

## Evaluation of the Kenya Market-led Dairy Programme II (KMDP II)

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## Executive Summary

The Kenya Market-led Dairy Programme (KMPD) Phase II was implemented between 2016 and 2019 by SNV. It is funded by the Embassy of the Kingdom of the Netherlands in Kenya (EKN). The programme is a continuation of KMDP Phase I which started in 2012. As the programme is nearing an end, EKN has commissioned Aidenvironment to conduct a final programme evaluation. Aidenvironment conducted this evaluation in partnership with Emma Blackmore, a research associate with IIED based in Kenya.

This evaluation is based upon a review of existing literature and documentation related to the programme (including independent studies), and key informant interviews. In total, 42 interviews were conducted with a variety of actors in Kenya and the Netherlands.

KMDP II has as its overall goal *“to contribute to an improved business and investment climate of the Kenyan dairy sector”*. It was based upon the premise that the sector needs to improve the cost price and quality of milk in order to enhance its competitiveness. Interventions were structured according to five outcomes which were (1) training, extension and farm advisory services, (2) quality feed and fodder, (3) supply of milk quality, (4) functional value chains and (5) international linkages. The last two outcomes are intended to contribute to the first three.

### *Relevance*

**The design of KMDP II's is highly relevant to several of the most important systemic issues in the Kenyan dairy sector.** Issues around training/capacity, feed and fodder and milk quality significantly undermine the sector's competitiveness and sustainability. The programme is also relevant for climate change, in terms of both adaptation and mitigation. The programme's focus on entrepreneurial farmers of varying scales (in terms of land size and milk production) seems to be justified from a sector development perspective. Though KMDP II was sensitive to the inclusion of women, the programme design was not that strong on gender as it lacked a targeted approach or strategy for female inclusion and empowerment.

### *Results*

**KMDP II's contributed to systemic change on various issues.** KMDP II has contributed to transformative change in fodder production and distribution. It has introduced numerous innovations including the maize train and software to ration cow feed. Another legacy is that the programme has contributed to the establishment of various companies with viable service delivery models differentiated for small-, medium- and large-scale farmers. KMDP II also contributed to a shift in mindset with regards to the need of practical farmer training, the use of maize for silage and the importance of milk quality. KMDP II's activities regarding networking, partnership brokering and advice were highly valued by Dutch companies and was highly complementary to EKN's From Aid to Trade agenda. The Innovation Fund also contributed to investments by Dutch companies in new business ventures.

**This evaluation found evidence of many activities being sustained, scaled and replicated.** Particularly on fodder, it has catalyzed wide-scale change. Its contribution to an improved service offering for medium- and large-scale dairy farms can also be considered as an important legacy. The increased awareness regarding milk quality is also a major achievement, though this has not yet materialized into widespread behavioural change.

**Less has been achieved on building functional quality-based value chains.** Despite the many lessons learned there is not yet a proof of concept of the business case and business model of value chains for

quality milk, whether from smallholders or medium and large-scale farmers. This remains a sector-wide challenge that is still to be solved.

**There is general appreciation for the quality of support given by KMDP II.** Staff were regarded as being high quality, professional, committed and client centered. The programme has also become an important source of new professionals in the sector.

**Despite KMDP II having contributed to a better business and investment climate the overall market and policy context remains unfavorable to a full transformation of the Kenyan dairy sector.** This hinders further scaling of some of the introduced innovations and blocks transformative change on other issues. There is a general belief that the transition to a more competitive and sustainable Kenyan dairy sector will only occur if certain conditions in the political and market context can change. KMDP II has contributed to some extent to such changes, but much more needs to be done.

### *Recommendations*

We recommend EKN and SNV continue their engagement in the Kenyan dairy sector and identified three options which build upon KMDP achievements so far, and work to improve sector competitiveness and sustainability.

**The first option is to facilitate the institutionalization of conducive policies and investments to improve milk quality and promote a more general sector transformation process.** It is recommended to link this with a more generic sector dialogue on how to make the Kenyan dairy sector more competitive and sustainable. A shared vision and roadmap among key stakeholders will also enable further scaling of innovations introduced by KMDP. An option for SNV is to position itself for a more facilitating role at sector level, as it has gained credibility with its eight years involvement in the sector.

**The second option is to support the next level of innovations on fodder, milk quality and value chain integration.** These innovations should drive the procurement of quality services and adoption of good practices by increasing number of farmers, farmer groups and dairy product companies. Key issues to address on fodder include access to forage seeds, registration of forage varieties and plant material, forage quality standards, testing and independent assurance of quality and the development of more efficient production and distribution models to reduce costs and enhance quality. There is also a need to collect more evidence on the costs and benefits of quality forage products to raise awareness in the market and strengthening of linkages between various actors in Kenya to promote further scaling. With regards to milk quality and value chain integration there is a need to develop viable supply chain models which can source quality milk from small-scale producers. This requires innovations in terms of integrated service delivery models, quality management, traceability, trading practices (including market incentives for quality) and marketing.

**The third option is to continue the role of networking, linking, and intelligence sharing for Dutch and Kenyan service providers and dairy companies.** A dedicated Dairy Business Hub, possibly for the whole East African Community, allows to continue this service so much valued by the private sector. A key success factor is to equip the Hub with staff with good knowledge of the dairy sector and business development. Efforts should be made to work towards a (semi)- commercial business model to reduce dependency on donor funding in the future.

## Acronyms

- CBE Collection and Bulking Enterprise
- CIAT Centre for Tropical Agriculture
- DVS Directorate of Veterinary Services (falls under MoALF)
- EDFA Eldoret Dairy Farmers Association
- EKN Embassy of the Kingdom of the Netherlands in Kenya
- ENTAG Ethiopia Netherlands Trade for Agricultural Growth
- ESADA East and Southern Africa Dairy Association
- IIED International Institute for Environment and Development
- ISPI Input Suppliers, Service Providers and Investors
- KDB Kenya Dairy Board
- KDPA Kenya Dairy Processors' Association
- KEBS Kenya Bureau of Standards
- KES Kenyan Shilling
- KMDP Kenyan Market-led Dairy Programme
- LDC Local Dairy Consultancy
- MoALF Ministry of Livestock Agriculture and Fisheries
- NEADAP Netherlands East African Dairy Partnership
- PDTC Practical Dairy Training Centres
- PMO Policy and Market Options
- PUM PUM Netherlands Senior Experts
- QBPS Quality Based Payment System
- QT&TS Quality Tracking and Tracing System
- SME Small- and Medium-sized Enterprise
- SNV SNV Netherlands Development Organisation
- SOP Standard Operating Procedures
- SPE Service Provider Enterprise
- TTI Technical Training Institutes

# Introduction

The Kenya Market-led Dairy Programme (KMPD) – Phase II was implemented between October 2016 and August 2019 by SNV. It is funded by the Embassy of the Kingdom of the Netherlands in Kenya (EKN). The programme is a continuation of KMDP Phase I which ran from 2012 until 2016. As the programme is nearing an end, EKN commissioned Aidenvironment to conduct a final programme evaluation. The objective of the evaluation is threefold:

1. To assess the design, efficiency, effectiveness, impact and sustainability of the interventions.
2. To learn from the project approach and management.
3. To make recommendations for future interventions in the Kenyan dairy sector.

Aidenvironment conducted this evaluation in partnership with Emma Blackmore, a research associate with International Institute for Environment and Development (IIED). The evaluation was carried out between early April and mid-June 2019. This report presents the findings of this evaluation.

## **Methods used**

This evaluation is based upon a review of existing literature and documentation related to the programme (including independent studies), and key informant interviews. In total, 42 interviews were conducted with a variety of actors in Kenya and the Netherlands. They included programme staff, EKN, close partners, beneficiaries, clients as well as key informants with less direct involvement in the programme but with knowledge of the sector. See Appendix 1 for a list of key informants.

The total allocation of days for the consultants on this evaluation was 30, of which more than 50% was spent interviewing key informants (both face-to-face and over the telephone). Prior to conducting the interviews, the evaluation team had a day's workshop with several KMDP staff members to validate our understanding of the programme based upon the desk review, and to explore SNV staff's understanding of the results of KMDP II. The findings have subsequently been validated by EKN and SNV in a joined meeting. The evaluation questions were based upon the Terms of Reference provided by EKN.

In this document we present the findings using the following concepts:

- **Intervention:** an activity implemented by the programme
- **Outcomes and impacts** (also referred to as effectiveness): the immediate and final results of the interventions (and the extent to which they fulfilled their objectives)
- **Relevance:** the extent to which the programme is suited to the priorities of the Kenyan dairy sector
- **Sustainability:** whether the results of an activity are likely to continue after the programme ends
- **Scaling:** the extent to which project outcomes have been adopted more widely by targeted and non-targeted actors
- **Systemic change:** the extent to which outcomes have contributed to transformative change, for example through a change in mindset, creating leverage, being seen as a 'game changer'

## **Structure of the report**

The report starts with an explanation of the methodology used. It continues with two sections introducing the Kenyan dairy sector and the KMDP II programme. Section three discusses the overall relevance of the programme, followed by a brief overview of the programme achievements according to its M&E framework. The main body of evidence and analysis is presented in section five, which describes the key interventions and results of KMDP II according to its five planned Outcomes, as well as the evidence on their sustainability, scaling and contributions to systemic change. Section six presents findings regarding the effectiveness of the programme's management. The report ends with general conclusions and recommendations for a potential future involvement by EKN and/or SNV in the Kenyan dairy sector.

# 1. Introduction to the Kenyan Dairy Sector

The Kenyan dairy sector **appears to offer great potential for growth**, being the largest sub-sectoral contributor to agricultural GDP and growing rapidly at an average of 4% per annum. In addition, the 50% increase in milk being marketed between 2003 and 2010 alone (Baiya and Kithinji, 2010), and the fact that consumption levels are expected to continue to grow with improved incomes to surpass supply (Orregård, 2013), suggests great potential for the sector. Within sub-Saharan Africa, Kenya's dairy sector is the most developed and the single largest contributor to national GDP at 4.5% (MoALFa, undated).

**Eighty per cent of Kenya's total milk production is produced by smallholders** (Rademaker *et al.*, 2016) – some of whom have crossbred dairy cows, others who have exotic cows<sup>1</sup>). There are estimated to be somewhere in the range of 1 million (SDP in FAO, 2011) to 1.8 million smallholders (MoALFa, undated). These smallholders have mixed crop-livestock farming systems and operate in the high to medium potential agricultural areas of Kenya. The remaining **20% are medium and large-scale dairy farmers** – generally defined as farmers with 20 cows or more. Medium- and large-scale dairy farmers are thought to be growing in number (Rademaker *et al.*, 2016), though a number have also struggled with profitability, despite selling to premium markets and maximizing productivity. Land ownership in Kenya is characterized by increasing sub-division, attributed to population growth, a socio-economic and cultural emphasis on land as a highly valuable and sought-after asset, and is occurring against a backdrop of a limited tendency (and incentives) to sub-let land. The dominance of small farms may therefore persist for many years to come.

The dairy sector consists of several different players: producers; cooperatives (formal sector) processors (the formal sector); retailers (supermarkets, milk bars, shops and kiosks, mobile traders, and cooperatives, selling both pasteurised and unpasteurised) and consumers. 45% of all milk produced is estimated to be consumed on farm by either households or calves. Of the remaining 55% milk that is marketed, the **vast majority (70-80%) is marketed raw** (but boiled before consumption). Informal traders (middlemen/transporters) play an important role in getting raw milk to market.

The remaining **20-25% of marketed milk is processed** (defined as the formal sector). Major processors have their own collection, bulking and transportation systems (FAO, 2011), but typically obtain milk from smallholders, often through cooperatives. Accessibility to raw milk is still a challenge for processors, with high seasonal fluctuations. There are 32 medium and large-sized and 40 small-scale milk processors in Kenya (interview KDB), which combined handle about 1.5 million litres per day, despite having a capacity of 3 million litres, leaving 50% of capacity unutilised (MoALFa, undated). Two of these processors (Brookside and New KCC), process more than 85% of the total processed milk (and **levels of market concentration have been growing over time**), with others making up the remaining 15%. The **formal sector has strong links to government**, with the major processor, Brookside, being partly owned by the Kenyatta family (Kenya's president since 2012 is Uhuru Kenyatta) (Reuters, 2017), and New KCC remaining a state corporation (parastatal) although the government has repeatedly expressed its intention to hand it over to dairy farmers.

Processed milk is more costly than raw milk, which partly explains the higher demand for unprocessed milk. In 2005 (latest available World Bank data), 43.4% of Kenya's population was defined as poor (living on less than \$1.25 a day) (Robinson and Yoshida, 2016). Demand for processed milk and dairy products like mala, yoghurt, ghee and cheese is concentrated amongst middle and upper income groups. However, consumption of processed milk and dairy products increases as household incomes increase,

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<sup>1</sup> Exotic cattle are dairy cattle breeds introduced by European settlers in the early 1900s to Kenya, for example Ayrshire or Guernsey breeds.

and processors who are focusing on quality expect a growth in demand (e.g. Bio Foods). In the medium-term, however, informal dairy markets will likely remain sizeable.

Kenya's dairy sector faces a number of **production and marketing challenges**, including: insufficient rain in the dry season meaning shortage of forages; poor access to high quality fresh and preserved forages and feeds (e.g. with high nutritional value and low aflatoxin levels) to maintain or enhance cattle productivity; poor access to veterinary services; lack of knowledge, awareness and training on dairy and forage management and milk handling (e.g. on safe/clean milking, milk handling and storage, use of proper containers); lack of financial incentives to maintain safety and quality (e.g. not adding water to bulk milk volumes, observing correct withdrawal periods after giving antibiotics to treat mastitis and other diseases); poor quality infrastructure and a lack of adequate cold chain to allow for efficient and safe bulking and marketing of milk.

**Strong incentives and disincentives ('carrots and sticks') to drive quality and safety improvements in milk are lacking** (in both the informal and formal sector). For example, consumer awareness of safety issues and the ability to pay a premium for safer milk is limited, and there is a lack of testing and enforcement of existing food safety standards that exist for milk. There are often strong incentives (and weak disincentives) to adulterate milk or mix morning and evening milk. Farmers and transporters typically lack the financial capacity to invest in aluminum containers that are easier to clean, cooling facilities, reliable access to power, or access to good transportation and roads. **Changes in consumer demand for quality and food safe milk and dairy products, supported by stronger enforcement of food safety regulations and standards, are required to make a meaningful shift towards the production of quality milk.**

**The cost of production in Kenya is high** compared to neighboring countries like Uganda (import from countries falling under the East African Communities Common Markets Protocol is free from import tariffs, unlike the 60% import tariffs that exist for non-East African countries). Kenyan processors, namely Brookside, have been taking advantage of this growing regional trade and lower cost of production, and are establishing processing plants in Uganda. Brookside also imports raw milk from Uganda to process in their Ruiru plant. In addition, there is an influx of large volumes of packed UHT milk from Ugandan, from processors such as Pearl (Lato brand). This is thought to be contributing to the recently reported low milk prices, which are uncommon during the dry season.

**The market is characterized by oligopolistic behavior by the main processors in setting the raw milk prices** to the detriment of farmers – exacerbated by a lack of farmer representation and bargaining power, and a failure of some cooperatives to negotiate meaningfully on their members' behalfes. This is evidenced by the fact that **consumer prices remain high** despite the lower producer prices. Without addressing the cost of production and/or prices paid by processors, the sector will very likely see a growth in the informal sector (also witnessed by fast growth in number of milk dispensing machines or milk-ATMs) to the detriment of the formal sector – which offers less potential for regional and international competitiveness.

**A large portion of production costs in dairy are related to feed (65-70%)** (Perfometer Solutions, 2013 in Creemers and Alvarez, 2019), and feed – especially forages -- is a significant **determining factor for productivity**, milk output per cow (and therefore profitability as well as methane emissions per litre of milk produced). **Proper preservation and storage of high quality feed and fodder is essential** to ensure consistent feeding and optimum productivity year round, thereby reducing seasonality in milk output (this will become increasingly important in light of climate unpredictability). However, Kenya's **feed and fodder market is characterized by poor quality and high cost**, particularly in relation to dairy meal and hay (due to a lack of standards, enforcement of standards, and poor production and storage practices,

leading to aflatoxin growth and loss of nutritional value). In the last 10 years, **feed prices have increased by approximately 70%** (Creemers and Alvarez, 2019).

Aside from issues to do with feed and fodder quality, prices and availability, there is **significant scope for productivity improvements with changes in farm management practices alone**. A large knowledge gap exists around good agricultural practices at the farm-level (especially feeding but also proper handling of milk, breeding, calf rearing, cow comfort etc.). **The existing landscape of practical training is regarded as weak and ineffective**. Government extension is lacking in coverage and/or quality with a lack of practical emphasis. Some NGOs provide training, but this is uncoordinated – with some repetition and overlap. Some private providers exist – typically input providers – but the quality of advice and impartiality is not necessarily guaranteed. There is however emerging engagement of processors (e.g. Meru Union, Githunguri, NKCC) and dairy cooperative societies to invest in training and extension, however this is not yet robust.

In sum, despite the importance of the Kenyan dairy sector in terms of contribution to GDP, income, employment and nutrition, the competitiveness and sustainability of the sector is threatened by high cost of production and food safety issues. In addition, there is concern regarding the environmental practices and impact of the dairy sector.

## 2. Introduction to KMDP II

### 2.1 Programme design

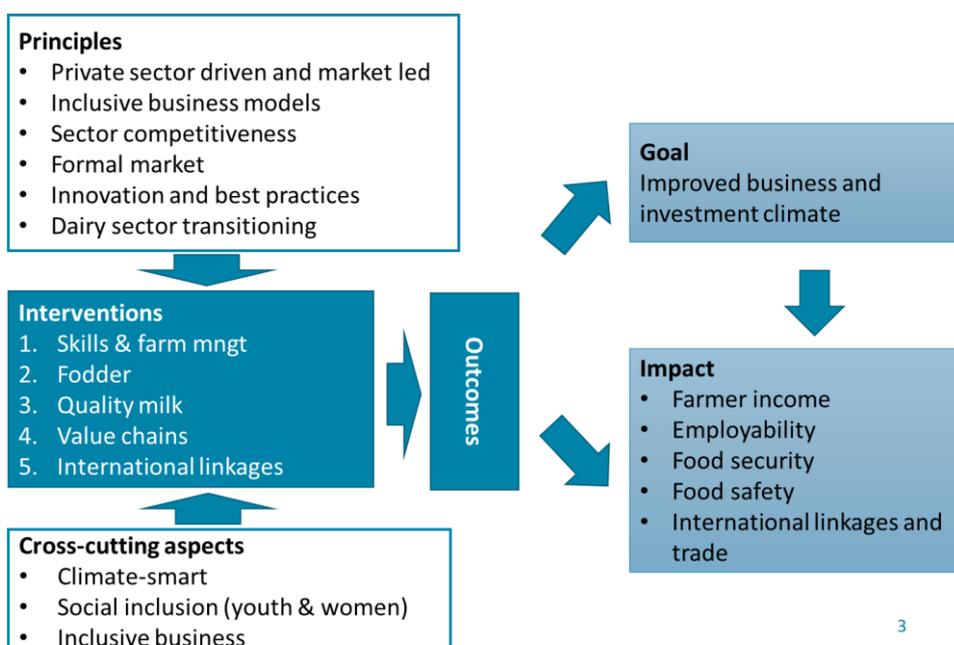
KMDP II is a continuation of KMDP I which started in July 2012. The first overall goal was “to contribute to the development of a vibrant and competitive dairy sector with beneficiaries across the value chain”, linked to the Embassy’s agriculture and food security ambitions.

The second phase, which started in October 2016, has as its overall goal “to contribute to an improved business and investment climate of the Kenyan dairy sector”. It was based upon the premise that the sector needs to improve the cost price and quality of milk in order to enhance its competitiveness.

It has identified **five impacts** areas to which it expected to contribute:

1. **Farmer income:** Increased profitability and income for project beneficiaries, amongst them dairy farmers, commercial fodder producers, dairy societies and processors, as well as input and service providers
2. **Employability:** Enhanced institutional infrastructure for practical skills development at various levels in the dairy value chain
3. **Food security:** Increased volumes and reduced cost price of milk, hoping that these benefits will be transmitted through to the retail market achieving affordability and increased consumption of milk among low income groups
4. **Food safety:** Implementation of processor-led milk quality assurance mechanisms.
5. **International linkages and trade:** mature and robust international trade relations among Dutch and Kenyan dairy sector actors, with the aim to help fast-track innovations and sustained mechanisms for transfer of skills, knowledge and investments.

Figure 1: A Theory of Change of the KMDP II programme, as revised by the evaluation’s authors<sup>2</sup>



<sup>2</sup> The evaluators made this ToC to visualise the link between the principles, cross-cutting aspects, interventions, outcomes, overall goal and impact.

It has formulated **five objectives** which should contribute to the overall goal and impacts:

1. To improve the availability of affordable & good quality practical **training, extension and farm advisory services** for farmers and other value chain actors.
2. To improve the availability of affordable and good quality **fodder** to farmers.
3. To improve the availability of incentives and mechanisms along the value chain that enable the supply of **quality milk** (food safety).
4. To improve linkages in the **dairy value chain** to stimulate chain integration and inclusiveness.
5. To improve the **linkages** of dairy value chain actors with **international** companies and institutes, as a stimulus for innovation and competitiveness in the sector.

The last two objectives are intended to contribute to the first three. The programme's interventions are structured according to these five objectives. These clusters of interventions are referred to as Outcomes. The interventions are shaped by three cross-cutting aspects and design principles. They are presented in the above figure.

## 2.2 Programme management

The management of the programme is structured as follows: at the head is the Project Steering Committee that comprises of the SNV Kenya Country Director (the Programme Director), the SNV Kenya Agriculture Sector Leader and the Project Team Leader.

KMDP II's staff in 2018 consisted of 5 SNV core advisors and a team of 29 local consultants, 6 local interns and 2 international interns. The KMDP teams are working in North Rift (from Eldoret Office), Meru and Nakuru/Nyandarua (from Nairobi and Meru Office) and Central (from Nairobi Office).

Some of the local consultants are organized into two Dairy Advisory Consultancy Companies, via Perfometer and Policy and Market Options (PMO) both established during KMDP, to carry out a number of activities (e.g. training and capacity building). For example, in Central/Eastern Kenya, the Perfometer Team implements many activities with medium- and large-scale farms. Perfometer and PMO are given support in this by the SNV team as well as by ProDairy Ltd (Jos Creemers) and PUM experts (see below)

KMDP has included several partners in the programme. Important partners include PUM, the Netherlands Senior Expert Programme, whose (5) volunteers completed 52 missions in KMDP I and II to support capacity building, knowledge exchange and the use of Rumen8 under the programme. Another important partner has been Wageningen University and Research (WUR) through its departments of Livestock Research, Centre for Development and Innovation (CDI) and the 3R Kenya Project. They supported the programme through strategic planning and a number of related research projects to understand impact and effectiveness. The project collaborated with WUR CDI to achieve the M&E objectives. The programme has also partnered with the Centre for Tropical Agriculture (CIAT) to pilot and demonstrate new fodder varieties on various farms selected across Eastern, Central and North rift regions. In addition, the programme made use of several experts on specific topics (e.g. Dirk Harting from Bles Dairies who advised on the Quality-Based Milk Payment project with Happy Cow and Jos Creemers who supported the KMDP Teams on Rumen8).

### 3. Relevance of KMDP II

**KMDP II addresses several of the most important systemic issues in the Kenyan dairy sector.** The formal sector is facing a number of challenges to becoming more competitive. For example, to compete with the informal market, being able to compete with imports from Uganda or beyond the East African Community in the scenario import barriers will be reduced and being in a position to be able to export. Key for this will be to increase milk quality while reducing the cost-price of milk. For the reduction of the cost-price of milk, farm productivity needs to be increased. This requires better herd management and particularly feeding practices, which greatly depends on farmers' knowledge and capacity and therefore access to training, advisory and inputs (Outcome 1), including quality fodder (Outcome 2). Kenyan dairy farmers are typically under-capacitated and lack knowledge on what can be done to optimize farm-level productivity. In addition, the fodder and feed markets are defined by poor quality and high prices (which compromise milk volumes and milk quality). To increase milk quality (Outcome 3), farmers can benefit from being part of more integrated value chains (Outcome 4). The required knowledge and services to make progress on Outcome 1 through 4 can be partly closed by knowledge and service provision of Dutch Input Suppliers, Service Providers and Investors (ISPI) (Outcome 5).

**The programme is highly relevant for climate change, in terms of both adaptation and mitigation.** In terms of adaptation, as climate change intensifies – with increased climate variability and longer periods of drought, or flash flooding – the benefits of improved silage making and feeding practices will also intensify (Outcome 1 and 2). This is confirmed by farmers who noted that training on silage-making and feeding is particularly valuable in periods of drought, by ensuring cows can be maintained without significant off-farm purchases of feed since climate variability reduces the grazing available in the dry season. In terms of climate mitigation, research shows a strong correlation between output per cow and emissions intensity per unit of product produced (Gerber *et al.*, 2013). In other words, if cows become more productive, the greenhouse gas emissions per unit of milk (methane) will decrease. The gains are particularly high when transitioning from low to medium productivity systems. Indeed, research in the region of East Africa shows that a reduction in greenhouse gas emissions is mainly realized by an improved feed efficiency i.e. better feed and better feeding management (Solidaridad and Wageningen University Livestock Research Centre, 2018), which the programme has had an explicit focus on.

**The programme's focus on entrepreneurial farmers of varying scales (in terms of land size and milk production) seems to be justified from a sector development perspective.** A special feature of KMDP I and II, particularly in relation to other development programmes, is that it targets 'small-scale' farms as well as 'medium and large-scale' farms. The criterion for inclusion of farmers has been the willingness and ability of these farmers to commercialize – and therefore make meaningful increases to their productivity – rather than the size of land they operate on. Medium- and large-scale farms are generally excluded from other development programmes. However, experts interviewed perceive these farmers as key actors in the professionalization of the sector, though they still face many performance challenges, and are small in number. Their inclusion has also been relevant for the Aid to Trade agenda. Several Dutch and Kenyan ISPIs sell services which are particularly (and sometimes exclusively) relevant for larger farms. Some of them also need a solid client portfolio of medium to large-scale farms, before they can invest in services and inputs for small-scale farms.

In addition, one cannot ignore that 80% of the milk in Kenya is produced by small-scale farms. Supporting the entrepreneurial farmers among them to become more professional (and more productive) makes sense from a sector development perspective but also from the inclusive business principle. Key informants had different perceptions on whether NGOs – like SNV – should work directly with cooperatives. Some believe that they should have a direct role in strengthening cooperatives, while other believe this should be the role of processors. In Phase II, KMDP seems to have found a middle

ground by supporting both cooperatives directly and the processors, founded on the concept of inclusive value chains. KMDP II worked only with Meru Union and Happy Cow processors and their network of cooperative suppliers as a primary means of working with smallholders. Various interventions across other outcomes are also relevant to promoting small-scale farms (e.g. a commercial fodder market will make land size less of a constraint for dairy farmers).

**KMDP II was sensitive to the inclusion of women but did not develop a targeted or documented approach or strategy for female inclusion and empowerment.** Having carried out a gender scan of two cooperatives in Meru the programme staff felt more informed about gender issues in dairy in Kenya (many staff had also been trained on gender issues at an organisational level by SNV). But this did not necessarily inform a targeted approach to gender inclusion and empowerment or other gender-related issues in the programme. However, the programme was sensitive to gender in its monitoring and some of its training. For example, the programme was able to document an equal number of men and women being included in farmer trainings – though there was no targeted intervention to achieve this balance (it happened of its own accord). The programme also raised awareness of the need for female representation in cooperative management through training cooperative leadership/boards on governance issues, including the need to comply with the Kenyan Constitution on having a minimum representation of 30% of either men or women. In addition, 52% of members in the 15 cooperatives supported in Meru under Phase II were women, but again the programme did not directly seek to influence the gender balance of cooperative membership in any way. This balance is therefore likely attributable to the higher cultural sensitivity to the role of female leadership and entrepreneurship in Meru as compared to other parts in Kenya. It may also be because dairy is still less commercialized than other sectors, and these other sectors (particularly those off-farm), may be considered more lucrative by men, rather than women being truly empowered to engage in dairy farming. The programme did not include any activities which sensitized farmers about the gender balance in farming and household decision-making. The programme design could have benefitted from a more considered and nuanced approach to gender which sought to first understand the realities of gender-related constraints in agriculture, particularly beyond the Meru context, and how, and to what extent, the programme might have more directly contributed to female empowerment.

**The Dutch Aid to Trade Agenda is relevant from a Dutch policy perspective, but from a Kenyan perspective there is a need to go beyond what the Dutch can offer.** The Aid to Trade agenda with a focus on Dutch companies is clearly intended to meet Dutch policy objectives as promoted by EKN. The added value of Dutch companies has also been proven in many KMDP interventions and beyond, particularly in regards to gains in knowledge and expertise. However, the need in Kenya for knowledge, technology and other services goes beyond what the Dutch can offer. Some key informants also criticized the focus on Dutch companies: they were of the opinion that better, or more affordable, solutions could be found in other countries.

**Many interventions were relevant to the impact indicators, but their true impact will depend on the extent to which they will be scaled.** KMDP II's strategy was to introduce new innovations relevant to the desired impacts (e.g. farmer income or food security). Due to the market-led approach and budgetary constraints, the supported interventions are generally of limited scale. As a consequence, the number of farmers which have increased their income as a direct result of KMDP is small compared to the total number of farmers in Kenya. A similar reasoning exists for the additional volume of (quality) milk and trade. Hence, the true impact of the programme will depend on the extent to which the introduced innovations will be scaled in the future. Chapter 5 will provide further insights on this point.

## 4. Targets and Results of KMDP II

This section presents the achievements on the targets formulated by the programme. The overview of individual indicators and results are presented in Appendix 2. The below table shows how many of the indicators per theme met their total (cumulative) end of programme target. For some indicators (see Appendix 2) the final results are not yet available and end of 2018 or early 2019 data has been used.

*Table 2: Number of indicators met, per theme*

Theme	number of indicators met versus intended	Theme	Indicators on or above target
<b>1) Training, extension and farm advisory services</b>	1 out of 3	<b>Impacts</b>	2 out of 5
<b>2) Feed and Fodder</b>	2 out of 3	<b>Climate-smart</b>	2 out of 3
<b>3) Milk Quality</b>	5 out of 6	<b>Gender</b>	2 out of 3
<b>4) Functional value chains</b>	3 out of 4	<b>Youth</b>	2 out of 4
<b>5) International linkages</b>	2 out of 3	<b>Total</b>	21 out of 34 (=62%)

In total, in 21 out of 34 indicators KMDP II either met or exceeded its target for performance. Results were higher than expected on the following specific indicators:

- No. of policy/ sector initiatives contributed to for supply of quality fodder (Outcome 2): 8 instead of 2
- No. of innovative & scaling-up fodder solutions facilitated in the market (Outcome 2): 7 instead of 5
- No. of dairy societies that have adopted and/or implemented policies/ regulations/SOPs for milk collection (Outcome 3): 15 instead of 7
- Increase in average production per cow (Impact Food security): 26% instead of 10%
- New business/dealerships partnerships established (Impact Trade): 36 instead of 25
- No. of youth joining the SPE (Youth): 131 instead of 100

Indicators where results were lower than expected include:

- No. of people using training, extension and farm advisory services (Outcome 1): 15.7k instead of 20k
- Volume of quality fodder preserved (Outcome 2): 64k instead of 200k – the expected volumes were set based on targets that were set too high for the KMDP clients involved. This figure does not include any volume realized by copying and crowding-in (there is evidence this has happened, but this was not formally monitored)
- Reduced rejects of raw milk at both dairy society and processor level (Outcome 3): rejects increased rather than decreased (expectation was a 10% decrease) – these can be explained by the stricter quality norms and testing regimes
- No. of companies in the dairy value chain that have business linkages: 36 instead of 80 (all on the input /service side)
- No. of dairy farmers with increased income (Impact Income): 7.5k instead of 10k
- No of trainers, extensionists, dairy advisories with improved skills (Impact Employability): 136 instead of 200
- Investment in energy efficient cold chains (Climate-smart): 0 instead of 3 – one project failed and the expected link with the SNV Biogas activities was not established
- % of female-led dairy farming enterprises (Gender): 26% instead of 40%

One general observation is that targets which had a large reach (e.g. number of farmers or volumes) were generally not met. This is not necessarily a problem as the true impact of the interventions, which were often pilots, depend on the future scaling, which generally does not depend on the size of the pilots. It is recommended for future projects to include scaling in the monitoring framework and evaluation activities (e.g. by collecting evidence of replication, crowding-in or public policy response).

## 5. Effectiveness, sustainability and scaling

This chapter discusses the key interventions and results of KMDP II for the 5 Outcomes. It assesses their impact/results delivered – beyond the monitoring framework – and presents evidence on their sustainability and scaling (current and future). The evidence use is content from key informant interviews and existing project-related literature.

### 5.1 Outcome 1: Training, extension and farm advisory services

#### 5.1.1 Key interventions

- Investments toward creating linkages between Technical Training Institutes (TTIs - Universities, Agricultural Colleges) with Dutch training/knowledge institutes, were made but did not materialize.
- Supporting the establishment of Training Firms and Training Farms (host farms for training) with the support of GAD Foundation and ProDairy Ltd (building on the Practical Dairy Training Centre Concept established in Phase I). Supporting Dutch advisors e.g. Bles Dairies and ProDairy with advice and clients (growing their market), and Kenyan KMDP consultants as individuals or organized in dairy consultancy firms (Perfometer, PMO Consultants) through training, contracts, referrals.
- Supporting cooperatives and processors (e.g. Meru Union) with access to training for farmers and extension staff (offered directly by SNV and indirectly by KMDP-linked staff and experts); offering strategic advice on how to incorporate extension into the management/finances of their cooperative; offering advice and support on governance and management of cooperatives more broadly; co-funding exchange visits to see other farms.
- Supporting lead farmers in training and knowledge building through exchange visits; access to PUM experts etc.
- Production of handbooks, instructional and training materials, guidelines and Standard Operating Procedures, including Cow Signals East Africa publications and Barn Design.
- Piloting ration formulation software Rumen8 in farms via LDCs and training of university students on use of Rumen8 software.

#### 5.1.2 Outcomes and impacts

**A great deal of value has been placed on the emphasis on practical training and demonstrations by all recipients** (lead farmers, farmers, LDCs, SNV intern/staff themselves, cooperative extension staff). It is important to bear in mind that the dominant system of education and training in Kenya is regarded as textbook-heavy with little to no practical learning. One farmer referred to training provided by non KMDP actors as “cut-and-paste” trainings, with insufficient tailoring to what is happening at farm level.

**Productivity gains have been significant.** For all farmers and farmer representatives interviewed (e.g. cooperative management level or Union-level) the key outcomes associated with the receipt of training has been improvements in productivity at the farm level in the form of improved forages, rations and increased milk volumes being produced (typically per cow, leading to reduce production costs and methane emissions per litre of milk). For example, the farmer members of Abogeta Cooperative have doubled their milk production volumes in the period in which they have received training support from KMDP II. They attribute this solely to the training they received, rather than any contextual factors. We found evidence of feeding practices having improved and some farmers being able to store maize silage they’ve produced for following year. Increasingly, training has diversified into new topics, such as calf rearing,, which can help to quicken the time at which cows can be impregnated and begin to lactate

(and therefore cow productivity and milk volumes). Other topics covered by the trainings include: pasture management, record keeping, breeding and fertility, cow comfort.

**Increased production volumes lead to improved incomes/profitability and climate mitigation benefits.**

This applies to both the farmer level, and the cooperative or processor level – since they benefit from increased milk volumes being collected or processed (leading to increased sales, and economies of scale in collection, processing etc.). Farmers state that an increase in production volumes has improved their profitability and therefore their quality of life and ability to be food secure. One cooperative mentioned that they have seen a reduction from 40% to 20% of their members living below the poverty line, thanks to the improvements they have seen at the farm level (bearing in mind a large number of members have joined during the duration of the KMDP’s involvement, which would lessen the proportion). As explained in chapter 3, increased cow productivity through better feeds and feeding, better calf rearing and reduced calving intervals, has also important benefits in terms of reduced enteric methane emissions per litre of produced milk. Data collected by the programme for monitoring and evaluation showed an average increase in milk production of 26% per cow as a result of the programme’s interventions (across 145 lead smallholder farmers, and 25 medium-scale farmers).

**KMDP II has helped to drive dairy advisory business growth – directly, through use of services, and indirectly, through referrals of clients, linking to market and market intelligence.** The SNV name and reputation has helped build the businesses’ credibility – particularly at the outset – e.g. with clients (Perfometer and PMO) and potential partners (Bles Dairies), which has helped their business become established and grow. SNV were easy to communicate with, and had local offices which played a crucial role for many dairy advisory businesses in linking them to clients. The market studies were highly valued and were a key input in the business development of companies such as Bles Dairy and FIT Ltd.

**KMDP II’s training of, and support for, local dairy advisors has had numerous multiplier effects, through improved capacity and employment.** For example, Perfometer was able to hire promising graduates, train them directly (using the knowledge they themselves had received through KMDP), or expose them to KMDP-led training and KDMP and PUM experts, and attach them to a farm for practical experience. This has allowed the commercial business to grow (12 staff are now employed on a permanent basis). The experience gained by staff of PMO has helped them enhance their reputation, win new work contracts, and employ new consultants.

### 5.1.3 Sustainability and scaling

**Farmers who have been trained are still seeing the benefits of training at the farm level, but follow-up may be needed to maintain benefits.** Farmers clearly see the benefits of improved feeding, farm management, calf rearing breeding etc, all of which can improve productivity. However, there is a sense that some follow up could be needed in the future to maintain the benefits, and, unsurprisingly perhaps, that there are many more farmers still to be trained.

**Several lead farmer groups (small-scale farmers) and groups of medium- and large-scale farmers have been maintained after KMDP II.** These groups have seen the benefit of continuing to share knowledge and experience, and some are looking at revenue generation as a group (e.g. the Eldoret Dairy Farmers Association establishing field days for ISPIs and farmers). Several lead farmers have been able to offer training and exposure visits to their peers at a moderate fee of 300-500 KES per day. Despite many of them having a small client base at the moment – and relying on referrals from KMDP – a number of lead farmers feel they can utilize their networks (one interviewee was the chairman of a local cooperative so was particularly well networked) to attract more farmers, and that farmers are willing to pay for day/half a day training in a group. This source of income would need to remain part of a diversified livelihood strategy (i.e. to supplement, rather than replace, farming activities).

**Some local dairy advisors/dairy advisory consultancies have reduced their reliance on KMDP II as a direct client and for client referrals, establishing their own client base of medium and large-scale farmers/farm owners.** Whilst Perfometer still receives 35% of its revenue from KMDP-related projects, the rest is now generated through its own, independent client base (farmers and other NGOs), with many repeat customers. PMO's revenue is currently 50-55% reliant on KMDP links and contacts, but has developed its own client base which will continue to exist after June 2019. There is a strong sense that both businesses will grow once the KMDP program comes to an end. KMDP has done a good job at every stage of 'weaning-off' their support e.g. supporting the first two publications of Perfometer's dairy magazine until it reached a stage where advertisers were interested and it could be self-financed. Medium and large-scale farms who have received advisory services from dairy advisory consultancies, such as Perfometer, rated the advice received as good quality and stated that they would continue to use some of their services (advisory on feeding and fodder, cow comfort and breeding) – on a paid basis – in the future. Perfometer's client placed great value on the practical training offered by them.

**The business model of most Training Farms ('host farms') and Training Firms is unlikely to be strong enough to continue independently when KMDP II ends.** Training farms have relied almost entirely on client referrals from KMDP, which will end after the program. Despite the direct financial support offered by the program, the profitability of running the farms as host farms for training is perceived as marginal by those who run it. Increasing expenses incurred by the host farms (food costs) further reduce margins. The training firms which deliver the training through host farms are also unlikely to be sustained without donor support, since it is almost impossible for the average smallholder dairy farmer to pay over 30,-33,000KES for a week of training. There have been some self-paying clients, but these have not huge in number – and they are typically only willing to pay for 0.5 or 1 day training (at max. 500 KES a day). While some medium/large scale farm owners may be able to pay for their farm manager to do an intensive week-long training course, their willingness to do so is affected by the risk that the farm manager leaves shortly after, incurring a significant financial loss. However, a number of training firms – and by extension therefore host farms – will be able to continue to run due to donor support from the GAD Foundation and ProDairy (and contributions from Meru Union).

**Cooperatives and farmers groups/associations engaged with during the program do not seem to have made strong commitments to future delivery of training and extension to members.** This is despite significant engagement from KMDP II on training and extension via cooperatives, effective support from KMDP II to improve governance, book keeping, management etc., and a number of verbal suggestions made by SNV staff on how they could plan for their own delivery of extension (including allocation of budget and who they could recruit). This is also despite the obvious benefits gained by processors and cooperatives as a result of the productivity gains brought about by enhanced extension services. Cooperatives and Unions are concerned that the lead farmer model or farmer-to-farmer training cannot be sustained without ongoing support (despite their willingness to continue and aspirations to increase coverage). A number of cooperatives do have arrangements with input suppliers to provide training, but in the absence of KMDP to broker these relationships and to ensure quality of advice, the independence of this advice may be compromised. Meru Union (and a number of cooperatives) argue that due to limited financial capacity, even if they provide their own training in the future, they may have to make significant compromises in terms of coverage of farmers, topics, size of groups being trained and quality of trainers (KMDP staff have played a very important supervisory role in overseeing extension delivered by Meru Union, for example). This is despite KMDP staff demonstrating (e.g. through a levy model for Meru Union) that this is not necessarily the case. Meru Union, Naari cooperative, Abogeta cooperative and the Eldoret Dairy Farmers Association (EDFA) would like to see a closer engagement by KMDP in a

joint planning process to develop a future plan/handover plan to build on the progress already made (and wish the phasing out was “slower”).<sup>3</sup>

**Maintaining quality in dairy training and advisory is a key challenge to the future sustainability of KMDP II’s interventions.** LDCs have seen their skills develop well, particularly as technical trainers. Though there has been a mention that the capacities of LDCs to be a strategic advisor to a farm are less evident. A key challenge for these dairy advisors will be to retain quality staff, as the financial incentives to work for an NGO are arguably stronger, and there are financial risks for dairy advisory businesses in maintaining a pool of permanent, high quality staff versus using ad-hoc consultants (whom may offer poorer quality services). As a means to ensure the quality of the existing staff base will be maintained, PMO and Performeter have sought partnerships with ProDairy and Bles Dairies (via them providing training on the latter’s behalf e.g. the week long training at Training Farms) which will ensure some continuation of exposure to ProDairy and Bles Dairies’ knowledge and expertise.

**Cow Signals and KMDP publications and are increasingly in use.** A number of TTIs use Cow Signals East Africa version to complement their curricula and there is also increasing interest by processors and input suppliers (Unga Ltd) in these instructional books. For example, BioFoods has procured a Bio Foods branded version : Farming the Bio Way” for its suppliers and promotional purposes. Through the project’s networking in KMDP-II also a Kiswahili translation of Cow Signal Basics East Africa version was launched early 2019, with co-financing from GAD/Rabobank Foundation.

#### 5.1.4 Systemic change

**There is evidence of a growing private-led training and advisory, but the size of the market is uncertain, and unlikely to be large in the short- to medium-term.** This is due to a combination of uncertainties around ability to pay and the value placed on fee-charging training and advice. The ability to pay for training is limited, particularly amongst small-scale farmers producing less than 50 litres, and they may not see the benefits if they have not been trained at first for free. More successful small-scale farmers and medium- large-scale farmers appear to have an ability pay for some services provided privately, but some trainings (e.g. week-long trainings at a Host Farm, provided by a Training Firm) are still out of reach for many. Some cooperatives are nervous about funding extension by farmers by deducting a “training levy” from milk, because they would lose members and milk supply to competitors who are not charging for (or providing) training . Nonetheless, some actors observe a changing mindset around the value of paying for training and advice, amongst medium-and-large scale farmers. New, inexperienced dairy investors entering the sector are a growing client base. Performeter, PMO and ProDairy, have seen a growing farmer client base. There is some evidence that other dairy advisory/consultancies are emerging, often as individual consultants. However, the current trend of low milk prices may challenge the ability for milk producers to invest in training (and inputs).

**Bundling the provision of training or advice with the sales of inputs is a growing market.** Many of the training providers and dairy advisory consultants do not see the potential market for the provision of training on its own. Instead they bundle the provision of training or advice with the sales of inputs. For example, Bles Dairies will bundle free training and advice with the sale of semen, which they see as a key competitive strength (other examples of bundling training with products can be found at AgriAssist, PMO and CRV). Alternatively, Performeter and ProDairy package and market training and advice as a “product”, rather than a service – even though it is fundamentally dairy advisory that they are offering (e.g. Dairy Farm Benchmarking tool, Academy of Dairy Managers, or Rumen8).

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<sup>3</sup> Since the interviews carried out by the research team a number of the interviewees (cooperatives, Meru Union etc.) have contacted SNV to look to make a plan for future engagement and handover, and to explore the options for finding future donors to support extension.

**No systemic change at the Technical Training Institutes (TTI) has been achieved.** KMDPs attempt to link TTIs to Dutch training/knowledge institutes failed, KMDP-II's review of GIZ/DTI national dairy TVET curriculum did not result in a satisfying outcome. As earlier attempts by KMDP I to promote more market led dairy training institutions failed, the KMDP's contribution to a structural solution for the lack of dairy professionals has been limited. This is a real concern for the future development of the sector (as confirmed by the scoping study on TVET in East Africa by Hawkins et al, 2019). A positive development though is that University of Nairobi and Egerton University have shown interest in including the Rumen8 ration formulation tool into their curriculum, and are already training some students on the software.

## 5.2 Outcome 2: Quality feed and fodder

### 5.2.1 Key interventions

- Fodder planning at farm level (advisory as regards suitable forages as per agro ecological zones and acreage).
- On-farm establishment and preservation of high quality forages through demonstration plots and training, in partnership with CIAT – using lead farmers and the cooperative structures utilised in outcome 1
- Supporting establishment of service provider enterprise groups (SPE Groups) (youths providing silage production services to smallholders at a fee), through training/capacity building, co-funding of machinery e.g. shredders, and linking to clients
- Agricultural contractor model “Maize Train” supported (using agricultural contractors to support maize silage production at all stages from planting to ensiling) through co-funding of machinery (Innovation Fund), technical assistance/training and linking to clients/markets (e.g. Nundoroto and AG Harvesting)
- Support to commercial forage suppliers/bailers through the Innovation Fund to facilitate sales of silage to small- and medium-scale producers (FIT Ltd)
- Organising field days to demonstrate the work of the maize train and to link farmers to agricultural contractors.

### 5.2.2 Outcomes and impacts

**The programme achieved significant growth in small-scale farmers production and understanding the nutritive and economic value of maize silage.** These farmers are growing maize (or other energy rich crops e.g. oats, sorghum) for silage on their own land, or leasing nearby land and ensiling themselves or using services offered by SPE Groups. Several small- and medium-scale farmers are seeing sufficient value from growing their own maize silage that they are leasing additional land to increase production. The Naari cooperative mentioned that out of its 850 members, at least 45% are now making their own silage. In 2014 – pre KMDP involvement – no one was making silage. Many of the farmers and cooperatives we interviewed attributed these increases in silage making almost solely to the program, through a shift in mindsets, though supported by the low maize grain prices offered by the Maize Board.

**Significant growth in uptake of services offered by agricultural contractors as part of the ‘maize train’.** For example, Nundoroto have seen the acreage covered by their services increase from 200 acres in 2015 to 1,300 acres in 2018. Nunduroto and the other contractors have established their own client base but have also benefitted from KMDP-organised field days to acquire clients for their services. They also continue to benefit from client referrals by local KMDP staff.

**Farmers have given very positive feedback on the demonstration of Brachiaria and Panicum grasses in terms of growing potential and impacts on farm productivity included in the CIAT demonstration plots.** They have shown a clear preference of these grasses over excessive use of dairy meals or napier grass (which are more expensive and/or have lower quality in terms of nutritional value). CIAT attributed much of the success of the pilots shown so far to the local KMDP II staff, who have played an essential role in providing local farmer networks/contacts, knowledge and support.

**KMDP II interventions on feed and forage preparation and preservation has resulted in significant improvements in:**

- **Milk productivity:** Farms have been able to increase milk production significantly, whilst maintaining the same number of cows. Some farmers also mentioned that their cows seem much more content as a result of changes to feeding (quieter and more likely to rest or sleep between feedings). Some lead farmers groups have been able to invest in their own feed mill as a result of productivity improvements thanks to feed. Calculations show that the potential milk productivity can be increased from anywhere between 83% to 205% when shifting from very low quality silage to very good quality (Ettema, 2019).
- **Stability of milk production:** Several farmers mentioned the benefits of being able to maintain milk volumes during the dry season, through having maize silage available on-farm, rather than seeing the usual drop in milk output. A large-scale farmer in Eldoret is very satisfied with the impact that Rumen8 has had on the consistency of his milk volumes, and which has been supported by silage making services provided by Nunduroto.
- **Lower cost of production per litre of milk/higher income:** Farmers link this to better balancing of feeds, own feed and fodder production, or improved availability of quality feed and fodder on the open market. Frans Ettema's study (2019) calculated the potential increase of farmer's income of the use of improved silage produced on its own farm to be KES 82,688/acre. The Rumen8 software also helped to increase margin above feed costs and productivity in a pilot containing 25 dairy farms in Kenya, situated in North Rift Central and Meru. The software has received positive feedback from farmers, and offers great potential for farm level changes in regards to milk productivity and the cost of production, though it is still being piloted on farms and generally farmers are not yet paying for services associated with Rumen8 (its introduction as part of KMDP II has happened relatively late in the programme's lifecycle).

**Members of SPE Groups interviewed mentioned that they have benefited from increased incomes, employment and employment security as a result of being part of an SPE Group.** This is despite the work being highly seasonal. Professor Gachuri, from Nairobi University, mentioned that the SPE model has solved a number of problems around employment of school leavers<sup>4</sup> (supported by Kilelu *et al.*, undatedb), knowledge delivery and gaps in farmer expertise. SPEs have marketed themselves through cooperatives, have relied on referrals from existing clients and have received referrals from SNV. In some cases, SNV has been very helpful in giving farmers assurances in relation to the quality of the group's services, through certification of their ensiling practices.

**SPE Groups offered employment for youth.** The intervention has done relatively well in creating opportunities for youth (though many groups have had to stretch their definition of young people to 40 years or younger). These findings are supported by research by 3R, who based on their fieldwork in 2016, estimated that 50% of SPE Group members were young people (Kilelu *et al.*, undated). As expected, most groups do not include women. This has been attributed to the fact that the work of the SPE group is not attractive to women – being physically taxing, and involving travel – and it does not fit well with their dominant role in the household and in childcare.

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<sup>4</sup> In 2016, there were 14,227 individuals making up these groups (Kilelu *et al.*, undatedb).

### 5.2.3 Sustainability and scaling

**Several SPE groups (from KMDP I and KMDP II) are still operating, and saving money together as a group, even if most of them are providing day-to-day services to farmers as individuals.** This is based upon a sound business case for SPE groups and maize train to support production of maize silage. Several SPEs have a significant number of repeat customers. Farmers argue that it is cheaper to pay for SPE groups to come and ensile than buying silage elsewhere. Farmers producing their own maize prefer to hire SPEs in order to ensure quality. Existing SPE groups have reported large demand for their services during harvesting season, which is why they operate as individuals (though they make plans and market themselves as a group), and hire in casual labour. Many are confident of their abilities, their future and the size of the market. There is a large market still to be exploited (only 7% of market estimated to have been exploited in 2016 (Kilelu *et al.*, undated), but it is unclear if groups have the ability to fulfil the market potential (they face a number of challenges around access to technology, like choppers, marketing/ advertising etc.). SPE Groups require people with entrepreneurial skills/attitude, often demonstrated by investments in machinery (e.g. maize choppers), which not everyone possesses. To reduce the seasonality in business, several groups are looking at ways in which they can diversify the business, for example through the sale of seeds for grasses that can be ensiled. Others see opportunities to combine their services with the sales of inputs (e.g. feed), but this will require them to be able to advise farmers on feeding practices (which would need more training/capacity building). The turnover of staff in groups has historically been quite high, which is a challenge.

**There are signs of sustainability and scaling amongst some SPE Groups.** Some SPEs are investing in their own machinery; eight of them were co-funded by KMDP (50%) but now need replacing. Another is looking to purchase a truck as a group to save on paying an external contractor to transport. Referrals from other farms show a degree of scaling of SPE's businesses and of business viability in the absence of KMDP II. One group claims 75% of their business comes from referrals via existing clients. A farmer client of one SPE group claims that several neighbouring farmers have seen what he is doing and have asked for him to put them in touch with the service provider. They believe there is a demand for their services without KMDP. Seven SPE Groups have recently emerged (reported in June 2019) without direct KMDP II support, but with support from cooperatives instead – though six of them are requesting co-financing from KMDP II for maize shredders before the programme ends. It is unlikely that SPE Groups will emerge without some form of support, but it is positive to see their emergence with support from the private sector rather than donors alone. It will be interesting to see whether the quality of the services offered by these new groups can match those of the groups who have benefitted from KMDP-linked training and technical support, and whether equipment – such as cutters -- will be widely accessible (i.e. financeable) without KMDP (and indeed whether this may be a limiting factor in scaling). Indeed, Kilelu *et al.*, (undated: 25) explain in their research that *'the SPEs indicate that vocational training by experts (e.g. PUM and Performeter) and some mentorship by the original SPEN groups had been key to building their technical competencies in offering good services. Such technical skill acquisition from hired experts and continued support/coaching is therefore key to the success of this model. This was supported through a development programme, but further propagation of the model requires broader support, including from other public and private sector actors'*.

**Climate change will strengthen the need for silage and ensiling services offered by SPE.** But it can also challenge the work of SPEs and agricultural contractors: if it is too dry, maize harvests decrease, reducing demand for their services. If it is too wet, machinery can struggle to access farms and carry out their work. These challenges will need to be addressed to ensure sustainability and further scaling.

**Maize Train: Agricultural contractors' businesses are growing, despite several challenges.** They are maintaining a good client base and are attracting new clients – despite some challenges around servicing machinery, technological know-how of staff, managing client expectations and clients paying

for services on time. Ventures are profitable and they can pay their staff etc. Many feel that the agricultural contractors who carry out silage-related activities will continue to exist without KMDP. Both Nunduroto and AG Harvesting are also increasing their capacity through securing additional investments in machinery. However, some are cautious about the future and argue that there is a need for some follow up with farmers through field days, independent consultants (ex KDMP II staff, for example) to ensure knowledge amongst farmers of the importance of quality silage – and how to maintain it once produced – is not lost. Nunduroto and AG Harvesting plan to continue supporting field days (e.g. paying to be present).

**There are some signs of crowding-in of other agricultural contractors.** There are five new contracting companies now providing services to farmers in Eldoret in silage making, possibly showing market potential (making a total of 7 agricultural contractors making maize silage in North Rift). However, it is unclear how these companies will fare without the support Nunduroto and AG Harvesting have received from KMDP. Nunduroto said they would not exist without the initial support that they received from KMDP (I and II). On the other hand, new entrants in the market may have the potential to learn from the example of Nunduroto and AG Harvesting as they are now well established.

**Farmers felt ownership of the brachiaria and panicum grasses they demonstrated on their farms through the KMDP/CIAT pilot and will continue to grow them.** Farmers had to make the decision to dedicate their own land to the demonstration, prepare the land for planting and assist in field design (e.g. size of plot dedicated to the different grasses) – they received training on planting and when to harvest from SNV staff. The project ensured that there was no dictation on which grasses farmers should choose and continue to use. All demonstration farmers interviewed stated that they will continue to grow a limited number of these grasses in the future, and in some cases even extend the area of land dedicated to the grasses.

**There are strong signs of scaling up of the grasses included in the farmer demonstration plots.** Neighboring farmers are showing an interest in growing brachiaria and panicum used in the demos and are buying splits from farmers (though again, there has been no systematic monitoring of this). Input companies are increasingly providing seeds for these grasses, and making them more accessible by selling in smaller volumes, which are more affordable. They are also reporting increased sales of seeds. However, seeds are still not fully accessible (as discussed later). Farmers are, to some extent, circumventing these issues by buying and selling splits.

#### 5.2.4 Systemic change

**There has been a fundamental shift in mind-sets around using maize as a forage for livestock, indicating the beginnings of systemic change.** This is especially the case in Meru and is driving demand for service provision by SPE and agri-contractors. However, the future of this mindset shift – whether it can be strongly maintained and further shifted – depends on the price of milk and availability of forage maize varieties in combination with the price of maize grain and other feed stuffs in the market. This mindset is believed to already exist in Eldoret where farms are bigger and decisions regarding food versus feed are less acute. There is a strong sense (though no detailed monitoring) amongst agricultural contractors, farmers, and KMDP staff that the land dedicated to maize grown for silage has grown significantly. Sector experts note that the packaged silage element of the program (via FIT Ltd) is revolutionary in Kenya and can be attributed solely to KMDP, and the farmers and contractors it supported. But FIT Ltd has argued that for further scaling it requires access to affordable credit/loans, which can be hard to obtain as an SME in the agricultural sector. Bles Dairies (a Dutch investor) is investing in Nunduroto to increase the number of machines to be able to cover more farmers during harvesting period, showing a strong conviction in market potential.

**However, more investments and innovations are needed to improve the relevance and viability of the silage baling business for other segments of farmers currently served.** Experts recognize important innovations have been introduced, but some question whether the viability for commercial fodder producers and dairy farmers of baled silages has been sufficiently assessed. They see current models work for larger farmers or smaller farmers close to the city and during the dry season when forage is scarce and hay expensive, but question whether these models work for the vast majority of small-scale farmers across the country. FIT Ltd recognizes that their customers are mainly farmers living close to the city or in areas/seasons where/when forage is scarce, and see that scaling their business significantly may be a challenge if conditions are not conducive (e.g. logistics, price of bales, price for milk). Some more strategic reflection is needed on for whom this is interesting for whom it is not. As a stand-alone innovation one could argue that this technology is not a solution that will transform the whole sector to access improved forages. The KMDP staff is aware that more investments and adjustments are to be made to the business model to reduce the cost of the end product and enhance quality (and by this make it accessible for other market segments of dairy farmers). There is no one size fits all solution, and much more still needs to be done in this sub sector, including realizing enhanced access to quality forage seeds and varieties and plant material.

**Considerations of quality in silage production and ensiling are key but is not always at the forefront of consumers' demand or contractors' practices.** The quality of services provided by the contractor is important, in that it is an important determinant in the growths of moulds/aflatoxins (as well as the nutritional value of the silage), and therefore milk safety and productivity. KMDP has demonstrated the benefits of quality and good agricultural practices in relation to silage production, through raised awareness and sensitivity amongst farmers and agricultural contractors (e.g. through field days, training of farmers, agricultural contractors and SPE Groups, and the production of guidelines for quality silage production). However, maintaining that understanding and demand for quality without KDMP support in the form of knowledge/awareness-raising could be a challenge. Farmers are also not loyal to service providers, input suppliers and are very price sensitive. They may quickly switch to new ISPs who offer products or services at a lower price – without consideration or understanding the notion of quality. This may compromise the future success of the businesses that KMDP has helped to support and who do try to focus on quality.

## **5.3 Outcome 3: Supply of quality milk**

### **5.3.1 Key interventions**

*Working with Meru Union to:*

- Train farmers, milk collectors and graders on how to produce and maintain milk safety
- Develop Standard Operating Procedures for clean milk handling and storage
- Establish a demo satellite milk cooling center by connecting Mueller and Meru Union (did not yet materialize)

*Working with Happy Cow (and its suppliers) to:*

- Pilot a milk tracking & tracing system
- Pilot a milk quality payment system
- Develop infrastructure for milk testing on a variety of parameters and create a data base (generate evidence) for policy influencing
- Establish mini-labs at the dairy societies (e.g. Olenguruone)
- Upgrading of Happy Cow's laboratory and achieving KENAS accreditation
- Test equipment and train staff
- Invest in the milk collection chain including the cold chain (Happy Cow)

*Other sector level activities:*

- Sector level dissemination of lessons of the QT&T/QBPS pilot through the KDPA and East and Southern Africa Dairy Association (ESADA)
- Support to KDB for establishing a milk testing laboratory through the organisation of a one week study tour to the Netherlands
- National seminar in Milk Quality and Safety

### 5.3.2 Outcomes and impacts

**Some improvements to milk quality were made through the interventions, but less than expected.**

Meru Union saw some improvements in milk quality as a result of the program – the volumes of milk they rejected at the factory level decreased. Total bacterial count decreased slightly, adulteration improved more markedly, as did levels of antibiotic residues in the milk, and milk was delivered in a much more timely manner. They attributed this to: increased farmer awareness (through KMDP training) of the need for better milk handling; improved milking and cleanliness of cow houses; support to societies for farmers to switch to aluminum cans; and the implementation of standard operating procedures for quality amongst the cooperatives. Milk was also tested nearer to the farms by graders, who would follow up with farmers if issues were identified to give advice on how these might be overcome.

The milk quality at Happy Cow did not improve as expected. It improved on antibiotic residues and reduction of adulteration when it concerned the milk sourced from Olenguruone cooperative. However, microbial quality remained an issue. Happy Cow terminated sourcing from the second cooperative in the pilot, New Ngorika, because antibiotic residues increased during the project and other business-relation issues. At Olenguruone milk rejections decreased from 20% to 5%. Olenguruone therefore regarded the pilot as a success – though recognized the pilot was very limited in the number of farmers that received bonus for improved milk. Olenguruone stated that other processors have now expressed interest in procuring milk from them as a result of their quality improvements, and that they have been able to improve their profitability by selling greater volumes of milk, as well as negotiating slightly higher prices from Happy Cow. Farmers who received a bonus for quality milk have a net profit after deducting their additional investments (Ndambi *et al.*, 2019). Membership of the cooperative has also increased. However, the lower than expected improvement in milk quality impedes Happy Cow to move towards premium milk products.

**The QBPS faced several challenges, preventing an increase in beneficiaries.** Ndambi *et al.*, (2019) identified the following weaknesses in design: (1) too many quality parameters were targeted (making the system expensive and expectations too high); (2) the bonus payment system was relatively complex and not properly understood by all actors; (3) the interconnected milk-testing regimes and bonus payment system were not well streamlined to ensure a seamless MQT&T system and prompt bonus payment; (4) the design of the bonus payment did not factor in incentives for other critical actors in the supply chain, including the transporters and CBEs (i.e. the lack of traceability and incentives made transporters continue mixing milk from different farmers. This meant a number of farmers did not meet quality thresholds and as a consequence did not receive a bonus); (5) the milk collection system did not carefully consider the effort required to make the MQT&T system work; (6) socio-economic issues were insufficiently considered. In combination with various implementation issues and the lack of a level playing field with competitors, the proportion of farmers qualifying for bonus payments grew very slowly. And with the end of the partnership with New Ngorika this number declined considerably. The business case and potential risks for the different actors had not been sufficiently assessed in the design phase of the project. The net costs for Happy Cow has been calculated at KES 2.12/kg of Grade A milk, despite cost-savings achieved by reduced production failures and product returns (for example Happy

Cow saw increased cheese yield, obtaining 1 kg of cheese from 9–10 kg of cheese milk, compared to 1 kg cheese from 13–14 kg milk at the onset of the project) (Ndambi *et al.*, 2019).

**The pilot offers many important lessons on what can be done to improve quality in a very challenging market and regulatory environment.** Many important lessons have been offered on what works, what does not, who needs to be incentivized in the supply chain to deliver quality, and to what extent. The pilot gave insights on what is possible in terms of quality track & trace and quality improvements with what investments, which was arguably lacking in the sector before the project. It also highlighted the need for conducive regulation and greater enforcement (carrots alone are not enough).

**There are clear signs that the project contributed to putting milk quality higher on the public agenda.** KMDP has clearly contributed to putting milk quality higher on the agenda of sector players like KDPA and KDB. Quality is prominent in KDPA's strategic plan (KMDP's input and support was highly appreciated), QBPS features in the proposed new regulation (inspired by KMDP) – though this proposed Dairy Industry Regulations (2018) have been put on hold due to opposition in the sector by many players on a variety of issues (many of which relate to new levies and the attempt of phasing out the raw milk market). KMDP has facilitated KDB officers' visit to the Netherlands and link up with Qlip, the Dutch reference lab for milk testing and international proficiency testing (ring testing). The workshop on Milk Quality and Food Safety in January 2019 greatly improved awareness in the sector of quality issues and a committee has been formed to follow-up on the outcomes.

### 5.3.3 Sustainability and scaling

**Several aspects of the Happy Cow pilot were not sustainable or scalable, but the model will be continued in an adapted form.** Happy Cow has indicated it will continue to implement the QBMPs and MQT&T systems. Following the lessons learned, it is currently designing a simpler and less expensive system (i.e. less parameters being part of the bonus payment system and a less intense sampling regime). Olenguruone indicated it will continue to do some testing, but they will reduce the scope due to the high chemical costs involved, and will reduce their levels of investment in extension staff who have supported the pilot at the field level. They argue that now the basic infrastructure is in place for testing (collection centres, laboratories) they will be able to cover any maintenance costs incurred. However, they will not be able to scale up the extension needed to support quality improvements to include any other producers beyond those 500 already included in the pilot (active members are currently 3000).

**Replication of some areas of the project by other processors and cooperatives show some scaling.** Other cooperatives have replicated the implementation of standard operating procedures (SOPs) for milk quality that Meru Union-linked cooperatives have implemented. Meru Union's competitors have also copied their bonus payment system, and there is a sense by the management of the Union that there is now more milk testing being carried out by their competitors. Though Brookside arguably has not prioritised milk quality in the past – having to focus on volumes processed instead – it claimed (in reports to the Union itself which were then reported to us during a KII) that milk rejected by Meru Union was of better quality than the standard milk available in the market and they would therefore purchase its rejects. Conversely, Olenguruone claimed that Brookside are no longer accepting its rejected milk due to their own more extensive testing. Brookside have also announced a small-scale pilot which will also work on quality (which if successful could induce important changes in the market).

**There is no proof of concept yet of the business case and model to invest in smallholder-based quality milk value chains and donor support is likely needed to continue and scale current efforts.** Meru Union and Olenguruone are concerned that without adequate investment in extension, farmers will revert to some of their previous practices. There has been a change of mind-set amongst farmers regarding

observing correct antibiotic withdrawal periods, and for both farmers and transporters in regard to use of aluminum cans and the timely delivery of milk. However, there is also the realization that extension and incentives are needed to ensure practices are continued and milk quality is maintained. Further scaling or replication of the models will not be easy without donor support in the absence of a level playing field in raw milk procurement and enforcement of quality standards. Many investments required for a milk quality chain are likely difficult to finance without donor support or significant price premiums. In the case of Olenguruone cooperative the following investments had to be made: chemicals to allow for testing in the lab; purchase of aluminum cans for both farmers and the cooperative; data entry software; infrastructure for collection; training of personnel for testing and grading; fuel and transport for those testing; and staff to manage the overall project. Most of these have been co-funded by KMDP.

#### 5.3.4 Systemic change

**The market for premium processed milk based on quality and safety remains limited.** This is due to a dominance of the informal sector linked to consumer price sensitivity, perceptions and low awareness of food safety issues. Consumer demand will also need to be addressed if longer-term efforts to improve quality --- which need market rewards to recoup the costs of investments – are to succeed. Hence, the importance of raising consumer awareness about food safety and milk quality, but with good quality and accurate data on the realities of milk safety. The 3R Kenya Project policy research on the private and public costs and benefits of safe milk and dairy products – taking the Happy Cow project as an example - gives useful data and insight, but it is less directed to consumers and more to policy makers.

**The increased awareness on quality is a systemic change, though it is uncertain on whether and how this will lead to actual changes in practice.** KMDP II has contributed to a clear momentum for quality among key sector players. KDPA's focus on quality in its strategic plan, KDB's emphasis on quality in the new policies and investment in a milk quality laboratory, and Brookside's pilot on QBPS are clear indications of this. The big question is, however, to what extent these intentions will result in actual impacts. It may very well be possible, but there are also many challenges in the political and market environment that need to be overcome.

## 5.4 Outcome 4: Functional value chains

Some of the activities which are categorized under this Outcome in the project documentation have significant overlap with the activities in the other Outcomes. This is partly intentional, since Outcome 4 should support Outcome 1-3 but for clarity and conciseness of analysis we have included some of the interventions and related results in the other Outcomes, making this section unrepresentatively short.

### 5.4.1 Key interventions

#### Smallholder dairy value chain

- Supporting Happy Cow and Meru Union in enhancing milk collection and handling (partly discussed under Outcome 4)
- Training cooperative governance and management, training and extension, exchange visits and SPE groups for forage silage services, access to inputs and technology (partly discussed under Outcome 1)

#### Medium and Large-scale Dairy farms:

- support on ration formulation (Rumen8), farm recording of Key Performance Indicators, fodder planning and production, pasture management, calf and young stock rearing and cow house improvements and breeding (discussed under Outcome 1 & 2)

- B2B linkages between Input Suppliers, Service Providers and Investors (ISPIs) and farmers (see also Outcome 1 & 2)

#### **Sector engagement**

- Strategic support to KDPA
- National seminar in Milk Quality and Safety (also discussed under Outcome 4)

#### **5.4.2 Outcomes and impacts**

**KMDP's work on establishing business linkages between service providers and potential clients is highly effective and appreciated.** KMDP's role in establishing business linkages between ISPIs and farmers (directly or indirectly (e.g. via field days)) is regarded as extremely helpful. As discussed also under Outcome 1 and 2, people would like to see SNV continue this brokering role.

**KMDP's strengthening of smallholder supply chains resulted in higher milk intake by participating cooperatives.** KMDP II's interventions focused on processors (Meru Union and Happy Cow) as a key means to realise support to the smallholder dairy farmer and enhanced efficiency in milk collection and handling. Efforts were made by the programme to strengthen cooperative management. Financial management, bookkeeping practices (which were largely absent before) have all improved through training and support from KMDP, allowing cooperatives to forecast and plan more effectively. Cooperatives found this support very helpful. Meru Union was supported in the development of marketing and production strategies. This has encouraged them to take some issues much more seriously, and ultimately increase the volumes of milk they are collecting, processing and marketing. In addition, cooperatives have been able to increase their membership base, in part due to the attraction of training and extension on offer to farmers via KMDP II (and KMDP co-funded exchange visits). The programme has contributed to a 53% increase of milk intake in volumes in 2018 compare to 2017 by the 17 cooperatives in the programme.

**The programme had less focus on downstream parts of the milk value chains.** The Meru Union and Happy Cow projects focused on the relationships between farmers, cooperatives and the processor. KMDP did not address the nodes after the processor, while the projects show that downstream practices determine to a large extent what investments can be made upstream. One could argue that this is an omission as the objective is to build functional and market-led value chains. It is important to note that despite all the investments made by suppliers such as Olenguruone and Happy Cow (and the farmers linked to them), and some improvements in quality, Happy Cow were not able to sell a premium product as quality was yet insufficient– making it difficult to see strong financial incentives from the market-end on all the investments made. In addition, there can be challenges to managing a quality-based milk payment system through cooperatives if those cooperatives are not well managed or accountable to farmers (e.g. if premiums be adequately passed on to farmers).

**KMDP's sector engagement gained traction over time but remains a relative small component of the programme.** As mentioned under Outcome 3, KMDP has been influential in putting milk quality higher on the agenda of KDB and KDPA. Its support to KDPA's strategic plan is highly appreciated, though the plan itself has not been launched due to a series of internal issues<sup>5</sup>. Our impression is that KMDP's work in sector engagement could have been more intense, particularly compared to the more implementation-oriented activities. This is partly by design. In KMDP I various attempts were made to link up at sector level, but without much success. With this experience in mind, SNV and EKN preferred to focus KMDP II on private sector driven and market-led interventions and to keep some distance from

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<sup>5</sup> Brookside explained that this is yet to be published because they are waiting for members of the Association to agree to funding a Secretariat so they can implement areas in the review, before they publish it. The delay is attributed to issues/dynamics within the Association, rather than any lack of action or support on the part of KMDP who helped to support research and drafting process which fed into the strategic review.

ineffective government bureaucracy. The goal of policy influencing was pursued indirectly through Kenyan dairy sector stakeholders (e.g. farmers, processors, ISPIs and others) and based upon evidence gained from interventions on the ground. At the start, KMDP II staff did not necessarily have the credibility, capabilities (and possibly appetite) to be more directly and intensively involved at the institutional level.

#### 5.4.3 Sustainability and scaling

**There are plans by various stakeholders to continue to host field days.** These days have been highly valued to promote awareness and understanding of farmers of key production issues, see the range of products and services of ISPIs on offer, and for ISPIs to generate business links and develop partnerships. For example, the EDFA in Eldoret indicated its intention to continue to host field days and charge key ISPIs to demonstrate. ISPIs like Nunduroto and AG Harvesting indicated that they are happy to pay for a space. Additionally, many of the established relationships between ISPIs and the farms are expected to continue beyond KMDP II.

**The potential scalability of KMDP's smallholder supply chain interventions remains unclear.** As mentioned under Outcome 4, some elements of the quality management project are being replicated by other actors. However, strengthening the Happy Cow and Meru Union supply chain models required significant investments. While their scale is relatively small in the Kenyan context, it is not clear what the scaling mechanism will be to ensure that these models will be spread across the country.

#### 5.4.4 Systemic change

**Solutions are still needed to build integrated, inclusive and competitive supply chains for mainstream processors.** A prerequisite for larger processors to move to increased quality-based milk sourcing, are more integrated supply chains. While companies like BioFoods manages to do this with medium-scale farmers, and for example Meru Union and Happy Cow with small-scale farmers, there is still a lot to learn on how to make such emerging models more robust and scalable when working with smaller-scale farmers. The Happy Cow project also offers some learnings for this, but there is a general agreement that there are still many things that would need to be fully considered and planned. This includes the type of organizational models, logistics, support services and trading practices.

**KMDP II's approach to evidence-based policy influencing on specific issues was justified, but the sector now needs a coordinated approach of sector transformation.** The sector engagement activities by KMDP II had a focus on milk quality and forage. It was based upon the principles of indirect evidence-based policy influencing, assuming other actors will influence directly on their behalf. There was no comprehensive or deliberate approach to facilitate the creation of a widely shared sector vision, road map and corresponding policy framework on how the sector should develop to become competitive and sustainable. Some may argue that this was a missed opportunity, since many issues – like quality – require a level playing field and more alignment between stakeholders. Others may argue, however, that the time was not ripe for engagement at this level, as similar initiatives by other development programmes failed (e.g. revision of the Dairy Industry Act and KDPA strategic plan both pushed by Land O Lakes/USAID) and that project-based evidence and credibility was needed first. It is highly likely that such an approach is now essential to achieve further change and scaling of the programme's interventions to date. But this approach comes with a host of challenges, including how to make meaningful, multi-stakeholder, sector-wide plans and changes when the political economy is so challenging and where vested interests, corruption and mismanagement of both public and private entities abound. Nevertheless, during the course of the programme some things have changed. Nowadays, there is increased awareness in the sector of the systemic issues that need to be addressed. KMDP's capacity and credibility (i.e. social capital) has also improved by its extended presence in the

sector, its recognized expertise, and its positive engagement with KDB, KDPA and the Department of Livestock. Taking a central role in driving a process of future sector transformation of key sector issues such as feed & forage, milk quality and practical dairy training, could be something to consider for any potential follow-up.

**Facilitating a coordinated process of sector transformations should be with a clear mandate by Kenyan stakeholders and in alignment with other donors working at the institutional level.** Obviously, sector stakeholders need to own the coordinated approach to sector transformation and accept support from an external agent like SNV. This also requires alignment with other relevant donors. For example, the Danish Embassy, very active at the institutional level on food safety, would like to see EKN and SNV continue to play a more active role in bringing multiple stakeholders together to discuss issues around quality and safety – offering a platform for knowledge sharing from a variety of parties. In addition, they feel there is an important role to play in supporting industry on quality – via the KDPA – but do not recommend offering financial support for the running of the secretariat, since the members need to show commitment to the association first.

## 5.5 Outcome 5: International linkages

### 5.5.1 Key interventions

In KMDP international linkages and partnerships are important tools or vehicles for exchange and transfer of knowledge, technology, skills and investments – and driving innovations – to the Kenyan dairy sector. Facilitating linkages and engagement with the Dutch private sector, is also considered important in a transition “from aid to trade”.

The following main interventions took place:

- **Linking expertise:** study tours to the Netherlands (e.g. EDFA, Meru Union, Farmer Groups, KDB and PUM business linkages), expert input to Meru Union for a breeding strategy, numerous PUM missions, CowSoko website, reports and case studies
- **Facilitation of B2B linkages:** two investor forums, two Dutch Pavilions, trade missions to the Netherlands, 2 market studies (North Rift & Central/Eastern), 2 feasibility studies (Bles Dairies)
- **Partnerships:** participation in / facilitation of NEADAP, NUFFIC and FDOV Projects and Rabobank Foundation/GAD Foundation.
- **Innovation Fund:** 5 grants for projects operating in the other Outcomes

### 5.5.2 Outcomes and impacts

**Increased international linkages contributed to the introduction of new technologies and building capacities of producers, local service providers and policy makers.** Partly thanks to Dutch actors, innovations have been introduced in Kenya in fodder (maize train), breeding, milk processing and cooling equipment. It also facilitated significant capacity building. KMDP has linked-up with Dutch dairy advisory companies and organisations like PUM to build capacity of local Dairy Advisors or Consultants as well as other actors. The study tours to the Netherlands were highly valued. The PUM experts were valued, although to various degree, generally related to the ability of the expert to translate its knowledge to the local context. Also, much knowledge and good practice is being transferred by the Dutch ISPIs in the market, including the Innovation Fund projects. Activities under this Outcome have not always been successful. For example, the expert input by KMDP in developing a breeding strategy for Meru Union and CRVs offer to help implement this strategy did not materialize as the interests of the Union’s leadership seemed to change during the process.

**KMDP II has helped to grow the customer base for some businesses.** All of the above-mentioned interventions have contributed to this. For example, the market intelligence offered by KMDP II, via their market studies, and field days have been very helpful for agricultural contractors looking to scale up. Several companies stated that KMDP II's market studies helped them to identify clients and ultimately grow their business. Such intelligence is otherwise structurally lacking in Kenya. The field days also contributed to a growing client base for several service providers. Additionally, the KMDP teamleader has been in frequent communication with companies supported under KMDP and he has offered more market intelligence.

**The Innovation Fund played an important role in reducing risk associated with investing in Kenya.** For some investors (Dutch owned, or with Dutch linkages) they see Kenya has potential for businesses, but there are also higher risks involved in investing in Kenya than, for example, the Netherlands, Eastern Europe or Asia. This is the case for FIT Ltd/Agri Assist (who started once they had help from SNV to invest in machinery), whilst for Nundoroto they have been able to increase the capacity of their machines to target medium and large-scale farms rather than small-scale farms only, through co-funding of new machinery (Nundoroto were operating on a smaller scale before KMDP). Thanks to the Innovation Fund, Bles Dairies was able to invest in free advice and training linked to their products, which allowed them to gain market access more quickly. The Innovation Fund allowed these companies to make investments they would otherwise not have done, or in a different, much smaller way. The project of Uniform-Agri has not resulted in the desired outcome, partly because of a lack of the capacity in Kenya to support its customers and of Uniform-Agri giving insufficient support to the agent. Again, most beneficiaries highly valued the networking and advice which came with the grant.

### 5.5.3 Sustainability and scaling

**The companies and business models supported by KMDP's Innovation & Investment Fund will be sustained, but for some the end of the programme will leave an important gap.** Bles Dairies expects to continue to be able to offer training with their products as the initial investments to set this up have been made. The Happy Cow project will continue in a simpler form. Although the Uniform-Agri project failed, the company expects to relaunch its activities soon. As mentioned under Outcome 2, agricultural contractors' businesses are growing and expect to sustain their activities. Nonetheless, FIT Ltd and Agri-Assist are more nervous about the programme coming to an end. They have really relied on KMDP to refer clients and the Project Teamleader has been particularly supportive, sometimes even protective, in the establishment of their businesses. The end to the programme does make some of the companies nervous about some aspects of their future, though they feel they have a solid basis to sustain.

**There is an increasing presence and interest of Dutch companies in the Kenyan sector.** Since the start of KMDP in 2012, the number of Dutch companies has increased. Several new Dutch ISPIs have set up base, sometimes in partnership with local companies, such as: BDEA Ltd, Agri Assist, AG Harvesting, FIT Ltd, ProDairy, Nundoroto, Kanters/EuroDairy, Bio Foods and new investments are upcoming (e.g. feed manufacturers like Koudijs and Provimi/Cargill and Nutreco). Important success factors are that technology levels and business models are adjusted to the Kenya context, and that there is local presence of the investors themselves or their highly qualified staff. KMDP has been instrumental in many of these investments. In several cases, KMDP was even driving it. It did facilitate a shift from Aid to more Trade. The next step should be that new entrants take the initiative and do not need any Aid support. But in reality many of them still need the networking, advice, market intelligence and some also the funding.

**The end of KMDP will leave an important gap for future knowledge and B2B linkages.** For many years, KMDP has been the hub linking Dutch expertise and business to Kenyan actors in the dairy sector. With the end of the programme it is unlikely this will continue. Most interviewed felt that it is unfortunate

that such highly valued service is dependent on a temporary development programme. EKN and SNV may have underestimated the value stakeholders give to this linking role. With that in mind, it can be considered as a weakness that SNV and EKN have not sufficiently invested in a phasing out strategy regarding this role to ensure future continuation (certainly once it became clear that the Dutch Business Hub would not take over this role).

#### 5.5.4 Systemic change

**Despite an increasing presence, the Kenyan market is still immature for most Dutch products and services.** Many of the Dutch services are of high quality but are also high cost. This makes many products or services out of scope for many Kenyans. Kenya is also very price sensitive and for some products and services commercial actors face competition from donor funded projects. Many potential customers are used to low quality. For example, the uptake of Dutch machinery is very low because it is too sophisticated and expensive. Some of the new technologies (e.g. software solutions) are also too complex and have difficulties in finding a market. The general impression is that the Dutch are not interested in downgrading their products for sale in Kenya, except for those companies, and several of them exist, which market used and refurbished machinery and equipment at affordable prices.

Nonetheless, Dutch companies remain positive. They experience a slowly growing demand for more sophisticated and higher quality products and services. And although it has not happened recently (partly because of the low milk prices), they expect an acceleration in the future. Some expect that the tipping point for quality products and services will only happen if a large international dairy processor invests in the Kenyan market that is also willing to invest in local sourcing. As this could be a game changer. Despite earlier interest and the provision of market intelligence by KMDP, Friesland Campina has not yet entered the Kenyan market. Danone on the other hand holds a minority share in Brookside (40%), but this has not led yet to any visible changes in the current way of doing business.

## 6. Assessment of the programme management

This chapter describes the main findings regarding the capabilities of KMDP's staff, its overall approach and the role of EKN. It is based upon the interviews.

### 6.1.1 KMDP's approach

**There is a general consensus that KMDP delivered high value for money.** It contributed to several important innovations with relatively few resources. KMDP laid down suitable foundations for scaling of some of these innovations as is visible and demonstrated by crowding-in (especially in forage), continuing sector dialogue and draft policy documents.

**KMDP is seen as highly focused and credible.** It is seen as highly focused in achieving the desired results. Its credibility and legitimacy within the sector, including with KDB is now high. Its medium-term presence in the sector, closeness to the farmers and clear results contribute to this.

**There can be a trade-off between being demand-driven and flexible, and working on the systemic solutions.** KMDP I and KMDP II were flexible programmes. This has important benefits as it allowed the programme to be opportunistic to enhance impact. This is particularly relevant when working in a dynamic business context on innovations. The downside is that one can change direction too often, meaning that the different activities you are working on do not necessarily fit together, or that consistency over time is challenged (e.g. we found some criticism that the extension approach has changed various times over the course of the two programmes). KMDP was also very committed to its business partners, which was arguably highly beneficial to those businesses, but due to its time-consuming nature had less time and capacity to work at a sector level. And while these projects were carefully selected in relation to the relevance of key systemic issues (e.g. milk quality and cost of production) some respondents argued that the individual business projects did not necessarily result in systemic solutions (i.e. the relevance for the wider sector is limited).

### 6.1.2 KMDP's staff

**KMDP staff are high quality, professional, committed and client centered.** There is general appreciation for the quality of support given by KMDP. Partners and beneficiaries feel the KMDP staff are part of their businesses. They have played an important mentorship role and can be called on at any time. For example, farms and centers from KMDP I still make contact with SNV Meru staff for advice and support. SNV staff and dairy consultants who are now part of consultancies (e.g. Perfometer and PMO) place great value on the experience and training SNV has given them as well as the hands-on practical experience they have been offered as part of their roles/training. Relevant Kenyan degrees are not practical. KMDP gives those opportunities, and hence staff have explained that their skills and capacity are much stronger since being employed by SNV. The method of working has allowed them to gain independence (e.g. being attached to farms, working in new areas, conducting research without close supervision), and staff feel they have generally been able to work without micromanagement.

**KMDP has become an important source of new professionals to support the sector.** For example, many of KMDP's interns have made their way to the market. KMDP II field staff have often been on contracts that allow them some time to work elsewhere. This has been important in ensuring that staff keep a view to future work opportunities and demand for their services and has given many confidence that they will be able to find work elsewhere (as well as helping them maintain contacts beyond the program). Many have been offered roles within private dairy advisory consultancies (e.g. ProDairy and Bles Dairies), have plans to start their own consultancies (e.g. the majority of Eldoret team in the form of

SEB Consultants), or to continue work with NGOs who have partnered with SNV on KMDP (e.g. CIAT want to hire two of the Meru staff as local consultants to continue their grass demonstration project).

**The general impression is that KMDP found a good balance between (individual) business interests and responsible use of public funds in supporting these businesses, stimulating innovations and seeking to maximize or optimize development impact.** A certain degree of commercial and business sensitivity combined with a sound critical attitude towards commercial and technical soundness of proposals – as is the case in KMDP – is a critical capability for programmes that use funds to promote private sector development with a focus on development impact and inclusiveness. Nonetheless, the interviews revealed that companies can have different expectations regarding KMDP’s commercial attitude and approach. While commercial and business orientation is strongly present among some staff members, it was noted that some other staff or dairy consultants could further develop this.

**KMDP’s leadership is seen as a critical factor in the programme’s success.** The KMDP teamleader is regarded as highly committed, knowledgeable, available and effective. The teamleader’s networking and linking role has been important for many actors. He and his team have become the ‘go to’ source for intelligence and advice for any Dutch company interested in working in the dairy sector of Kenya. Several of the respondents have very regular contact with him. But the central role of the Teamleader – inevitable in such a role – also creates a challenge if certain components of the programme are to be continued without him (even if some key members would be maintained).

### 6.1.3 The role of EKN

**The relationship between SNV and EKN is constructive and flexible.** There is frequent communication between the two organizations. EKN also participated in various KMDP activities and visited several projects. The relationship between EKN and the individual KMDP beneficiaries is not that intensive. Several beneficiaries have no contact at all, but do not have a need for this. They see, however, that EKN is promoting Dutch trade in general, which they appreciate. One respondent did expect more attention and recognition from EKN. EKN has also been highly instrumental in allowing KMDP to adopt a flexible approach on project design, space to review and redesign during implementation if the circumstances (e.g. market dynamics) did require, including reallocation of budget. There is clearly a certain degree of trust of the KMDP team by EKN.

**KMDP may have benefited from more facilitation at institutional level, and would be if the programme would continue.** EKN’s role in facilitating sector level influencing has been limited. A more pro-active facilitation could possibly have helped KMDP to become more (quickly) effective at the institutional level. EKN has the ambition to become more active at institutional change, which would certainly be beneficial for any potential follow-up with more attention to institutional change. Relevant activities include the facilitation of linkages between any follow-up of KMDP and decision-makers in key institutions. EKN could also promote among the Kenyan leadership the need for an inclusive policy dialogue to develop a shared vision and sector transformation roadmap, while contributing to such a process financially. This requires an understanding of what is already being done at this level. For example, EKN already finances the Voice for Change Partnership which works on public policy advocacy regarding food safety in the dairy value chain. The Danish are focusing on reforming the national food safety system, working with all national competent authorities (KDB, KEBS, MoALF/DVS etc.) using advice, experience and knowledge-sharing from European systems to inform a risk-based approach to safety. They are also working with two counties (Nairobi and Nyandarua) to pilot these approaches and share knowledge on what works and how challenges might best be overcome. They are working to inform policymaking via the proposed Kenya Food Administration Act and the proposed Dairy Industry Regulations (making recommendations around legalizing the sale of raw milk direct to consumers, but not via wholesalers and how best to work with risk and food safety at the farm level). They feel work at

the institutional level is what is most needed to address food safety issues, and be done efficiently with minimal resources, despite the many challenges of doing so. As mentioned in section 5.4, the Danish see opportunities for complementary roles of the Dutch Embassy (e.g. facilitating a national dialogue and strategy on milk quality). A more institutional focus will however require a long- term commitment and consistent vision on the where to go and a considered approach to, at the very least, not undermining the private sector.

## 7. Conclusions and recommendations

### 7.1 Main conclusions on KMDP II

**KMDP II's thematic focus corresponds to important systemic issues which need to be addressed to drive the development of Kenyan dairy sector.** The selection of the Outcomes was done well. To become more competitive and sustainable, the sector needs significant innovation regarding access to training and advice, availability of quality fodder, supply of milk quality and value chain integration. The topic of quality feed and fodder is also highly relevant from a climate change perspective.

**KMDP II's contributed to systemic change on various issues.** The most significant results of the programme include:

- a shift in mindset as regards to the need for practical training
- a shift in mindset across stakeholders on the role of fodder
- the introduction of new innovations (e.g. maize train, silage, Rumen8, QBPS) which benefit the availability of fodder and cow productivity
- the establishment of various viable service delivery models and companies relevant to small and large farms (e.g. SPE, LDC, various other ISPIs)
- increased awareness on the importance of milk quality among key sector stakeholders
- improved linkages between Dutch experts and service providers and Kenyan stakeholders
- the public availability of technical guidelines and publications offering many lessons learned (e.g. through CowSoko).

This evaluation found evidence of many activities being sustained, scaled and replicated. Particularly on fodder, it has catalyzed wide-scale change. Its contribution to an improved service offer for medium- and large-scale dairy farms can also be considered as important legacy. The increased awareness regarding milk quality is also a major achievement, though this has not yet materialized into widespread behavioural change.

**Less systemic change has been achieved on quality-based value chain models.** KMDP II's main successes are found in the relationship between service providers and farms. It has been less successful in building functional value chains for milk and milk products. The Happy Cow and Meru Union projects show some success and many learnings, but there is not yet a proof of concept of the business case and business model of smallholder-based value chains for quality milk. The sector has not figured out yet how to mainstream sourcing of quality milk, whether from smallholders or medium and large-scale farmers.

**KMDP's business-oriented approach matched the From Aid to Trade agenda very well.** KMDP II facilitated a shift from aid to more trade. KMDP's capabilities regarding networking, partnership brokering, intelligence and advice were instrumental in this. The Innovation Fund also contributed to investments by Dutch companies in new business ventures. In several cases, KMDP was even driving new investments. KMDP's flexible approach allowed new opportunities to be captured, which is particularly relevant for a dynamic business environment. The next step should be that Dutch companies take the initiative and do not need any Aid support. There is evidence that this is happening, though the 'soft' services such as intelligence and networking will be missed.

**KMDP II offered high value for money with excellent staff.** There is general appreciation for the quality of support given by KMDP II. Staff were regarded as being high quality, professional, committed and client centered. The programme has also become an important source of new professionals in the

sector. Its strategy to establish and strengthen local dairy consultancies in implementing their activities and build new business is a very effective strategy from a sustainability point of view. The expectation is that they will continue to provide high-quality services long after the programme has ended.

**KMDP contributed to a better business and investment climate in the Kenyan Dairy Sector, but the market and policy context still pose many constraints to sector-wide transformation.** KMDP contributed to systemic solutions on various topics which offered opportunities for individual businesses. It also had an eye to sustainability and scaling. It has contributed to the initial stages of transformation in the fodder sector. However, the general market and political environment remains unfavorable to achieving transformation in many other areas. For example, the current enabling environment of low milk prices and absence of market incentives for quality poses serious challenges to commercial farmers to invest in more professional farming systems. Similarly, the lack of enforcement of existing quality standards reduce incentives to value chain actors to invest in improving milk quality. There is a general belief that real transformation in the dairy sector will only happen if certain conditions in the political and market context will change (e.g. more effective policies and enforcement, a reduction in collusion and corruption, increased consumer awareness of food safety, the market entry of an international dairy processor focused on quality).

## **7.2 Recommendations for future engagement in the Kenyan dairy sector**

We recommend EKN and SNV continue their engagement in the Kenyan dairy sector and identified three options which build upon KMDP achievements so far, and work to improve sector competitiveness and sustainability.

### **1. Sector level change**

This option refers to a more active role in the facilitation of a sector dialogue and independent advice on systemic issues and the overall transformation strategy of the Kenyan dairy sector. KMDP's achievement of increasing awareness on the importance of milk quality will need further (and more intense) facilitation and advice to the Kenyan authorities and private sector before it will materialize in wide-spread behavioural change. It is recommended to link this process to a more coordinated process of sector transformation. This entails the facilitation of a sector dialogue and planning process to define with key stakeholders a common vision, roadmap, programmes and policy frameworks to make the Kenyan dairy sector more competitive and sustainable. This implies a much broader agenda than just milk quality and food safety, and should encompass themes like cost-price (with strong links to forage and dairy nutrition), service provision (including finance, skills development and training), inclusive value chains, and reducing environmental footprints. It should also include the development of mechanisms which generate revenue from the sector to be re-invested strategically (e.g. in research and development, education and quality management).

Although this can be a risky venture because of the existing vested interest and collusion, the momentum seems to be growing for such dialogue. The potential gains are high as improvements in the enabling market and policy context can catalyze real transformation in the sector, offer many opportunities to the private sector, including Dutch companies.

A more coordinated approach to sector transformation is preferably owned and convened by the sector players themselves (e.g. KDB) and should ensure sound participation by all key stakeholders. There are undoubtedly challenges in working with government, as would be necessary to drive sector change – as highlighted by other donors who have chosen to work primarily with government. A careful balance also needs to be struck to ensure the private sector is not crowded out (or dominated by a few key interests such as those processors who have links to government) and remains a crucial part of any sector

dialogue and transformation strategy – which has been a criticism of some donors who have chosen to work primarily with government. SNV could advocate for such approach and try to receive the mandate to participate as expert or facilitator. It does not necessarily have to be SNV that adopts this role, but proposing an organization with sufficient social capital would be highly recommended. SNV now has the credibility to play a more active role at the institutional level. It will however require investment in some additional capabilities in order to play this role well. Such strategy will also benefit from a more active engagement of EKN at the institutional level and strong alignment with other donors active at the institutional level (notably the Danish).

## **2. Innovations**

This option refers to supporting the next level of innovations on fodder, milk quality and value chain integration. There is still a need for new technologies and business models. Key issues to address on fodder include access to forage seeds, efficient and timely production and registration of forage varieties and plant material<sup>6</sup>, introduce forage quality standards, testing and independent assurance of quality (which can then be used to drive the pricing of forages). It also includes the development of more efficient production and distribution models to reduce costs and enhance quality (and by this make silage accessible to more farms). There is also a need to collect more evidence on the costs and benefits of quality forage products to raise awareness in the market of the benefits of quality forages to support demand and accurate pricing for quality. Further scaling will also require strengthening of linkages between various actors in Kenya (including forage seed companies, feed manufacturers, service providers (e.g. those with the capacity to test the quality of forages and those with data that can form the basis of a feed library), investors, processors, farmers, cooperatives). Another priority could be to support future scaling of Rumen8. This requires continued work to ensure its integration into animal nutrition curricula through which future local dairy consultants can gain the knowledge and capacity to use this tool.

With regards to milk quality and value chain integration there is a need to develop viable supply chain models which can source quality milk from small-scale producers. This requires innovations in terms of integrated service delivery models, quality management, traceability, trading practices (including market incentives for quality) and marketing. Decisions to support potential innovations should be based upon their wider sector relevance in addition to the individual business interest. This option could be combined with an Innovation Fund to lower the barriers for companies to make certain investments. Continued work with the KDPA – assuming they are able to raise their own funds for running their secretariat and the members therefore show commitment to the Association – could offer an opportunity for operationalizing a form of sector-wide agreement or code of conduct for processors (and the collection and bulking enterprises (CBEs) to which they are linked) on quality and testing, under the quality objective of their strategic plan. Alternatively, this could be driven by retailers or a consumer representative body (if they are able to gain enough institutional, and representative strength). Over time this system could offer scope for independent assurance of the quality testing systems and processes put in place by CBEs and processors.

## **3. (Regional) Dairy Business Hub**

This option implies the continuation of the role of facilitating knowledge and B2B linkages between Dutch and Kenyan actors. This evaluation revealed that KMDP will be particularly missed in this role. Key activities for such a Hub should be networking, partnership brokering, intelligence and advice. An option is to set up the Hub for the East African Community as many actors are active in multiple countries. A key success factor is to equip the Hub with staff with good knowledge of the dairy sector and business

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<sup>6</sup> Though it is important to consider that there are a number of organisations (e.g. Syngenta Foundation and KIT) who are already working in this area, but may require further support or partnerships.

development. Efforts should be made to work towards a (semi)- commercial business model to reduce dependency on donor funding in the future.

For inspiration one could look at the Ethiopia Netherlands Trade for Agricultural Growth (ENTAG) project funded by the Dutch Embassy in Addis Ababa. Though ENTAG's total package of services is much larger than what a dairy business hub should do, it also has a front office for Dutch companies. The basic services of this front office are delivered for free, but companies pay for additional services (e.g. specific market research, technical assistance).

**Other systemic issues** in the dairy sector which need to be addressed, but not necessarily by a follow-up of KMDP, are the improvement of the dairy educational system, access to finance for SME ISPIs and engagement on issues regarding land tenure or incentives to sub-lease land. In particular, the dairy educational system is not to be underestimated as area which requires future intervention: human capital is a prerequisite for achieving scaling and systemic change. It is relevant to all the above recommendations. These issues may be out of scope for an immediate follow-up of KMDP, but EKN and the Dutch government could consider giving more attention to this. Some activity in this area is already taking place. For example, the new call of the Nuffic's Orange Knowledge Programme on institutional collaboration can be relevant, if it manages to achieve structural change in the dairy educational system. It is recommended to create a strong link between the Nuffic projects in Kenya and a potential follow-up of KMDP to ensure those projects are relevant and practice driven. A similar recommendation for the remainder of the programme (and certainly a follow-up) is to ensure that KMDPs in-depth sector and supply chain knowledge are integrated in other programmes such as Voice4Change and the Netherlands East African Dairy Partnership (NEADAP).

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### Other project documentation reviewed by the evaluation team:

- KMDP II proposal
- KMDP annual reports (2017 and 2018)
- Status Report SNV/KMDP - International Linkages and Partnerships, Prepared by Anton Jansen, KMDP Teamleader, 9 November 2015, updated 12 April 2019
- Modular Cow Barn Design Hand Book for Smallholder Dairy Entrepreneurs
- Memo GAD Foundation SNV KMDP
- Scoping study tvet dairy eastafrica

- SNV PUM Business Link Report
- SR Practical Dairy Training Centres (PDTCs)
- Status report on KMDP Training and Extension Approaches
- Assessment KMDP Forage Interventions North Rift 25 March 2019
- Case Study of the Service Provider Enterprise SPE Model
- Guidelines maize silage booklet
- Kenya Forage Scan Version Supplements 04MAY2019
- KMDP Fodder flier
- Methodology Rumen8 Pilot 2018 Final
- Rumen8 SNV Presentation Animal Production Society

## Appendix 1: Key informants

### Meru

1. Kirimena Dairy: Lead farmer + 4 members of an SPE group who provides services to him (Dairy Ventures)
2. Itiri PDTC + SPE member (Bidii SPE Group) + farmer client
3. Farmer John (received training from lead farmer)
4. John Giton (lead farmer)
5. Abogeta cooperative (5 members)
6. Mwangagasa farm (PDTC)
7. Meru SNV staff
8. Naari cooperative (9 members)
9. Meru Union/Dairy (Union of cooperatives and processor)
10. Sikuru farm (PDTC)

### Eldoret

11. Nunduroto agricultural contractor (Humphrey and company manager)
12. Ilula farm manager (involved in Rumen8, working with Bles dairies, lead farmer, CIAT demons).
13. Agri-Assist/FIT Ltd – Eric de Jong and one of his managers.
14. Eldoret Dairy Farmers Association – former Chairman and Association Manager.
15. Bles Dairies – Dirk Harting
16. Eldoret SNV staff
17. Biofoods (Dairy Development Officer)

### Nairobi

18. SNV KMDP staff
19. EKN (Sanne Willems)
20. Kenya Dairy Board
21. Department of Livestock
22. David Maina, Perfometer (LDC)
23. Catherine Kilelu (3R)
24. CIAT (Solomon, Uwe and Ann)
25. Professor Gachuri (Nairobi University)
26. Dr. Makoni (consultant)
27. Brookside (processor)
28. BioFoods (processor)
29. AG Harvesting, ProDairy, Agri Assist and FIT representatives
30. Jos Creemers (ProDairy)
31. DANIDA (Henning Høy Nygaard)

### Elsewhere in Kenya

32. Gogar farm – farm manager, Hamish Grant.
33. MEVED farm (medium/large-scale farm) – services from Perfometer.
34. Olenguruone cooperative (6 members)
35. Olosian Dairy farm (medium scale farm)
36. Happy Cow (processor in Nakuru)

### Netherlands

37. Geert Westenbrink – Ministry of Economic Affairs
38. Jan van der Lee – Wageningen University

39. Frans Ettema - PUM, Landfort and temporary SNV Global Dairy Coordinator
40. Vetvice/cow signals
41. Bles Dairies – Henk Bles
42. CRV
43. Uniform Agri

## Appendix 2: Monitoring framework and results

Some targets slightly deviate from the original proposal, but these changes have been approved by EKN in year 1 of the project. The targets and results show the end of programme targets and results of which some are cumulative. For the indicators with an (\*) the end of programme results are not yet available. Instead, the end of 2018 or early 2019 data has been (and some of these results have been adjusted compared to the 2018 Annual Report after discussion with the KMDP II team).

The color shaded shows the extent of achievement: “green” is above the target achievement and “orange” indicates a lower than expected achievement.

### Outcome 1: Practical Skills and Farm Management

Indicator	Target	Realized	Remark
a) No. of people using training, extension and farm advisory services*	20,000	15,730	<ul style="list-style-type: none"> <li>7,415 male and 8,315 female (=53%)</li> </ul>
b) No. of new investments/ partnerships for supply of practical dairy training in Kenya	3	2	<ul style="list-style-type: none"> <li>GAD and Rabobank foundation</li> <li>Rumen8 training modules with University of Nairobi</li> </ul>
c) No. of policy/sector initiatives contributed to, for supply of practical dairy training in Kenya	1	2	<ul style="list-style-type: none"> <li>Contribution to the Scoping study to strengthen the Technical Vocational Education and Training in the Dairy Sector in East Africa - ICRA/ AERES</li> <li>Advise to GiZ/DTI on draft national TVET curriculum</li> </ul>

### Outcome 2: Feed and fodder

Indicator	Target	Realized	Remark
a) Volume of quality fodder preserved*	200,000	63,959	<ul style="list-style-type: none"> <li>Target was set too optimistically. The realized figures do not include the volumes produced by actors who replicated fodder production activities but did not receive KMDP support</li> </ul>
b) No. of innovative & scaling-up fodder solutions facilitated in the market	5	7	<ul style="list-style-type: none"> <li>New: AG Harvesting, FIT</li> <li>Upscaling from KMDP I: SPEs, NFC, Leketeton, AusQuest Farms, Rumen8 pilot</li> </ul>
c) No. of policy/ sector initiatives contributed to for supply of quality fodder in Kenya	2	8	<ul style="list-style-type: none"> <li>ESADA, Annual Nation Fodder Conference in Nakuru, MoALF, ASAL SeminarMalindi, Animal Production Society of Kenya –Nanyuki &amp; Nakuru Seminar, KMDP’s contribution to ILRI strategic plan for EA Ethiopia, FAO/MoALF National Feed Inventory &amp; Kenya Forage Quick Scan</li> </ul>

### Outcome 3: Milk Quality

Indicator	Target	Realized	Remark
a1) No. of dairy societies adopted and/or implemented policies/ regulations/SOPs for milk collection	7	15	<ul style="list-style-type: none"> <li></li> </ul>
a2) Investments in aluminum milk cans leading to zero milk supply in plastics	50%	53,3%	<ul style="list-style-type: none"> <li>8 out of 15 dairy societies eliminated plastics, with the other 7 reduced the incidences of use of plastics.</li> </ul>

b1) Reduced rejects of raw milk at both dairy society and processor level*	- 10%	-	<ul style="list-style-type: none"> <li>0.9% reject in 2018 against 0.32% in baseline. Higher standards and testing regimes resulted in more rejects (but increased food safety).</li> </ul>
b2) improved testing regimes at processor and dairy society level	40%	100%	<ul style="list-style-type: none"> <li>Testing regimes across 15 dairy societies and 2 processors (milk acceptance-farm level, platform tests at satellite milk coolers &amp; processing plant receptions, laboratory tests).</li> </ul>
c) Increase in no. of farmers enrolled for payment based on milk quality*	tbd	600	<ul style="list-style-type: none"> <li>Happy Cow's MQT&amp;T/QBMPS pilot involved currently 600 farmers, previously 1697 (as collaboration with one cooperative stopped)</li> </ul>
d) No. of policy/sector initiatives contributed to for supply of quality raw milk and payment based on quality in Kenya	1	2	<ul style="list-style-type: none"> <li>Sector level dissemination of lessons of the MQT&amp;T/QBMPS pilot through the KDPA and ESADA.</li> <li>KDB Initiatives for milk testing laboratory</li> </ul>

#### Outcome 4: Functional value chains

Indicator	Target	Realized	Remark
a) No. of companies in the dairy value chain that have business linkages*	80	36	<ul style="list-style-type: none"> <li>Input Supply and Services providers linked</li> </ul>
b) No. of initiatives lead by processors for investing backward in the chain	3	3	<ul style="list-style-type: none"> <li>Meru Central Dairy Cooperative Union Ltd and Happy Cow Ltd, Biofoods Ltd</li> </ul>
c) No. of dairy farms with improved performance*	40	45	<ul style="list-style-type: none"> <li>45 lead or demo farms drawn from smallholder and medium-scale farms.</li> </ul>
d) No. of policy/sector initiatives contributed to for improved functional relationships in the DVC in Kenya	1	2	<ul style="list-style-type: none"> <li>Strategic support KDPA Strategic plan.</li> <li>National seminar in Milk Quality and Safety with KDB</li> </ul>

#### Outcome 5: International linkages

Indicator	Target	Realized	Remark
a) Businesses (Dutch + local) that have been supported with scoping and/or a planning for investment, trade or service provision	20	16	<ul style="list-style-type: none"> <li>The total number of Dutch owned or local agents</li> </ul>
b) Increased volume of business between Netherlands and Kenya	20%	>20%	<ul style="list-style-type: none"> <li>This indicator has not been measured consistently.</li> <li>16 out of 18 companies report to have increased their market share. Two shared data on turnover (+24% &amp; +168%)</li> </ul>
c) Increased demand for sector information and market intelligence from Dutch investors/companies*	100	142,426	<ul style="list-style-type: none"> <li>The realized figure represents the number of KMDP documents downloaded from Cowsoko website</li> </ul>

### Impact indicators

Indicator	Target	Realized	Remark
<b>Income:</b> No. of dairy farmers with increased income*	10.000	7,535	<ul style="list-style-type: none"> <li>3,542 male; ,3994 female</li> <li>327 farmers had less than 5% increase incomes</li> </ul>
<b>Employability:</b> Trainers, extensionists, dairy advisories with improved skills*	200	136	<ul style="list-style-type: none"> <li>87 male; 49 female</li> </ul>
<b>Food security:</b> Increase in average production per cow*	10%	26%	<ul style="list-style-type: none"> <li>145 lead SHFs and 25 MSFs reported an average increase of in milk production of 26% per cow.</li> </ul>
<b>Food safety:</b> Dairy societies/processors with quality controlled and quality assured milk collection systems	2	1	<ul style="list-style-type: none"> <li>Happy Cow's KENAS accredited MQT&amp;T/QBMPs pilot project laboratory</li> </ul>
<b>Trade:</b> Active companies in dairy value chain*	25	36	<ul style="list-style-type: none"> <li>Input Supply and Services providers linked</li> </ul>

### Cross cutting themes

Indicator	Target	Realized	Remark
<b>Climate smart</b>			
a) % of hectares of farmland used more eco-efficiently of total land size under pasture management*	50%	54%	<ul style="list-style-type: none"> <li>Baseline of 561 ha, reported in 2017 and 866 ha reported for 2018.</li> </ul>
b) enhanced agronomic practices (including manure management)	3	4	<ul style="list-style-type: none"> <li>Power Point Seed to Feed, Maize Silage Guidelines, SPE case study 3R, Report KMDP Inter-ventions NRift: Agr. Contracting &amp; Baling of Maize Silage</li> </ul>
c) Cases of investments in renewable energy solutions in the DVC saving measures in the cold chain*	3	0	<ul style="list-style-type: none"> <li>No activity anymore, was part of Muller project</li> <li>Link with SNV Biogas programme not established</li> </ul>
<b>Gender</b>			
a) % of women (trained, trainers, advisors, linked)*	50%	50.7%	<ul style="list-style-type: none"> <li>8,865 females out of the total contacted 17,451 project clients</li> </ul>
b) % of female-led dairy farming enterprises	40%	26%	<ul style="list-style-type: none"> <li>42 female-led entities out of the total 162</li> </ul>
c) % of female member in dairy societies	50%	53%	<ul style="list-style-type: none"> <li>The proportion of female membership in dairy societies</li> </ul>
<b>Youth</b>			
a) % of youth lead farmers	30%	28%	<ul style="list-style-type: none"> <li>89 youthful farmer, out of the 314 expanded smallholder lead farmers</li> </ul>
b) no. of youth joining the SPE	100	131	<ul style="list-style-type: none"> <li>131 Youths inducted into SPE with 72 operational</li> </ul>
c) increase in no. of services offered by SPEs*	3	2	<ul style="list-style-type: none"> <li>Agronomic advice for maize for fodder and fodder preparation and preservation</li> </ul>
d) Increase in the no. clients using SPE services	100%	100%	<ul style="list-style-type: none"> <li>Increase in number of client – baseline = zero. 2017: 517 clients; 2018: 599 clients (=16% increase)</li> </ul>

