereby negatively affecting their cash flow and their ability to meet debt demands. This remains a challenge for sustainability of these cooperatives, especially in terms of business expansion and mitigation of unforeseen risks.

***Photos 29–31**: Investments by a DFCS (i.e. ATM milk pasteurizer, cooling tank, agro-vet shop), which unfortunately led to losses and complaining farmers: The DFCS was no longer able to buy products from companies and therefore farmers could no longer buy farm inputs via the agro-vet shop; also see section 7.2.3).*

Figure 6 shows the net profit from all eighteen CBEs separately. The empty spaces mean that CBEs did not conduct an audit of their books in that year, which makes thorough analysis difficult. The smallholder dairy value chain progress report 2013 (SNV Kenya 2014) states that before 2013 most CBEs were making losses in the milk business, but making profits via agro-vet shops. The worst performing ones during that time were Slopes, Githongo and Uruku DFCSs, which experienced real net losses caused by poor governance and management practices (SNV Kenya 2014). Their situation has improved, even though profit margins have remained thin. Currently, annual net profits in the CBEs do not exceed KSh 3 million, excluding Kiambaa DFCS. At least three DFCSs were making a loss in 2014. In most cases, irresponsible investments have been the reason for societies making a loss; for example, one DFCS started too many investments at the same time (see photos 29-31). These investments, some of which cannot be made without investing in other equipment as well, like a pasteurizer and a cooling tank, are only profitable when milk intake reaches a certain threshold. Factors such as poor weather conditions and decreasing farmer loyalty easily affect milk intake, which affects the return of these investments.

Another contribution to a negative financial balance is funding that is easily accessible from development, public or private organizations. These organizations are not always discerning in handing out funds to CBEs, making CBE management boards greedy and ready to invest in ill-designed business ventures. The funds Kiplombe DFCS received from the KCB Foundation were used in this way. Similarly, Tulaga DFCS received a grant of KSh 3 million from the county government to build a feed mill. The KSh 3 million appeared to be insufficient, so the CBE took out a KSh 5 million loan to complete the mill. However, Tulaga was not able to run the feed mill efficiently, and the loss-making enterprise ate dramatically into Tulaga's profitability.

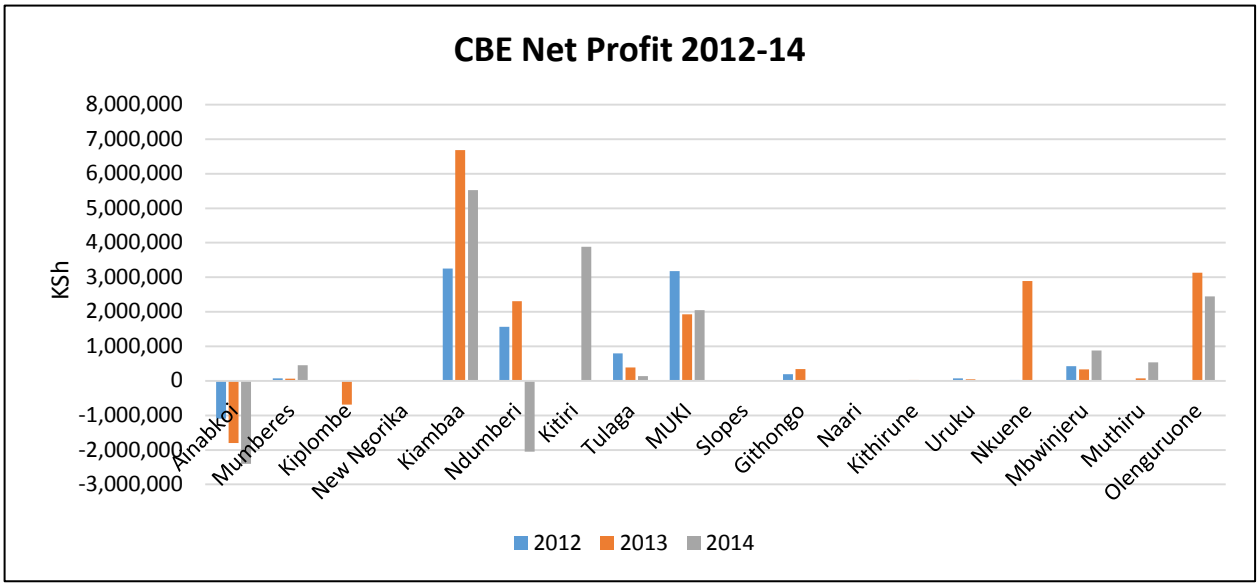


Figure 6: Eighteen CBE net profits between 2012 and 2015

Note: 2015 data are not included, as only provisional data were available.

8 Discussion

Chapter 7 presented an overview of responses and changes by CBEs and their farmer members after being involved in KMDP interventions. The changes have been difficult to measure at times due to a lack of comparative data and interventions being conducted concurrently by other organizations and/or institutions. This chapter will provide answers to the questions: “What have been the results of the changes made by CBEs and farmers?” and “Why did CBEs and farmers respond to interventions and change practices the way they did?”

8.1 Development of governance in CBEs

Section 7.1.1 showed that interventions in CBE governance and management have resulted in more services being provided in-house by CBEs (or being outsourced if in-house provision was not justifiable for economic or ethical reasons). The interventions also led to varied degrees of adoption and implementation of other good governance practices. After the general implementation of interventions, whereby all CBEs received the same support, two CBEs have actively started seeking more support. Most CBEs have adopted certain structures and policies and have made investments to strengthen their service delivery system. The second approach, where support was given to only those CBEs that actively requested it, resulted in a higher implementation level of good governance practices in the requesting CBEs. Overall the data on the eighteen CBEs show an increase in KPIs such as number of active milk suppliers, milk intake, milk sales, and profitability.

A number of factors explain why CBEs have reacted so differently towards interventions. The specific history of the CBE plays a role, such as what support it has had from (development) organizations or institutions, but the key factor is leadership (see Box 1).

- When a CBE has a good reputation, it is easier to keep loyal farmers and board members are already familiar with good governance practices. A troubled history, for example with a lot of politics and mismanagement, makes it more likely that current board members and management have also been influenced by these;
- Support from other non-governmental organizations has also influenced how CBE governance reacted to interventions. KMDP staff found that CBEs that have received a lot of easy obtainable support, for instance in terms of “free” money, have become spoiled. Worse, some of them were inclined to invest in loss-making business enterprises;
- The main reason CBE governance reacts differently to interventions is the level of leadership they enjoy. None of the eighteen CBEs has what could be rated as excellent leadership. In CBEs that are relatively well-governed, board members and management often find their own way of benefiting a little extra from the position they are in. However, those CBEs that request support and are willing to open up their financial accounts to scrutiny do make steps in the right direction.

Whether a CBE does open itself to change depends on its leadership. The leadership in a farmer-owned CBE starts with the board of management that is chosen by the DFCS members. The experience and education of board members, and especially of the chairperson, determine how board members govern the society and thus develop the CBE. The board members (frequently) are (re)elected based on their standing in the community, for example, due to a (public) position they hold or held, their family background or their strong presence and voice in general. Thus board members are not necessarily chosen for their good ideas or board experience. Moreover, the number of candidates is often very limited: Only occasionally does the number of candidates exceed the number of positions. Farmers in general see board positions as political business, and therefore do not like to be involved.

The chairperson fulfils the main role on the board, so to a large extent how the CBE develops will reflect the mindset of the person in that role.

The CBEs that have started to request KMDP support and services all have a committed, experienced chairperson on the board. These board members are able to put training into practice and adopt good governance practices; they are also able to mobilize the other board members. In contrast, CBEs that did not improve governance practices – or did so to only a limited extent – mainly have older board members who are often form four (lower high school) leavers.

The CBEs requesting support have proved, step by step, that they can change, but they do need close monitoring and hand-holding. The fact that the demand-driven interventions target smaller issues rather than the bigger picture issues has also helped in realizing more concrete results; solutions for these issues are easier for board members and management to incorporate and also easier for intervening organizations to monitor. For a CBE to implement improved governance practices, the law governing cooperatives needs to be clear and widely known, whereby monitoring and evaluation are carried out and measures are enforced.

Box 1. CBE leadership

Good leadership is defined here as:

- Capable management: Management staff who know their role, are qualified to perform it and are not hindered by board members in doing so
- Vision and strategy: A clear strategy led by a qualified manager and supported by board members who are able to direct the affiliated CBE farmers towards the vision described in the strategy
- Organizational excellence: A good organizational structure and good communication within the governance of the CBE as well as with affiliated farmers
- Proper conduct: A board and management showing integrity and transparency.

8.2 Capacity building of farmers

CBEs made significant investments in their capacity to provide T&E services to their farmers. The CBE-directed T&E model was new to the farmers: Previously farmers had conducted dairy farming as their fathers and grandfathers had before them, with a similar aim: To sustain the household with milk. Prior to the collapse of the public services in the 1990s, T&E services were free of charge. The investment of a CBE in a T&E unit was therefore not very well received at first; it was seen as “spending money without knowing what it will bring”. Most CBEs now have all T&E structures in place and experience the benefits of the T&E unit. Nevertheless, not all active milk suppliers in all CBEs have been reached by T&E officers, or they can access only a limited set of T&E activities. This means that T&E units have not been performing optimally, which could be explained by the following factors:

- The number of T&E officers is insufficient to offer T&E services to all active milk suppliers. The lack of money – or lack of willingness to create a larger budget for T&E services – hinders the employment of sufficient officers;
- The T&E officers’ expertise and performance leave something to be desired. The T&E officers often have limited education, especially because most CBEs underpay and therefore attract unqualified staff (and where qualified staff are employed, the chance that they will receive and take a better offer is significant). KMDP staff had to set the example for T&E officers and guide them; however, in a number of cases the KMDP staff are the ones who are doing the T&E work;
- The T&E unit of MCDFCU lacks some important human resource management procedures, which are necessary to effectively and efficiently guide, educate and monitor from a distance the T&E officers stationed in affiliated CBEs. In some instances, T&E staff left for better jobs when requests to MCDFCU for salary increases were left unanswered. MCDFCU lacks a T&E sub-committee that can make management decisions. This makes decision-making regarding T&E a bureaucratic process. Furthermore, the T&E officers employed by MCDFCU often have a higher salary than the manager of the affiliated CBE who has to supervise the officer; this creates tension and results in ineffective management;

- CBE T&E committees find it hard to effectively carry out their tasks around implementation and monitoring of T&E activities and management of the T&E unit. Most committees already find it a challenge to meet monthly and therefore find it difficult to realize concrete results in practice;
- Lack of transportation for T&E officers remains an issue, even though every CBE received a co-financed motorbike. In the majority of the CBEs it is questionable whether the purpose of motorbike purchase was achieved: The motorbike in a number of cases is not used for T&E activities due to insufficient operational T&E budget, poor maintenance or the vehicle being used for other activities.

The responses and changes described in section 7.1.2 are based on experiences with a limited number of farmers per CBE. In general, farmers are slowly starting to invest in their farm. These farmers are the ones whose responses and changes have been documented. In order to start investing in their dairy farms, either via small, short-term investments or large, long-term investments, these farmers have gone through a change process that needs to be emulated by others.

A number of factors affect whether farmers attended training, and additional factors determined whether farmers began to implement the training:

- *Communication means*. The communication means to get farmers to training should be adjusted to what farmers prefer: For example, posters at milk-collection points or text messages via mobile phones;
- *Reputation of a certain type of training*. For example, field days attract many farmers, as they receive free lunch; however, presentations are theoretical and therefore not popular; on-farm demonstration visits have been more interesting, because they contribute to “seeing is believing”. Also, the person who is giving the training can contribute to the reputation of that training;
- *Accessibility of the training location*. Attendance numbers of farmers at training sessions in central locations are larger than training conducted in remote locations;
- *Priority*. The farmer should come to see attending training as a priority over other activities. This is, to a large extent, determined by the importance of dairy farming in the region; for example, dairy is the main economic activity in Naari because agro-ecological circumstances limit other types of farming.

After attending training, the second step is for farmers to implement what they have learned. This step takes time. The factors that determine whether farmers will implement what they have learned include:

- *Consensus in the household*. Most farmers need to consult their family, because the family decides where money will be used. Doing something the rest of the community is not doing hinders easy consensus in the family;
- *Financial status*. Farmers should have capital to invest in their dairy farm. Often farmers are only able to change small things, making short-term investments that do not require a lot of money. Farmers who have another job, for example telephone farmers, do have money, but then the third factor is whether they see dairy farming as a priority;
- *Priorities*. Farmers often have multiple priorities, for example, investing in education for the children;
- *Comprehensive knowledge*. This is determined by training and available sources of information (training, T&E officers, and neighbouring farmers);
- *Competitive incentive*. When implementation will result in status or additional income, farmers are motivated to implement sooner.

Lead farmers have been through a process that addressed these factors: Communication and agreement to use only a small part of their land for fodder testing have led to consensus in the household. The household has made money available (from savings, from having a job, or through a loan); as the amount of money available differs per household, so the speed of implementation differs. Lead farmers have started to see dairy farming as a priority, largely influenced by stable milk prices. Moreover, lead farmers have access to more information, due to an extended service delivery model of the CBE (e.g. availability of the T&E officer) as well as involvement of supporting organizations that led to an increase in training.

The above factors together determine the success of lead farmers. The fact that KMDP has focused on only those farmers who are willing to contribute is now starting to change the mindsets of other

farmers, the ones who are serious about investing in dairy farming. Nevertheless, the extent of spillover effects is hard to measure and depends on the level of sharing that lead farmers carry out.

There is not a particular type of farmer who is most suited to being a lead farmer. However, the number of telephone farmers acting as lead farmers is limited, because even though these farmers do have money to invest, implementation is a challenging process. Telephone farmers employ a manager who is responsible for implementation, but who cannot make the decisions. This slows down the implementation process. Furthermore, the number of young farmers (performing as lead farmers) is growing: Some have no alternative; others are now seeing farming as a source of income. These younger farmers are more eager to implement new practices, but may lack capital.

The general reputation of non-governmental organizations is still a limiting factor for farmers: They are known for giving out “free” money, which makes (some) lead farmers still use “lack of financial means” as an excuse for not beginning implementation. Their hope that KMDP will provide subsidies maintains this charity mentality.

The role of processors in providing T&E services in CBEs is increasing, because processors are noticing an upward trend in milk intake. MCDFCU has found that other processors are also willing now to invest in T&E activities, because this strengthens their competitive edge. Nevertheless, the organization of T&E activities by processors has been challenging: Good collaboration between the processor and CBEs is needed, as are transparency and the division of responsibilities.

8.3 Improving fodder practices

Training organized for (lead) farmers has promoted fodder establishment and preservation, but lack of capacity resulted in minimal follow-up with the trainees. An accurate judgement about the level of implementation is therefore not possible at this stage of KMDP, even though lead farmers have adopted fodder establishment, and interviews and observations in the field suggest spillover effects.

The process of establishing fodder via fodder demonstration plots was challenging due to farmers’ attitudes, climatic conditions and a lack of good guidance. Farmers’ attitudes determined their willingness to invest in fodder establishment. Of those who did invest, the farmers who did not feel responsible for the fodder demonstration plots, because they did not own them, found that their crops failed due to mismanagement. The farmers who felt responsible and received seeds of crops that needed minimal care experienced successful plot development and economic advantages. These fodder demonstration plots have contributed to positive promotion of fodder crops among farmers. The crops that needed more care often failed due to incorrect – or absence of – advice.

The second step, fodder preservation (e.g. maize silage), was adopted faster by farmers. The amount of silage made and recorded by SPE members has been increasing quickly since the establishment of these groups, though the level of adoption varies between farmers in different regions.

Farmers from CBEs in Central region and especially those in Eastern region adopted fodder preservation practices faster than farmers from CBEs in North Rift region. Farmers from Central and Eastern regions have smaller land sizes (on average two or three acres) available for dairy farming than farmers from North Rift region (on average eight to ten acres). While farmers from Central and Eastern regions were encouraged to construct zero-grazing units faster, which forced them to cultivate fodder for their cows, farmers from North Rift region started to paddock before taking the next step of construction zero-grazing units. The farmers in Eastern region who do not have farming alternatives (e.g. coffee, tea, potato or horticultural farming) due to ecological or climatic conditions have quickly adopted fodder establishment and preservation. The SPE groups have been more successful in Eastern region in terms of amounts of silage made. The SPE groups were piloted in Central region, and lessons learned from that pilot were taken into account during the establishment of SPE groups in Eastern region. Members of SPE groups in Eastern region are therefore closer located to the farmers, are better coordinated by the original SPE group and are more involved with CBEs. The SPE groups in Central region are geographically scattered, having only limited involvement in the CBEs and are no longer making silage as their core business, but instead have discovered better economic benefits in offering other activities.

The cultural background of farmers also affected their level of adoption. In general, the Kalenjin farmers in North Rift region need more time to adapt than farmers in Central and Eastern regions (the Kikuyus and the Merus from the Mount Kenya area).

The importance of SPE members being located close to their clients (the farmers), the potential of good economic benefits in making silage, good coordination, and the relationship between CBEs and SPE members are only three of many factors that affect the success of SPE groups. Success also depends on the willingness of SPE members to first focus and invest in creating a good reputation before earning money (e.g. keeping prices low and delivering quality work), the capability of the chairperson of the group to lead by example and to mobilize the group to make sure rules set are followed, the business-mindedness of SPE members and demand from farmers for assistance in silage making.

Focusing on only a limited number of farmers to promote fodder establishment and preservation assumes there will be spillover effects, which are hard to measure. In most CBEs, farmers are encouraged to visit the demonstration plot farms, and some demonstration plot farmers have taken the initiative to extend these invitations so other farmers can learn from them. This gives an opportunity to further explore other ways of promoting spillover effects.

Establishment and preservation of fodder will lead to better fed and more productive cows and to a reduction of feeding costs for the farmer. Linking farmers to CFPs has led to better access to fodder and probably more productive cows in the dry season, but it also resulted in an increase of costs for the farmer. As the quality of hay is generally poor and prices are too high in relation to feed value, this is not an area that KMDP should further promote, unless hay quality is improved or other quality fodders are commercialized.

8.4 Improving milk quality through a processor-led approach

Improving milk quality via an inclusive business model, driven by a processor, did not go as planned. In general, processors have made limited efforts to improve the quality of milk collected from smallholder farmers, but did invest in CBEs to reduce the volume of milk that would be spoiled on arrival. The processors only invest in those CBEs that have proved to be loyal by supplying to them for a long time, or processors invest because they have started to feel a competitive pressure from other processors that are investing. This has resulted in processors employing educated graders and posting them at loyal CBEs or sending experts to smallholder farmers to investigate what is causing milk to be spoiled. Nevertheless, spoilage records provided by CBEs show irregularities, and it is unclear which spoilage amounts are taken into account and which not. These questionable records impede analysis of trends in the quality of milk from CBEs and therefore in being able to see the results of investments.

There are several reasons why processors are sceptical of investing in the milk quality of smallholder farmers via CBEs. Firstly, processors lack an incentive to improve milk quality, because the market is not demanding better quality milk. Secondly, CBEs can decide to sell their milk to another marketing channel at any time, so the processors would risk not seeing the returns of the investments. On the other side, smallholder farmers are also sceptical about investing in quality milk: These investments require money, which farmers often do not have; for milk quality to truly improve, all smallholder farmers should participate; and processors have a general practice of rejecting excess milk during the rainy season regardless of the quality, because in this period they receive more milk than they can sell.

Processor Happy Cow is participating in a pilot of improving milk quality via two CBEs, whereby costs are partly covered by KMDP. The ambition of Happy Cow to produce excellent quality cheeses and yoghurts has led to the willingness of this processor to invest. Nevertheless, for the project to succeed, the processor, CBEs and the affiliated smallholder farmers should be willing and able to consistently invest in milk quality, and consumers should be willing to pay a higher price for the quality cheeses. This process requires a lot from all actors, who therefore need time to adjust, resulting in a slow process of creating results.

In conclusion, processors will only start investing in receiving better quality milk once the market starts demanding it, or when authorities start enforcing standards and regulations. For the time being, smallholder farmers deliver the quality of milk that is requested by CBEs; CBEs take the quality of milk that is demanded by processors; and processors buy the quality of milk that they can sell to customers. So convincing any actor to invest in better quality milk while the next part of the value chain is not demanding it is very difficult. Time will tell whether the milk quality tracking and tracing pilot by Happy Cow will be a game changer.

8.5 Contribution to business development of CBEs

Supporting CBEs by enhancing their businesses appeared to be a challenging task. The first step was to organize stakeholder meetings where a number of input suppliers would come together with CBEs to establish a training calendar. This strategy proved ineffective in increasing input supplier training: CBEs found that only a limited number of input suppliers were willing to attend these meetings. Input suppliers were said to be unwilling to travel long distances to CBEs just to establish a calendar as well as being unwilling to share their strategies and information in front of other input suppliers.

Successful business relations have proved to depend on knowing and meeting each other's expectations. Each party has different expectations of the others: CBEs towards input suppliers; input suppliers towards CBEs; CBEs and input suppliers towards their facilitator.

CBEs are trying to satisfy farmers by meeting their demands. When farmers are content with training (e.g. when the training is well-facilitated and the information given in the training is clear and useful for farmers) and when the products supplied are considered good value for money, the demand from farmers will increase. When farmers experience issues with product quality or availability, or have attractive alternatives, demand will be affected. Expectations of CBE board and management could also be influenced by the potential to profit from the deal themselves: They are making the final decision and thus consider all benefits when deciding whether to stock products of a certain supplier.

Input suppliers are focused on selling as many products as possible, so they expect that training is attended by a minimum number of farmers and that a minimum number of products are sold during the training. However, the relationship between a CBE and any input supplier has to be flexible because demand from farmers and available supply from input suppliers fluctuate, making a strict contract difficult. Yet input suppliers also want confirmation that a previous deal with that CBE is respected, giving rise to potential for conflict.

Input suppliers, service providers and farmers may also develop expectations towards the facilitator of these B2B linkages. The facilitator, in this case KMDP, aims to introduce both parties to each other. In practice, input suppliers and service providers expect rather more: They want KMDP to help them facilitate training, establish contracts and many other tasks. When these expectations are not properly aligned, disappointments and even conflicts may arise.

Direct communication between CBE staff and/or KMDP staff and input suppliers has helped each party to understand the others' expectations and to increase investments in training, resulting in more businesses linkages of CBEs with input suppliers.

8.6 Programme implementation: Interaction between KMDP staff and clients

The results of KMDP, in terms of responses and changes made by clients and farmers, have been described in Chapter 7 and further discussed in the previous sections of this chapter. The responses and changes described are determined by the type of interventions and the attitude of clients, but also by the interaction between the implementing team (mostly junior consultants [JCs] and local capacity builders [LCBs]) and clients. This section analyses this staff–client interaction to better understand what pitfalls and opportunities arose during the implementation process.

The interaction between KMDP staff and clients has been much appreciated; farmers have especially appreciated JCs and LCBs as well as KMDP as a project. For example, one JC mentioned that one of the farmers saw him in Meru town one day over the weekend and said that he would buy him lunch. Another farmer referred to the LCB as “a prophet from above”. In general, smallholder farmers find the LCBs and JCs to be resourceful and to provide timely and accessible information that they can benefit from. KMDP staff have generated trust with farmers, and this helps to change the mindsets of farmers and convince them to implement new activities.

Nevertheless, both KMDP staff and clients have also experienced challenges in interacting with dairy societies and smallholder farmers:

- The first challenge for KMDP staff in the field, the JCs and LCBs, is to be fully up to date about KMDP’s interventions. They interact on a monthly or quarterly basis with KMDP senior staff, but this might not be sufficient to be informed about all the developments at higher levels. It is the KMDP senior advisors who establish the MoUs with clients. The JCs and LCBs feel that without good and regular communication, they can feel confused and may create unrealistic expectations in clients;
- The second challenge is staff knowledge level. JCs are recent graduates, while LCBs have gained more experience in the field. To keep the knowledge levels of both up to date and to make sure KMDP staff do not get involved in operational matters in CBEs, KMDP staff require regular training. The training they have been given by international trainers has contributed to building their capacity, but they need more specific training to make sure they can give clients the right guidance, for example, in terms of fodder development. Staff request that these international trainers coordinate and mutually adjust the information they deliver, during both KMDP staff training and training of (smallholder) farmers;
- The third challenge for KMDP staff is to respond to smallholder farmers without creating false expectations. The reputation that development organizations have of giving out money “for free” is haunting KMDP, requiring KMDP staff to respond appropriately to smallholder farmers who demand money.

From the other side, the eighteen CBEs and affiliated farmers also face challenges in interacting with KMDP staff. Firstly, regular turnover of KMDP staff on the ground, which was necessary to ensure the presence of committed staff, has been challenging for some farmers. The clients state that they became confused as they had to get used to new people all the time. Secondly, in some cases farmers have seen KMDP staff as being too pushy: Over-commitment by KMDP led to discouragement as board members or farmers resisted changing their mindsets. For example, one of the CBEs said that the LCBs were there “in all the meetings, all the time, pushing too much”, annoying the CBE’s management.

9 Recommendations

This chapter lists a number of recommendations for the implementation of KMDP interventions in the smallholder dairy value chain.

a. Supply-driven interventions should only be carried out as pilots that can be monitored well and that connect to the approach of the relevant dairy value chain actor

Supply-driven interventions should aim at encouraging the actors to realize what they should know. These types of interventions should be done to a limited extent only, and should be evaluated regularly. Long-term interventions should be demand-driven, whereby only those who are willing to change are targeted, and consistent, quality follow-ups are in place.

b. Governance and management support to CBEs should focus on what they need, be offered only to those CBEs that are actively requesting support, and make proportional contributions

Leadership of CBEs changes regularly, and board members are often chosen based on their status, rather than their knowledge and experience. Transparency and accountability are major issues, especially because monitoring and legal consequences are absent. This makes liability of board members of dairy societies limited. CBE willingness to change is evidenced by board members and management requesting assistance, offering to make a proportional contribution and opening up their books for scrutiny. Support to these CBEs increases the chance that interventions will have a sustainable impact. Continuous support and monitoring, as well as starting from issues that need to be solved in the short term, will encourage board members to further develop themselves in terms of adopting good governance practices.

c. Farmers should be encouraged to vote for board members based on their expertise and ideas instead of their background; board members should be encouraged to employ qualified staff

A good board chairperson is usually is a leader who guides the society's vision and growth. Even so, the management staff should be qualified to translate the vision into reality. Qualified management is key to promoting transparency and accountability, which are fundamental for achieving dairy farmer loyalty to the CBE. Interventions by development partners should therefore focus on educating farmers on their rights to elect good leaders and what to look for in leadership. The approach of fostering lead farmers is creating more ambitious, committed farmers who should be encouraged to play a role in CBE governance.

d. CBEs need to be encouraged to improve their competitive position through good service delivery systems

The competitiveness of a CBE as a milk-collection enterprise is determined by a good farm gate price, timely payments and cost reduction via economies of scale. A good service delivery system has become an additional factor. It requires encouragement and promotion through detailed and thorough business analysis and advice. When the CBE cannot feasibly run certain services, they should be run in collaboration with private companies. The check-off system is a very effective instrument for competing with hawkers and should therefore be used in developing service delivery systems.

e. To improve milk quality along the dairy value chain, the processor should be attuned to the market or have a strong ambition to create a product with high added value

Milk quality issues at the CBE level can only be addressed with the milk processor taking the lead by demanding quality milk from CBEs. Even then, this needs to be supported by effective enforcement of standards by the authorities. The milk processor will only be in the lead when consumers demand quality milk or when it has an intrinsic ambition to supply quality milk products. Unless this is the case, any interventions by development organizations will not yield the desired impact.

Where these conditions are met, social pressure at dairy society level could help mobilize farmers to improve hygienic milking and handling practices.

f. Linkages for B2B relationships between CBEs and input suppliers should be tailor-made and be implemented with proper due diligence in place

Expectations from input suppliers towards an intermediary party like SNV Kenya need to be clarified from the beginning. After linking input suppliers with a CBE, KMDP should transfer the responsibility of creating B2B linkages and exchange knowledge towards the CBE's T&E officer or manager, who will prefer to have a flexible contract with the input supplier as demand from farmers fluctuates. Dealing with input suppliers and service providers one-on-one is the best way to ensure effective linkages. The CBE T&E officer should also be competent in conducting due diligence on the input suppliers and service providers before they engage with them. Issues include effectiveness/quality of products offered and satisfaction of farmers on products delivered and on the training session - training approach used and competence of trainers/technicians.

g. The introduction of T&E units should be followed by running the T&E unit as a profit centre

CBE management and farmers are starting to realize the importance of T&E activities. T&E units do not generally function from a business point of view. The next step for CBEs and/or processors is to focus on applying a business approach: Create a business plan on T&E where T&E is tied to increases in milk production and supply to CBEs. T&E officers should get more skills to make sure they can handle the new approach. KMDP staff should have a more coordinating and advisory rather than an implementing role. To ensure sustainability of T&E in CBEs, CBEs have to see returns in any investment to sustain that investment.

h. The lead farmer approach should be scaled up

The lead farmer approach seems to have been well received by the CBEs. Spillover effects have been noticed in the field, mostly by neighbouring farmers or by farmers from further away places who are actively looking for exemplar practices. However, even the current number of lead farmers per CBE is too small to reach the majority of active milk suppliers. The number of lead farmers should increase, and CBEs should actively share the results of lead farmers with other farmers, as farmers learn best from other farmers.

i. The T&E officer should encourage lead farmers to become trainers of trainers

Lead farmers can set the example for other farmers about what changes are needed. However, before they can effectively use their farm for training purposes, they need to bring their farming practices up to a minimum level. This requires further training on incorporating farm economics, dairy investment priorities, farm planning, breeding and water conservation methods. They also need exposure to new practices, for example, by visiting medium-scale farmers. Eventually, lead farmers could be encouraged to open up their farm by requesting a small fee per visiting farmer.

j. Add focus on issues like planning, access to finance and business attitude

Supporting organizations that want to trigger smallholder farmers to invest in their dairy farms should focus on the following factors to create an effective and efficient approach:

- *Planning*. Farmers should be aware of their opportunities and what they can change and should be able to prioritize changes in their dairy farms. This requires attention to household decision-making dynamics as well: Whether the farmer is male or female, the couple should be in agreement with each other.
- *Finances*. Farmers need a source of capital to carry out and expand dairy businesses.
- *Business attitude*. Peer pressure may be useful in forming a dairy-as-business attitude. Farmers may feel pressured to invest in their dairy farms when they feel the need to prove themselves to other farmers.

k. Demonstration plots should be scaled up, taking into account lessons learned

The demonstration plots helped to show that a successful demonstration plot is influenced by:

- The quality of information provided;
- The attitude and working conditions of the demonstration farmer;
- The size of the demonstration plot;
- The quality of advice and monitoring by an expert.

l. SPE-models should be scaled up, and SPE groups should be encouraged to increase their service offer

The SPE groups that have proved to be successful should be trained in offering new types of services. These SPE groups have gained ground in their CBEs and can really start working as an enterprise. Increasing the number of activities will not only increase the revenue that the SPE group members are making, but will also bring certain other services closer to the farmers.

m. Linking CBEs with commercial fodder producers should be encouraged only when minimum conditions are met

Linking smallholder farmers and/or CBEs to CFPs has met minimal success due to the limited number of CFPs, poor quality, high priced of hay leading to high costs of milk production, lack of cash from farmers and lack of a credit system with the CFPs. Before smallholder farmers are encouraged to buy hay from CFPs, they should first be able to make a cost–benefit analysis. When this analysis shows that much could be gained from buying hay, the farmers can be encouraged to do this – but only if they are not able to cultivate the fodder themselves. In its support to commercial fodder producers, KMDP should consider working only with entrepreneurs who are willing to invest in increased quality of hay and – preferably – commercialization of other fodder crops (e.g. grass and maize silage packed in bales).

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Appendix 1 Profiles of 18 KMDP CBE clients in three regions

Sources: CBE records (listed here in terms of milk intake in 2012)

Table 1

Dairy Farmers Cooperative Society Ltd Profile 1.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	0.4	1.2	1.6	2.1	425%
No of active milk suppliers	270	320	330	540	100%
No of registered members	505	600	600	650	29%
Average buying price (KSh)	30	33	33	37	23%
Average selling price (KSh)	39.23	35.31	37.49	39.00	-1%
Total income from milk sales (Million KSh)	16.8	41.3	58.8	81.7	386%
Payment to milk suppliers ((Million KSh)	12.9	38.6	51.7	77.5	501%
No. of services	3	3	4	4	33%
Investments in T&E (Thousand KSh)	-	206	481	707	Infinite

Note: The services include: Agro-vet, AI, T&E and Financial management

Table 2

Dairy Farmers Cooperative Society Ltd Profile 2.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	0.5	0.5	0.91	1.0	100%
No of active milk suppliers	286	348	518	542	90%
No of registered members	4,050	4,050	4,050	4072	1%
Average buying price (KSh)	30	35	35	38	27%
Average selling price (KSh)	35.39	36.01	37.05	39.00	10%
Total income from milk sales (Million KSh)	16.1	18.7	33.6	38.9	142%
Payment to milk suppliers ((Million KSh)	13.6	18.2	31.7	37.9	179%
No. of services	2	2	3	4	100%
Investments in T&E (Thousand KSh)	-	160	186	613	Infinite

Note: The services include: Agro-vet, AI, T&E and Financial management

Table 3

Dairy Farmers Cooperative Society Ltd Profile 3.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	0.7	0.7	0.8	1.0	43%
No of active milk suppliers	696	631	634	612	-12%
No of registered members	1,480	1,990	2,012	2143	45%
Average buying price (KSh)	30	35	35	35	17%
Average selling price (KSh)	34	37	38	39	15%
Total income from milk sales (Million KSh)	22.0	23.8	31.4	37.9	72%
Payment to milk suppliers ((Million KSh)	19.5	22.8	28.9	34.0	74%
No. of services	4	4	4	4	0%
Investments in T&E (Thousand KSh)	-	2,554	2,673	2,880	Infinite

Note: The services include: Agro-vet, AI, T&E and Financial management

Table 4

Dairy Farmers Cooperative Society Ltd Profile 4.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	0.9	1.0	1.2	1.4	56%
No of active milk suppliers	906	958	675	772	-15%
No of registered members	1,324	1,324	1,325	1423	7%
Average buying price (KSh)	27	35	35	37	37%
Average selling price (KSh)	30.78	34.19	37.86	39.00	27%
Total income from milk sales (Million KSh)	28.8	33.1	46.7	54.1	88%
Payment to milk suppliers ((Million KSh)	25.2	33.8	43.2	51.4	104%
No. of services	3	4	4	4	33%
Investments in T&E (Thousand KSh)	-	900	1,110	572	Infinite

Note: The services include: Agro-vet, AI, T&E and Financial management

Table 5

Dairy Farmers Cooperative Society Ltd Profile 5.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	1.0	1.1	1.5	1.5	50%
No of active milk suppliers	477	560	780	792	66%
No of registered members	2,245	2,282	2,370	2,401	7%
Average buying price (KSh)	30	32	35	37	23%
Average selling price (KSh)	31.41	35.08	38.27	39.00	24%
Total income from milk sales (Million KSh)	29.8	36.8	55.9	59.4	99%
Payment to milk suppliers ((Million KSh)	28.4	33.5	51.1	56.4	99%
No. of services	3	3	4	4	33%
Investments in T&E (Thousand KSh)	-	1450	1532	980	Infinite

Note: The services include: Agro-vet, AI, T&E and Financial management

Table 6

Dairy Farmers Cooperative Society Ltd Profile 6.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	1.0	1.2	1.2	2.2	120%
No of active milk suppliers	200	300	600	1,400	600%
No of registered members	500	600	1,100	2,006	301%
Average buying price (KSh)	25	30	30	32	28%
Average selling price (KSh)	27.8	35	35	37.95	37%
Total income from milk sales (Million KSh)	30.0	41.4	41.6	69.1	130%
Payment to milk suppliers ((Million KSh)	25.0	35.5	35.6	82.0	228%
No. of services	2	2	3	3	50%
Investments in T&E (Thousand KSh)	-	-	1,120	990	Inifinite

Note: Services include: Agro-vet, Finance & T&E

Table 7

Dairy Farmers Cooperative Society Ltd Profile 7.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	1.1	1.5	2.2	2.8	155%
No of active milk suppliers	735	964	1,307	1723	134%
No of registered members	3,123	3,329	3,657	3753	20%
Average buying price (KSh)	32	35	35	38	19%
Average selling price (KSh)	40.37	35.28	38.18	39.00	-3%
Total income from milk sales (Million KSh)	45.8	51.7	84.0	108.1	136%
Payment to milk suppliers ((Million KSh)	36.3	51.3	77.0	105.3	190%
No. of services	3	3	4	4	33%
Investments in T&E (Thousand KSh)	-	1,535	1,650	1,400	Infinite

Note: The services include: Agro-vet, AI, T&E and Financial management

Table 8

Dairy Farmers Cooperative Society Ltd Profile 8.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	1.4	1.6	1.0	0.8	-42%
No of active milk suppliers	639	548	573	408	-36%
No of registered members	1,353	1,484	1,898	2,051	52%
Average buying price (KSh)	27.0	29.30	30.9	32.20	19.3%
Average selling price (KSh)	32.50	30.90	43.80	39.30	20.9%
Total income from milk sales (Million KSh)	46.0	49.0	45.5	32.2	-30%
Payment to milk suppliers ((Million KSh)	38.2	46.6	32.1	26.3	-31%
No. of services	3	3	3	3	0%
Investments in T&E (Thousand KSh)	-	120,000	1,142,700	969	infinite

Note: The services include: Agro-vet and T&E services

Table 9

Dairy Farmers Cooperative Society Ltd Profile 9.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	1.5	2.0	2.0	2.7	80%
No of active milk suppliers	1,692	1,692	1,692	2,015	19%
No of registered members	2,871	2,871	2,871	2,871	0%
Average buying price (KSh)	28.30	33.20	32.10	34.40	22%
Average selling price (KSh)	31.40	35.50	36.90	37.50	19%
Total income from milk sales (Million KSh)	46.9	72.3	73.7	102.0	117%
Payment to milk suppliers ((Million KSh)	42.3	67.5	64.0	93.6	121%
No. of services	-	1	3	4	infinite
Investments in T&E (Thousand KSh)	-	-	240	1,036	infinite

Note: The services include: T&E, agro-vet, FSA and AI

Table 10

Dairy Farmers Cooperative Society Ltd Profile 10.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	1.6	1.6	1.5	1.6	0%
No of active milk suppliers	345	375	375	375	8.7%
No of registered members	538	761	845	793	47%
Average buying price (KSh)	30.5	31	31	32	8.2%
Average selling price (KSh)	34	36	35	35	2.9%
Total income from milk sales (Million KSh)	56.0	56.0	50.0	55.0	-1.8%
Payment to milk suppliers ((Million KSh)	48.8	49.0	45.0	49.0	0.4%
No. of services	4	4	5	5	25%
Investments in T&E (Thousand KSh)	0	0	183	290	100%

Note: The services include: Agro-vet, Milk transport, Animal Dip Services, rental and T&E (introduced in 2014).

Table 11

Dairy Farmers Cooperative Society Ltd Profile 11.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	1.8	2.6	1.8	1.7	-6%
No of active milk suppliers	1150	1657	923	749	-35%
No of registered members	1250	1852	2,156	2,220	78%
Average buying price (KSh)	26.75	29	29.25	31.2	17%
Average selling price (KSh)	29.18	34.04	34.83	36.96	27%
Total income from milk sales (Million KSh)	53.8	88.4	61.0	62.3	16%
Payment to milk suppliers ((Million KSh)	49.3	75.3	51.2	52.6	7%
No. of services	4	4	4	4	0%
Investments in T&E (Thousand KSh)	-	282	312	360	Infinite

Note: The services include: Agro-vet, AI, Financial management, and T&E

Table 12

Dairy Farmers Cooperative Society Ltd Profile 12.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	2.1	2.9	4.5	3.5	67%
No of active milk suppliers	1800	2000	2,200	2,325	29%
No of registered members	1900	2200	2,300	2,580	36%
Average buying price (KSh)	28	31	31	34.04	22%
Average selling price (KSh)	59.5	91.1	140.2	120.6	103%
Total income from milk sales (Million KSh)	67.5	103.3	159.0	136.8	103%
Payment to milk suppliers ((Million KSh)	59.5	91.1	140.2	120.6	103%
No. of services	2	2	3	4	100%
Investments in T&E (Thousand KSh)	-	120	180		Infinite

Note: The services include: Agro-vet, AI, T&E and Financial management

Table 13

Dairy Farmers Cooperative Society Ltd Profile 13.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	2.3	3.0	2.8	3.7	61%
No of active milk suppliers	1,899	2,090	1,774	1,412	-26%
No of registered members	2,700	2,890	3,300	4,436	64%
Average buying price (KSh)	28	31	33	30.4	8.6%
Average selling price (KSh)	28.9	26.6	36.6	34.0	17.6%
Total income from milk sales (Million KSh)	68.6	101.3	101.4	125.2	89.4%
Payment to milk suppliers ((Million KSh)	64.1	95.2	92.9	112.0	74.7%
No. of services	2	2	2	2	0%
Investments in T&E (Thousand KSh)	-	200	592	823	infinite

Note: The services include: Agro-vet and T&E services

Table 14

Dairy Farmers Cooperative Society Ltd Profile 14.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	4.5	4.9	5.5	6.3	40%
No of active milk suppliers	1483	1643	1,886	1,550	5%
No of registered members	4060	4250	4,527	4,800	18%
Average buying price (KSh)	29.9	32.9	36.75	37.00	24%
Average selling price (KSh)	37.78	41.01	44.22	44.30	17%
Total income from milk sales (Million KSh)	168.8	201.6	241.9	279.8	66%
Payment to milk suppliers ((Million KSh)	133.6	161.7	201.0	233.7	75%
No. of services	4	4	4	4	0%
Investments in T&E (Thousand KSh)	-	700	1,200	600	Infinite

Note: The services include: Agro-vet, AI, Financial and T&E

Table 15

Dairy Farmers Cooperative Society Ltd Profile 15.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	4.9	5.3	5.4	5.7	16%
No of active milk suppliers	2,600	2,950	3,100	3223	24%
No of registered members	7,340	7,960	8,373	8456	15%
Average buying price (KSh)	28	33	33	37	32%
Average selling price (KSh)	30.00	30.00	34.22	39.00	30%
Total income from milk sales (Million KSh)	145.6	157.6	186.0	220.6	51%
Payment to milk suppliers ((Million KSh)	**135.9**	136.0	166.5	209.2	54%
No. of services	4	4	4	4	0%
Investments in T&E (Thousand KSh)	-	1650	1831	2,197	Infinite

Note: The services include: Agro-vet, AI, T&E and Financial management

Table 16

Dairy Farmers Cooperative Society Ltd Profile 16.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	5.1	6.1	6.5	5.9	16%
No of active milk suppliers	1,831	2,217	2,401	2,259	23%
No of registered members	3,000	3,000	3,000	3,000	0%
Average buying price (KSh)	27.17	29.75	31.67	32.3	19%
Average selling price (KSh)	32.14	35.32	35.17	36.07	12%
Total income from milk sales (Million KSh)	166	215	227	213	28%
Payment to milk suppliers ((Million KSh)	140	181	204	191	36%
No. of services	4	5	5	5	25%
Investments in T&E (Thousand KSh)	-	285	320	752	Infinite

Note: Services include: Advances, agro-vet, AI, Financial management and T&E

Table 17

Dairy Farmers Cooperative Society Ltd Profile 17.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	7.6	7.2	6.4	5.4	-29%
No of active milk suppliers	1900	1900	1900	1200	-37%
No of registered members	6000	6000	6000	5400	-10%
Average buying price (KSh)	30	33	34	36	20%
Average selling price (KSh)	34.99	35.97	40.98	47.67	36%
Total income from milk sales (Million KSh)	265	260	262	257	-3%
Payment to milk suppliers ((Million KSh)	227.0	238.6	217.2	193.8	-15%
No. of services	4	4	4	4	0%
Investments in T&E (Thousand KSh)	-	551.4	623.5	400	Infinite

Note: The services include: Agro-vet, AI, Financial management, and T&E

Table 18

Dairy Farmers Cooperative Society Ltd Profile 18.

Key Performance Indicators	2012 (Baseline)	2013	2014	2015	% Change (2012-15)
Milk intake (Million kg)	12.9	13.8	17.4	20.6	60%
No of active milk suppliers	5999	6422	6,713	7,370	23%
No of registered members	10,524	12,561	14,483	17,500	66%
Average buying price (KSh)	26	29	30	34.25	32%
Average selling price (KSh)	31.59	34.28	30.00	36.89	17%
Total income from milk sales (Million KSh)	408.7	474.6	522.7	759.3	86%
Payment to milk suppliers ((Million KSh)	387.0	452.4	589.1	705.0	82%
No. of services	6	6	6	7	17%
Investments in T&E (Thousand KSh)	-	1,200	2,957	6,350	Infinite

Note: The services include: Agro-vet, AI, Financial management, and T&E

Appendix 2 Meru Central Dairy Farmers Cooperative Union Ltd (MCDFCU)

1. History

Meru Central Dairy Co-operative Union Ltd was registered under the Co-operative Societies Act on 23rd May 2005. Prior to that, it was an activity of the former giant union known as Meru Central Farmers' Co-operative Union (MCFCU). The registration of a new Union was necessitated by a restructuring process that was spearheaded by the Ministry of Co-operative Development and Marketing, which was aimed at improving efficiency and effectiveness of the former giant Union.

The main area of operation of MCDFCU is Meru County, especially the sub-counties or divisions Imenti North and South. However it also collects milk in Tharaka Nithi County that is part of the former Greater Meru District, and socio-economically and culturally the same. In addition MCDFCU has contracts with a few cooperatives outside the Meru region (close to Nyeri) for supply of raw milk. MCDFCU also offers artificial insemination, supply of animal feeds and field extension services to the members of its affiliated DFCSs.

The core business of the MCDFCU is milk processing and marketing. It also offers artificial insemination services, supply of animal feeds and field extension services to the farmers.

2. Genesis of the Union

The first Dairy Co-operative Union known as Meru District Dairy Union (MDDU) was formed in 1967 by three primary co-operative societies. These societies are Katheri Dairy Farmers Co-operative Society, Naari Dairy Farmers Co-operative Society and Buuri Dairy Farmers Co-operative Society. These societies came together primarily to pull their resources in order to transport their raw milk to the nearest processing plant owned by Kenya Co-operative Creameries (KCC) in Kiganjo in Nyeri District.

In that period, there was another strong Union for coffee primary societies known as Meru African Coffee Co-operative Union (MACCU). In 1972, a directive was issued by the Ministry of Co-operative Development that there should be only one co-operative union in any administrative district. The Dairy Union thus amalgamated with the Coffee Union (MACCU) to form the then giant Meru Central Farmers' Co-operative Union (MCFCU). Following the merger, all dairy activities were run as a department of the newly created Farmers Union. Since coffee played a major economic role to the small scale farmers in Meru District, attention was naturally concentrated to activities related to coffee. As such the main pre-occupation of the dairy section was in selling of raw milk to the main urban centres and delivering of the surplus milk to KCC Kiganjo.

As selling of raw milk in urban centres intensified a need to improve the cumbersomeness of distributing the raw milk led to innovation. A semi manual chilling and packaging system was installed in 1978. It was located at the present site of the milk bar in the town centre next to Kenya Commercial Bank. This semi-manual installation made an immediate impact in revenue generation for the dairy section and therefore the management of the Union started viewing this development in a different perspective.

In the 1970's the country was generally enjoying economic growth and donors started to support dairy, amongst others from the Finnish International Development Agency (FINNIDA).

FINNIDA commissioned a consulting company for agriculture and agro food industry known as FINNAGRO to undertake a feasibility study with a broad objective of initiating small scale milk processing plants in areas that were not adequately served by the then Kenya Co-operative Creameries. The study concluded that there was a big potential for milk production and processing in Meru and Bungoma Districts.

Through FINNIDA, it was recommended that the two districts be chosen as pilot projects to undertake milk processing activities to promote dairy farming in the potential districts not adequately served by KCC.

Thus the first milk processing plant was installed in Meru in 1982 with a grant from the Government of Finland at a cost of Kshs.15.75 million. This plant had a capacity of processing 20,000 litres of milk with only one production line of Ultra Heat Treated (UHT) milk in polythene sachets. The economic impact of the plant to dairy farming was tremendous. Whereas the feasibility study had indicated that it would take about eight years before the full capacity of the plant was realized, it took only three years to exceed the installed capacity. In 1986, the Union was not able to handle the surplus milk and therefore approached KCC to offload the surplus milk, which however was declined by the latter, leading to wastage of milk and losses for the farmers.

It was also in this period (1982) that the Dutch funded National Dairy Development Programme (NDDP) started operations in Meru. At its height during the early 1990-s NDDP was present in 20 Districts across Kenya. In Meru it introduced the zero grazing system and the programme effectively promoted the establishment of Napier grass as base roughage. NDDP contributed to increased interest and investments in dairy by the Meru smallholders and growth in production.

Between 1987 and 1990, plans of expanding the plant were initiated. FINNAGRO was again engaged to carry out a feasibility study of expanding the 20,000 litre capacity plant. Their report became the blue print upon which the new plant was expanded. In line with the outcome of the feasibility studies, FINNAGRO filed an application to the Finnish Export Credit Limited for a loan to facilitate the expansion of the processing plant. The loan was to cover up to 85% of the contract price with the pre-mixed concessional credit. Meru Central Farmers Union was expected to pay a minimum of 15% of the contract price. The foundation for the new factory was laid in 1992 at a cost of Kshs 230 million. On completion, the capacity of the processing plant was 50,000 litres. The processing plant was now able to process the following products:

- Pasteurized one day fresh milk;
- Two (2) weeks shelf life milk;
- Cream;
- Fermented milk (Mala and Yoghurt);
- Ghee;
- Butter;
- Ice cream.

In 1995, the Union launched its own artificial insemination service scheme following the GoK withdrawal of AI services during 1993/94. In 1996 the supply of milk to the Union exceeded the installed processing capacity of 50,000 litres of milk per day. However in 1997/98 the El Nino rains tremendously caused a decline in milk production. In 1999/2000 a long-life Tetra Pak packaging line was inaugurated with a maximum capacity of processing 10,000 litres of milk per day in 250 ml packets. From the year 2000, the Union started experiencing a lot of challenges. It was heavily indebted to its key financiers like the Co-operative Bank as well as other suppliers of goods and services. In addition to that it owed the GoK close to KES 100 million for guaranteeing the loan to the Finish Export Credit Ltd.

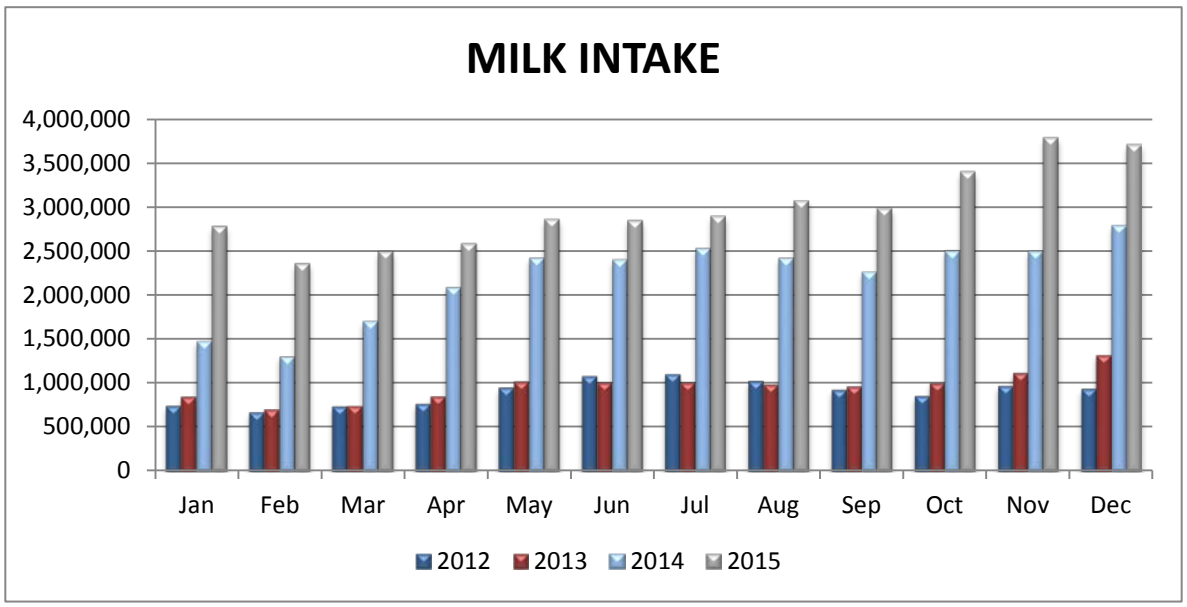
Delays in payment to farmers accumulated and shot up to three months in arrears as well as salaries and wages of the employees. In 2003 the Ministry of Co-operative Development and Marketing intervened and formed a commission of inquiry which led to the dissolution of the Management Board of the Union. Among the recommendations of the Commission was that the Union be restructured into four independent business entities as follows:

- Coffee Union;
- Dairy Union;
- Multipurpose Co-operative Society;
- Savings and Credit Cooperative (SACCO).

This resulted in the birth of Meru Central Dairy Farmers Co-operative Union Ltd (MCDFCU) was registered under the Co-operative Societies Act on 23rd May 2005.

Between 2012 and 2015, MCDFCU experienced a revival and with an aggressive milk procurement strategy that saw milk intake increase from 30,000 to 90,000 litres/day in this three year period, paralleled by investments in training and extensions and – especially - heavy investments in the factory. Two new ESL (Extended Shelf Life) processing and packaging lines were supplied from Finland on a credit facility from the Government of Finland, with a capacity to pack 300,000 litres of milk per day. By doing so MCDFCU moved from pasteurized fresh milk to 30 and 90 day shelf life milk, which it markets in Meru/Isiolo and other parts in Northern Kenya, and the large urban centres Nairobi and Mombasa. In 2015 MCDFCU also started supplying milk to Somalia.

MCDFCU's growth ambitions are therefore high, as it wished to increase to 300,000 litres milk intake in the next 4-5 years. It is price setter in Meru region offering year round the highest price for raw milk as compared to its competitors. Access to the market remains crucial even with prolonged storage capacity of ESL milk. Growth ambitions are high and milk intakes have continued to grow as shown below. (Source of data: MCDFCU strategic plan 2015).



3. Elected Officials and Staffing

MCDFCU Ltd by-laws provide for an elected leadership of seven management and three supervisory committee members respectively. The management committee lays down the policies of the organization while the staff headed by the Chief Executive Officer implement the policies. The role of each committee is clearly stipulated in the Union's by-laws. The highest policy making body of the MCDFCU is the Annual General Meeting (AGM) which is attended by delegates. When they meet, the delegates mainly conduct the following business: Approve audited accounts, approve maximum borrowing power, approve budget for the ensuing year, and hold elections.

The management committee employs staff that perform the day-to-day operations of the Union. The CEO heads the staff. MCDFCU Ltd currently has a workforce of 133 employees. The other managers are heads of departments which are as follows: Administration, finance and accounts, internal audits, milk procurement, production, quality assurance, marketing and engineering.

4. Affiliates

MCDFCU Ltd is formed by 26 affiliated primary cooperative societies. The primary cooperatives have an active membership of about 40,000 members/farmers. In addition to cooperatives, MCDFCU Ltd also receives milk from other suppliers like small self-help groups, non-affiliated suppliers and individual dairy farmers. Currently 40 self-help groups and eight non-affiliated societies are supplying milk to the union. MCDFCU also started collecting/buying milk from cooperative societies outside Meru County in the vicinity of Nyeri.

5. KMDP Partnership

KMDP is working with MCDFCU both at the Union level and with five farmer cooperatives affiliated to the Union.

a) Union level

- KMDP supports the extension program in recruiting and training of extension officers for the 26 affiliate societies. In addition, KMDP provided a grant of Kshs 1 million in a co-financing arrangement with MCDFCU and supported the purchase of motorbikes for extension program;
- Support to field days organized by the Union. MCDFCU organises one farmer field day per year bringing together over 10,000 farmers;
- Pre-ISO Audit for the processing factory. This activity is planned to be done in the course of the year with KMDP's support (50% co-financing). MCDFCU is in the course of identifying a consultant to the same.

b) Farmers' Cooperative level

KMDP supports five farmer cooperative societies affiliated to MCDFCU, i.e. Githongo, Naari, Nkuene, Kithirune and Uruku DFCSs. Focus has been on the following activities:

- Working with the extension officers in organizing and conducting training of farmers;
- Developing and strengthening an extension service model working with input providers;
- Identification of lead farmers and supporting them to improve their farming activities and become learning farms for other farmers;
- Identification and training of young farmers to form Service Provider Enterprises and support farmers in fodder establishment and preservation;
- Training and coaching of the cooperatives' management boards on governance and leadership.
- Provision of financial management support to the CBEs.

6. Agriterra

Agriterra also supports MCDFCU and conducted various studies to inform business improvement and milk marketing. It also assisted with the development of a strategic plan and gave support to the extension program. Agriterra has initiated several missions with experts from FrieslandCampina's Shared Value CSR programme.

To explore the potential of nature to improve the quality of life

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The mission of Wageningen UR (University & Research) is 'To explore the potential of nature to improve the quality of life'. Within Wageningen UR, nine specialised research institutes of the DLO Foundation have joined forces with Wageningen University to help answer the most important questions in the domain of healthy food and living environment. With approximately 30 locations, 6,000 members of staff and 9,000 students, Wageningen UR is one of the leading organisations in its domain worldwide. The integral approach to problems and the cooperation between the various disciplines are at the heart of the unique Wageningen Approach.