SNV NETHERLANDS DEVELOPMENT ORGANISATION
SNV KENYA
THE KENYA MARKET-LED DAIRY PROGRAMME
(KMDP)

STATUS REPORT
MEDIUM SCALE FARMERS (MSFs)
AND COMMERCIAL FODDER PRODUCERS (CFPs) AGENDA
(INCLUDING PUM EVALUATION 2015)

LANDFORT ADVIESBUREAU
PUM NETHERLANDS SENIOR EXPERTS PROGRAM

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Referenced Documents and Annexes

SNV documents

Annex 08_KMDP Dutch Companies Network_2015
Annex 09_SNV KMDP Dairy Positioning Paper
Annex 10_SR KMDP Introduction_08102015.pdf
Annex 11_Practical Dairy Training Centres
Annex 12_DTC Proposal KMDP Innovation Fund
Annex 13_FPSC 18082014 GHAJ Final Draft.pdf
Annex 14_UA Pilot SNV Kenya_06102015.pdf
Annex 15_Final Report Internship Eric de Jong
Annex 16_Farm Analysis Dalsa farm_JGK_2015
Annex 17_Farm Analysis Kapsuswa farm_JGK_2015
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Annex 19_Farm Analysis Limo farm_JGK_2015
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Annex 21_Farm Analysis Seregon farm_JGK_2015
Annex 22_Farm Analysis Simam farm_JGK_2015
Annex 23_Handbook Modular Dairy Cow
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Feed & Fodder documents

Annex 29_Grass Silage field day at Willens farm
Annex 30_Maize Train_Sept_2015
Annex 31_Data on Pannar Pilot Farms_2014

Perfometer documents

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Annex 02_KMDP Perfometer MSF CFP Agenda.pdf
Annex 03_MSF Countywise_2015
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Annex 32_ELDOSIRIKWA PROGRESS-SNV_Sept_2015
Annex 33_Record Keeping Progress Report_2015

EDFA documents

Annex 24_ EDFA Strategic Plan_2015_2018
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Annex 26_KMDP INTERVENTIONS_2015
Annex 27_EDFA Study Tour NL & SA_08102015.pdf
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Annex 34_Evaluation-PUM assisted TDM
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Annex 36_PUM Evaluation Report-2014.pdf
Annex 37_PUM MISSION 2015 REPORT_FE
Annex 38_PUM Mission schedule_SNV-KMDP_2013_2014

PowerPoint Presentations in KMDP

Annex 39_Cow Barn Slides_2015
Annex 40_Practical Dairy Training Centres
Annex 41_Presentation MSF Fodder Interventions
Annex 42_SAMO FARM_WH_2015
Annex 43_Gogar Farm_2015.pdf

Referenced documents and attachments see:
https://www.dropbox.com/sh/806qk27dg0j8zyj/AACd6ni-q3-8sOQxZZUtekUZa?dl=0

Lists of abbreviations

AFC	*Agriculture Finance Corporation*
AI	*Artificial Insemination*
B2B	*Business to Business*
BCS	*Body Condition Score*
CAN	*Calcium Ammonium Nitrate*
CBE	*Collection and Bulking Enterprises*
CFP	*Commercial Fodder Producers*
DAP	*Di-Ammonium Phosphate*
DFB	*Dairy Farm Benchmarking*
DIP	*Dairy Investment Plan*
DTC	*Dairy Training Centre*
DTI	*Dairy Training Institute*
EDFA	*Eldoret Dairy Farmers Association*
FE	*Farm Evaluation*
FFB	*Fodder Farm Benchmarking*
FSSC	*Feeds Supply and Service Centre*
FTE	*Full Time Equivalence*
KEPHIS	*Kenya Plant Health Inspectorate Services*
KMDP	*Kenya Market-led Dairy Program*
LCB	*Local Capacity Builder*
LSF	*Large Scale Dairy Farmers*
MFF	*Medium-scale dairy Farmers Forum*
MoU	*Memorandum of Understanding*
MSF	*Medium Scale dairy Farmers*
NL	*Netherlands*
PDTC	*Practical Dairy Training Centre*
PUM	*Netherlands Senior Expert Program*
QBMP	*Quality Based Milk Payment*
SA	*South Africa*
SH	*Small Holder*
SME	*Small and Micro Enterprise*
SNV	*SNV Netherlands Development Organisation*
SPEN	*Service Provider Enterprise Network*
SR	*Status Report*
TFM	*Total Farm Management*
TMR	*Total Mixed Ration*
ToC	*Theory of Change*
UA	*Uniform Agri*
UoE	*University of Eldoret*
VDM	*Visiting Dairy Manager*
WUR	*Wageningen University and Research*

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Last and not least, I wish to thank all the respondents, mostly the dairy farmers and leaders of study groups for setting aside time to give their input in this process, and more particularly for opening up their farms for observation and assessments. It was because of everyone's contribution that this report has become valuable, and for that reason we would like to thank all who participated at different levels to bring it to completion.

The Consultant - Frans Ettema

Chapter 1. Introduction and Summary

The Kenya Market-led Dairy Programme (KMDP/SNV Kenya) is funded by the Netherlands Embassy in Nairobi and runs from July 2012 – December 2016. It is now in its third year of implementation. KMDP wishes to enhance the documentation of the various interventions or Agendas under the program by preparing a Status Report on each of them. The Status Reports shall give a factual description of KMDP's activities and approach for the main intervention areas The Reports shall also give testimony of the visible and potential impact and relevance for both the clients and the Kenyan dairy sector, and shall serve as an input for KMDP's Strategic Review Mission (October/November 2105). Finally case studies may be drawn from the Status Reports for learning and sharing.

This status report concerns the work of SNV KMDP with Medium Scale Farmers (MSFs) and Commercial Fodder Producers (CPPs). The report will also serve as an "end-of-year" progress report for PUM and the main input for the preparation of the KMDP/PUM workplan for 2016.
The report has been compiled by Mr Frans Ettema, a dairy expert who has been involved in KMDP's MSF/CFP Agenda through PUM Netherlands Senior Expert Program and – for this report - was engaged as the Managing Consultant of Landfort Adviesburo voor Management en Techniek in de Melkveehouderij.
Mr Ettema carried out a desk study of relevant reports on the KMDP MSF/CFP Agenda. These reports and studies have been listed above in the section "Referenced Reports and Annexes".
In addition he visited Kenya in September 2015 for 2.5 weeks for field visits to interview KMDP staff, consultants, clients (farmers) and input and service providers. The Terms of Reference of this assignment have been included at the end of this report.

Activities undertaken by KMDP that are described in this report include:

- Record keeping and the introduction of farm recording software. This is intervention makes a start with farm management based on farm specific data. The report describes how 10 MSFs are piloting the Uniform Agri software supported by local consultants.
- The project on Modular Cow House Design resulted in a Handbook for planning and construction of best practice cow house design for MSFs, who intend to grow the herd from 20-40-60-80 lactating cows. This Handbook or guide is a practical guide with floorplans, technical drawings, bills of quantities and costings, for planning and construction of cow houses that guarantee optimum cow comfort and farm logistics. It will help to a large extent to end the common practice amongst farmers, to copy cow house designs that have many errors and poor practices as regards to cow comfort and logistics.
- The KMDP activities as regards to Total farm Management, which are being supported by PUM experts and KMDP staff. Embedded in this intervention is the Feed & Fodder Agenda, which is by far the most relevant topic to increase milk production, improve animal health and reproduction. A lot of effort has been put by KMDP and local and international experts in

good practice fodder crop establishment, management, land preparation, seeding practice, harvesting, silage making of grass and maize. This intervention goes a long way in reducing losses in fodder quality and quantity – and feed value. Farmers have clearly recognized the effect on milk production and profitability of the farm.

- KMDP engagement and advice to a large group of Commercial Fodder Producers, as regards to improved farming practices, including soil preparation, seeding, fertilization and timing of harvesting.
- KMDP's engagement with emerging agricultural service providers or contractors for enhanced fodder production and preservation.
- In regards to Feed & Fodder, also worth mentioning is the feasibility study for a Commercial Fodder Production and Service Centre, and the spin-off it had to initiatives for machinery contracting, field-days and demos and piloting of techniques for baling and packaging quality roughage.
- The various delivery mechanisms and channels used in KMDP for "embedded" transfer of knowledge, skills and technology.
- KMDP's endeavors to link up with Dutch experts and private sector and to provide platforms for B2B business relationships and partnerships.

An overview of the sample of MSFs and CFPs visited by the Consultant, is presented in Chapter 8. This includes the behavioral changes and notable impact these interventions had on the client-farms visited. An overview of all MSFs and CFPs under this program is provided in the section "referenced document and annexes".

Capacity building of local dairy consultants is important for sustainability of interventions. To drive this agenda, KMDP works with Local Capacity Builders (LCBs) or dairy consultants. Significant progress has been made by Perfometer Agribusiness Solutions Ltd operating in Central and Eastern to develop their firm/business, and the same applies to Eldosirikwa Consultants in North Rift. With regards to service providers to support farmers in daily operations, SPEN is a promising model as will be discussed in par 7.3.

MSFs and CFPs are relevant for the dairy sector, as they more easily adopt new ideas and innovations as compared to smallholders. For knowledge transfer and skills development MSFs are not just an important target group, they can also have a key role as delivery channel of interventions and good practices to colleague farmers, including smallholders. MSFs are important for the sector because of their entrepreneurial attitude towards dairy farming, which they have taken up as a fully commercial business. This also helps to create "demand and market" for enhanced service provision and input supply.

The relevance of KMDP for dairy sector development – in the context of this MSF/CFP Agenda – is that the programme addresses key-systemic issues or bottlenecks around cost price, productivity, farm management and the dairy service infrastructure.

The approach to address simultaneously a number of key-issues, makes it hopefully clear to farmers and service providers that commercial dairy farming is a complex business and takes a long term effort and vision of those who invest in it.

KMDP's approach is market-driven and business-oriented, which is witnessed by the wide range of companies and organisations (local and international) which have been engaged in the programme, through facilitation of KMDP - and also by PUM. This is important for both sustainability and innovation.

The MoU between SNV and PUM (Dutch Senior Experts) and subsequent missions of PUM experts, were crucial in shaping the MSF/CFP agenda. PUM experts also played an important role in linking KMDP and its clients to the Dutch private sector. Training and knowledge transfer by PUM experts has raised awareness of MSFs to a critical level, where Kenyan farmers/investors see the value of purchasing and paying on commercial terms machineries, technology and management advise by Dutch input and service providers. In the past 2 years in total 21 missions were executed by PUM experts to train and support KMDP clients and LCBs on fodder crop management and Total Farm Management.

The recommendation for 2016 and beyond, is to bring more focus to the programme, to deepen the support as regards demonstrating good practice and farm economics, and to invest even more in developing a sustainable local delivery mechanism.
For SNV/PUM collaboration in 2016, Feed & Fodder and Total Farm Management should still be the most important topics. In addition to that – and as mentioned above - the dairy service infrastructure is a key area to invest in. Depending on farm size (acres of land and /or number of animals) service provision can be at individual farm level and/or at group level. The most relevant areas for service provision are:

- ✓ Machinery contracting for fodder production and preservation
- ✓ Animal nutrition (data analysis, ration calculation and feed planning)
- ✓ Animal health and reproduction (AI, veterinary service and vaccination)
- ✓ Farm economics (cost of production, calculation of losses and benchmarking))
- ✓ Farm management (strategic and operational)

Chapter 2. SNV Kenya – The Kenya Market-led Dairy Programme (KMDP)

2.1. SNV Netherlands Development Organisation

SNV Netherlands Development Organisation (SNV) is an international not-for-profit development organisation that provides capacity development services to nearly 2,500 organisations in 36 countries worldwide. SNV engages with stakeholders at different levels in local economies and agricultural value chains, with the objective to help enhance competitiveness, incomes and employment by inclusion of small and medium sized farmers and SMEs. In the East & Southern African region, SNV has offices and programs in Ethiopia, Kenya, South Sudan, Uganda, Tanzania, Rwanda, Zambia, Zimbabwe and Mozambique. In Kenya, SNV focuses on horticulture, dairy and extensive livestock, water and sanitation and renewable energy (biogas). In the dairy sector SNV Kenya is implementing the Kenya Market-led Dairy Programme (KMDP).

2.2. Kenya Market-led Dairy Programme (KMDP)

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

I. Dairy Value Chain: Increase efficiency, effectiveness & inclusiveness of the dairy value chain.
In the smallholder dominated dairy value chain, KMDP works in a number of milk sheds with processors and dairy societies (also referred to as milk Collection and Bulking Enterprises or CBEs). Currently SNV/KMDP collaborates with two processors and eighteen dairy societies in Meru/Eastern, Central/Kinangop and North Rift and facilitates design and implementation of more inclusive business models, with an emphasis on embedded Training & Extension and input supply services for CBE members/farmers. In addition to that, SNV/KMDP provides BDS services to enhance management capacity and governance of CBEs at their level.

II. Sector issues: Promote/support interventions and innovations that address systemic issues.
Under this pillar KMDP facilitates innovations and interventions, which address systemic issues related to e.g. feed & fodder, farm management, milk quality (e.g. piloting Quality Based Milk Payment systems) and practical dairy skills development/training. This also involves supporting the transitioning of the sector from smallholder subsistence farming and dairy production, to commercial dairy entrepreneurship and dairy as core business. In doing so KMDP is engaged in a project with medium (and large scale) dairy farmers (MFSs) and commercial fodder producers (CFPs). The objective of this intervention is to fast-track innovations and adoption of best practices in total farm management, which is expected to also have spin off to smallholder farmers and CBEs through promotion of business linkages, field days, demos and training.

Chapter 3. Kenya Dairy Sector: Commercialization and Sector Transitioning

3.1 Dairy as a Business

SNV/KMDP supports the transitioning of the dairy sector towards professionalization and commercialization of dairy farming as core business. The dairy sector is the largest agricultural subsector in Kenya, and its share in GDP is approximately 4%. Milk consumption per head of population is one of the highest in Sub Sahara Africa and stands at 115 liters per person. An estimated 80% of total production (approx. 5 billion liters in 2012) comes from smallholder farmers of which about 50% is marketed. Out of this 50%, 25% enters the market as processed milk and value added milk products. The sector is in a transition phase from smallholder subsistence farming with on average 3-4 crossbreed cows for home consumption and sales of small quantities of excess milk (5-10 litres per day), to dairy entrepreneurs with dairy as core business. The latter invest in amongst others exotic breeds, improved dairy barns and fodder production & preservation. This segment of dairy farms/farmers is of a varied composition in terms of farming systems (zero grazing and semi-zero grazing with pastures), size of landholdings/herd and ownership/ management. However, they have one thing in common which is that they all are in dairy farming as a business. This commercializing segment of farmers consists of:

- Smallholders who invest in dairy as (core) business and have been able to grow their dairy business to "the next level". These farmers are fully commercial however limited in their growth by lack of capital and land and – therefore – also inability to grow and preserve own fodder in sufficient quantities. Often the household has various sources of income from on-farm and off-farm activities/employment, and part of this is invested in the dairy enterprise. These farms have 5 up to 15 lactating cows and produce over a 100 litres of milk per day on landholdings ranging from 1-5 acres in the densely populated Mount Kenya milksheds (zero-grazing) to say 5-10 acres in other parts of Central Province (Kinangop, Nyandarua) and North Rift (semi-zero grazing). Often land is leased for fodder production.
- Medium and large scale farmers who have "(re-) discovered" dairy farming as a profitable business undertaking. Some are farm owner-manager. But many of these are well-off Kenyans with ample land and resources and a passion for farming, and usually in formal employment or on retirement. This segment of land- or farm owners employ farm managers. The level of mechanization is much higher as compared to the former segment of farmers, especially fodder production and preservation is fully mechanized. Farm sizes and herds may go up from 20 to 500 acres and 20-100 cows respectively. A good number of the MSFs are landowners with formal jobs outside agriculture, also referred to as "telephone farmers". MSFs invest often quite heavily in dairy but – like their farm managers – usually lack sufficient skills to make the dairy farm profitable. Yet they are eager to learn and improve their dairy enterprises.
- Corporate business and investors who see dairy as an attractive business opportunity and Training Centers and Universities who set up training farms.

The above typology is a simplification of reality, but helps to give a general profile of the farmers and farming systems involved. Amongst all three groups, the knowledge and skills levels are limited and there is a great demand for training and other ways of knowledge transfer. SNV/KMDP tries to address this through various interventions and partnerships with knowledge providers.
Group (a) is considered to be part of the smallholder dairy value chain and SNV's support is derived from there, mainly by engagement of local dairy consultants. KMDP's support to Group (b) Medium Scale and Large Scale Dairy Farmers is facilitated by international experts. It should be noted however that the demarcation between Group (a) and Group (b) is more fluid and that many MSFs have emerged from the smallholder supply chain and are members also of what is referred to in Kenya as "smallholder/producer owned dairy cooperatives".

3.2 Relevance of MSFs

KMDP's analysis is that for long-term sustainable growth, the sector needs to transition from smallholder semi-subsistence farming, to an industry that relies for the supply of raw milk on fully commercial dairy farming systems. The relevance of MSFs for the Kenya dairy sector can be summarized as follows:

Innovation

This group of farmers or land-owners are engaged in dairy farming as a core business (rather than as a livelihood strategy). They are willing and able to invest in expansion of the herd, cow housing, training of farm managers, on-farm (mechanised) fodder production and preservation, and in innovations.

Dairy support-infrastructure

These farmers – if organised well – also have the ability to attract more credible input suppliers and service providers. Where applicable they can forge business linkages with the Dutch private sector or other international players. In doing so, they can fast-track the development of a professional dairy support infrastructure that – once in place – is expected to also benefit the smallholder supply chain.

Lobbying

Through their political and business networks they also have the ability to push for policy reforms that will benefit the dairy sector as a whole.

Demonstration and training

Interestingly, a good number of the more successful commercial dairy farms have gone into training (of peers and also of smallholders) as a side-business; some position themselves as Practical Dairy Training Farms or Centres. To some extent this fills the gap in practical dairy training & extension that was created after withdrawal by the government extension services.

(Business) linkages with smallholder dairy farmers

Lastly, these MSFs have the potential to supply smallholders with inputs and services. For example the supply of fodder and heifers or leasing of farm machinery for fodder production and preservation. Some MSFs have started bulking milk from smallholder dairy farmers around them offering enhanced market access for their milk.

3.3 Commercial Fodder Producers (CFPs)

Another sign of a dairy sector in transition, is the emergence of specialized service providers and input suppliers. Notably is the development and growth of commercial fodder supply chains where farmers/investors specialize in (mostly) hay and lucern production/sales as core business. These CFPs (Commercial Fodder Suppliers) supply both smallholders and MSFs. Some are also MSFs but many are in this trade as core business.

The Feed & Fodder study implemented during KMDP's Inception Phase (BLGG Group) confirmed that one of the most important bottlenecks for enhanced competitiveness and growth, is access/ availability of quality fodder. This applies both to smallholders and MSFs. The sector is in agreement that the fodder issue – or feed in general - is more important than breed. Without proper feed and feed rations/regimes the genetic potential of the breed remains unlocked, and good fertility management relies heavily on the animal's health and feeding. The limited access to/availability of quality fodder is partly due to land size and competition with others crops. But also it is directly related to low skills and knowledge as regards to fodder management and preservation, mechanisation and unavailability of high energy and protein fodder seed varieties. The fodder gap has severe impact on cost price of milk, profitability of the farm enterprise and seasonality in milk supply.

KMDP's fodder interventions aim to increase year-round access to good quality fodder both on-farm (smallholders and MSFs) and from Commercial Fodder Producers (CFPs). This includes support to dairy farmers and CFPs on fodder-management skills in production, mechanisation and preservation, introducing new fodder seed varieties and piloting innovative technologies and business concepts for marketing of preserved fodders.

In addition to that professional agricultural contractors are emerging to support both MSFs and CFPs in land preparation, harvesting, ensiling, baling (hay, grass) and silage making.

Chapter 4. KMDP Expertise to Support MSFs and CFPs

Under the second strategic intervention level (Sector Issues: see above) KMDP has identified "dairy sector transitioning and innovation" as an important area for support. It has singled out MSFs and CFPs as change agents for sector development and innovation, and important "entry" points for facilitating and exploring B2B linkages with the Dutch private sector (see also: KMDP ToC Paper, revised version May 2015).
As a result, KMDP has allocated a substantial part of its funding to support this part of the program, and during the course of implementation has engaged and built a team of local and international experts to operationalize and implement this part of the programme. These are:

- KMDP Teamleader who devotes a significant part of his time to the development and implementation of this Agenda
- KMDP Team: Senior VOSD Advisor who devotes 0.5 of his time to this Agenda.
- Perfometer Agribusiness and Eldosirikwa Consultants for Central/Eastern and North Rift respectively (each with a team of 3 consultants).
- Three experts from PUM (each 3 x 2-3 weeks/year for the period 2014-2016; MoU SNV/PUM).
- One international dairy advisor (hired from The Friesian Agro Consulting) as part of the KMDP Team and based in Eldoret since September 2014.
- Two Dutch interns (CAH Dronten) in 2013/14/15 each 4 months.
- Three Dutch interns during the end-2015 (Van Hall/Den Bosch) for 3-4 months each.
- An international junior expert and 2 local junior consultants for a farm recording project with UA software (parttime August 2014-August 2015). The international junior expert received an extension of his contract for 40 days from September – December 2015.

In addition to mobilizing and deploying international experts and students (Technical Assistance), KMDP also uses its Innovation Fund for co-financing study tours, feasibility studies, demos, pilots and business proposals that target this segment of MSF and CFP farmers/entrepreneurs. Mention can be made of:

a) Study tours or exposure visits to the Netherlands (in 2013, 2014 and 2015).
b) The Friesian feasibility studies (i.e. farm business plans, fodder production center).
c) Vetvice/The Friesian: Handbook Modular Cow House Design.
d) KMDP/Fieten: MSF Cow House Pilot Project

Chapter 5. Interventions Medium Scale Farmers

The interventions as regards to MSFs focus on farm record keeping, cow house design, feed & fodder and related service providers, and total farm management among others.

5.1 Record Keeping

In 2013 SNV/KMDP started collaborating with EDFA and PUM for introduction and training of good farming practices and Total Farm Management (see below). Based on the advice of PUM experts Halbe Klijnstra and Frans Ettema, a start was made in 2014 with introducing a manual farm recording system in a number of EDFA farms. This activity was supported by Eric de Jong (an intern from HAS Dronten), Eldosirikwa Consultants and PUM. Mid 2014 the manual system was replaced by a digital excel based system and Eric de Jong and a local consultant were hired on a 6 months contract to take this a step further. The intervention was successful and created demand amongst the EDFA members, as well as KMDP MSF Farmers in Central Province (under Perfometer), for professional international accredited farm recording software. Based on this demand a project was formulated under KMDP's Innovation Fund entailing a demo with 10 farmers with Uniform Agri Software (UA Global). Uniform Agri is based in the Netherlands and sells its farm recording software in 35 countries worldwide with backup from a helpdesk. This demo project was financed by KMDP (EUR 50,000) and implemented by Eric de Jong with 2 local consultants (Victor Koech/James Ngatia).
Uniform Agri carried out one week training of the local consultants and demo farmers in Kenya, in a cost sharing arrangement with SNV. The local consultants were hereby empowered and capacity build, to act as UA's local Kenyan Helpdesk, keeping in mind the overall objective of the demo project. This was to create an environment (i.e. market, local agents) for commercial marketing of the UA software, for example through a local dealership.

The selection of 10 MSFs (including 2 PDTCs) for introduction and implementation of the farm recording software packages was done by EDFA and Perfometer. On all the farms, individual farm manager and owners were interviewed for profiling the individual farms. Preparation on all farms began with conducting quick scans and farm profiles and assessments of the farm operations and culture of record keeping.
Farms in the Central region were selected also on the basis of being host farms for study groups and used for training by PUM and Perfometer experts. The selected farms in Central are geographically distributed in different Counties. After the selection of the farms, the training of local service providers to support and guide farmers and farm managers started. The international consultant Eric de Jong had the responsibility to supervise and assist the local consultants, coached by Wytze Heida, KMDP's senior dairy expert (The Friesian).

The local consultants were the ones implementing the software on the different farms. The systematic approach was meant to introduce the software step by step until the farmer was comfortable working with it. Record keeping using cow cards was only practiced at two farms,

namely Risa and Manyatta farm. These two farms already had some good knowledge about record keeping (e.g. individual cow cards were present and used on a daily basis). The other eight farms had managers using books, some several books, to enter reproduction and milking records separately. Insemination records were common on all 10 farms – this was an easy set-up to get a good start.

On 11th -15th May 2015, the record keeping team composed of Eric de Jong, James Ngatia and Victor Koech, were trained by Durk Haringsma from Uniform-Agri.
The training was organized to enable the local consultants to install and train the farmers effectively. The training was a combination of roundtable meetings with farm owners and farm visits with the main objective to train the local Helpdesk (James and Victor). Using the Uniform Agri software enables Kenyan farmers to see improvements or retrogression. Uniform Agri (represented by Durk Haringsma) got a good impression of the Kenyan market situation.
In October 2015 the dealership contract for Kenya was awarded by Uniform Agri to one of the local consultants who participated in this project.

Recommendations on farm level
During installation and support, some of the common challenges included lack of dedicated or reliable internet and getting dedicated staff for data entry on the farms. The farm managers have busy and tight work schedules, from fodder preparation to animal management to human resources management. Adding the new UA software tended to increase the workload rather than to off-load them. On some farms, new casual data entry clerks were deployed to enter huge pieces of data for one to two months to avoid backlogs. While there was a willingness to adopt the new ways of managing their herd using software, the current staff hardly had time to work on the new responsibilities and other human resource in the farms had only very basic skills in computers. In summary, and since the use of software to manage herd is a paradigm shift, it is recommended to most of the farm owners that the farm manager has assistants for data entry, and a designated farm veterinarian (animal health officers) available on the farm during the visits by the local help-desk, so as to understand what the new ways of managing the herds are.

Opportunities
Generally farmers in Kenya are very focused in improving the quality of their herd, milk production and move towards efficient operations on their farms, amongst many other areas. This is mainly due to the revival of the dairy sector, high milk prices, increased business acumen and levels of education of owners and managers.
Uniform Agri Herd-Management Software is a useful management tool for dairy farms milking more than 50 cows and this segment of farms is fast growing. Many of MSF and LSF farms are owned by so-called “telephone-farmers”. The UA software with the smartphone App allows them to get real time manage-ment information “at remote distance”. It is through this App on their phone that farm owners can stay connected to the activities that take place on their farms and have insight in the performance.

For Uniform-Agri, there are major opportunities to “Africanize” its software and make it more aligned to the market needs. The potential for upscaling the UA Herd-Management Software in Kenya is significant – farmers (including telephone farmers) move towards more and more serious dairy farming, and also corporate investors have discovered dairy as a good investment.

5.2 Modular Cow House Design

The Handbook “Designing and Planning Modular Dairy Cow House (Kenya)” was developed especially for MSFs who intend to invest in the establishment of a new dairy farm enterprise, or who wish to upgrade or expand their existing dairy production facilities. This Handbook has been prepared for the Kenya Market-led Dairy Programme (KMDP) by the Dutch company Vetvice and The Friesian Dairy Development Company, who were assisted by Perfometer Consultants from Nairobi and Eldosirikwa Consultants from Eldoret. This handbook will be of use to Dairy Consultants and Architects in advising and guiding MSFs on farm planning and cow house design.

The main objective of the Handbook is therefore to guide farmers/investors – and their advisors - on professional and cost effective methods of developing their dairy farm, by following a structured and planned approach. In the Handbook emphasis is on the design of the cow house or cattle barn and on all other important support functions and structures that are part of a commercial dairy unit. The Handbook follows a modular approach and shows examples of 4 different cow house modules, starting with 20 cows and moving to 40, 60 and up to 80 cows. For each module the design and the layout is illustrated by technical drawings and a description is given about usage and management. Also a 3D presentation is made available. The designs and technical drawings are premised on international best practice dairy management translated to the Kenyan context.

This Handbook presents an investment plan(s) and technical drawings (including 3Ds), for the construction of a modern cow house with utility buildings. The design and the costings are adjusted to Kenyan conditions, but the principles of the design are based on international best practice and standards. The Handbook follows a modular approach and shows 4 stages of development of the dairy farm with modules for 20-40-60-80 lactating cows plus dry cows and young stock for replacement. The target group for this Handbook consists of dairy investors, medium and large scale dairy farmers, dairy consultants and architects.
In view of good animal health care practices, the preferred stable is designed in such a way that it can accommodate animals of all age groups separately in a free walking area all year round. At the same time it must facilitate labor processes – e.g. milking, feeding and manure collection – in a safe and efficient manner. And it provides high cow comfort for optimal milk production and good ventilation and protection against unfavorable weather conditions (e.g. heat, rain, wind).
Annex 23: handbook Modular Dairy Cow House Design (Kenya)

5.3 Pilot for Modular Cow House Design

Even before the Handbook was published and available for farmers, consultants and architects, there was great interest from MSFs to pilot one of the cow house designs develop in this project. After completion of the Handbook and a workshop with interested investors, SNV KMDP initiated in July 2015 a demo project for MSF Modular Cow House construction. After careful assessment and interviews, six farms were selected to participate in this project, and to build one of the modular designs, being supported by SNV and an architect specialized in cow barn design for screening of architectural drawings, choice of materials and supervision of construction. The following are the participating farms who will also receive a cash contribution from SNV KMDP of each KES 500,000 to complement their own investments of KES 5-20 million.

- ✓ Loyan Dairy Farm (Kisumu)
- ✓ Muhinga Dairy Farm (Nyandarua/Kinangop)
- ✓ Tatton Farm (Nyandarua)
- ✓ Herber Farm (Kirinyaga)
- ✓ Risa Farm (Redhill Limuru)
- ✓ Erros County Farm (Kajiado)

The cow houses so constructed will serve as demos (field days, farm visits) and examples of best practice MSF design, for sharing and learning by stakeholders in the sector.

5.4 Feed and Fodder

As regards to improved production of fodder crops in MSF farms, the KMDP program had numerous interventions. Hay and maize (and to some extent Napier grass and fodder sorghum), are the main fodder products preserved by dairy farmers. Both hay and maize production and handling (i.e. preservation, storage) have room for significant improvements and optimization, if management and mechanization are enhanced.

As for *grass and hay*, large improvements can be made in total kgs of dry matter harvested per acre, protein content and digestibility, if fertilized properly and harvested at the correct time or stage. Grass silage is promising, but is largely unknown. Together with pasture management this has been one of the successful innovations brought by KMDP/PUM. There is also scope for improved fodder seed varieties.

With the support from KMDP and PUM, farmers have continued to improve *maize* cropping practices and their acreage under “fodder” maize. PUM and KMDP have been instrumental in enhanced maize production practices (land preparation, fertilization, seeding and spacing) as well as maize harvesting, chopping and ensiling. In the crop management program supported by PUM expert Jaap de Vrij, farmers have been advised on proper seedbed preparation ahead of planting and on seed selection and the whole process of planting. Through PUM interventions, farmers are now engaging in soil friendly practices like minimum or zero tillage through selection and use

of implements that help conserve soils case in point is the increasing adoption of chisel or mouldboard ploughs over the previously widely used disc ploughs.
Interventions for crop management in the Feed & Fodder program therefore include:

a) Improving farm-management skills in production, mechanization and preservation, introduction of new fodder seed varieties and piloting innovative technologies and business concepts for marketing of preserved fodders.
b) Improved land preparation, with farmers understanding the pros and cons of using certain farm implements like the disc plough versus mould-board or chiseling as far as conservation farming is concerned.
c) Fertilization programs for maize and grasses were initiated in a number of farms and this has resulted in improved fodder production in terms of quantity and quality.
d) More than 2,000 acres of maize silage was done in 2014 and silage preparation has improved, whereas in the past most of the farmers experienced huge losses due to poor silage preparation.
e) Farmers have started to pilot new fodder crops especially protein fodder like lucern, desmodium, lupines amongst others.
f) Farmers have started to undertake paddocking their grazing fields and rotational grazing to reduce the cost of milk production. This includes weeding and applying fertilizers.

Field days and demonstrations
KMDP and EDFA organise field days and demonstrations. Recently two successful field days were organized at Willens Farm (grass train) and at Seregon Farm (maize train). Over 200 farmers were in attendance at both occasions.

5.5 Agricultural Machinery Contracting Services ("the maize and grass train").
EDFA farmers and other MSFs across the country have numerous challenges in fodder management due to limited or low capacity of machinery, poor chopping and timing. The machines used are mostly single row harvesters. Some are mounted on the tractors and some are stationary and therefore used by cut and carry approach. These low capacity machines have no corn crushers and therefore leave whole grain in the silages, which consequently are not digested by the cows thereby contributing to the losses of feed. The machines also harvest at a slower pace. This contributed to losses through heating up at silos in that covering the silage pit at most EDFA farms, took as long as 1 month in other instances.
To address these challenges, KMDP sought to build a machinery-contracting concept in Kenya with Nundoroto Farm Company Ltd and Simam (6 row maize harvester). This is when the term "maize train" was coined which infers to the fleet of complementing machines that the contractor provides from chopping, transportation and compaction.
Different machines from different farms were put together to form the "maize and the grass train" at the field days. This showed that if farmers work together and pool their machines they can be successful in maize and grass silaging. Nundoroto has successfully applied through KMDP's

Innovation Fund to scale up its service model and professionalize its agricultural contracting business. Crowding-in is already taking place: having seen the huge potential and demand at EDFA farms to improve preserved fodders, Eric de Jong, with the help of local partners and farmers, is initiating contracting services on grass silage making. He registered a local company Dejirene Enterprises (K) Ltd and is currently importing machinery from Europe for fresh grass baling and packaging, to further this new concept of grass and maize train.

5.6 Total Farm Management

The medium and large scale dairy farmers in the *MSF Dairy Farmers Model* play an important role in adopting innovations, demonstration of best practices, providing critical mass for the development of an effective dairy infrastructure with quality services, input suppliers and investors. They are also key in addressing the issue of food security for a growing urban population. KMDP supports Medium Scale Farmer Forums in Central and Eastern Provinces through Perfometer, and in North Rift through Eldoret Dairy Farmers Association (EDFA) and Eldosirikwa Consultants, with the aim to capacitate dairy farmers in accessing/sharing best practice Farm Management. SNV engages various local and international experts (see Chapter 4) to provide solutions to the challenges witnessed at farms, and thereby aims to set good examples and demos of best practice dairy farming, for sharing and learning by other farmers and stakeholders in the Kenyan dairy industry.

In North Rift, KMDP works through the Eldoret Dairy Farmers Association (EDFA) and focuses on 8 EDFA lead farmers who are being trained through various forums, such as expert visits, PDTCs, farm-to-farm exchange visits, study tours (2013, 2014) and training in Kenya and abroad (NMTP, October 2015). These 8 lead farms are used for demos and field days to show good agricultural practices, thereby roping in and creating sin-off to other farms – EDFA (53 members) and non EDFA members including smallholder lead farmers for dairy cooperative societies. Some field days have been attended by over 300 interested farmers and other stakeholders, like processors, banks, farm machinery suppliers.
In addition to direct interaction with EDFA lead farmers, KMDP also provides support to capacity development of EDFA as a membership organisation (see Chapter 10).

In Eastern and Central Kenya, KMDP works through so-called Medium Scale Farmers Forums (8 forums in different counties each with 20-25 members) and host farms, where good practice is promoted and training and field days take place. Perfometer has currently a data base of 226 MSF that have been reached by the programme in one way or another. 30 out of this larger population are closely monitored as regards to changes in farm management, investments and impact on "farm economics: (productivity, profitability).
The TFM training program has been instrumental amongst others in the establishment of proper feed plans and also helped farmers in ration calculation and formulations, which saw, increased milk production. There were also on-farm trainings and notable improvements on calf rearing, cow housing, feeding of cows in different production groups and monitoring of body condition

scores. All farms were able to address the challenges of producing below optimum limits through under-feeding or over-conditioning the cows.

Ten farms (5 in North Rift and 5 in Central) piloted the Uniform Agri software and they all participated in the Netherlands Farm Managers Training project funded by RVO that took place in October 2016. Six MSF farms spread over different Counties, are currently investing in modular cow houses as per the design provided by Vetvice/The Friesian, being supervised and advised by a Dutch architect and certified cow barn designer. Investments range from KES 5-20 million depending on the module-size; the farms involved will serve as demos for others to learn.

In North Rift, farmers have also benefited from animal health and fertility interventions, as Eldosirikwa Consultants established an arrangement with farmers to provide professional consultations in as far as health and fertility and AI is concerned (CRV). The farmers have also been able to plan for new calving due to the near perfect pregnancy diagnosis with the ultrasound technology. The farms have also benefitted by biosecurity sensitization programs through KMDP and vaccination at EDFA farms (instead of waiting for the usual Government vaccination programs). The vet (Dr Tanui) in the KMDP/Eldosirikwa/EDFA program was instrumental in installing preventive and curative measures at the farms. EDFA and Eldosirikwa have forged strong links with financial institutions such as AFC, Chase Bank and Family Bank. In 2014/15 Chase Bank developed a credit portfolio amongst dairy farmers in North Rift of close to KES 100 million, of which 50% to EDFA farmers. EDFA has a department that imports young stock from South Africa for EDFA members. In November 2015 200 in-calf heifers will arrive in Eldoret partly financed by Family Bank.

For all MSF interventions in the various milksheds in North Rift, Central and Eastern, TFM is a major activity. Proper training & extension services for practical skills development are required for farmers and farm workers to apply good animal husbandry practices as regards to feeding, housing, fertility management, calf rearing and record keeping. In summary, focus in North Rift, Central and Eastern in KMDP's MSF Agenda has been on the following interventions:

a) Grouping of animals on the farm
b) Dry matter intake of different groups of animals
c) Feedstuff composition
d) Ration composition and calculation.
e) On-farm training on practical aspects of feeding
f) BCS, calf rearing, health and reproduction, housing and cow welfare.
g) Silage conservation and storage
h) Judging quality of maize and grass silage
i) Grazing practice and paddocking
j) Record keeping and farm planning

Chapter 6. Interventions Commercial Fodder Producers

(This chapter was prepared by Perfometer Agribusiness Solutions Ltd)

6.1 CFP supported in 2014-2015

The clientele for Commercial Fodder Producers (CFPs) has gradually expanded (geographical scope) and increased in scale (acreage and production) for the last 2 years with the engagement of PUM. A total of 39 farms benefited from SNV-KMDP interventions through PUM. International experts from PUM are accompanied by local agronomists from Perfometer and SPEN Ltd in the Central and Eastern regions.

Nakuru County leads in the acreage under fodder production while the neighboring Narok County has the highest number of farms under support. Of the number of regions supported by PUM Nyeri has the least acreage under fodder production. The CFP Agenda as a support area under KMDP, expanded the number of farms supported by introducing new farms after 1-1.5 years of continued support. The table shows the distribution of CFP farms and forages grown in acreages.

Table: CFPs supported in 2014-2005

County-Location	No. Farms	Boma Rhode	Maize	Sorghum /Sudan	Lucerne	Sunflower	Kikuyu Grass	Barley	Rye Grass	Lupin	Oats	Total Acreage	Acreage %	Farmers %
Nyeri	3	10	21	1	0	-	-					32	1%	8%
Baringo	4	90	3	4	1	-	1					99	2%	10%
Nyandarua	5	96	22	20	5	-	-	1	10		10	164	3%	13%
Meru	4	79	20	32	4	5	5					145	3%	10%
Narok	11	560	-	-	3	-	-					563	12%	28%
Eldoret	3	70	1,010	-	5	-	-		10	5		1,100	23%	8%
Laikipia	4	1,330	2	-	3	-	-					1,335	28%	10%
Nakuru	5	1,045	300	51		-	-					1,396	29%	13%
Total	**39**	**3,280**	**1,378**	**108**	**21**	**5**	**6**	**1**	**20**	**5**	**10**	**4,834**		

39 Commercial Fodder Producers were supported mainly through PUM missions in 2014-2015, with a total acreage of 4,834 under fodder crops. There was a major shift in 2015 where some CFPs were graduated and weaned-off, whilst new ones were introduced. Especially from Narok, which is seen as a fast growing fodder production frontier. It is also important to note that 3 farms were dropped at the start of 2015 due to slow application of technical advice on the farms.

Among the CFPs weaned-off, were those who had received over 6 mission visits right from 2014 and were already implementing the technical advice. A remarkable milestone was the increased trade activities between the medium scale dairy farmers and commercial fodder producers, pegged on formal contracts. This was especially observed between individual farmers, although also in some cases dairy cooperatives embarked on commercial fodder production (Muki and Kiplombe.

In general, it was observed that individual fodder investors provided a better return on investment of time spent in missions, than institutions like dairy cooperatives/processors and Laikipia Country Government that was also amongst the CFP clients, and claimed to be interested and willing in embarking on large scale commercial fodder production. At the same time, on the supply side, there was more trade between CFPs and individual dairy farmers, as compared to trade between CFPs and dairy cooperatives (CBEs).

Long and cumbersome administrative procedures in CBEs, resulting in slow and cumbersome decision making, lack of business acumen and/or politically-driven investment proposals, were observed as the main factors contributing to this.
This is an important observation in making considerations for future programs. As regard to commercial fodder production: individually owned fodder and dairy farms invest, adopt and apply advice faster, thereby demonstrating more value for money for advisory services, contrary to public institutions and cooperatives owned fodder production units or enterprises.

In KMDP there has however been support directed to CBEs own fodder production pilots on Rhodes grass and sorghum at Kiplombe CBE in Baringo County, and Rye grass, oats and barley at Muki CBE in Nyandarua County. This concerned modest acreages (10-30) and although (cost-) efficiency of implementing these 2 projects was sub-optimal, there is now steady progress. These two fodder plots also have spin-off in terms of individual farmers taking up commercial fodder production and replicating the pilot, or establishing fodder for own use.

Over 32,982 bales of an average of 14 kgs per bale have been traded between July and October 2015 by the CFPs under the programme, of which 9,700 were consumed by 3 clients located in 2 Counties: Nakuru County (MSF member) and Nyandarua County (CBE & MSF member).
The linkages are such that CFPs in Laikipia County (Nanyuki and Timau) trade Rhode grass with Meru County, Nyeri and Kiambu Counties. Narok trades mostly with Kiambu and Nyandarua Counties. Nakuru trades with Nyandarua, Kiambu and Nyeri Counties.

Table: Central & Eastern Region Hay Consumers

Rhodes grass hay production Zones	Narok County	Nakuru County	Nyandarua County	Laikipia County
Hay Consumers County	Kiambu, Nyandarua, Nairobi	Nyandarua, Kiambu, Nairobi and Nyeri	Nakuru, Kiambu & Nairobi	Meru, Nyeri, Kirinyaga, Kiambu & Nairobi

6.2 General Progress at CFP Farms

Progress at CFP client farms can be summarized as follows (adoption of good practices):

a) Timely and direct seeding under reduced land tillage (mould board, zero tillage) has been adopted. Adoption of this practice resulted in improved soil health, reduced soil erosion, runoff and increased soil organic matter. It also is an adaptive strategy under fluctuating rainfall patterns and increased dry spells and therefore “climate smart”.
b) Improved fertilization through soil sampling, fertilization and tillage advice, which positively affects yields per acre. This was first demonstrated by doing pilots of circa 10 acres, but got immediately up-scaled by the clients after seeing the positive changes.
c) Increased adoption of use of certified seeds.
d) Timely harvesting to increase quality of hay grass (protein content and digestibility).

e) Increased yields per acre for maize, hay grass and other fodders. For example an increase in volume of 30-50% per unit of land in grass achieved in Nanyuki (Maina): from 400 bales of 14 kgs/acre to 600 bales per acre, and in a farm in Narok from 300 to 400 bales per acre.
f) Increased area under fodder production by 1,426 acres since kick-off to date.

6.3 Change Processes

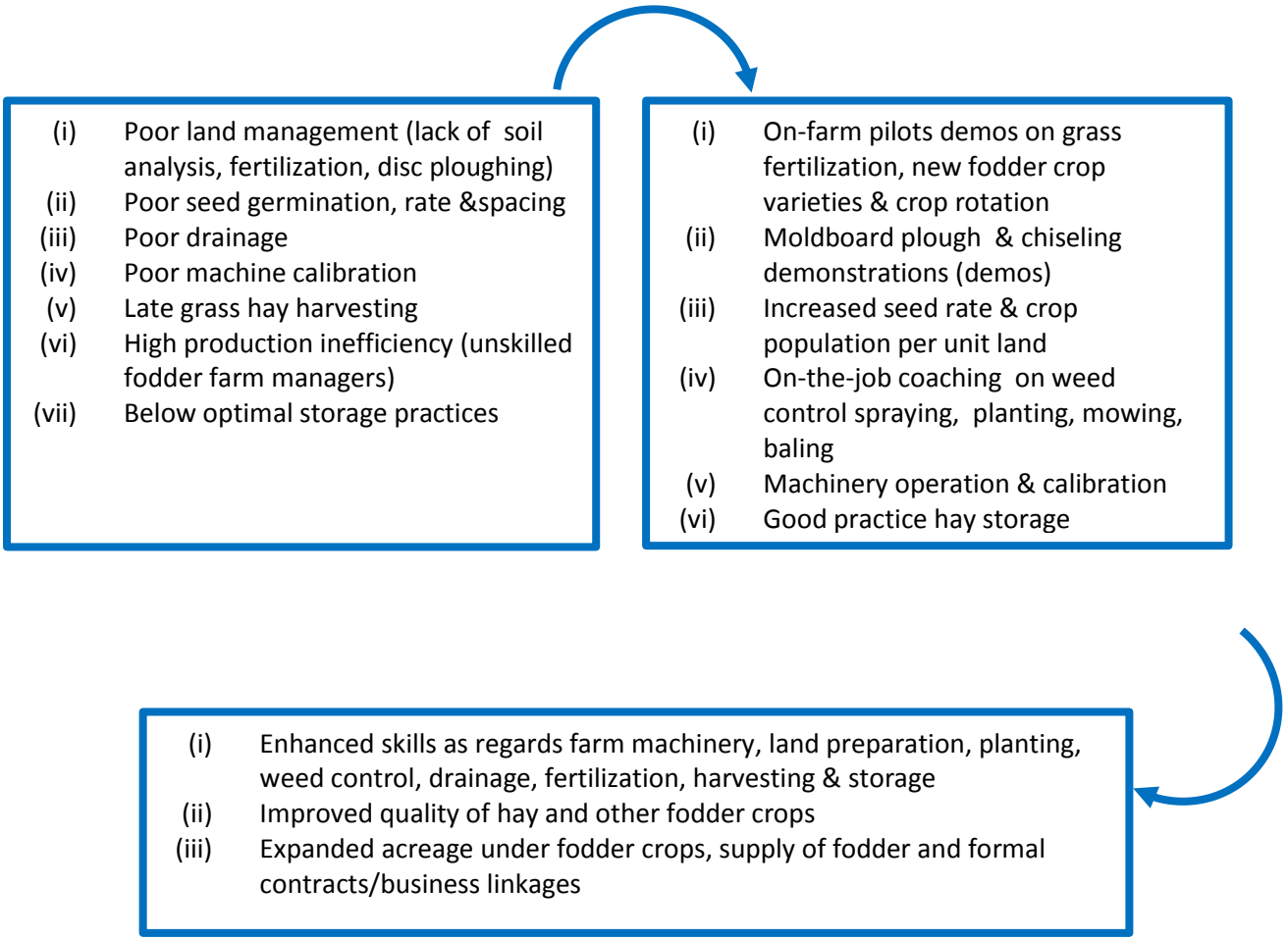

Figure: Summary of CFP Change Process through PUM Support

6.4 PUM Fodder Missions: 2014-2015

Seven (7) PUM CFP missions were organized in the period 2014-2015. The schedule is adjusted to match with the seasons and farming patterns in Kenya, i.e. the short and long rains which dictate the timing of land preparation, weed control, fertilization, harvesting & storage.

Fodder Missions in 2014/15 focused on proper land preparation and crop management, towards achieving zero-net land degradation as well as restoring degraded lands. Training sessions advocated for mould board ploughing or minimum tillage and best practice production and storage practices.

In addition to that efforts were made to facilitate linkages between CFPs/MSFs (EDFA) with local and international seed companies (Pannar Seeds SA, Barenbrug NL/SA and DLF Trifolium from the Netherlands), and between the latter and the local seed companies (Leldet Seeds, Kenya Seeds, Highland Seeds). A project for piloting suitable new fodder varieties with 40 farmers with Pannar Seeds SA, could not take off because of import issues with KEPHIS. KMDP continues to pursue and facilitate linkages between companies like Barenbrug and DLF with Kenyan seed suppliers, but this has not yet been successful.

KMDP supported farms to conduct soil testing in order to determine the right fertilization regime ahead of planting. PUM was very helpful in interpreting the results and explaining the fertilization advice to the farmers who had received their soil analysis results. In between PUM Missions, Perfometer provided follow-up advice and coaching to the CFPs by its in-house agronomist, to apply PUM recommendations and linking farmers with input suppliers (fodder seeds, fertilizer, machinery, soil sampling).

Table: Fodder PUM Missions - 2014

2014	1st Mission (F2)	2nd Mission (F3)	3rd Mission (F4)
Mission dates	2nd -22nd March 2014	21st July-9th August 2014	12th -26th October 2014
Focus Topics	▪ Land preparation skills ▪ Planting ▪ Weed control ▪ Harvesting ▪ Fodder seed linkages	▪ Land preparation skills ▪ Planting ▪ Fodder Machinery settings ▪ Fertilization ▪ Fodder seed linkages	▪ Land preparation skills ▪ Soil analysis results interpretation, ▪ Harvesting ▪ Fodder preservation ▪ Strengthening CFP platform
Learning Points	▪ Conduct soil analysis in order to determine fertilization with precision. ▪ Conducted on-farm coaching on land preparation and fodder crop management to reinforce application of best practices. ▪ Collaboration with international fodder seed companies (Pannar Seeds, Kenya Seed) on new fodder variety importation & pilots against KEPHIS regulations.	▪ Rye grass harvesting & ensiling. ▪ Apply Fertilizer to grass fields. ▪ Adjusting planters at 5cm below & 5cm beside seeds. ▪ Attach roller to harrow. ▪ Conduct soil analysis on Nitrogen (N) annually while basic nutrients once every 5 years. ▪ Organized CFP Peer learning in Nakuru	▪ CFPs to adopt Mould Board Plough that makes flat beds. ▪ Harrow immediately while soil is still soft & chiseling. ▪ Mow Rhode grass at 5-6cm above ground. ▪ Seed rate & spacing: - maize spacing at 75cm inter row by 20cm or 25cm intra row. Rhode grass seed rate of 5 Kgs/acre ▪ Organized CFP Peer learning in Meru, Nakuru & Eldoret.

Table: Fodder PUM Missions - 2015

2015	1st Mission (F5)	2nd Mission (F6)	3rd Mission (F7)	4th Mission (F8)
Mission dates	15th -28th February 2015	3rd -16th May 2015	19th July-2nd August 2015	28th October -14th November 2015
Focus Topics	▪ Land preparation ▪ Planting & top dressing ▪ Farm records ▪ Drainage ▪ Sodium manage-ment ▪ Weed control ▪ Irrigation set up	▪ Minimum tillage ▪ Soil analysis results interpretation ▪ Fertilization ▪ Weed control ▪ Irrigation	▪ Machinery contracting ▪ Silage making ▪ Pasture management ▪ Fertilization ▪ Seed selection	▪ Land preparation ▪ Planting ▪ Fertilization ▪ Weed control ▪ Crop manage-ment ▪ Silage quality
Learning Points	▪ Horizontal & diagonal harrow ▪ Chiseling adjusted at 30cm depth & harrowing with attached roller ▪ Top dressing Kikuyu grass ▪ Set Lucerne pilot demos of 5Kgs /acre and 10cm inter row to control moisture loss & weed ▪ Lime application ▪ Application of 2,4-D herbicide to control broad leaves ▪ Do dry planting for maize	▪ Interpretation of soil analysis results ▪ Control nut sedge weed by Servian or Basagran, rogue out sodom apple weed manually, use gladiator to control termites ▪ Harrow & plant, follow behind the planter to inspect rows when drilling ▪ Grass silage demos ▪ Irrigate at night ▪ Harvest maize at 2/3 solid	▪ Construction of hay barn & on-farm seed management ▪ Grass fertiliza-tion grass (Rhode, Kikuyu) ▪ Reseed grass & top dress uniformly ▪ Gapping Napier grass inter-cropped with Desmodium ▪ Reduce mycotoxin in Lucerne(cut at 5cm above ground, dry & store well)	▪ Kikuyu grass establishment & fertilization ▪ Lucerne management ▪ Chiseling & harrowing ▪ Weed control ▪ Interpretation of soilanalysis ▪ Silage making ▪ Seed rate & spacing

6.5 Gogar Farm (KMDP Innovation Fund)

Gogar Farm is a large-scale dairy farm situated in Rongai about 30 km from Nakuru towards Eldoret. It is one of the leading dairy farms in Kenya (5,000 litres of milk/day, 800 animals) and it specialises in breeding. Gogar imports young calves from Firma Dekker in the Netherlands which it rears and inseminates with sexed semen. The farm is well-equipped with farm machinery and grows large quantities of maize for silage and grass for hay.

Gogar Farm received 50% funding from KMDP's Innovation Fund in 2014 (EUR 35,000) for commercializing fodder production. The business model is to compress and pack/seal maize silage in 80 kgs briquettes and fodder pellets, for sales to MSFs and smallholders. For this pilot machinery was imported from China. Currently Gogar Farm is seeking financing for commercial lucern production under pivot system for own use and commercialisation.

6.6 Morendat Farm (Feasibility Study)

Morendat Farm (Kenya Nut Company Ltd) is a large-scale beef cattle farm situated at Naivasha about 92 kilometres from Nairobi. It has over 3,000 acres of land of which 120 acres are under Lucerne production. The farm intends to increase fodder production to over 1,000 acres and partly commercialize this (lucern and high protein grass).

Part of the crop will be used for feeding its own beef cattle and to support its dairy cow herd. This currently stands at 70 cows, but Morendat wants to expand this number to 4-500 dairy lactating cows, with a milk production of 10,000 litres per day, to be processed in a new milk processing unit into value added products like cheese, yoghurt, ice cream and butter. Through the networks of KMDP Morendat has agreed to hire The Friesian BV to carry out this feasibility study for the 3 business units (i.e. commercial fodder production, dairy farm and milk processing). The ToR for this study were prepared with the assistance of KMDP.

Through a MoU between Morendat and SNV KMDP, both parties will collaborate on market development for the commercial fodder unit, and linkages with Dutch input suppliers and knowledge providers for the 3 projects, once investments will take place.

Chapter 7. Delivery Channels and Mechanisms

For transferring knowledge and skills in KMDP's MSF and CFP Agenda, the following delivery channels and mechanisms are used:

a) EDFA as a membership organisation in North Rift for organizing field days and demos (incl. UA farm recording), and other services for their members (such as importation of heifers, organizing study tours, linkages with AI service providers and financial institutions).
b) Medium-size Farmers Forums organized by Perfometer in Central and Eastern for farmer training on host farms, farmer study groups, farm recording (UA) and other activities.
c) Perfometer, Eldosirikwa Consultants, Fieten (K) Ltd who have grown their companies and invested in staff, products and services for management support of MSFs and CFPs on commercial terms, including linkages with Dutch private sector.
d) SNV/KMDP through mobilization of PUM experts and Dutch HBO students for training and support on farm management, farm recording, and (commercial) fodder production and preservation.
e) SNV KMDP through contracting of international dairy consultants and trainers (e.g. The Friesian, Cow Signals, DTC)).
f) Input and service providers, e.g. Nundoroto Farm Company Ltd, SPEN (Service Provider Network), CRV/Coopers, Vital, SoilCares, Chase Bank, Kenya Seeds, etc.
g) Practical Dairy Training Centres (PDTCs) for training of farm managers.

7.1 MFFs and EDFA

In Central and Eastern Provinces, farms are organized in Medium Scale Farmers Forums (MFF).
SNV noted that most of the dairy projects in Kenya were focused on smallholders and identified a need and opportunity to engage with MSFs as (another) tool or entry point for sector development. This required a different approach as many of the MSFs are not a member of CBEs and their need and demand for advice and training is also different.
Therefore Perfometer Agribusiness Solutions Ltd created the Medium-sized Farmers Forum (MFF) in Central and Eastern to facilitate learning in study groups, and promote linkages with international dairy experts (PUM). 226 MSF farms in total are identified and 8 MFF groups are established to be advised and supported through this framework. The farms in the different MFFs originate from 10 Counties and the size of MFFs vary from 10 in Kiambu to 44 in Meru.
(See Annex 03: Overview of the MSF farms per County).

In North-Rift Region the farms advised in the KMDP program are all members of EDFA (Eldoret Dairy Farmers Association). EDFA was established in 2013 and by mid-2015 it had recruited a total of 53 members of which about half of them are active in EDFA organised activities. EDFA has currently embarked on member sensitization and initiatives to improve members' participation in the day-to-day activities of the organisation.

The EDFA membership is made up of medium and large-scale dairy farmers from across North Rift, including Nakuru, Uasin Gishu, Kitale and other Counties. This group of farmers have on average large landholdings ranging from 100 - 1,000 acres and above. They have huge – but largely untapped - potential of bringing noticeable change in the entire dairy value chain in Kenya. SNV considers EDFA as an important player and potentially strong membership organisation. Hence KMDP has a MoU with EDFA and gives support at various levels, for example to EDFA lead farmers, capacity building of EDFA's Secretariat and facilitating international linkages. The group has the ability to influence the policy direction of both the government and the private sector dairy players. For example, through EDFA lobbying, a bilateral agreement between the Kenyan Government and the Dutch Government for the importation of young stock was signed. Currently EDFA has applied for a license to be a seed merchant and this offers opportunities for importing improved and certified fodder seed varieties.

During the first 2 years of "forming and storming", EDFA positioned itself vigorously as an up-coming membership organisation. This was triggered amongst others by the interest of Friesland Campina in EDFA as a potential supplier of milk and beneficiary of a dairy development program to be financed by Friesland Campina. In 2013 and 2014 study tours/exposure trips were organised to the Netherlands with help of NABC and SNV/KMDP. In this period also SNV/KMDP facilitated support to EDFA and EDFA farmers through the MoU with PUM, arranging for internships of Dutch and Kenyan students, contracting Eldosirikwa Consultants, and inclusion in the KMDP Team of a Dutch dairy expert based in Eldoret (Mr Wytze Heida). EDFA Secretariat was formed with (financial and technical) support from SNV/KMDP and EDFA started interacting with input and service providers, notably CRV/Coopers and financial institutions for loans to its members, including for the importation of in-calf heifers from South Africa.

However EDFA has not progressed much thereafter and the Secretariat lacks an experienced CEO or drive the organisation to the next level. The potential of this organisation to change the "dairy landscape in North Rift" and to become a robust and effective dairy farmers' organisation, actively promoting the interest of their members, remains therefore untapped. With the exception of importing young stock from South Africa for its members and forging linkages with financial institutions, other member-services have not been developed, neither is there a clear strategy in place to take this up. Within EDFA, a group of 8 lead farmers were selected by EDFA/SNV to be advised and supported on Total Farm Managment, including feed & fodder and farm recording. They serve as demo farmers for a much wider farming population – EDFA and non-EDFA members including smallholders (See *Annex 28: Detailed info EDFA member farms).*

7.2 Capacity Development of Local Dairy Consultants: Eldosirikwa and Perfometer

To support development of sustainable delivery mechanisms, KMDP acknowledges the importance of capacity building of local dairy consultants and service providers. In the MSF and CFP Agenda this is concretized through the collaboration and support of Eldosirikwa Consultants and Perfometer. Both organisations have staff who are contracted for a certain number of days per

month to deliver on the MSF and CFP Agenda in their area of operation, and are continuously capacity build through the Dutch experts and students that are engaged by KMDP.
The MoU between SNV Kenya/KMDP and PUM has been very instrumental in this respect, as Perfometer and Eldosirikwa staff have been integral part – and responsible for planning - of all 21 PUM missions that took part during the period 2014/15. They also participated and took lead in some of the sector studies (KMDP Inception Phase BLGG Feed & Fodder study), feasibility studies (i.e. DTI, UoE Businessplans, Fodder Supply and Service Centre, Cow House Design and UA Farm Recording Projects).

Through the PUM Business Link and Training Facility, David Maina/Kenneth Mutoro (Perfo-meter) and Stanley Koech/Solomon Misoi (Eldosirkwa) participated in a training and exposure visit to the Netherlands (2014 and 2015). These exposure visits focused on farm economics and the role of service providers in the Dutch dairy sector. This were strong learning points, as it explains how the demand for such services comes from the dairy farmer. It is the producers need for quality and professional dairy practice that keeps the consultants at work. Another important 'take-away' from this study tour was the effort made by the Dutch dairy farms in achieving efficiency and optimization at farm level, amongst others with the help of farm recording software.

Perfometer Agribusiness Solutions Ltd
Perfometer was registered by David Maina in 2013 as a business name but was incorporated in 2015 as Perfometer Agribusiness Solutions. David had exposure to the local dairy sector among other agribusiness fields and entrepreneurship, having already worked for in different sectors and capacities since 2004. The company aimed to take up assignments in agri-business as regards to research, baselines, feasibility studies and project evaluations. Dairy was one amongst other projects that were targeted. The design was to target many clients and sectors.

It was the combination of the first assignment at SNV KMDP (BLGG study-KMDP Inception Phase) and David's participation in the 2013 study tour to The Netherlands that triggered the decision to specialize in the dairy sector. 2014 marked the year that Perfometer build a full house of a variety of (10) staff with the skills to market a full package of dairy advisory workforce. It hired skills sets ranging from farm economics, dairy nutrition, fodder agronomy, marketing and customer care, and finance. In addition to that it build a network of niche experts who it consults from time to time to boost the capacity of its in-house team.

The Influence in this process of SNV/KMDP was very clear, as the program has a clear focus on systemic issues like fodder and total farm management and support to medium scale farmers, as well productivity issues at the small holder dairy cooperatives. The other way through which Perfometer capacity was boosted was by taking up joint assignment in Kenya with more experienced Dutch consultants.

In 2014 and 2015 Perfometer worked with 5 Dutch Private Sector companies, namely The Friesian, Vetvice, Cow Signals, Uniform Agri and Fieten (K) Ltd in various assignments where Perfometer played the role of the local resource firm.
Perfometer's products@2015 are among others:

- ✓ Dairy Farm Benchmarking tool (DFB)
- ✓ Dairy Investment Plan (DIP)
- ✓ Farmer Training in Cooperatives
- ✓ Fodder Establishment and Preservation
- ✓ Visiting Dairy Manager (VDM)
- ✓ Perfometer Commercial Services
- ✓ Farm Recording Software (UA)
- ✓ Cow Barn Design and Construction

Since 2015 Perfometer is host for the PUM expert missions of Frans Ettema and Jaap de Vrij.
Annex 44: Perfometer 2013 – onwards.

Eldosirikwa Consultants Ltd
Eldosirikwa is a dairy business development consultancy firm based in Eldoret Kenya. The main clientele are the medium and large-scale dairy farmers in Central and North Rift region of Kenya, grouped under EDFA. Eldosirikwa has started engaging with similar farmers from Uganda, being linked by SNV Kenya/Uganda.
Established in 2009, Eldosirikwa started engaging with dairy farmers in 2012 through the SNV KMDP programme, doing mainly business planning for the farmers. Eldosirikwa was very instrumental in the formative stages of EDFA. Eldosirikwa has played a central role in developing programs in which EDFA raise funds to run their programs. This is through participation in shows, heifer importation, farmer trips to the Netherlands and South Africa, funding of specific events by private institutions. In their management support Eldosirikwa is focusing on:

- ✓ Contact management/networking
- ✓ Farmer training
- ✓ Farm management recruitment
- ✓ AI programs and ultra sound scanning of cow
- ✓ Importation of young stock

SNV and PUM have played a very critical role in the growth of Eldosirikwa. SNV advisors (Kenyan and Dutch) have mentored Eldosirikwa in its business and staff growth (4 local experts). PUM experts have been instrumental in passing of knowledge and skills on various aspects of dairy farming to the Eldosirikwa team. Since 2014 Eldosirikwa is hosting PUM expert Halbe Klijnstra for his TFM missions. *Annex 32: Eldosirikwa progress-SNV.*

7.3 SPEN Ltd

Services Provider Enterprise Network (SPEN Ltd) is a product of SNV Kenya (David Maina), through the implementation of the National Agriculture and Livestock Extension Program (NALEP) during 2011 & 2012 project period. SPEN affiliates are strategically located in the rural areas amidst the dairy farmers, with a regional functional field officer coordinating the different SPEN chapters. Initially the focus was on smallholder dairy farmers but SNV has created more business opportunities by targeting medium scale farmers. SPEN Ltd provides the following services:

- ✓ Provide practical (on-farm) fodder establishment and preservation (silage).
- ✓ Create business linkages: distribution of essential farm inputs and interaction among dairy value chain actors.
- ✓ Disseminate relevant knowledge skills /information, competencies and resources to address the local community needs.
- ✓ Nurture and coach emerging out-of-school youth entrepreneurs into agriculture.

KMDP has increased capacity of the firm in terms of acquiring new skills such as:

- ✓ Cow Signals training
- ✓ Grass fertilization & right time of harvesting
- ✓ Land preparation, minimum tillage, chiselling, mould board
- ✓ Silage preservation (maize and grass)
- ✓ Cow barn design

SPEN Ltd business opportunities are:

- ✓ Hoof trimming
- ✓ Feed and fodder management
- ✓ Farm planning & management
- ✓ Ultra sound scanning
- ✓ Cow housing
- ✓ CowSignal's training

Annex 06: SR SPEN Ltd.

Chapter 8. Behavioral Change and Impact at Farm Level

In September 2015 the Consultant (Frans Ettema) carried out a desk study of progress reports received from the KMDP Team and Perfometer and Eldosirikwa. In addition he visited a number of farms in North Rift, Central and Eastern (both MSFs and CFPs) and held structured interviews with the owners and/or farm managers. A listing of the farms visited and the notable changes on each farm is presented in the following pages.

In summary, the reports and the site visits confirmed that KMDP has an outstanding impact on the farm operations that are participating in KMDP, and it is assumed that this has important spin-off for the larger dairy sector in the North Rift, Central and Eastern. The program has enhanced the capacities of both medium and large-scale farmers, which is evidenced by concrete results as regards to milk production and cost price, productivity, quality of feeds and fodders, calf rearing, cow housing and investments made by the farmers. Both MSFs and CFPs have adopted good farm practices and consequently improved productivity.

Looking to the outcome and the results of training and support to the MSF farms, there is great improvement in feed and fodder, in combination with total farm management issues. Many farmers have made a change from Napier grass to maize silage and, at some farms even grass silage and rotational grazing (pasture development) is piloted. Very promising improvements are made on many farms in the technic of silage making, and in the lay-out/size of the clamp in relation to the number of animals to be fed from the pit. Improvement in compacting of the silage in combination with an air tied cover is notable, and this greatly increases the quality and nutritive value and reduces losses.

In all the training sessions, farmers were very dedicated to calf rearing. A growth rate of 800 gram/day in the first year, is the new set target for many farmers, and necessary for a good body weight at first calving at an age of 24 month. Housing and hygiene in calf rearing has improved on a good number of farms together with good feeding practice and proper working protocols.

Proper feeding of dairy cows according to its production and maintenance is the most difficult topic in TFM. In the absence of reliable laboratory services in Kenya and – hence - data on feed quality, it remains difficult however to formulate an optimum feed-ration for the different groups of cows. The project of SoilCares to provide reliable laboratory services and advice on feed stuffs and soils & fertilisation, is a necessary step in improving feed & fodder management.

Housing, hygiene and cow comfort are topics in the training sessions that were very much appreciated by the farmers. Small but effective interventions can and have been made to improve cow comfort and performance, such as adequate ventilation, proper bedding and unlimited access to feed and water. This has been applied by many farms after joining the KMDP training.

Behavioral change of the farmer (and his staff) and the impact of interventions as a result of training and support, starts with awareness of the bottlenecks and constraints at farm level. Interaction between farmers (study groups, field days and demos, farmer-to-farmer exchange visits) discussing and seeing the potential and opportunities for improvements at farm level, appeared to be important for behavioral change.

All farmers visited by the Consultant stated that the reason for joining the KMDP program is the need for capacity building, also for farm staff, to address the lack of skills and knowledge and the need to make real business of dairy farming and to generate an income. The following questions were used to guide or structure the interviews with the farm owners/ managers:

a) Which area of farm management has KMDP impacted the most?
b) What changes have you made as a result of KMDP training/interventions?
c) What was the effect of the changes made on the farm?
d) Which investment have you made on the farm since beginning of the program?
e) What targets do you have for the next 2 years?
f) Which are the current challenges in farm management after interventions by KMDP?

8.1 Notable changes/improvements on MSF farms visited in Central and Eastern

Name of farm	Risa Farm	Behavioural changes / improvements as a result of interventions
Owner	Andrew Murugu	1. Increase in conserving maize for silage. Quality of the maize silage has also improved and there has been less wastage and spoilage. Uniform Agri software Installed in the farm 2. Maize silage improved milk production from 16 – 17 kg till 18 – 23 kg / day. First insemination improved from 20 month to 17 month. Improved cow comfort by soft bedding. Capacity building of farm workers. 3. Improved farm planning. Young stock weighing and record keeping. 4. Contracting machinery for land preparation and harvesting. 5. Feeding management, calf rearing and mastitis. 6. Fodder production for year round feed availability. New cow barn for 50 cows. Training of farm staff. Milk production of 25 kg / cow / day. Improvement of milk quality.
Mobile	0722 572 014	
E-mail	murugua@molito.com	
Farm Manager	Samson Muthomi	
Mobile	0721 934 093	
E-mail	muthomis@molito.co.ke	
Location	Red hill	
Herd size	71	
Milk production/day/Litres	611	
Lactating Cows	28	
Average litres per cow	20-21 litres	

Name of farm	Mwaniki's Farm	Behavioural changes / improvements as a result of interventions
Owner	Henry Mwaniki	1. The cow barn design. Currently there is construction going on at the farm for a 80 milking barn. 2. Feeding: Change from Napier grass feeding to Maize silage. The farm has adopted maize silage and plans to plant/establish up to 30 acres of maize next year. Adopting young stock weighing to monitor growth. 3. Invested in establishing 22-25 acres of maize for ensiling in 2015, plans to do 30 acres and above in future. Training/capacity building for staff / workers. 4. Land leasing for more fodder establishment and cow barn construction. Value addition of the milk. Breeders of quality heifers. Model farm to other farmers in the county. Expand the herd to 80 milking cows. 5. Better planning in fodder conservation and establishment. 6. Capacity building on young stock, feeding and value addition
Mobile	0721 585 957	
E-mail	mwaniki5957@gmail.com	
Farm Manager	John Mugigua	
Mobile	0724 997 501	
E-mail	N/A	
Location	Mukindiru- Kerugoya	
Herd size	30	
Milk production/day/Litres	250-255	
Lactating Cows	16	
Average litres per cow	15-18litres	

Name of farm	Wachira's Farm	Behavioural changes / improvements as a result of interventions
Owner	PETER WACHIRA	1. The cow barn design. Currently there is construction going on at the farm for a 80 milking cow barn. 2. Low mortality, in 2013-2014 there was high mortality due to poor planning of feeds. 3. Farm size/production: 2013-2014 there was a total herd of 4 currently there are 7 in total. Staff/Workers: Currently the farmer and his family take care of the farm; there has been change in attitude due to motivation after the trainings. 4. Leased more land for fodder establishment of maize and sorghum. Total cost about sh.100, 000. 5. Regular feed analysis to ensure quality is maintained. Plan to do more fodder conservation and establishment. 6. Feed all year round and ensuring constant quality of the feed
Mobile	0725288514	
E-mail		
Location	Kagio, Kirinyaga	
Herd size	7	
Milk production/day/Litres	70-80lts	
Lactating Cows	5	
Average litres per cow	11-15lts	

Name of farm	Kathendu Farm	Behavioural changes / improvements as a result of interventions
Owner	ERIC KATHENDU	1. Feeding of the animals, focus more on quality instead of quantity. 2. Feeding has changed from stover feeding to maize silage. Grouping of animals. Young stock management has improved and mortality is lower. Land preparation methods have changed from using a disc plough to chisel plough and harrowing. 3. The herd has increased from 61 to 89: from purchase and also births on farm. Staff/Workers: More skills generated: better herd management. 4. Acquired land 110 acres for about (65 million) Forage harvester purchased, (KES 800,000). Heat detection device (1.2 million). Feed mill establishment (700,000) 5. Increase milking herd to 160. New barn construction. Become a model farm for farmers (small/medium) in the area. Breeders of high quality heifers. 6. Heat detection, insemination and nutritional requirements of different cow groups.
Mobile	0728730820	
E-mail	kathendudairy@gmail.com	
Location	Nkubu	
Herd size	89	
Milk production/day/Litres	800	
Lactating Cows	45	
Average litres per cow	25-30litres	

Name of farm	Gakurine Farm	Behavioural changes / improvements as a result of interventions
Owner	Mr. Mutwiri	1. Feeding of the different groups of the dairy herd. Maize silage has been adopted. Currently the farm does regular weighing of young stock to monitor growth. 2. Due to improved nutrition and change in feeding regime mortality rates has decreased. Production has increase from 110lts to 200-250lts. Less hoof problems due to training on maintaining a good barn structure and cows comfort. More fodder establishment and conservation to ensure feed all year round 3. Farm size/production: increase in herd size. Staff/Workers: Good salaries as production and cost of production balance; they also acquire new skill sets. 4. Own feed mixer for on farm mixing. New milk outlet due to rise in demand. 5. Breeders of good quality heifers for sale. End of 2015 projected milk production is 500 litres, by 2017 1,500litres. Increase milking herd to 50 from 12. 6. Laboratories for feed and soil tests. Value addition by training to fetch better milk prices. Financial assistance in dairy projects for Meru MFF group. Help to purchase machinery for fodder conservation. More training on feeding management of the animals.
Mobile	0722700495	
E-mail	m_ringera@yahoo.com	
Location	Makutano- Meru	
Herd size	70	
Milk production/day/Litres	195lts	
Lactating Cows	12	
Average litres per cow	16-17lts	

Name of farm	Muriuki Farm	Behavioural changes / improvements as a result of interventions
Owner	Silas Muriuki	1. Change from Napier to maize silage, establishment of more acreage for steady supply of feeds. Improved young stock management through regular weighing and good feeding practices. 2. Change from Napier grass feeding to Maize silage increased total production from 50-70lts/day to 110-120lts. Fodder establishment and conservation. The farm has adopted maize silage and plans to plant/establish more acres of maize next year. 3. Cow barn design developed by SNV/Perfometer, currently under construction. 4. Increase in production from 50-60lts to 110-120lts/day. Feeding is becoming easier with maize silage and reduces incidences of going to source for feed from outside. New skills are acquired. 5. Value addition of the milk produced into cheese and yoghurt. Improve milk quality in years to come. 6. Training on how to do value addition on the milk to fetch better prices. Assistance with mechanisation to increase capacity of fodder conservation. Develop curriculum to have capacity building for the farm staff. More financial assistance.
Mobile	0722729423	
E-mail	smuriuki@gmail.com	
Location	Runogone	
Herd size	18	
Milk production/day/Litres	115	
Lactating Cows	6	
Average litres per cow	16-19lts	

Name of farm	Kiambati Farm	Behavioural changes / improvements as a result of interventions
Owner	Stanley Kiambati	1. Change from Napier to maize silage. Improved young stock management through regular weighing and good calf rearing practices. New cow barn that takes cow comfort into consideration. 2. The farm has adopted maize silage, plans more acres of maize next year. Cow barn design by SNV/Perfometer currently under construction. Better young stock management and practices. 3. Increased total production from 90-100lts/day to 250-255lts. More motivated staff with new skill has led to increase in income. 4. With own farm production of forages the cost of production is lower. As a member of Meru Medium Scale Farmers) investment is made on feed mill plant. 5. Improve on quality of their current herd and eventually be able to supply heifers to other farmers. More fodder establishment and conservation. 6. More capacity building to continue improving dairy practices.
Mobile	0720 230 155	
E-mail	kiambatis@yahoo.com	
Location	Kiirua	
Herd size	38	
Milk production/day/Litres	250-255lts/day	
Lactating Cows	15	
Average litres per cow	15-17lts	

Name of farm	Gathiaga Farm	Behavioural changes / improvements as a result of interventions
Owner	John Gathiaga	1 Fodder establishment: increased acreage of Lucerne and maize. When to best harvest fodder. 2 Calf rearing- grouping calves, feeding, weighing, how to observe and monitor body condition score of the animals 3 Increased acreage under fodder and focusing on quality and not quantity. 4 Information not available by the manager 5 Increased acreage under fodder and focusing on quality and not quantity, Increased herd, improve housing and cow comfort. 6 Fodder production/ establishment and conservation, cow housing.
Mobile		
Location	Naromoru	
Herd size	11	
Milk production/day/Liters	165-170 liters	
Lactating Cows	7	
Average liters per cow		

Name of farm	Kinuthia Farm	Behavioural changes / improvements as a result of interventions
Owner	Mr. Kinuthia	1. Feeding has changed from Napier to Maize silage. Young stock management. 2. Grouping and feeding of cows and young stock to achieve recommended weight gain per day. Improved calf rearing: feeding of concentrates and monitoring weight on a monthly basis. Feeding on dry maize stover to making silage on the farm at the recommended stage. Constant feed throughout the year. 3. Feeding: maintained concentrate feeding but now mixed with maize silage and hay to make the cows TMR. 4. 40% increment after production due to maize silage. Increase in production has made turnover increase and reduces cost. Cow barn design 50 milking
Mobile		
E-mail		
Location	Nyeri	
Herd size		
Milk production/day/Lts	220	
Lactating Cows	10	
Average lts per cow	18-10lts	

		will collaborate with Perfometer/SNV. Invest in milking machine, capacity of silage through mechanization. 5. Embryo transfer. Produce to high quality heifers for other farmers. Increase milk production to 2,000 liters. Value addition of milk. 6. Cost of inputs and outputs to get profits. (Efficiency of Economics). Machinery to optimize silage making.

Name of farm	Kigwandi Farm	**Behavioural changes / improvements as a result of interventions**
Owner	Church based	1. Fodder establishment and conservation. Maize, sorghum, vetch, lucerne and Calliandra have been established on the farm. Maize silage is also being practiced on the farm. 2. Record keeping on – tagging/ identification, milk, feeding, digital. 3. Barn designs modification to make cows more comfortable. 4. Leasing land for more fodder establishment. Milking machines and machines for silage making. 5. More land for fodder. Expanding to 50 cows minimum Become a training centre. Become a breeding center. 6. Health production. Reproductive management. Fodder establishment and production. More capacity building for staff.
Mobile		
Farm Manager	SPEN	
Mobile		
Location	Nyeri	
Herd size	16	
Milk production/day/Litres	110 liters	
Lactating Cows	8	
Average litres per cow		

Name of farm	**Imani Farm**	**Behavioural changes / improvements as a result of interventions**
Owner	Maina Muthuma	1. Capacity building. 2. Calf rearing- grouping calves, feeding, weighing, BCS. 3. Vet bills are low (Healthy cows). Increased value addition. 4. Barn modification to increase cow comfort and increase silage bunkers. 5. Breeders of quality heifers. Increase milking cows to 50. Become a practical training centre. 6. Feeding/ Nutrition. Genetics/ Reproduction. Capacity for fodder production esp. Hay. Value Addition. Follow up/ Coaching for farms.
Mobile	0722 656 363	
E-mail	mainamuthuma@yahoo.com	
Farm Manager	Maina	
Location	Ihwagi, Karatina	
Herd size	30	
Milk production/day/Lts	250	
Lactating Cows	15	
Average lts per cow	15-16lts	

Name of farm	**Gichua Farm (dairy part)**	**Behavioural changes / improvements as a result of interventions**
Owner	Mary Mburu	1. Feeding practice and quality of feeds. 2. Silage making- maize, sorghum + hay. Experimental drought resistant maize. Grass silage with Boma Rhodes. Feeding improve on nutrition. Young stock management 3. Increase of acreage under fodder. Improve on quality and condition of the animals on the farm. 4. None at the moment. 5. Less cows more milk. Feeding program to sustain itself Move both dairy and fodder enterprise as one. Independent enterprise on its own. 6. Farm economics / cost of production. Feeding programs.
Mobile		
Location	Lanet, Nakuru	
Herd size	30	
Milk production/day/Liters	200-250	
Lactating Cows	15	
Average liters per cow	15lts	

8.2 Notable changes/improvements on CFP farms visited in Central and Eastern

Name of the farm: GICHUA FARM (CFP part)

Current status:

- ✓ Acreage 10, 20, 40 acres. (3 different locations)
- ✓ Used to harvest overgrown hay

Challenges farm is facing and has faced since KMDP/CFP program:

- ✓ Fields to do farm preparation to even the farm- wastage of seeds.
- ✓ Machinery in the farm
- ✓ Weed control is a major problem.
- ✓ Harvesting needs improvement.
- ✓ Seed purchase.

Changes made as a result of KMDP:

- ✓ Land preparation- Levelling out the land. Ploughing + Harrowing.
- ✓ Weed control
- ✓ Planting method; more managed by measuring no. of seeds
- ✓ Fertilizer Advices. Tested one field with fertilizer and one without
- ✓ Records for inputs and outputs
- ✓ Increased cost but also increased production, so rises in turnover.

Investment made since the beginning of the program:

- ✓ Tractors
- ✓ Harrow
- ✓ Balers (old machinery) - high maintenance cost.

Achievements the farm desires to have in the next 2 years:

- ✓ Kikuyu grass for silage
- ✓ Partition fields to make them smaller
- ✓ Paddocks for grazing
- ✓ Upgrade on machinery:
- ✓ Tractor, chisel plough, baler.

Future support / intervention needed:

- ✓ Experimental plots for grass and maize
- ✓ Capacity improvement.

Name of the farm: KIPLOMBE COOPERATIVES (founded 1973)

Current status:

- ✓ 2014: Training on breeding, calf rearing and demonstration farms for fodder on hay, Lucerne, sorghum, Desmodium.
- ✓ July 2015: This season has experienced shortage of rain resulting to slow regrowth.

Challenges Cooperative farmers are facing since KMDP/CFP program:

- ✓ Feed supply all year round for the farmers in the cooperative.
- ✓ Slow rate of adoption to best practice that SNV/KMDP is introducing.

Changes made as a result of KMDP:

- ✓ Adaptation of technology like fodder conservation + production, A.I
- ✓ No. of acres per farmer
- ✓ New fodder- forage sorghum, yellow maize
- ✓ New SPE's to make silage for group.

Investment made on the farm since beginning the program:

- ✓ Building structures of zero grazing
- ✓ Silage making

Achievements the farm desires to have in the next 2 years:

- ✓ Breeding. Better due to A.I from using natural bull mating
- ✓ More fodder production + conservation to overcome drought.

Interventions advised and applied:

- ✓ Soil testing- new technology to fertilizer to use.
- ✓ Type of fertilizers used- lowered cost
- ✓ Stage of harvesting- Boma Rhodes
- ✓ Production per acre can't be qualified due to rains failure.
- ✓ Feedback from farmers.
- ✓ Mindset changes i.e time of harvesting, maize silage (demand for silage is high)

Future interventions and support needed:

- ✓ Capacity building- fodder technologies i.e. more crops + seeds made available fodder for ecological zone.
- ✓ Cheaper techniques of silage making.

Name of the farm: MURUGU FARM (Timau, Meru)

Current status:

- ✓ 49 acres of cultivated land, located in Timau, Meru County.
- ✓ Harvest in June 2015 yielded 570 bales of Boma Rhodes grass this is partly due to insufficient rainfall.
- ✓ Harvest in 2013: 570 bales were harvested this was before KMDP intervention/support.
- ✓ The first harvest after KMDP intervention and support 500 bales from 18 acres and second harvest was 1,798 bales.

Challenges experienced in the farm.

- ✓ There is a local grass (*Nutsedge*) that competes with the Boma Rhodes. It is persistent even after spraying.
- ✓ Having to depend on contractors for harvesting causes delay and reduces on efficiency capacity of the hay bales.
- ✓ Weather patterns are unpredictable and unreliable like this year rain has been minimal. Grass regrowth has been slow.

Changes the farm has made as a result of KMDP program?

- ✓ Land preparation methods changed; before KMDP disc plough was used to plough then land was harrowed once. After the intervention the farm changed to chisel plough and harrowing two times and planting with seed rows
- ✓ There was fertilization done 2 times

Investments made on the farm since the program began?

- ✓ Currently there is a new borehole not yet in operation but will be used to bridge the gap of low rainfall through drip irrigation.

Achievements (goals/ targets) the farm desires to have in the next 2-3 years?

- ✓ Set up irrigation system – drip irrigation
- ✓ Weighing bales as they are baled.

Interventions/Support SNV/Perfometer should provide so as to achieve the goals/targets stated above?

- ✓ More training /capacity building on weed control
- ✓ Fertilizer advice

Name of the farm: HAYMAN (Mr. Maina in Nanyuki)

Current status:

- ✓ Farm is on a 300-acre plot and is located in Nanyuki.
- ✓ At the start of KMDP intervention the farm was only 100 acres.
- ✓ Last harvest yielded 18,000 bales from 300 acres.

Changes the farm has made as a result of KMDP program:

- ✓ Land preparation methods changed from disc plough and harrowing to chisel plough and harrowing two times.
- ✓ Planting with seed rows
- ✓ 2 times fertilizing, at planting DAP (1 bag per acre) and top dressing for CAN.
- ✓ The grass is now not left to dry in the farm. It is cut and dried at the recommended stage.
- ✓ Storage has also been improved tremendously by construction of a hay store.
- ✓ Soil testing was adopted after advice and will continue to be practiced by the farm.
- ✓ Weighing of the bales to ensure it is 15kgs- 20kgs and not less.

Challenges experienced in the farm:

- ✓ Depending on contractors capacity for harvesting causes delay and reduces on efficiency capacity of the hay bales.
- ✓ Grass regrowth has been slow due to lack of rainfall.

Investments made on the farm since the program began:

- ✓ Purchase of tractor that cost around 3 million shillings.
- ✓ Baler @ 3 million
- ✓ Lorry to transport hay to consumers @4.2 million
- ✓ Raker, and Mower @ 750,000

Some of the achievements (goals/ targets) the farm desires to have in the next 2-3 years:

- ✓ Stop depending on contractors and purchase
- ✓ Increase acreage by buying more land
- ✓ Soil testing will be done as recommended.

Interventions/Support SNV/Perfometer should provide so as to achieve the goals/targets stated above:

- ✓ More training /capacity building on weed control
- ✓ Fertilizer advice

8.3 Notable changes/improvements on EDFA farms visited in North Rift

Name of farm	NUNDURUTO	Behavioural changes / improvements as a result of interventions
Owner	Evert Van Der Ham	Contractor has harvested over 300 acres of maize silage of good quality Expected to increase even further by next year 2016. KMDP expects the contractor to also provide professional services in areas of land preparation and grass silage making so that it can be a fully-fledged entity with total solutions in respect to dairy farming.
Location	Plateau-Kipsinende village	
Nr of tractors owned	5	
Number of choppers	2 (two rows) and 1 (Six row)	
Other implements	Mouldboard ploughs and power harrows	
Number of workers	22	

Name of farm	WILLEMS FARM	Behavioural changes / improvements as a result of interventions
Owner	Willy Kirwa	Calf rearing. 7 calves are placed under professional calf rearing system and profound results were noted since the growth rate went from 250 grams to over 600 grams per day. A field day on grass silage at the farm where over 100 dairy farmers attended and 10 acres of grass silage was ensiled in a day. Installation of Uniform Agri dairy software and training of staff for operation. Preparing a feed plan and formulation of rations.
Location	Kapseret	
Herd size	56	
Milk production/day/lts	420	
Lactating cows	22	
Average litres per cow	19 litres	

Name of farm	Sakong Farm	Behavioural changes / improvements as a result of interventions
Owner	Andrew Limo	Increased maize fodder production from 15 to 30 acre in 2105. Development of grass fields and grass silage. Improved structure of the milking parlour. Import of 8 in-calf heifers from SA Ultrasound scanning for pregnancy Vaccination program
Location	Kaptagat	
Herd size	60	
Milk production/day/lts	450	
Lactating cows	30	
Average litres per cow	15	

Name of farm	Seregon Farm	Behavioural changes / improvements as a result of interventions
Owner	Sammy Shollei	Establishing and fertilization of 6 acre kikuyu grass Improvement on Calf rearing Development of proper feed plan, concentrate formulations and calculation of total rations
Herd size	99	
Milk production/day/lts	630	
Lactating cows	48	
Average litres per cow	13	

Name of farm	Mara	Behavioural changes / improvements as a result of interventions
Owner	Stephen Kemboi	Improvements of pasture through bush clearing, paddocking and fertilization of grass Renovation of young stock housing Increasing the land under maize silage from previous 50 acres to 90 acres in 2015
Location	Burnt Forest	
Herd size	200	
Milk production/day/lts	600	
Lactating cows	50	
Average litres per cow	12	

Name of farm	Kapsuswa	Behavioural changes / improvements as a result of interventions
Owner	Sarah Boit	Good calf rearing, over 650 grams/ day average growth rates and inseminations at 15 months. Young stock housing. Grass management including fertilization and making of nutritious hay. Adoption of automated record keeping i.e. use of uniform Agri program. Improved quality of maize silage (chopping length and corn crashing).
Location	Turbo	
Herd size	303	
Milk production/day/lts	1650	
Lactating cows	93	
Average litres per cow	18	

Name of farm	Samo	Behavioural changes / improvements as a result of interventions
Owner	Jeffrey Samoei	Establishment of the calf housing and a professional milking parlour. Establishment of over 10 paddocks and improved pasture management Bush clearing, fencing and fertilization of grass Making of grass silage Improve land preparation implements Investment in automated farm records of Uniform Agri. Improved calf growth rates from below 200 grams/day to 500 grams/day Renovation of feeding barn Establishments of feed plans and ration calculation Expanded fodder reserves as maize silage is increased from 20 acres to 40 acres
Location	Moiben	
Herd size	104	
Milk production/day/litres	250	
Lactating cows	20	
Average litres per cow	13	

Name of farm	Setway	Behavioural changes / improvements as a result of interventions
Owner	Mr. Kositany	Bush clearing, fencing and fertilization of grass Improved silage in 2015 due to the use of Nundoroto machinery contractor Investment in a milking parlour Building of a calf rearing unit Initiation of proper record keeping (Manual records) Employment of a professional dairy manager Expansion of herd stock (bought over 20 dairy cows locally) Establishment of new pastures (5 acres of Rhodes grass)
Location	Ziwa	
Herd size	31	
Milk production/day/lts	280	
Lactating cows	17	
Average litres per cow	14	

Name of farm		Behavioural changes / improvements as a result of interventions
Owner	Stephen Simam	Bush clearing, paddocking and fertilization of grass fields A well-coordinated rotational grazing system Quality silage due to use of machine with corn crasher A good calf rearing Participated in the SNV subsidized software (Uniform Agri)
Location	Burnt Forest	
Herd size	94	
Milk production/day/lts	300	
Lactating Cows	29	
Average litres per cow	10	

Chapter 9. Relevance of MSFs for the Sector

KMDP's Theory of Change (ToC) emphasizes that for a long-term sustainable growth, the Kenyan dairy sector needs to transition from small-scale semi-subsistence farming, to an industry that relies on fully commercial dairy farming systems. The ToC further states that in regard to milk procurement and processing, the sector needs processors that invest in supply chain development for enhanced productivity and milk quality, offering credible long-term milk procurement contracts. In addition to that, Kenyan government is urged to adopt and enforce dairy industry standards, to develop a strategy to phase-out the raw milk market and to provide – with private sector and knowledge institutions – a robust infrastructure for practical dairy training and education.

As for the dairy production, KMDP's TOC paper notes that there is a growing segment of farmers that is fast commercializing, partly from within the membership of CBEs and partly from without. Many MSFs sell milk directly to processors or – unprocessed - to institutions like schools, hotels and caterers. These are farmers with 20-30 dairy cows with the ambition to grow to 50 milking cows or more, and with sufficient land to produce quality fodder. A good number of these MSFs are wealthy landowners with formal jobs outside primary industries, also referred to as "telephone farmers". MSFs invest often quite heavily in dairy but – like their farm managers – usually lack sufficient skills to make the dairy farm profitable. Yet they are eager to learn and improve their dairy enterprises. This group of farmers or landowners is engaged in dairy farming as a core business (rather than as a livelihood strategy) and is willing and able to invest in expansion of the herd, cow housing, training of farm managers, on-farm (mechanized) fodder production and preservation.

The ToC paper also remarks that these farmers – if organized well – have the ability to attract more credible input and service providers and where applicable forge business linkages with the Dutch dairy sector. In doing so, they can fast track the development of a professional dairy support infrastructure that – once in place - will also benefit the smallholder supply chain. Through their political and business networks they also have the ability to push for policy reforms that will benefit the dairy sector as a whole.

Interestingly – the ToC paper continues - a number of the more successful commercial dairy farms have gone into training (of small scale farmer) as a side-business and position themselves as Practical Dairy Training Farms or Centre's. To some extent this fills the gap in practical dairy training & extension created by the withdrawal of government extension services. Lastly, these MSFs have the potential to supply smallholders with inputs and services. For example the supply of fodder and heifers or leasing of farm machinery for fodder production and preservation. Some MSFs have started bulking milk from small-scale dairy farms around them offering market access for their milk. Medium and large scale dairy farmers play an important role in adopting innovations, demonstration of best practices, providing critical mass for the development of an effective dairy infrastructure with quality services, input suppliers and investors. They are also key in addressing the issue of food security for a growing urban population.

The Consultant largely agrees and confirms this analysis, which to an important extent underpins the relevance and importance of this group or segment of farmers for sector transitioning and innovation. It is furthermore the Consultant's opinion that the relevance of MSFs and CFP for the Kenyan dairy sector is particularly in the improvement of the dairy value chain. In the strategy to phase-out the raw milk market and to secure milk quality in a growth-market like Kenya - where demand outnumbers supply - only farms with scale in number of cows and land are able to adapt and implement new technology and management practices. In the process of innovation and technology development for local application, MSFs are more accessible for new ideas as compared to smallholders.

MSFs are important for the sector because of their entrepreneurial attitude towards dairy farming as a commercial business. This is also a strong basis for increased demand and market (!) for credible input and service providers, and – as a result - enhanced quality and availability of service provision (e.g. veterinary services, AI, agricultural contractors, feed manufacturers and so on and so forth). This benefits all farmers – small or large. MSFs also have usually easy or easier access to policy makers and regulatory bodies, and therefore strong ability to lobby for policy changes. EDFA e.g. has shown to have that ability (bilateral agreement for importation of young stock from Netherlands), although it could do more. For example as regards to the issue of shortage of certified fodder seeds and new high yielding varieties. Recently EDFA has endeavoured to be registered as a seed company or trader with the Kenyan authorities. This is a promising development as it then has a basis for partnering with international seed breeders like Barenbrug and DFL, and importation and piloting of new varieties. This again will benefit small and large farmers alike.

For knowledge transfer and skills development, MSFs are not just an important target group or beneficiary, they also play a key role as "knowledge delivery channel", by demonstrating best practices and innovations, including for smallholders. Amongst the KMDP MSF clients a number of them have started to use their farm as a training farm, where other farmers - including smallholders - pay a fee for a one-day farm tour or training. Others, like Willens Farm (EDFA) and Baraka Farm have gone to a level of offering a structured one week training programme. With the support of KMDP, these farms are on the way to become full-fledged Practical Dairy Training Centres "at the doorstep of the farmer".
Stated earlier that for milk procurement and processing, the sector needs processors that invest in supply chain, it also needs a solid supply base to reliably source quality raw milk. In regards to this milk sourcing, MSFs are or will become vital for a secure year round supply of milk of an acceptable quality, so as to allow processors to use their processing plant full capacity and thus reach economies of scale at their level. For that reason processors should play a more significant role in "dairy development" rather than continuing the strategy of "mopping milk".

Chapter 10. Relevance of CFPs and Agricultural Contracting Services

The Feed & Fodder study implemented during KMDP's Inception Phase (BLGG Group) confirmed that one of the most important bottlenecks for enhanced competitiveness and growth is access/availability of quality fodder. This applies both to smallholders and MSFs.
The sector is in agreement that the fodder issue – or feed in general - is more important than breed. Without proper feed and feed rations/regimes the genetic potential of the breed remains unlocked, and good fertility management relies heavily on the animal's health and feeding.
The limited access to/availability of quality fodder is partly due to land size and competition with others crops (smallholders). But also it is directly related to low skills and knowledge as regards to fodder management and preservation, mechanisation and unavailability of high energy and protein fodder seed varieties. The fodder gap has severe impact on cost price of milk, profitability of the farm enterprise and seasonality in milk supply.

KMDP's fodder intervention aims to increase year-round access to good quality fodder on-farm (smallholders and MSFs) and – also - from Commercial Fodder Producers (CFPs). This includes support to CFPs on fodder-management skills in production, mechanisation and preservation, introducing new fodder seed varieties and piloting innovative technologies and business concepts for marketing of preserved fodders.
In addition to that, KMDP supports initiatives that help develop specialised service providers or agricultural contractors to support farmers and CFPs, with professional services as regards to land preparation, seeding, crop management, harvesting and fodder preservation (baling, ensiling).

The Consultant is of the opinion that both interventions under KMDP are relevant and successful. As for CFPs most of them are in hay production and all or most have benefited from the PUM advisory services and enhanced production/productivity and acreage under hay-grass. It is however advised that KMDP in 2016 focuses on CFPs that have really innovative business ideas targeting high(-er) quality fodder, such as the concepts promoted by Gogar Farm (packed maize silage, fodder pellets) and the emerging Morendat proposal for commercial lucern production.

As regards the interventions of KMDP with specialized agricultural contractors for enhanced forage production and preservation (see e.g. Nundoroto and concept of the maize and grass train" and SPEN Ltd), this is a crucial intervention that needs full support in 2016 and beyond. These specialised contractors or service providers form the backbone of more advanced dairy economies elsewhere in the world.

Chapter 11. KMDP's International Linkages Agenda

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

SNV-KMDP believes that development of the sector and investments in it (including support by KMDP) should be market-led and private sector-driven. Private sector in this case includes farmers and farmer-owned CBEs, with processors and CBEs playing a key role, as regards to the shaping of the industry in terms of investing in the supply chain for enhanced productivity and quality of milk. Private sector-driven also means pro-activeness of KMDP's clients to take lead and invest in interventions that are focused on improving efficiency and competitiveness, and to run their operations as profitable businesses.

KMDP follows an approach that is market-led. This implies amongst others that KMDP is demand-driven and this is where the complexity of KMDP lies. Where it promotes change and innovation through for example exposure visits, feasibility studies, pilots and demos, international linkages and its Innovation Fund, KMDP only engages with clients if they are interested and willing to adopt and invest in these new ideas and good practices.

The Consultant is in agreement with this set of objectives and strategies. Innovations and transfer of knowledge, skills & technology are crucial to enhance dairy sector growth and competitiveness, and to do this in a sustainable way there is need for a private sector approach and B2B linkages. KMDP's emphasis on achieving this through international linkages and partnerships is useful and effective, although to create a conducive environment for Dutch-Kenyan B2B to grow and prosper may be a long shot. This is partly because not all Dutch "technology" is relevant and affordable for Kenyan stakeholders, and – related to this - the market for Dutch private sector is still "thin". Willingness and ability to significantly invest in developing this market is limited on part of Dutch private sector, also keeping in mind that globally other markets (e.g. China) are more lucrative.

The approach to address through KMDP a broad range of dairy topics simultaneously, makes it hopefully clear to farmers and service providers that commercial dairy farming is a complex business. This approach is in the Consultant's view important to achieve the main goal of the KMDP project "To contribute to the development of a vibrant dairy sector with beneficiaries across the value chain". It also opens up possibilities to engage with a larger number of service providers and input suppliers from the Dutch private sector.

The Consultant supports KMDP's opinion that the dairy sector should be market-led and private sector driven. This implies a strong contribution of private companies, such as service providers, farm machinery suppliers, veterinarians, financial institutions, feed companies, and milk processors, for the successful execution of the project.

International Linkages Dutch Private Sector

To drive the agenda of transfer of knowledge, skills and technology, KMDP has pro-actively linked-up with the Dutch private sector – and private sector development programs like PUM – on one hand to hire and incorporate Dutch expertise in the programme, but on the other hand also to help facilitate and forge B2B linkages between credible Dutch and Kenyan companies.

At the start of KMDP – and in the SNV dairy project that preceded KMDP, funded through core subsidy (2009-12) – there was no connection existing between SNV and Dutch dairy sector players/experts. Apart from a link to WUR/CDI and cooperation with Agriterra. Agriterra facilitated several Missions by experts from Agriterra-members in the Netherlands (amongst others from Friesland Campina, Agrifirm) to a number of dairy cooperatives where SNV and Agriterra collaborated.

With a heavy background in so-called BDS (Business Development Services) and ID/OS (Institutional Development and Organisational Strengthening) in SNV Kenya and like-minded programs (EADD), the KMDP Team that was formed at the start of the programme did not include technical experts in dairy production or processing. Nor did the team members have networks with the Dutch dairy sector. This includes the KMDP Coordinator. The latter however had expertise and networks in the animal feed industry and in agricultural contracting.
However in the project proposal, provision was made for inclusion of international expertise in various key intervention areas of KMDP, by allocating a substantial budget to short missions of international consultants. These missions took the form of:

a) (Feasibility) Studies, e.g. The Friesian: QBMP systems, Feed & Fodder;
b) Business- and Investment Plans, e.g. The Friesian: DTI, University of Eldoret Dairy Farm, The Friesian: Happy Cow Proposal MQT&T Project;
c) Training & Coaching e.g. PUM, Dutch students, DTC, QPoint, Vetvice Cow Signals;
d) Handbooks e.g. Vetvice/The Friesian, Fieten (K) Ltd: MSF and SH Cow House Design;
e) Demo Projects e.g. Fieten/Vetvice: MSF Cow House Pilot; De Jong: UA Farm Recording, Dutch Students.
f) International study tours, exposure visits, trade fairs (KE-NL and NL-KE)

In 2014 KMDP decided to hire an international dairy expert from The Friesian (0.8 FTE), to be part of the KMDP Team with duty station Eldoret. This expert started his work 1st of September 2014. The involvement of Dutch experts has been successful and valuable for KMDP and its clients.

It has brought innovation, good practices, new insights, knowledge and skills into the Kenyan dairy sector. It also has been instrumental in capacity building of KMDP staff and LCBs.
In addition to this, the experts and consultancy firms contracted by KMDP for short-term missions were given a platform to position themselves in Kenya/EA and to create business outside KMDP. This has for example worked quite well for The Friesian.

Other Dutch companies have seen the opportunity of KMDP's Innovation Fund and applied successfully (Roodbont BV/Vetvice, DTC). Eric de Jong started as an intern in KMDP and was later hired as a junior international consultant for implementation of the farm recording pilot project (UA software). He has now registered a company in Kenya for import of farm machinery and agricultural contracting services. The Uniform Agri dealership for Kenya was granted to a local consultant who was trained by Eric de Jong through the KMDP project.

In retrospect, local presence of international dairy expertise (e.g. farm/ fodder management, milk quality) in the Project Team could have been sought earlier. Although admittedly, KMDP's Inception Phase and its first year of implementation were instrumental to formulate the demand for such expertise more sharply. Hiring consultants on short term Missions worked well, but is not ideal as regards to the administrative burden involved in sourcing, contracting, induction and reporting (cost of doing business) and follow-up between missions.

Local presence of international expertise also comes with a cost. A combination of a senior dairy development expert and 1 or 2 fresh graduates from Dutch dairy training centres, backstopped by PUM experts or experts from a dairy development consultancy firm, is a modality that could be considered in programs like KMDP. The involvement of Dutch expertise for implementation of KMDP interventions has mainly focused on the second pillar of KMDP: "sector issues". Direct involvement in the Dairy Value Chain Agenda has been very limited. There is need to rectify this and seek a more balanced approach in 2016.

The table on the next page presents an overview of Dutch companies and organisations that have been involved or were facilitated by KMDP (and PUM) to start or enhance activities in the Kenyan dairy sector. This table is also included in the Status Report: International Linkages.

Table - Companies/organisations of the (Dutch) private sector active in Kenyan dairy industry initiated and/or facilitated by SNV/KMDP and PUM

Company / Organisation	Business activity	Product delivery in KMDP and linkages	Contact details	Active in KMDP since
NABC Den Haag	Dutch business development in Africa (trade missions)	Dutch Dairy Development Platform Linkages: various stakeholders Kenyan dairy industry	Prinses Margrietplantsoen 37 (WTC) 2595 AM Den Haag Tel +254 703043618 www.nabc.nl	2013
Uniform-Agri B.V. - Assen	Management software and program.	Piloting herd manage-ment software. Linkage: Victor Koech, Eldoret (dealership Kenya)	Oostersingel 23 - 9401 IZ T +31(0) 592394959 www.uniform-agri.com ellen@uniform-agri.com	2015
Vetvice BV Bergharen	Training and consultancy	Cow barn design (Modular Cow House for MSFs and SHs) Linkage: Fieten (K) Ltd and Perfometer	Hoekgraaf 17a - 6617 AX www.cowsignals.com info@cowsignals.com	2014
Roodbont B.V. Zutphen	Agricultural publisher	Cow Signal advanced edition and CS basic edition for East-Africa. Linkage: Olive Publishers, Perfometer	P.O. Box 4103 7200 BC Zutphen +31(0) 575545688 www.roodbont.nl info@roodbont.nl	2015
CowSignals Bergharen	Training Company	Training sessions for trainers / consultants Linkage: Perfometer	Hoekgraaf 17a 6617 AX Bergharen www.cowsignals.com info@cowsignals.com	2014
The Friesian/ Bles Dairy Leeuwarden	Dairy Development Company/ Breeding/export of young stock	Senior dairy advisor in KMDP. Executing SMR Linkage: Perfometer, Eldosirikwa, EDFA	Van Swietenstraat 2 8911 AL Leeuwarden +31(0) 582167266 www.thefriesian.nl info@thefriesian.nl	2014 2015
De Haan Agricultural Contracting Giekerk	Agricultural Contractor	Feasibility study commercial fodder production	Canterlandseweg 48 9061 CD Giekerk T: +31(0) 582561493 info@dehaanloonbedrijf.nl	2014
Johan Fieten Architect Nairobi, Kenya	Architect and certified cow barn designer	Cow barn design Linkages: Vetvice BV	Mbagathi Ridge Karen PO Box 823 – 00502 Nairobi +254716346728 www.fieten.co.ke	2015
Eric de Jongh Eldoret, Kenya	Agricultural contractor/ Commercial fodder producer	Import used machinery, Grass/maize silage trade and contracting services Linkages: EDFA, Eldoret and Dutch suppliers of farm machinery	Evert van den Ham Oosterheemplein 265 2721 NC Zoetermeer T: +31 621 588 544 PO Box 8162, 30100 Eldoret	
Nundoroto Farm Company Ltd Eldoret, Kenya	Agricultural Contractor	Land preparation and maize and grass silaging Linkage: EDFA, Eldoret Eldosirkwa, Eldoret	ds. E. van den Ham Oosterheemplein 265 2721 NC Zoetermeer +31621588544 ds@vandenham.mobi	2015
Royal Friesland Campina Amersfoort	Dairy processor	Market orientation for dairy processor Linkages: various stakeholders Kenyan dairy industry	Stationsplein 4 3818 LE Amersfoort www.frieslandcampina.com	2014
Firma Dekker Ommen	Breeder and export of young stock	Export of young stock Linkage: Hamish Grant Gogar Farms Ltd Rongai, Nakuru, Kenya Tel: + 254722327718 +254720441819	Het Laar 2 7730 AE Ommen +31 529 469 390	2014

CRV-Breeding Arnhem	Cattle breeding and farm data	Semen, embryo's Management guides Linkage : Eldoret Dairy Farmers Association Eldoret, Kenya nkositany@gmail.com Tel: +254722519042	Wassenaarweg 20 6843 NW Arnhem www.crv4all.nl +31(0) 880024440	2014
DTC - Dairy Training Centre Oenkerk	Training for dairy farming and milk processing	E - learning platform and training program for dairy farmers and consultants Linkage: EGU, DTI	Sanjesreed 4 9062 EK Oenkerk www.dairytrainingcentre.com +31(0) 880206420 info@dairytrainingcentre.com	2014
QPoint Naaldwijk	Consultancy and training in food chains	Training of Trainer Program NABC/RVO Linkage: EDFA, PDTCs	Zuidweg 38 2671 MN Naaldwijk +31 174 282888 www.q-point-bv.nl	
DLF BV Kapelle/ Barenbrug B.V. Nijmegen	Plant breeding and grass seed company	Grass and maize variety's for Kenya Linkage: not achieved	**DLF-Trifolium** - Dijkwelsestraat 70 4421 AJ KAPELLE www.dlf.com Barenbrug BV P.O. Box 1338 6501 BH Nijmegen www.barenbrug.nl	2014
Delta Instruments BV Drachten	Advanced lab equipment for the analysis of milk	Partner in QBPS project. Linkage: Amiken Ltd, Nairobi (dealer EA) and Happy Cow	Kelvinlaan 3 9207 JB Drachten +31(0) 512582222 www.deltainstruments.com	2014
Van de Heuvel Dairy and Food Equipment Molenaarsgraaf	Dairy and Food Equipment	Supply of dairy equipment Linkages: various milk processors in Kenya	Graafdijk Oost 23 2973 XB Molenaarsgraaf +31 184 641 266 www.heuvelzuivelmachines.nl	
Paul Mueller Assen	Stainless steel tanks	Supply of dairy equipment (tanks) Linkages: various dairy processors, supplier of chilling tanks	Balkendwarsweg 3 9405 PT Assen +31 592 361 600 http://nl.paulmueller.com	
SoilCares Wageningen	Soil and feed analysis	Mobile lab for soil and feed analysis Linkages: 18 dairy societies in Kenya	Binnenhaven 5 6709 PD Wageningen www.soilcaresresearch.com info@soilcaresresearch.com	2014
PUM Senior Dutch Experts Den Haag	Expert volunteers sharing knowledge and expertise	3 dairy experts, 2 dairy training tours to Netherlands and documentation of the project.	Bezuidenhoutseweg 12 2594 AV Den Haag +31(0)703490555 www.pum.nl info@pum.nl	2013
Hogeschool VHL CAH Vilentum HAS Den Bosch	Universities for Applied Sciences.	Interns for: Business planning for agricultural contracting Record keeping Farm analysis Farm management Linkage: Perfometer, Eldosirikwa, EDFA	Van Hall Larenstein P.O. Box 1528 8901 BV Leeuwarden www.vhluniversity.com CAH Vilentum De Drieslag 4 8251 JZ Dronten www.cahvilentum.eu HAS University P.O. Box 90108 5200 MA 's Hertogenbosch www.hashogeschool.eu	2015 2014 2015

Chapter 12. PUM / Netherlands Senior Experts Program

The MoU between SNV Kenya/KMDP and PUM (December 2013) and subsequent missions of PUM experts (see table below), were crucial in shaping KMDP's MSF/CFP Agenda. As a result, many of the activities and products referred to above – including the posting of the dairy expert from The Friesian in Eldoret and the engagement of Dutch students on internship projects have been triggered, and/or were enabled, by PUM. In addition PUM played an important role in linking-up KMDP and its clients with the Dutch private sector. Both directly through the existing networks of PUM-experts in the Netherlands. But also indirectly as the knowledge transfer and training by PUM-experts has raised awareness of MSFs to a critical level, where Kenyan farmers/investors see the value of purchasing and paying on commercial terms for machineries, technology and management advise by Dutch input and service providers.
It is safe to conclude that PUM not only contributes to the operationalization of the MSF/CFP agenda through on-site technical advice and training in Kenya. It also has been instrumental in shaping the strategic direction of this Agenda and the B2B agenda.

Table - PUM Missions SNV-KMDP (2013 – 2015)

Mission Activity	Time of mission	PUM expert	Working region / target group
1. Inception mission	01/09–15/09 - 2013	Johan Koeslag	N-Rift, Eastern / Central.
2. Joined scanning mission	24/11–11/12 - 2013	Frans Ettema & Jaap de Vrij	N-Rift, Central / Eastern
3. TFM	13/01–31/01 - 2014	Halbe Klijnstra	EDFA. N-Rift
4. CFP	02/03–22/03 - 2104	Jaap de Vrij	EDFA and CFP's in N-Rift, Central / Eastern
5. TFM	17/05–04/06 - 2014	Halbe Klijnstra	EDFA. N-Rift
6. TFM	30/06–11/07 - 2014	Frans Ettema	MSF Forum, Central / Eastern
7. CFP	21/07–09/08 - 2014	Jaap de Vrij	EDFA, N-Rift and CFP's, Central and Eastern
1 st Business link / training mission in The Netherlands	19/08–30/08 - 2014	-David Maina (Perfometer). -Stanley Koech (Eldosirkwa)	Dutch EDF farmers, veterinarians, service providers and training centres.
8. Training TFM	03/09–22/09 - 2014	Frans Ettema	MFF, groups Eastern / Central
9. CFP	12/10–26/10 - 2014	Jaap de Vrij	CFP's in Central / EDFA.
10. TFM	25/10–16/11 - 2014	Halbe Klijnstra	EDFA, N-Rift
11. Training TFM	25/01–08/02 - 2015	Frans Ettema	MFF groups, Central / Eastern
2nd Business link / training mission in The Netherlands.	12/04-19/04 - 2015	- Kenneth Mutoro (Perfometer) - Solomon Misoi (Eldosirikwa)	Soil preparation, Contracting business, Seed company, Soil laboratory.
12. CFP	08/03–15/03 - 2015	Jaap de Vrij	EDFA and CFP's
13. TFM	12/04–26/04 - 2015	Halbe Klijnstra	EDFA, N-Rift
14.	03/05-17/05 - 2015	Jaap de Vrij	Fodder production. N-Rift
15. Training TFM	07/06–21/06 - 2015	Frans Ettema	MFF groups, Central / Eastern
16. TFM	26/08–13/09 - 2015	Halbe Klijnstra	EDFA, N-Rift
17. CFP	19/07-05/08 - 2015	Jaap de Vrij	Fodder production, N-Rift
18. Documentation status report	13/09–29/09 - 2015	Frans Ettema	Central, Eastern and N-Rift
19. CFP	28/10-15/11 - 2015	Jaap de Vrij	Fodder production, N-Rift and Central.
20. TFM	01/11–15/11 - 2015	Halbe Klijnstra	EDFA
21. TFM	06/12–20/12 - 2015	Frans Ettema	MSF Forum, Central and Eastern

12.1 Delivery Mechanism

The collaboration between SNV-KMDP and PUM started in 2013 with an inception mission and a quick scan of KMDP and the emerging MSF/CFP Agenda. These first two missions, the first one by the PUM sector coordinator (Johan Koeslag) and the second mission by two experts (Frans Ettema and Jaap de Vrij), concentrated mainly on field visits to observe and understand the tasks ahead and the bottlenecks and the opportunities and needs of the sector.

The outcome of the scanning mission revealed that a single focus on fodder – which was appropriate for the commercial fodder producers - would not meet the demands of the MSFs who were also part of the clientele to be supported under this PUM/SNV MoU.

This also came out very clearly in North Rift where the Eldoret Dairy Farmers Association, supported by SNV through Eldosirikwa Consultants, requested for a dedicated PUM representative (Halbe Klijnstra) under the SNV/PUM MoU for Total Farm Management.

From the scanning mission onwards, it was no longer necessary to have joint missions. The Total Dairy Management Unit of Perfometer would host Frans Ettema, the Fodder Agronomy Unit of Perfometer would host Jaap de Vrij, and the Total Dairy Management Unit of Eldosirikwa would host Halbe Klijnstra.

As for fodder production and preservation, adaptation to new practices and technologies especially in land preparation, fertilization and timing of harvesting and preservation techniques, is clearly bearing fruits, after less than 2 years of engagement of PUM experts. The clients response it very positive. However, because of amongst others the inconsistencies with rainfall, the right application of machinery during land preparation and fodder harvesting, but also the need for a change of mind set with the farmers, this is still a learning area. It will be necessary for the PUM experts to carry on with this work for 2016.

Both the work with EDFA and the MSF Forum have just taken off, but the initial results and uptake are very encouraging. The demand for the PUM services - skills and knowledge transfer - is very high. Hence it is important that PUM missions for TFM will continue in 2016, to support the momentum that has been gained in 2014 and 2015. This MSF segment of farmers is Kenya's future generation dairy farmers, and its importance has been acknowledged by KMDP by deploying Mr. Wytze Heida as a member of the KMDP Team from 1st September 2014 onwards. Wytze Heida will continue to give support and focus to the PUM missions in 2016, with a deliberate joint-effort to scale up and embed the PUM services in the local dairy support structures (i.e. Perfometer, Eldosirikwa, EDFA, MFFs, SPEN, Nundoroto, PDTCs and other delivery mechanisms).

PUM/KMDP interventions will remain to be focused on transforming the dairy sector in Kenya through two major avenues. Commercial Fodder Production (CFP) and Total Farm Management (TFM). CFP promotes viability in dairy by contributing high volumes and higher nutrition fodder in the market for dairy enterprises. It is suggested that in 2016 less focus will be however on hay producers as suggested in Chapter 10, but more on producers of higher quality fodders. In addition under this avenue, support will also go the emerging agricultural contractors (advice on

land preparation, seeding, fertilization, harvesting and preservation). TFM on the other hand, boosts optimization and efficiency in the production systems.
The model of the two avenues coupled with building the capacity of the local actors through the local missions and outgoing training missions, is expected to help accelerate the transformation of the dairy landscape in Kenya.

The delivery model of these interventions will continue to be by linking the PUM experts to the two local dairy consultancy Eldosirikwa Consultants and Perfometer Agribusiness Solutions, who on their part work with Medium Scale Farmers Forums – MFF (which includes EDFA) and Commercial Fodder Producer Forums (CFPF). Besides, PUM experts also give advice to individual farms and use host farms for demos and training, and to emerging agricultural contractors.

12.2 Linkages with the Dutch Private Sector

One other important dimension of PUM support and partnership is in creating linkages with the Dutch private sector. Kenya has a vibrant dairy sector and it will continue to demand for knowledge, skills, products and technologies to enhance quality and competitiveness. As this happens, companies in the Netherlands will increasingly be interested in business opportunities offered by the Kenyan dairy sector. Entry of international players will boost dairy service infrastructure and delivery in Kenya, and allows for sharing of international best practices. Some of these companies include SoilCares, DSM, Delta Instruments, DLF Trifolium, De-Haan Agri-cultural Contracting, Barenbrug Seed Company, The Friesian, Vetvice/Cow Signals, Roodbont Publishers BV, DTC/PTC+, The Friesian Consultancy, CRV, Uniform Agri, Mueller Tanks, Van Den Heuvel Dairy Equipment and Dutch investors in milk processing and trading (e.g. Royal Friesland Campina). The PUM experts have in many ways been instrumental to connect SNV/KMDP and its clients in the Kenya dairy sector to the above referenced players.

12.3 Local Capacity Building

The cooperation between SNV and PUM assures that a large number of farmer-entrepreneurs can be reached and that knowledge transfer is therefore efficient. SNV works with farmer groups, associations or platforms and organises these farmers in study groups or around host farms for training. SNV also addresses – or helps these platforms to address - policy issues around matters like importation of heifers, new seed varieties and so on. In addition SNV works through Local Capacity Builders or Dairy Consultants (Perfometer and Eldosirikwa) who in the process benefit from the presence and activities of the PUM and SNV experts to build capacity in their own firms. They have received a big push in 2014-15 through incoming and an outgoing mission and are well on their way to become professional dairy consultants in their own right. The cooperation between SNV and PUM thus assures that technical messages are embedded in local structures and delivery mechanisms (i.e. EDFA, MFF, Eldosirikwa, Perfometer, and SPEN).

12.4 PUM Interventions for 2016

For 2016 there will be more focus on management coaching by Halbe Klijnstra and Frans Ettema regarding TFM at individual farm level on MSF host farms including EDFA. There will be intensive collaboration with Perfometer/MFF (Frans Ettema) and Eldosirikwa/EDFA (Halbe Klijnstra), as regards to the use of tools provided for the training and coaching on farm level (for example the Dairy Farm Benchmark (DFB) tool).

For crop management support by Jaap de Vrij, there will be a change of focus from commercial hay producers to fodder producers/marketers engaged in more innovative high value fodder crops (e.g. lucern or TMR) and emerging agricultural contractors. In addition Jaap de Vrij will also shift to advisory services for crop production at individual farm level being an important part of Total Farm Management. For 2016 tentatively 9-10 PUM missions are planned, with 1 mission out of these 10 for the preparation and execution of a PUM/SNV Seminar on lessons learned for a wider audience with a variety of sector stakeholders.

Chapter 13. Recommendations for KMDP 2016 and Beyond

Based on the PUM experience so far in the KMDP project, and the discussions and interviews with KMDP staff, Local Capacity Builders, KMDP clients, and the private sector, it is recommended for 2016 and beyond to have more focus on topics that are really adding value to the dairy business chain. Up till now it seems KMDP is working on a wide range of activities and projects, sometimes driven by ad hoc ideas and market-driven initiatives. This is partly the result of the choice made by SNV and the Embassy of the Kingdom of The Netherlands (the donor) at the start of the project, to work on two strategic intervention levels:

- *Dairy value Chain: Increase efficiency, effectiveness & inclusiveness of the dairy value chain*
- *Sector issues: Promote/support interventions and innovations that address systematic issues.*

This Status Report has documented the results and progress of KMDP in the MSF and CFP Agenda, which are domiciled by the project under "Sector Issues". Whether this segmentation in two vertical pillars is effective in assessing and tapping into the potential and the needs of the sector, is something for a more comprehensive evaluation or strategic review to look into. Looking at the more technical issues that are important to support sector growth and competitiveness, this report makes the following recommendations to set the focus for 2016 and beyond.

Feed & Fodder

The impact of improved feed for all dairy cattle as regards to milk production, animal health and reproduction, justifies continued support. All aspects in the chain of fodder production (i.e. access to certified seeds, soil analysis and fertilization advise, soil preparation, crop management, harvesting, silage making, storage, mechanization and contracting, and feed analysis) need to have focus for 2016 and KMDP Phase 2 if approved. It is to be expected that availability of appropriate farm machinery and contracting services as central topics in the feed & fodder agenda, will accelerate the year round availability of quality feeds to boost milk production, animal health and reproduction.

Service Provision

Among other issues, the robustness of the dairy service infrastructure was the main eye opener during the study tours 2013, 2014 and 2015 to The Netherlands. Looking at dairy farming in the NW - Europe, it is obvious that the network of service providers around the dairy farm is vital for strategic and operational management. In the Consultant's opinion a strong focus on capacity building for local service providers is crucial for the Kenyan dairy sector. Depending on farm size (acres of land and/or number of animals) service provision can be at individual farm level or at group level. The most relevant areas for service provision in the current setting of the Kenyan dairy industry are:

- ✓ Machinery contracting services for fodder production/preservation
- ✓ Animal nutrition (data analysis, ration calculation and feed planning)
- ✓ Animal health and reproduction (AI, veterinary service and vaccination)
- ✓ Farm economics (cost of production, calculation of losses and benchmarking)
- ✓ Management (strategic and operational)

Farmers Forums and Study Groups

The effectiveness of service provision depends strongly on how it is delivered and by what means. Farmer groups (study groups) like MFFs can play an important role in selection and acceptance of service products, as well as being a service provider themselves. Study groups of farmers should not have too many members to be effective in creating a platform of trust and openness.

EDFA

The Eldoret Dairy farmers Association (EDFA), a grouping of medium and large-scale dairy farmers in North Rift, has the potential to play a vital role for its members in creating a robust dairy service infrastructure, in tandem with reliable input suppliers and service providers. Sofar it has however not succeeded in playing that role as hoped and expected. If EDFA wishes to play that role more vigorously, it needs to develop and adopt a clearer set of objectives and strategy to reach there. The current 3-year strategic plan 2015–2018 does not provide this direction. If EDFA wants to increase its relevance as a membership organisation, it needs professional management and a clear action plan or programme as regards to dairy development. It could also seek collaboration with other farmer organisations such as the Kenya Dairy Farmers Federation. It is recommended that EDFA:

- ✓ Adopts a clear internal structure and proceedings for the election and mandate of the Board and appointed committees.
- ✓ Makes a clear membership profile.
- ✓ Stops membership of non-active members.
- ✓ Attracts new (associate) members from amongst input suppliers and service providers
- ✓ Agrees on being either a lobby organization **or** a service providing organization.
- ✓ Agrees on a robust membership fee for credible resource mobilisation.
- ✓ Appoints a qualified and experienced manager for the Secretariat.
- ✓ Applies for a (PUM) expert on capacity building of farmers associations

Annex 1. Consultant's Terms of Reference

1. PREAMBLE

SNV Netherlands Development Organisation (SNV) is an international not-for-profit development organisation that provides capacity development services to nearly 2,500 organisations in 36 countries worldwide. SNV engages with stakeholders at different levels in local economies and agricultural value chains, with the objective to help enhance competitiveness, incomes and employment by inclusion of small and medium sized farmers and SMEs. In the East & Southern African region, SNV has offices and programs in Ethiopia, Kenya, South Sudan, Uganda, Tanzania, Rwanda, Zambia, Zimbabwe and Mozambique. In Kenya, SNV focuses on horticulture, dairy and extensive livestock, water and sanitation and renewable energy (biogas). In the dairy sector SNV Kenya is implementing the Kenya Market-led Dairy Programme (KMDP).

2. KENYA MARKET-LED DAIRY PROGRAMME (KMDP)

The Kenya Market-led Dairy Programme (KMDP) is a 4.5 year programme funded by the Embassy of the Kingdom of the Netherlands. The programme started 1st July 2012 and is implemented by SNV Netherlands Development Organisation in collaboration with stakeholders in the dairy industry. The overall goal of KMDP is to contribute to the development of a vibrant and competitive dairy sector with beneficiaries across the value chain. KMDP acknowledges and appreciates that the dairy industry in Kenya is private sector driven. KMDP has two pillars or strategic levels of intervention:

I. Dairy Value Chain: Increase efficiency, effectiveness & inclusiveness of the dairy value chain.
In the smallholder dominated dairy value chain, KMDP works in a number of milk sheds with processors and dairy societies (also referred to as milk Collection and Bulking Enterprises or CBEs). Currently SNV/KMDP collaborates with two processors and eighteen dairy societies in Meru/Eastern, Central/Kinangop and North Rift and facilitates design and implementation of more inclusive business models, with an emphasis on embedded Training & Extension and input supply services for CBE members/farmers. In addition to that SNV/KMDP provides BDS services to enhance management capacity and governance of CBEs at their level.

II. Sector issues: Promote/support interventions and innovations that address systemic issues.
Under this pillar KMDP facilitates innovations and supports interventions which address systemic issues related to e.g. dairy sector policies, feed & fodder, milk quality (e.g. piloting Quality Based Milk Payment systems), access to finance, and practical dairy skills development/training. This also involves supporting the transitioning of the sector from smallholder subsistence farming and dairy production, to commercial dairy entrepreneurship and dairy as core business. In doing so KMDP is engaged in a project with medium (and large scale) dairy farmers (MFSs) and commercial fodder producers (CFPs). The objective of this intervention is to fast-track innovations and adoption of best practices in total farm manage-

ment, which is expected to also have spin off to smallholder farmers and CBEs through promotion of business linkages, field days, demos and training.

3. MEDIUM SCALE FARMERS AND COMMERCIAL FODDER PRODUCERS

SNV/KMDP supports the transitioning of the dairy sector towards professionalization and commercialization of dairy farming as core business. The dairy sector is the largest agricultural subsector and its share in GDP is approximately 4%. Milk consumption per head of population is one of the highest in Sub Sahara Africa and stands at 115 liters per person. An estimated 80% of total production (estimated at 5 billion liters in 2012) comes from smallholder farmers of which about 50% is marketed. Out of this, 25% enters the market as processed milk and value added milk products.

The sector is in a transition phase from smallholder subsistence farming with on average 3-4 crossbreed cows selling excess milk, to dairy entrepreneurs with dairy as core business investing in amongst others exotic breeds, dairy barns and fodder production and preservation. This segment of dairy farms/farmers is of a varied composition in terms of farming systems (zero grazing and semi-zero grazing with pastures) and ownership/management. As for the latter it consists of:

- Smallholders who invest in dairy as (ore) business and have been able to grow their dairy business to "the next level". These farmers are fully commercial however limited in their growth by lack of capital and land and – therefore – also inability to grow and preserve own fodder in sufficient quantities. Often the household has various sources of income from on-farm and off-farm activities/employment, and that part of that is invested in the dairy enterprise.
- Medium and large scale farmers who have "(re-) discovered" dairy farming as a profitable business undertaking. Some are farm owner-manager but many of these are well-off Kenyans with ample land and resources and a passion for farming, but usually in formal employment or on retirement. This segment of land or farm owners invest in dairy farming and employ farm managers.
- Corporate business and investors who see dairy as an attractive business opportunity and Training Centers and Universities who set up training farms

Amongst all three groups, knowledge and skills level is limited and there is a great demand for training and other ways of knowledge transfer. SNV/KMDP tries to address this through various interventions and partnerships with knowledge providers. PUM is prominent amongst these for the group of Medium Scale and Large Scale Dairy Farmers (PUM/Dutch Senior Expert Programme https://www.pum.nl/

Another sign of a dairy sector in transition is the emergence of specialized service providers and input suppliers. Notably is the development and growth of commercial fodder supply chains where farmers/investors specialize in (mostly) hay and lucern production/sales as core

business. These CFPs (Commercial Fodder Suppliers) supply both smallholders and MSFs. Some are also MSFs but many are in this trade as core business.
In addition to that professional agricultural contractors are emerging to support both MSFs and CFPs in land preparation, harvesting, ensiling and baling.
And equally important to mention is the emergence of local Dairy Consultants or Consultancy firms, which is fast-tracked by KMDP through hiring of LCBs and giving opportunity for on-the-job training and coaching by KMDP Senior Advisors and international experts contracted by KMDP, such as the experts made available by PUM.

4. KMDP's INTERVENTIONS WITH MSFs AND CFPs

Under the second strategic intervention level (Sector Issues: see above) KMDP has identified "dairy sector transitioning and innovation" as an important area for support. It has singled out MSFs and CFPs as change agents for sector development and innovation (for more detailed explanation on KMDP's justification to work with these actors reference is made the KMDP's ToC Paper, revised version May 2015). As a result KMDP has allocated a substantial part of its funding to support these actors and has engaged a team of local and international experts to operationalize and implement this part of the programme.

- KMDP Team: parttime KMDP Program Coordinator and Senior VOSD Advisor.
- Perfometer and Eldosirikwa Dairy Consultants for North Rift and Central/Eastern.
- 3 experts from PUM (each 3 x 2-3 weeks/year for the period 2014-2016; MoU SNV/PUM).
- International dairy advisor (hired from The Friesian Agro Consulting) as part of the KMDP Team (based in Eldoret since September 2014).
- 2 Dutch interns (CAH Dronten) in 2013/14/15 and 3 more in 2015 (Van Hall/Den Bosch) for 3-4 months periods each.
- An international junior expert and 2 local junior consultants for a farm recording project with UA software (parttime August 2014-August 2015).
- Vetvice/Cow Signals, QPoint, v.d. Bent, NABC (NMTP) for farm managers training.

In addition to that KMDP also uses its Innovation Fund for co-financing study tours, feasibility studies, demos, pilots and business proposals that target this segment of farmers/ entrepreneurs. Mention can be made for example of:

- Study tours or exposure visits to the Netherlands (in 2013, 2014 and 2015).
- The Friesian feasibility studies (i.e. farm businessplans, fodder production center).
- Vetvice/The Friesian: Handbook modular cow house design.
- KMDP/Fieten: MSF Cow House Pilot Project

The MoU between SNV/KMDP and PUM (December 2013) and subsequent missions of PUM experts, has/have been crucial in shaping this MSF/CFP Agenda. As a result many of the activities and products referred to above – including the posting of the dairy expert from The

Friesian in Eldoret and the engagement of Dutch students on internship projects - have been triggered -and were enabled by PUM support and advisory services. In addition PUM played an important role in linking-up KMDP and its clients with the Dutch private sector. Both directly through the existing networks of PUM-experts in the Netherlands, but also indirectly as the knowledge transfer and training by PUM-experts has raised awareness of MSFs to a critical level where Kenyan farmers/investors see the value of purchasing and paying on commercial terms for machineries, technology and management advise by Dutch input and service providers.
It is safe to conclude that PUM not only contributes to the operationalization of the MSF/CFP Agenda through on-site technical advice and training in Kenya, it also has been instrumental in shaping the strategic direction of this Agenda and the B2B agenda.

5. OBJECTIVES AND SCOPE OF THE ASSIGNMENT

5.1 General

KMDP is now in its third year of implementation and will end 31st of December 2016. KMDP and the donor (EKN) wish to enhance the documentation of the various interventions under the program, by preparing a status report on each of them. The status reports shall give a factual description of KMDP's activities and approach for the main intervention areas or Agendas for the period 2013-2015 (i.e. Smallholder DVC, MSF, CFP, VOSD, International linkages). The status reports shall give testimony of "successes and failures", client satisfaction, visible and potential impact and relevance for both the clients and the sector.
Finally case studies may be drawn from the status report(s) for learning and sharing.
The status reports will inform SNV/KMDP's Management on progress made so far in the subsequent intervention areas, and they shall also serve as an input for future evaluation of KMDP. In this respect they are also an important input for a Strategic Review Mission (SRM) that is planned for the end of October 2015. This SRM is – amongst others - to advise KMDP and the donor on focus areas for a (possible) KMDP Phase 2.
KMDP's "documentation agenda" is implemented in partnership with Wageningen University and Research, Center for Development Innovation (WUR CDI). This assignment therefore shall contribute to this agenda and the Documentation Plan that has been agreed between WUR CDI and SNV. The ToR has been validated by WUR CDI and the Consultant's workplan and draft report will be shared with WUR CDI for input and feedback.
As for the status report referred to in this assignment – i.e. documenting the work of SNV KMDP with MSFs and CFPs – the report will also serve as an "end-of-year" progress report for PUM and the main input for the preparation of the KMDP/PUM workplan for 2016.

5.2 Deliverables of the Assignment

This assignment will result in a status report that covers the following information:

a. Introduction of SNV Netherlands Development Organisation, SNV Kenya, KMDP.
b. Description of KMDP's two Strategic Intervention Levels.
c. KMDP's considerations and justification to work with MSFs/CFPs.

d. Description of local and international expertise engaged in KMDP's MSF/CFP agenda and for which activities.
e. Description of MSF/CFP related activities in N-Rift, Central/Eastern (2013-15).
f. Delivery mechanisms/structures used for knowledge/skills transfer (e.g. study groups, host training farms, demo farms, field days, and exposure visits/study tours).
g. Full list of clients/farms advised and supported under the KMDP MSF/CFP intervention and focus areas.
h. Typology of MSF and CFP clients: e.g. size of operations (cows/land), telephone farmer or farmer-owner, ability/willingness to invest, type of support requested (TA or finance).
i. Assessment/description of behavioral change in farm management practices, including summary of cash investments made by the farmer (2013-15).
j. Examples of measurable impact short and medium term (farm level).
k. Initiatives and results of MSF organisation building (EDFA, MFF Chapters).
l. PUM's role as "wegbereider" for the Dutch private sector and B2B linkages.
m. Capacity development of KMDP Dairy Consultants (Perfometer and Eldosirikwa)
n. Recommendations for case studies.
o. Informed expert opinion on the relevance of MSFs/CFPs for the sector.
p. Informed expert opinion on the relevance of KMDP's support to MSFs/CFPs.
q. Recommendations for enhancing this support & creating sustainable delivery mechanisms in 2016 and beyond (Phase 2).

NB: where relevant and possible a separate note shall be added on the role of PUM in each of the above reporting areas.

6. TIMELINES

The starting date of this assignment should not be later than 15th of September 2015 and the deadline for the draft report is 1st of November 2015. A final report is expected before 1st of December 2015.

Annex 2. Photo Impression: Pictures Speak