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PROJECT (K-SALES)**

BASELINE SURVEY REPORT



SUBMITTED

BY

DEVINSIGHT CONSULTANTS

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FY13 FOOD FOR PROGRESS KENYA SEMI-ARID LIVESTOCK ENHANCEMENT SUPPORT PROJECT (K-SALES) BASELINE SURVEY REPORT

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LIST OF ACRONYMS AND ABBREVIATIONS

AFC	Agricultural Finance Cooperation
APDT	Annual Performance Data Table
ASAL	Arid and Semi-Arid Lands
BDS	Business Development Services
CIDP	County Integrated Development Plans
DID	Difference in Difference
FFS	Farmer Field School
FGD	Focus Group Discussions
FRAs	Field Research Assistants
GIS	Geographical Information Systems
HHHead	Household Head
KARI	Kenya Agricultural Research Institute
KIIS	Key Informant Interviews
K-SALES Project	Kenya Semi-Arid Livestock Enterprise Enhancement Support Project
PMP	Performance Management Plans
SACCOs	Savings and Credit Cooperatives
SHOATS	Sheep and goats
SPSS	Statistical Package for Social Scientists
TLUs	Tropical Livestock Units
ToRs	Terms of Reference
WARMA	Water Resource Management Authority
WRUA	Water Resource User Association

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EXECUTIVE SUMMARY

The livestock sub-sector is vital to the Kenya's economy. The sector employs close to 50 percent of Kenya's agricultural labour force and is a primary source of livelihoods for the 6 million pastoralists and agro-pastoralists that live in the country's vast arid and semi-arid lands (ASALs). However, the sub-sector's potential for poverty-reducing opportunities has largely been untapped, due to unfavorable government policies that have concentrated productive resources in the high potential areas. In the ASALs (which constitute more than 80% of Kenya's landmass) lies an immense base of natural resources endowment for the development of the meat, and associated by products such as hides and skins.

Generally, the livestock sub sector has been faced with many challenges and constraints that have impacted negatively on its growth rate. These include weak policy and legal frameworks, low livestock productivity, erratic and unpredictable weather conditions, inadequate market and marketing infrastructure and shortage of water, which have affect the livestock offtake and quality and quantity of meat supply to meet local and export markets. This has been the situation in Meru, Tharaka-Nithi, Kitui, Makueni, Taita Taveta, and Machakos meat sub-sectors that are targeted by the Kenya Semi-Arid Livestock Enhancement Support (K-SALES) Project funded by USDA and implemented by Land O'Lakes. The overall objective of the K-SALES Project is to improve the productivity and competitiveness of the livestock value chains by addressing the demand and supply side constraints in these counties. Its specific objectives are to increase productivity of live animals and meat (cattle and shoat), hides and skins value chains; and expand trade of agricultural products (Domestic, Regional, and International).

To understand the current status of meat value chain and to ensure participation of key stakeholders in the development of sustainable initiatives, Land O'Lakes commissioned a baseline study in March 2014. This study was undertaken by DevInsight Consultants. The main objective of the baseline study was to benchmark the program's performance indicators and obtain more information on the qualitative measures and weak links in the meat value chain to guide program design. The baseline survey covered the various players in the meat value chain in the targeted counties. It employed a combination of household surveys, focused group discussions, key informants interviews, and business service providers and processors interview to achieve its objectives. This was undertaken within the quasi-experimental design of the project's evaluation involving treatment and control sites in each county.

This report details the findings of the baseline survey regarding the status of livestock production, input service provision, marketing and processing and culminates by giving recommendations for the project. It also presents the baseline values of the key program indicators upon which progress will be measured and provides further suggestions on the future monitoring of the progress and impact of the program. This is presented in the updated Annual Performance Data Table in Annex 9 of this report. Key findings of the status and entry points for project are presented below.

Livestock Production: The survey reveals growing preference of goats due to first maturity, high fecundity, resilience to drought and ease of marketing although the communities still place high value on cattle. There is low to moderate adoption of improved livestock husbandry and farm management practices with disease control measures such as de-worming, vaccinations and hand spraying being widely practiced across the six counties except for Taita Taveta. Use of breeding improvement services such as bull schemes and artificial insemination is not widely practiced yet these are critical for production of higher value breeds that would fetch better markets and higher economic returns for the farmers. With regard to farm management practice, record keeping is least practiced across all the sites. Livestock production is still largely taken as a way of life and there is need for extensive farmer education for commercial orientation.

Water for livestock production is a challenge in most of the program sites especially during the dry seasons. The current practice is to move with the livestock in search of water. Distances travelled to water points increases significantly during dry seasons with water shortage placing a heavier burden on women as they are also responsible for meeting other household water needs and chores. There is also need to promote water use and conservation efforts by strengthening water resource user associations for effective management of the scarce resource. Further support from the county governments and other development partners is also needed in developing appropriate community water supply systems for livestock and domestic use.

This calls for integrated and comprehensive programs to enhance access to productivity-enhancing affordable farm inputs, water for livestock use, disease control, credit, extension services and measures to manage other factors such as human wildlife conflict and insecurity due to cattle rustling that continue to impact negatively on the productivity of the sector. From the study, it appears the current extension system and technology and support is strong on providing veterinary care service but weaker on building other skills such as breeding, value addition, farm management and nutrition.

Business Service Providers: With regards to service providers, agrovets are the most common livestock input service providers providing a range of services from animal health services and are also stockiest of farm inputs. Adoption of farm management practices such as record keeping is low and at its basic level. Lack of credit is also cited as a key constraint in acquiring stock. Other challenges facing service providers in the livestock meat value chain were lack of appreciation of the services by livestock producers, implying need for demand-side pull factors such as general farmer education to enhance demand for the various livestock production services offered. High cost of animal health service delivery is also a major hindrance with farmers responding by carrying out diagnosis by themselves, buying antibiotics over the counter and administering treatment to their animals. Other challenges cited were competition from what was described as uncertified practitioners and presence of counterfeit drugs in the market is also a key concern for the service providers as this also contribute to the distrust among livestock producers.

Livestock Processors: From the study, use of modern and specialized facilities such as cold storage, digital weighing machines and specialised knives for flaying is lacking. Proper cold chain management was lacking yet it is essential for preservation of meat quality to fetch premium prices in the market. Similarly, lack of awareness of the quality standard certifications such as HACCAP and observation of recommended hygiene standards are major concerns. Most of the processing facilities require upgrading and renovation and most operate under-capacity as they serve the local market and are only active on market days, which is usually once a week. Good management practices such as record keeping is at basic levels.

Tanneries for effective value-addition and processing of hides and skin are lacking in all the study sites with wet salting being used as the main method of preservation. Erratic water and power supply, lack of access to credit were some of the other challenges facing livestock processors in the study sites.

Marketing of Livestock and Livestock By-Products: Results of this study indicate limited value addition at farm level. There are few marketing associations with marketing being dominated by middlemen. Selling of livestock is based on negotiated prices depending on observable characteristics of the animal such as body condition and age. Most of the study sites have designated places and days for selling livestock except for Taita Taveta and Tigania East in Meru. Most of the livestock market places lack basic infrastructure such as watering troughs. At the processors level, the potential for value addition to bones, horns and hooves is largely unexploited.

In this regard, developing reliable market infrastructures ought to be a major priority. On one hand, the communities need to intensify their demand for this through the local leadership with the county governments prioritizing these needs to spur local development. Other infrastructural facilities like good roads and rural electrification that impact livestock marketing also need to be addressed.

Building Institutional capacities: The role of institutions in promoting sustainable livestock production especially in the ASALs cannot be overemphasized. Farmer groups are one way of ensuring a collective bargaining power. As per study findings, farmer groups, marketing associations and water user associations are either non-existent or faced with serious management challenges. Perhaps capacity building in leadership and governance to enable them function effectively and channel livestock producers' interests. At the higher level, there are numerous institutions and authorities such as Drought Management Authority which are critical for livelihoods in the ASALs yet their roles are not yet known. There is need for awareness creation and harmonization of their roles to serve local interests and priorities of livestock sub-sector in each of the counties.

This survey identifies a number of opportunities for enhancing productivity and competitiveness of the meat value chain at various levels.

At farm level

- Support for rehabilitation of water infrastructure and strengthening of water management committees remain urgent
- Increasing access to affordable recommended productivity-enhancing practices and technologies such as breeding improvement programs is critical. Use of participatory methodologies such as the farmer field school will enable farmers to test and validate some of the technologies for wide-scale adoption and to mainstream issues of gender.
- Mechanisms to enhance access to credit through alternative collateral arrangements will be vital
- Facilitating formation and strengthening of producer and marketing associations to provide farmers with platforms for better negotiation to reduce exploitation by middlemen
- Farmer education on importance of recommended technologies and practices

At service provider level

- Capacity building on recommended technologies and farm management practices
- Enhance linkages to various input suppliers
- Enhance linkages to financial service providers

At processor level

- Capacity building on meat handling and hygiene practices and standards such as HACCAP and Good Manufacturing Practices
- Enhancing linkages to financial institutions to acquire modern facilities
- Support for rehabilitation or upgrading of processing facilities

Market and Marketing Infrastructure

- Support for market infrastructure
- Development of market information and dissemination systems
- Creation of market linkages
- Facilitate formation and strengthening of farmer groups

County Level

- Review and development of appropriate livestock policies
- Support for building and strengthening public-private partnerships in livestock sub-sector

1.0 INTRODUCTION

1.1 Livestock Production in Kenya

Livestock especially cattle, goats, sheep and chicken are kept for food production, traction, hides, manure, risk diversification and as alternatives to formal financing in most African smallholder production systems (Marstrand *et al.*, 2004). In Kenya, livestock contribute about 42% of the agricultural output; 35% of this comes from beef cattle.

There are three main beef cattle production systems in Kenya: nomadic pastoralism, agro-pastoralism and ranching. Nomadic pastoralism and agro-pastoralism contribute about 65% of total beef output in Kenya, while the rest is obtained from ranches and a small proportion of dairy-culls (Omiti and Irungu, 2002). Further, it is estimated that over 60 % of livestock in Kenya is kept by pastoralists in the arid and semi-arid lands (which constitute about 80% of Kenya's landmass) providing employment to about 90% of the population in those areas and contributing nearly 95% of their income (KIPPRA, 2009; Otieno, 2008).

However, more than 50% of pastoralists in Kenya live below the poverty line, i.e., they survive on less than USD\$1 per day (Thornton *et al.*, 2007). For instance, public funds allocated to livestock development are low, less than 10% of the annual national development expenditure (Mugunieri *et al.*, 2011; Otieno, 2008). Consequently, most farmers have limited access to better farm technologies, requisite skills and market services. Further, weak linkages between research-extension service providers and farmers contribute to low and/or inappropriate use of inputs by farmers. As a result, agricultural productivity and growth are relatively low; yet the agricultural sector is expected to play an important role as the engine of national economic development (Mugunieri and Omiti, 2007; Oluoch-Kosura, 2010). As noted by Larsen *et al.* (2009), improving the efficiency and productivity of livestock enterprises is important for enhancing economic growth and reducing poverty in agriculture-dependent developing countries such as Kenya, this is particularly so in semi-arid areas of Kenya where livestock rearing is the main source of livelihood. This is the objective of the K-SALES project.

1.2 Project Background

Land O'Lakes is implementing the **Kenya Semi-Arid Livestock Enhancement Support (K-SALES) Project** with the overall objective of improving the productivity and competitiveness of the livestock value chains in Meru, Tharaka-Nithi, Kitui, Makueni, Taita Taveta, and Machakos Counties.

For activities that involve value-addition, K-SALES will directly work with and assist Kenyan organizations such as Business Development Service (BDS) providers, meat processors, wholesalers, financial service providers and retailers. An estimated 80,000 farmers, 700 providers of livestock inputs and services, and

2,500 employees of livestock processing enterprises (slaughterhouses and butcheries) are anticipated to benefit.

1.3 The Objectives of K-SALES Project

K-SALES aim to achieve the following objectives

- Increase productivity of live animal and meat (cattle and shoat), and hides and skins value chains by enhancing the availability of productivity and quality enhancing inputs, technologies and services, while increasing adoption of improved livestock and farm management techniques
- The K-SALES Business Development and Water Development Funds will provide grants to leverage private financing for increased investment in business expansion, improved technologies and infrastructure, while the Capacity Building Fund will leverage grants to facilitate peer-to-peer learning
- Following an increase in productivity, the project will increase producer and processor capacity in providing hygienic quality meats, hides and skins. K-SALES will stimulate and leverage public and private investment in infrastructure and technologies through matching grants. The project will strengthen vertical and horizontal linkages through capacity building and mentorships to improve linkages between buyers and sellers, buy-down risk of investment and reduce transaction costs

1.4 The Baseline Survey Objectives

The purpose of this baseline survey was three-fold. First, was to obtain more information on the prevailing livestock production, marketing and socio-economic situation of the targeted households and firms to aid design of program interventions. Secondly, to identify gender gaps and constraints across the program sites to ensure women and youth specific issues are adequately addressed and that they also benefit from the program initiatives along the meat value chain. Thirdly, was to benchmark K-SALES performance indicators by obtaining their baseline values to provide basis of assessing program at mid-term and final evaluation.

The specific objectives of the baseline survey were to:

- Assess the prevailing conditions relating to livestock (beef and shoat –sheep and goats) value chains where K-SALES plans interventions
- Establish both qualitative and quantitative baseline information for the indicators for which the project will regularly measure performance
- Gather findings in light of which the annual targets for the indicators will be established or validated in the Performance Management Plan (PMP). Consulting firm will be required to provide recommendations on appropriateness of indicators and targets set as contained in the project PMP, and suggest improvements as appropriate.

- Establish quantitative and qualitative methodologies for specific indicators according to which subsequent data will be collected and compared to track and evaluate the project's progress and impact over the project lifespan,
- Gather necessary information regarding the situation and challenges on ground to make appropriate implementation decisions to maximize efficiency, effectiveness and impact of the project,
- Explain and/or validate the relevance and potential impact of K-SALES to key stakeholders,
- Incorporate stakeholder views and ensure strong partnerships, and
- Generate accurate information that can be used by Government of Kenya, Governments of targeted Counties, partners and stakeholders in developing the livestock sector.

To meet the purpose and specific objectives, this baseline survey study was expected to answer critical questions in each of them following categories targeting key players in the meat value chain such as livestock producers, marketing associations, business service providers, livestock processors and prospective partners.

The Gender Analysis component of the study aimed at assessing and identifying gender gaps and constraints across the meat value chain to ensure women and youth specific issues are adequately addressed and that they also benefit from the program initiatives along the meat value chain. Its specific objectives were:

- a. To obtain information regarding Gender roles, power dynamic, asset ownership and management, and decision making related to Livestock production and marketing
- b. To identify gender gaps and constraints to address in the project work plan
- c. To understand factors that influence power and gender
- d. By understanding the above the project will enhance the competitiveness of meat value chains by reducing inefficiencies that originate from gender-based constraints.
- e. Increase the opportunities for all and particularly women who may have been disadvantaged at all levels of the chain due to gender constraints

The detailed Terms of Reference for the assignment and the detailed report on the Gender Analysis Component of the Baseline Survey are attached in Annex 1 and 2 of this report.

1.5 Organization of the Report

This segment has provided a snapshot of the livestock sub-sector, the project objectives including the purpose of the baseline survey. The Section Two gives a detailed explanation of the methodology employed in the assignment while Section Three presents the results and findings of the baseline survey and is organized by the K-SALES Program Results Framework. In Section Three, the selected characteristics of sampled units are first presented, followed by presentation of broad results and findings (both quantitative and qualitative information), comparing the results from targeted counties and cross-cutting issues of gender under each Result Area. Each result section culminates by highlighting the key program performance indicators (as per the PMP and Annual Performance Data Table, APDT), their baseline values, suggested revisions on the targets and future monitoring of the indicator. Additional performance indicators are also presented for consideration based on the results from survey and other studies. The last section of the document presents the conclusions and recommendations of the baseline value, providing mostly qualitative information to aid design of interventions under the K- SALES Program with the updated APDT with validated baseline values presented in Annex 9 of the report.

2.0 THE STUDY METHODOLOGY

Under this section, the procedures and methodologies employed by the consultants to achieve the objectives of this assignment are presented and discussed.

2.1 The Survey Approach and Team

The team comprised of four lead consultants with expertise in four areas namely: Experimental study design, Monitoring and Evaluation, Gender Analysis and Spatial Analysis. Other team members were 5 – Team Leaders who led and supervised data collection in the six targeted counties; three gender anchors who led gender analysis across the study sites; and twenty-five Field Research Assistants (FRAs) who interviewed and administered household's questionnaire across all the sites. Training and pre-testing were duly conducted for the study team to ensure consistency in application of the tools and collection of data. The other team members were the K-SALES project staff who were also directly involved in mapping of the interventions and control sites and mobilizing stakeholders for various processes during the field visits.

2.1.1 Inception Meetings

Two inception meetings were held with Land O'Lakes K-SALES staff in Nairobi before commencement of data collection. These meetings were aimed at reviewing and clarifying the terms of reference (TORs) of the assignment and responsibilities of the consultants, as well as to discuss and agree on the approaches and proposed tools, sampling procedure and revised work plan. The second stage inception meetings involved the team of consultants and the various county officials before the start of the exercise. During these meetings, the consultants' clarified the objectives of the exercise and processes of data collection

and sought support from the county officials in mobilization of various stakeholders in the value chain for the baseline survey.

2.1.2 Situation Analysis

The study team reviewed a number of documents to gain deeper insights into the project objectives. These included the program documents, evaluation plan and performance managing plan (PMP). Other documents reviewed were the national and County Integrated Development Plans (CIDP) which was critical in highlighting county level livestock sector plans to aid effective engagement with various categories of respondents during the survey. The list of documents reviewed in this study can be found in the reference section of this report.

2.2 The Survey Design

2.2.1 Selection of Treatment and Control Sites

K-SALES project has adopted a Quasi-Experimental design in its approach to impact evaluation, central to which is the identification of treatment and control sites in each target county. The selection of the treatment and control were guided by several key factors to ensure that the two sites had similar characteristics except for the program intervention. In selecting the treatment sites, the following factors were considered:

- a) Program objectives; that the areas selected meet the criteria set out for support in the various program components such as livestock marketing, water infrastructure, value addition e.t.c
- b) Consultations with county livestock and water officials regarding on-going initiatives, county priorities and plans for developing the livestock sector: This was to ensure synergy with planned county initiatives in the livestock sector
- c) Enterprise of interest: cattle, sheep or goats depending on county context
- d) Livestock population density (Tropical Livestock Units, TLUs)¹.

2.2.2 Selection of Control Sites

Once the program intervention sites were identified, the study team proceeded and identified the control sites in each county. A number of considerations were taken into account to arrive at the control sites:

- a) **Phased program implementation:** The control sites were identified from the envisaged expansion sites for the program under phased implementation approach. For example, a site serving as a control of the program for year 1 and year 2 may become a program implementation site at the end of year 2 of the program. This mitigates against ethical issues in identification and use of control groups.

¹ Tropical Livestock Units (TLU) provides a convenient method for quantifying a wide range of different livestock types and sizes in a standardised manner. TLU was computed as follows, 1 TLU = Cattle 0.7; Sheep/Goats: 0.11.

- b) **Comparative Analysis of Livestock Population, Agro-ecological zone and market access:** This was aided by spatial analysis. GIS Maps of livestock population (Tropical Livestock Units, TLUs), market access and agro-ecological zones were overlaid and analyzed to ensure that the treatment and control sites have similar characteristics for the evaluation design to hold. The study team used GIS analysis to identify control sites with similar characteristics to treatment groups within the same counties.
- c) **Consultation with the County Officials:** With the indicative treatment and control sites mapped and identified using GIS, the study team held consultations with the county livestock and water officials regarding other characteristics of the selected sites. The purpose of these meetings was to identify other on-going initiatives to avoid risk of contamination of control sites. The sites selected and sampled for the survey are presented in Table 1.

2.2.3 Pilot Approach

With the identification of the treatment and control sites completed, the field exercise was rolled out on 26th March 2014 on a pilot basis, with Kitui serving as the pilot county. The idea of the pilot was to facilitate learning among the team members for smoother roll-out in the other counties. Piloting of the exercise was a great success as entry points for the projects were clearly identified and jointly agreed upon by the consultants and K-SALES team.

2.2.4 Sampling and Sample Size

The survey employed a three-stage purposive sampling technique as follows. In the first stage, the study targeted the 6 targeted counties of Meru, Tharaka-Nithi, Kitui, Makueni, Taita Taveta, and Machakos. Within the counties, the baseline survey team liaised with county officials and used GIS overlay maps to identify the treatment and control sites as discussed above. Within the identified sites, the team liaised with the county officials to identify existing livestock producer organizations – forming the second stage of the procedure. The agreed upon sampled was distributed according to the membership of the groups in parts of Kitui, Tharaka and Makueni. However, in most of the study sites, no organized livestock producer groups were found and thus the team worked with the sub-county and local administration in identification of suitable locations, sub locations and villages with high potential of livestock production for sampling and actual survey.

2.2.5 Determination of Sample Size

K-SALES project is targeting 80,000 smallholder livestock farmers distributed across the 6 counties. Given that the target population is more than 10,000, the sample size for this baseline survey was determined using *Fischer's (1998)* formula² as shown below:

$$n = \frac{Z^2 pq D}{d^2}$$

Where:

n = Minimum sample size (for population >10,000) required.

Z = Standard normal deviate at the required confidence level, (set at 1.96 corresponding to 95%, Confidence Level adopted for this study).

p = Population proportion estimated to be below the poverty line (stated as more than 60% for ASALs from Government of Kenya estimates).

q = 1-p

d = Degree of accuracy required (usually set at 0.05).

D = Design effect taken to be 2 in this case since there is also the non-participating group

Therefore, on substitution:

$$= \frac{1.96^2 \times 0.60 \times (1 - 0.60) \times 2}{0.05^2}$$

This gives a total sample of 738 households in all sites, distributed across the 6 counties. This was further adjusted by 60% to arrive at **1200** livestock smallholder farm households, with 200 households sampled in each county with equal distribution across treatment and control sites.

Sampling for Business Service Providers and Livestock Processors

The survey team collected data from 60 livestock service providers distributed across the 6 targeted counties. Key consideration was given to gender, convenience, among other factors that were agreed on with the K-SALES program team. 6 livestock processors were targeted for data collection from each of the program targeted counties.

2.2.6 Methods and Tools Employed in the Study

This study employed a number of quantitative and qualitative techniques to achieve the study objectives. These are:

Household Survey: The main objective of the household survey was to obtain quantitative information on livestock production, use of various technologies, marketing and households' incomes sources and earning, among other factors related to livestock meat value chain. A total of 1219 households were interviewed in this study. The household questionnaires were administered by field research assistants, recruited and trained by the core study team. A copy of the household questionnaire used in this study can be obtained from Annex 3.

² Use of other sampling techniques is limited due to paucity of data on earlier studies covering all the 6 targeted counties

Key Informant Interviews (KIIs): Interviews were conducted with various stakeholders in the meat value chain such as livestock producers, input service providers, livestock processors, opinion leaders, county officials, financial service providers, water user associations’ officials to provide more insights into the project’s objectives, activities, challenges and outcomes. The checklist used for KIIs is provided in Annex 4 while those interviewed in Annex 6.

Focus Group Discussions (FGDs): A total of 30 FGDs were held with various stakeholders across the value chain in the six counties. At farm level, 3 focus group discussions were held separately for men, youth and women in each county to gain additional insights into gender issues affecting participation and adoption of various recommended farm and herding practices. The two other focus group discussions in each county were held with livestock input service providers and processors in each county to obtain information on some of the opportunities and challenges there-in. The checklists for all the FGDs are provided in Annex 6 while the list of participants is in Annex 5.

Table 1: summary of the methodology used in the study

County	Treatment and Control sites	Number of households interviewed	FGDs conducted	Number of KIIs conducted
Machakos	Treatment site – Sub-County Mwala- Masii ward	98	5	6
	Control sites –Yatta Sub-County - Matuu ward	92		
Makueni	Treatment Site –Kathonzweni Sub County Kitise – Kithuki ward	102	5	7
	Control Site – Kibwezi Sub-County - Kibwezi east ward;	98		
Kitui	Treatment --- Mwingi Central sub county – Mumuni and Kitui East – Kauwi ward	101	5	7
	Control Site ----- Kitui South-sub county - Ikutha ward	103		
Meru	Treatment ----- Tigania East sub-county	105	5	5
	Control ----- Igembe North sub-county	108		
Taita Taveta	Treatment - Taita taveta Sub-county: Mahoo and Ngarigashe	99	5	9
	Control – Voi Sub-County Maungu and Kasigau Locations	103		
Tharaka Nithi	Treatment: Tharaka North Sub-County, Kathangacini Location	104	5	7
	Control: Chuka-Igambangombe Sub-County, Mutino Location	106		
Total		1219	30 FGDs	41 KIIs

2.3 Data Entry and Analysis

Farm Level data: The data collected from the 1219 smallholder livestock farmers was entered into Statistical Package for Social Scientists (SPSS), cleaned and analyzed accordingly. Data entry was undertaken hand in hand with data collection so as to meet the strict deadlines for the assignment.

Livestock Processors and Service Providers Data: These will be entered into MS-Excel and analyzed accordingly. Data is presented in bar graphs and chart where relevant.

2.3.1 Analysis of Data

The survey results have been disaggregated and presented by county, treatment and control farmers and by sex and age of the farmer where these are relevant. For the qualitative information, the information collected was collated and has been interwoven with the data from household survey in the findings section of this report. In carrying out the analysis, the study team was largely guided by the ToRs and the Performance Monitoring Plans that clarify the definitions of the indicators and the approaches to collecting the information and computing the indicators. The data has been presented using bar charts, graphs, tables where suitable.

2.3.2 Spatial Analysis of Data

GIS provides a commonly understood and powerful framework for collecting, organizing, and managing structured data. It can enable visualization of project locations and the related information such as completed, ongoing, number of beneficiaries, and project type among others. It has potential to go beyond visualization to more complex applications namely spatial analysis, where intervention impacts scenarios can be simulated. In this work its use will be limited to the visualization of the project indicators. The visual display of this information is expected to reveal patterns and relationships that may not be apparent in tabular displays and thus aid in impact evaluation by displaying information on a map and helping staff visualize changes over time. To achieve this, the various important data for this process will be given spatial meaning and intervention impacts visualized through a series of products that will include; status, comparison and trend maps.

2.4 Scope and Limitations of the Baseline Survey

This baseline survey sought to establish the status of key enterprises across the meat value chain. The tools used were designed to elicit data that was sometimes based on opinions and recall as accurate records were lacking especially at the household. The main disadvantage of this approach is failure of the respondents to provide accurate information on the past events. Heavy downpour that was experienced in Meru and Taita Taveta during data collection made some areas inaccessible. While distance between households in the largely ASAL areas was a major hindrance to data collection. Similarly, distance between treatment and control sites contributed to delay in data collection as the study teams traversed the vast counties. The study also relied on secondary data that were provided by the County officials, this was sometimes incomplete and not forthcoming.

3.0 THE RESULTS AND FINDINGS OF THE BASELINE SURVEY

The following section presents the findings of K-SALES project survey conducted in the month of March and April 2014, covering the meat value chain in Meru, Tharaka Nithi, Taita Taveta, Makueni, Kitui and Machakos counties. This section is organized by the K-SALES Project Results Framework.

3.1 Selected Characteristics of Sampled livestock producers by Sex and Age of Head

Table 2 presents some selected household characteristics across the study counties. Mean household size ranged from 5.1 persons in Machakos to 7 persons in Meru and Kitui counties with sample average of 6.3. This is consistent with national statistics that put average household size at 6 persons (KNBS, 2009). On the other hand, average age of head of household varied from 52.5 in Machakos to 45.1 in Meru with sample mean of 49.8 years. Female-headed households are relatively older (55.6) compared to male-headed households (48.9). However, a higher proportion of male heads of households (50.1%) reported attaining primary and above level of education as compared to the female headed ones (27%). This also mirrors earlier studies that observed that males have better access to education in the most rural areas of Kenya.

Table 2: Selected Socio-demographic characteristics of sampled HHholds

	Average household size	Mean age (In years)	% attaining primary education and above	% citing crop income as their main occupation	% citing livestock as their main occupation	% citing mixed farming as their main occupation	No of years in keeping livestock	Total Size of Land owned by the Household (Acres)
Whole sample	6.3	49.8	46.8	8.4	7.5	55.8	19.0	15.5
Male	6.4	48.9	50.1	8.3	7.2	53.8	20.3	16.1
Female	5.8	55.6	26.9	9.6	9.6	68.1	18.1	13.4
Below 35 years old	4.7	29.8	58.4	7.8	6.6	44.6	7.5	9.5
Above 35 years old	6.5	53.1	44.8	8.5	7.7	57.8	20.7	16.7
Meru	7.0	45.1	35.2	10.5	13.3	61.4	17.4	9.3
Tharaka Nithi	6.4	48.2	31.0	15.2	2.4	71.0	20.5	15.3
Kitui	7.0	52.3	54.3	10.4	9.9	42.1	21.0	22.2
Makueni	5.9	51.5	46.0	1.5	2.5	65.2	16.7	20.2
Taita Taveta	6.2	50.0	57.8	5.9	13.5	38.4	19.2	9.6
Machakos	5.1	52.5	60.0	6.1	3.4	54.7	19.0	17

This is a major bottleneck in women acting freely and fulfilling their potential as full and equal members of society. Lack of education limits the process by which women access information and therefore capacity building activities by extension services need to be participatory and hands on if women are to gain knowledge needed to improve productivity. As case studies presented in Annex 2 further reveal, women who stand out as business service providers had better chances to participate in the higher levels of the value chain because of access to education and training opportunities. Mixed farming (both livestock and crop farming i.e agro-pastoralism) is the main source of livelihoods in the study sites (by 58% of the respondents). Higher proportion (68.1%) of female-headed households depend on mixed farming as compared to the male-headed households. This corroborates the gender analysis component findings that support for livestock enterprise and related interventions in the meat value-chain will be more beneficial to women if well-integrated with support for crop production. This is also clearly articulated in the K-SALES program interventions. Similarly, those below 35 years of age are less dependent on mixed farming (44.6%) as opposed to the older generation (57.8%), perhaps an indication of better access to other livelihood options or limited access to agro-pastoral productive resources such as land. Average years spent in rearing livestock shows that it is an age old practice although majority of the sampled households (over 80%) stated acquiring initial herd through purchase.

Generally, livestock producers in Kitui and Makueni own large tracts of land (between 22.2 acres and 20.2 acres, respectively) with the lowest ownership being recorded in Meru (9.3 acres) and Taita Taveta (9.6 acres). Male headed households and those above 35 years of age have significantly large tracts of land across the 6 counties (16.1 acres and 16.7 acres). With regards to land use, about half of the land (49.7%) was put to grazing of livestock (including fodder) as compared to other uses such as cropping.

3.2 FFPr SO1: Increased Agricultural Productivity

3.2.1 Livestock Production Patterns

The main livestock types kept by farmers in the study areas are cattle, sheep and goats (Table 3). Notably, most farmers keep indigenous breeds with improved breeds accounting for less than 30% of the total herd. The major breeds of cattle are small African zebu, boran and crosses (boran and sahiwal). Goats kept are mainly boran (Galla Goat) and small east African goats, while sheep are Black Persian Head (Somali sheep) and red Maasai. Choice of livestock breed is influenced by a number of factors including tolerance to drought, availability of capital, and ease of management, returns, and marketability. Indigenous breeds of cattle, goats and sheep are perceived to have high tolerance to drought and are generally preferred across the study counties.

While respondents across the study sites place high value on cattle, they preferred mixed livestock species with growing preference for goats due to their fast maturity, resilience to drought, ease of

herding and marketing and efficient feeding habits. This mix of species is good for the sustainable use of rangeland ecosystem that is best utilized by a mix of browser and grazers. Goats are also preferred by women as less land is needed for rearing and the enterprise is also less labor intensive. This allows women to balance labor needs during household labor peaks (see Gender Analysis Report in Annex 2). Women farmers consulted across the sites also disclosed that goats and sheep are easily sold off to meet day to day family needs, which is also a key factor for preference by women. Women, because of their nurturing roles, are always focusing on securing household welfare and livestock for contribution to supplementing nutrition through supply of milk thus endears goat rearing. Therefore in choosing breed as a technology, dual purpose breed could be preferred alongside the pure meat breeds.

Across the study sites, cattle herd size ranged from 6.0 in Tharaka to 11.7 in Taita Taveta with sample mean of 8.9 while that of shoats ranged from 18.1 in Machakos to 54.7 in Taita Taveta with whole average of 44.7 animals. Female-headed households had significantly lower herd size across the study sites. This supports the gender analysis study that disclosed that ownership and control of livestock is a preserve of the men. While these areas are traditionally known to have high livestock density, these results attest to huge livestock losses mostly attributed to drought in 2000 by those consulted during the baseline survey. In some of the counties such as Taita Taveta, declining herd size is attributed to shrinking grazing lands as a result of acquisition and sub-division of grazing lands for human settlements. Shrinking land size for grazing presents an opportunity to facilitate groups of farmers to produce commercially in areas developing the mixed farming systems.

Table 3: Distribution of Livestock by type and breed

Livestock type		Whole sample	Sex		County					
			Male	Female	Meru	Tharaka Nithi	Kitui	Makueni	Taita Taveta	Machakos
Beef	Herd size	8.9	9.2	6.6	9.7	6.0	7.0	10.5	11.5	10.4
	% of cattle improved	29.4	28.9	38.7	23.0	16.6	22.1	33.5	30.2	51.5
	Average Body Condition Score	2.7	2.8	2.5	2.6	2.6	2.6	2.8	3.2	2.6
Goats	Herd size	28.5	30.3	15.2	25.7	16.9	35.7	37.5	29.4	13.7
	% of improved goats	46.1	47.2	15.8	59.2	15.8	36.8	54.0	40.6	29.2
	Average Body Condition Score	2.8	2.8	2.7	2.7	2.6	2.7	3.0	3.2	2.9
Sheep	Herd size	16.2	16.6	5.8	16.8	7.3	12.0	13.0	25.4	4.4
	% of improved sheep	42.6	41.5	-	31.7	27.5	30.9	56.0	57.2	0.0
	Average Body Condition Score	2.8	2.8	2.7	2.7	2.6	2.8	3.1	3.4	2.9

Reported Average Body Condition Score³ for the various livestock types varied from 2.7 among the cattle to 2.8 among the shoats. This score indicates generally fair availability of pasture and fair care by livestock producers in the study sites. Generally, Taita Taveta recorded the highest average body score conditions across the sites. The male-headed households had disproportionately higher scores as compared with the female-headed ones, perhaps an indication of better access to resources including distant pastures and ownership of large tracts of land. In addition, disease control and treatment skills gained from carrying out certain roles are customarily passed down to boys and not girls. This does not prepare the female-headed households to efficiently manage their herd without external assistance. Detailed description of Average Body Condition Score and how it was estimated in this study is provided in Annex 8 of this report.

3.2.2 Livestock Production Values and Incomes

Table 4 shows the distribution of respondents by total current value of their herd. As expected, male-headed households have significantly higher total herd value (Kshs. 151,970) as compared to female-headed households (Kshs. 98,604) as ownership and control of livestock in these communities is in the domain of men. Similarly, those above 35 years of age have significantly higher herd value than youth, given their livestock wealth acquisition over the years. With reference to the counties, Taita Taveta has significantly higher herd value (Kshs. 145,025), followed closely by Kitui as compared with the other counties. The lowest herd values were recorded in Tharaka Nithi with considerable contribution from goat breed.

Table 4: Current Total Herd Value (Kshs)

	Estimated value of cattle herd kept (KES)		Estimated value of Goat herd kept (KES)		Estimated value of Sheep herd kept (KES)		Estimated Total Livestock value kept (KES)	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
Whole sample	89584.4	60000.0	50535.9	25000.0	4806.6	0.0	144926.9	88850.5
Male	94166	60000	52701.4	26639.1	5103.2	0.0	151970.6	91850.5
Female	59454	33500	36295.0	19000.0	2856.2	0.0	98604.7	70305.0
Below 35 years old	61885	40000	44074.0	24000.0	5646.1	0.0	111605.5	76000.0
Above 35 years old	93929	60000	51570.3	25900.0	4682.9	0.0	150182.5	90000.0
Meru	58199	32500	28897.1	12000.0	5449.8	0.0	92545.5	61365.1
Tharaka Nithi	37208	20000	32261.1	21750.0	6983.6	4000.0	76452.3	51500.0
Kitui	118757	90000	75127.0	44900.0	4499.2	0.0	198383.3	145000.0
Makueni	69995	54000	50822.4	28000.0	4135.8	0.0	124953.2	90000.0
TaitaTaveta	145025	70010	69741.4	30000.0	5259.0	0.0	220025.4	112850.5
Machakos	111409	70000	44800.6	20500.0	2178.8	0.0	158388.8	94000.0

³ Livestock Body condition scoring is a subjective or “hands on” method of determining the amount of fat an animal is carrying and is scored from 1 (very thin) to 5 (grossly fat). It is an indication of how well farmers care for their livestock

3.2.3 Key Program Performance Indicators for Result Area

Table 5: Key Performance Indicators and their Baseline Values

FFPr SO1: Increased Agricultural Productivity			
Key Program Indicator and Number	Baseline Value	Targets	Suggestions for revisions of PMP and future monitoring
Average Livestock Body Score (7)	Cattle – 2.7 Shoats – 2.8	Cattle – 3.2 Shoats – 3.2	Indicator is sensitive to water and pasture availability hence will be affected by seasonality. Follow-up surveys or evaluations need to be conducted at same time of the year. Indicator will be disaggregated by sex of Head of Household, livestock Type and Target County and compared between Treatment and Control Sites
Percent increase in value of production per producer (6)	Kshs. 88850.5 (0%)		K-SALES team should consider dropping this indicator from the PMP due to complexity in getting accurate information and reporting when diversity of herd in terms of age is considered. The data is also highly skewed, median is used and households with 1 standard deviation above the mean are excluded from analysis. This study noted that improvement in animal health and care will be measured by average body condition score while improved market value from earnings from sale of healthy animals by mean farm-gate prices of livestock, a proposed indicator for the program in section 3.9.3 of this report.

3.3 FFPr 1.2 Increased Use of Improved Agricultural Technologies and Techniques

3.3.1 Herding Practices employed by farmers in the study areas

Across the counties, number of livestock, especially cattle, kept was dependent on the land size owned by the household. This is according to key informants consulted during the survey. Farmers depend on natural grass to feed their animals and when there is scarcity of pastures during the drought, they move with their animals to neighboring areas in search of fodder and water. Open range grazing is the most common herding practice employed by livestock producers (81.2%) in the study sites with mineral supplementation in the evening. This is closely followed by tethering (Table 5). Paddocking and semi-paddocking are minimally practiced in the study sites due to dwindling farm sizes with women adopting paddocking system at a much lower extent than their male counterparts. Paddocking is an investment that requires full access and control over land and this may be linked with legal frameworks around women access and control over land. In Taita Taveta, for example, the sub-division of the ranches into

individual land parcels has forced most of the livestock keepers to graze in the park and other private owned ranches, often at the expense of threats and confiscation of livestock by park officials. The attraction to graze in the parks could also be that the animals are able to find shrubs of high nutritive value and gain better body condition and therefore forage development programs will have to encourage restoration of biodiversity even when land is subdivided. Additionally, with herd sizes declining, farmers are opting for tethering and in some cases zero grazing, with cut and carry practice.

According to the data set, 36.1% of those surveyed practice destocking and restocking of their herds in responding to availability of water and pastures across the year. Those above 35 years of age are more likely to adopt de-stocking and restocking (37.6%) due to their relative better access to resources acquired over time as compared to those below 35 years (25.5%). Across the counties, Tharaka Nithi reported the least proportion (8.9%) of livestock producers practicing destocking and restocking. Livestock producers surveyed in the county had relatively more shoats than cattle that are less affected by droughts.

Table 6: Herding and Herd management practices by livestock producers

		Herding practice					% de-stocking /re-stocking
		Paddock	Semi paddock	Open range grazing	Tethering	Zero grazed	
	Whole sample	2.3	6.5	81.2	59.2	17.9	36.1
Sex of HH Head	Male	2.5	7.2	81.7	60	18.9	36.0
	Female	1.9	3.2	78.5	54.7	12.1	36.7
Age	Below 35 years old	1.9	4.3	82	59.6	12.7	25.5
	Above 35 years old	2.5	7	81.1	59.2	18.8	37.6
County	Meru	2.4	4.2	64.1	29.2	29.3	30.8
	Tharaka Nithi	0	1	94.7	54.5	6.2	8.9
	Kitui	2.6	14	73	63.2	13.1	40.9
	Makueni	3.1	11.8	86.3	88.7	13.7	56.2
	TaitaTaveta	4	4	87.5	51	28.9	37.8
	Machakos	2	4.9	81.1	76	14.6	43.2

3.3.2 Knowledge and Use of Improved Agricultural Technologies

Table 36 (Annex 10) shows the distribution of respondents by awareness of improved livestock nutrition, health and herd management practices. Apart from livestock insurance where only 25% indicated being aware of service, livestock producers were generally aware and knowledgeable of the improved technologies across all the sites (above 58%). The most popular ones were hand spraying for controlling ticks (93.7%) and livestock vaccinations (89%). These are mainly promoted because of disease

prevention rather than for fast growth and supporting reproduction needs of the animal. Across the sites, levels of awareness of the improved technologies, techniques and services were low in Taita Taveta with Makueni County reporting the highest levels of awareness. This corroborates focus group discussions findings that there is limited of coverage livestock production services and service providers in Taita Taveta County. With regard to utilization of the Vet services (Table 7), de-worming (86.2%), vaccinations (90.9%) and hand spraying (81.1%) were the most widely used services across the counties. This confirms reports from key informants that indicated that farmers carry out spraying as a first line of action in control of ticks. However, that this is not uniformly practices and that also shows some of the challenges faced in stemming outbreak of tick-borne diseases. This is particularly important as the target counties are also stock routes for livestock destined to other markets. Table 37 in Annex 10 shows use of improved technologies by sampled households.

Generally, the least used technologies were hoof trimming (13.6%) and castration (13.1%). These represent good husbandry practices that should be promoted by the department of animal production to facilitate good use of natural pastures by a carefully selected herd while learning to minimize climatic risks to livelihood. Across the study counties, the most preferred breeding practice is by own bull. Notably, use of breeding improvement services such as artificial insemination and bull schemes is not common (just 20.6%) with the former mainly associated with dairy production by those farmers consulted during the survey. In-depth discussions with some of the farmers using bull schemes also revealed delays in replacement of the bull, a scenario that may lead to inbreeding. The proposed Farmer Field Schools will provide a platform especially to youth for learning techniques that older people use more than them because of mastery. Its hands-on nature of extension would demonstrate advantages of hoof trimming, castrations and dehorning in animal production and equip these youth to provide these services at a fee in the community.

Across the sites, limited use of breeding improvement services were reported in Makueni (4.1%) and Machakos (6.7%), perhaps an indication of lack of appreciation of the program as number of farmers reported being aware of its existence (Table 34, Annex 10). This calls for extensive farmer education on importance of breeding improvement services in commercial livestock production. This may not necessarily mean use of Artificial Insemination (AI) but proper selection and maintaining a well selected breeding herd. According to a county official, there is minimal use of technologies appropriate husbandry practices and techniques in the area of animal health, feeds, nutrition and breeding that are less labor intensive, less risky and more profitable. Generally, there is widespread use of technologies that support disease control than those that support efficient conversion of feed to meat are very low. Farmers indicated high costs of farm inputs as a challenge.

Table 7: Use of improved technologies and herd management practices by livestock producers

Selected Technology		Sex		Youth		County					
		Male	Female	below 35 years old	above 35 years old	Meru	Tharaka Nithi	Kitui	Makueni	Taita Taveta	Machakos
% with separate sheds for different livestock types and ages	39.7	40.3	35.4	38.3	39.9	40.2	27.2	60.8	33.1	35.1	47.4
% of farmers with livestock shed with cement/stones/gravel floor	9.4	10.4	4.8	10.8	9.4	9.9	2.4	27.5	6.5	5.9	4.2
% of farmers with livestock shed/ boma with bricks or pole structures	42.4	42.8	40.3	37.2	43.3	27.5	46.9	42.5	60.5	39.2	37.3
AI service/Breed improvement services such as bull schemes- Whether household has	20.9	20.9	21.1	17.9	21.4	41.3	17.9	37.7	4.1	22.0	6.8
Castration	13.1	13.2	12.5	9.8	13.6	7.9	6.6	49.5	2.8	23.3	6.4
De-horning	16.8	16.5	19.0	10.2	17.8	14.8	16.8	54.5	2.1	16.7	8.3
Hoof trimming	13.6	13.5	14.7	8.2	14.5	16.5	3.3	51.2	8.3	17.4	1.1
De-stocking/re-stocking	36.2	36.1	36.7	25.5	37.7	30.8	8.9	40.9	56.2	38.4	43.5
% practicing on-farm feed conservation	55.1	55.6	51.4	40.7	57.4	21.9	4.1	76.5	87.6	63.6	80.7
% of farmers using at five of recommended technologies/service (separate sheds for livestock, shed type, AI/Bull scheme, hoof trimming, castration, de-horning, de-stocking)	5.3	5.0	7.6	0.0	6.1	6.7	0.0	20.5	0.6	1.7	0.6

3.3.3 Key Performance Indicators and Baseline Values

Table 8: Key Performance indicators for result area

Key Performance Indicator and Number	Baseline Value	Target	Suggestions on changes to PMP and Evaluation Plan
Result Area: Contribution to the Feed the Future			
Number of Individuals receiving short- term agricultural sector productivity or food security training as a result of USDA assistance (1).	0	83,200	No change
Percentage of farmers participating in project interventions who have applied new techniques or technologies as a result of USDA assistance (10)	0	64,000	Indicator will be monitored from those farmers attending program specific training. No change
Number of farmers who have applied new techniques or technologies as a result of USDA assistance (3)	0	64,000	Indicator will be tracked from those farmers attending and participating in program trainings, No change
Result Area: Facilitate Farmer Field Schools			
Number of farmers trained in improved agricultural technologies and techniques (33)	0	80,000	Targets re-distributed as year one of implementation is focusing on setting up project activities and identification of suitable implementing partners
FFPr 1.2.4 Increase knowledge by farmers on improved Agricultural Techniques and Technologies			
Percent farmers who can demonstrate a threshold level of proficiency in a least five new livestock husbandry and herd management techniques ⁴ as a result of USDA assistance (32).	0	64,000	Farmers to be tracked are those attending training and adopting at least 5 of the improved technologies that baseline survey findings show lower adoption rates.

3.4 FFPr 1.3: Improved Farm Management

3.4.1 Record Keeping in Livestock Enterprises

With regard to farm management practices, the survey examined livestock record keeping and involvement of various households' members in decision making regarding livestock enterprise. Record keeping in the livestock enterprise is not widespread. Just 8.4% of the total sampled households kept records of some sort regarding livestock enterprise activities (Table 9). This was mainly attributed to high levels of illiteracy and taking livestock production as a way of life rather than as a business enterprise. A common practice among the livestock keepers is to take daily count of the number of livestock in the evening to ascertain if all are back in the shed. The most commonly kept records were the health records whereby farmers marked dates on the calendar for important dates such as when vaccinations, deworming is due. Across gender, male-headed households are more likely to keep records (8.5%) as compared to female-headed households (5.7%). Similarly, those above 35 years of age were more likely to have records (8.3%) as opposed to the youth (6.9%). Record keeping is least practiced in Tharaka Nithi county and Makueni counties.

⁴ Re-stocking/de-stocking, hoof trimming, Use of AI/Bull Scheme, de-horning, castration, separate sheds for different livestock type and age, shed floor (at least sand, gravel, cement), shed type (boma, pole or permanent).

Table 9: Livestock enterprise record keeping

		Whether HH keeps records of livestock activities (%)
	Overall	8.4
Sex of HH Head	Male	8.5
	Female	5.7
Age	Below 35 years old	6.9
	Above 35 years old	8.3
Project area	Control	6.4
	Treatment	9.4
County	Meru	8.5
	Tharaka Nithi	2.4
	Kitui	12.3
	Makueni	3.5
	TaitaTaveta	7.4
	Machakos	11.1

3.4.2 Roles and Responsibilities in the Livestock Enterprise

Since the roles and power relations between men and women affect how an activity is implemented, responsibilities associated with livestock rearing were sought and analyzed in terms finding out who did what and whether their interests of men and women in the activity were considered. Study findings show that most decisions regarding the livestock enterprise in these communities are made by men (See Table 38). These include type of livestock, breed, when to sell and even adoption of recommended practices such as spraying, feeding on minerals and breeding, among others. Some of the roles such as breeding and housing are not done on daily basis but occasionally. Some roles in the community are shared. For instance boys would assist in roles such as grazing, herding and watering animals, and collecting dung when they are available e.g. weekends and during holidays. By and large, men were largely involved in buying livestock, giving directions to other household members on what is to be done on a daily basis as well as selling the same. Women on the other hand participate in buying livestock after which her role reduced to that of milking and cleaning the livestock shed. Other roles included grazing (done by women and boys-over the weekends), manure collection (done by women), slaughtering (done by men) and processing (done by men). Some of the duties performed by men were seen as roles that needed an energetic and masculine figure. According to women and youth focus groups, it appears that the boys bear a heavier burden than girls and learn special skills (trekking, construction) that are more rewarding later in life than hygiene roles that girls played. Interestingly, women indicated that they did not have control over use of hired labour to assist or facilitate them in roles they play in livestock management.

3.4.3 Household decision making on livestock sales and control of proceeds

Decision making to sell any livestock is a prerogative of the men in all the study sites (Table 10). This corroborates focus group findings that disclosed that decision to sell livestock is made by the men in the household even if the spouse purchased the livestock. However, there is a growing trend where spouses

are consulted. Similarly, the husband also controls how proceeds from the sale of livestock are used (see table 39).

Table 10: Household decision making on selling of livestock

		Husband	wife	Both	Son	Other
	Overall	42.1	10.5	40.8	1.3	5.3
Sex	Male	46.9	3.4	46.6	1	2.1
	Female	15.2	47.7	9.3	3.3	24.5
Age	below 35 years old	38.1	6.8	46.9	0.7	7.5
	above 35 years old	43.2	10	40.5	1.4	4.9
County						
	Meru	61.4	13.8	16.4	1.6	6.9
	Tharaka Nithi	44.6	8.2	40	1.5	5.6
	Kitui	38.2	10.7	44.9	2.2	3.9
	Makueni	33.5	10.5	50	1	5
	TaitaTaveta	30.3	14.9	48.6	1.1	5.1
	Machakos	44.3	5.5	45.4	0	4.9

3.4.4 Key Performance Indicators

Table 11: Key performance indicators for result area

Key Program Indicator and Number	Baseline Value	Targets	Suggestions for revisions of PMP and future monitoring
Results Area: Farmer Field Schools			
Number of farmers trained in improved farm management practices (34)	0	Targets re-distributed	Targets re-distributed as year one of implementation id
Contribution to Feed the Future			
Number of farmers and others who have applied improved farm management practices (i.e. governance, administration or financial management as a result of USDA assistance (4)	0	No change	
Result Area: FFPr 1.3 Improved farm management (operations financial)			
Percentage of farmers who have applied 60 percent of recommended improved farm management practices as a result of the USDA assistance (36)	TBD		Farmers to be tracked from those attending trainings. It is suggested that program tracks record keeping in the livestock enterprise.
Suggested Indicator: Proportion of farmers that adopt record keeping in the livestock enterprise as a result of as a result of USDA Assistance	8.4%	30%	This indicator identifies record keeping as a critical component of improved farm management. This will be tracked through population based surveys
Result Area: FFPr 1.3.1 Improved knowledge regarding farm management			
Percentage of farmers in target regions who can identify key characteristics of a well-managed farm as a result of USDA assistance (37) (Key characteristics of well-managed farm – record keeping, existence of plans and budgets/expenditure) for each enterprise	TBD		Indicator to be monitored from those actually attending training. Pre-and post-training evaluations recommended as key source of information.

3.5 FFPr 1.2.1: Increased Availability of Inputs

3.5.1 Access to Extension Services

Access to extension services by livestock producers was also examined across the study sites. Generally, livestock producers across the sites were aware of the kind of extension services available ranging from animal health services, breeding, animal nutrition, record keeping with animal health extension services being the most common (see Table 38). At least 63.8% of the sampled farmers stated receiving extension services in the last two years on a number of services with Taita Taveta reporting the lowest proportions (Table 39). The organizations providing extension services were mainly veterinary officers and government extension agents (See Table 40). As discussed above, Taita Taveta had limited coverage of both government and private service providers.

While there was general consensus across the sites that the government extension service is generally not available, subsidized vaccinations during disease outbreaks was widely acknowledged. Ministry of Livestock Development also issued quarantines at times of disease outbreak protect large herds from

being infected. Generally, there is little support for beef stock breeding and regeneration except for support offered by NGOs in Makueni and Machakos.

The extension services that improve productivity of the meat value chain needs to be broader than dealing with vet inputs. It needs to include capacity building in areas not commonly covered as a way to empower women and youth. These areas are in livestock sales agency, establishment of farmer organizations that are inclusive and are sustainable, field workers for seasonal livestock financial services including livestock and crop insurances, artisan skills for construction of farm structures and harnesses for animal drawn tools (ferry water, live animals, meat), Information and Communication Technology for market information services, operating cold storages, processing of hides and skin and making leather craft products, among others.

3.5.2 Access to Livestock Input Markets

Most farm inputs are sourced from Agro-vets that are situated in nearby markets across all the targeted counties. Distance to nearest market centre ranges from 4.9 Kms in Tharaka Nithi to about 20.9 Kms in Kitui (Table 11). The most commonly used means to nearest market or stockiest is walking although motorcycles (boda boda) have become popular. 48.9% of sampled farmers can access supplies of improved inputs within 5 Kms.

Table 11: Access to markets for livestock and livestock inputs

	% of farmers within 5 Km distance to the nearest stockiest of livestock inputs	% of farmer within 5 Km distance to the nearest livestock market
Whole sample	48.9	43.4
Male	48.8	42.8
Female	49.3	47.2
Below 35 years old	53.1	44.8
Above 35 years old	48.1	43.1
Meru	61.8	66.3
Tharaka Nithi	65.5	64.4
Kitui	29.0	19.0
Makueni	42.9	39.0
TaitaTaveta	57.4	44.3
Machakos	36.7	27.1

Table 12: Key Performance Indicator

Key Program Indicator and Number	Baseline Value	Targets	Suggestions for revisions of PMP and future monitoring
Result Area: FFPr 1.2.1: Increased Availability of Farm Inputs			
Percentage of farmers within 5 Kms of suppliers that sell improved inputs.	48.9%		It is recommended that complementary indicators such as perceptions on affordability and satisfactions with service provision be added as these were identified as the most important areas by farmers
Proposed Indicator: Farmer perceptions on affordability of livestock input services (Score)			Affordability accessed on a scale of 1-3 (very expensive, fair, affordable). Indicator computed by average scores from all services
Proposed Indicator: Farmer perception on satisfaction with service provision			Affordability accessed on a scale of 1-4 (dissatisfied, fairly satisfied, satisfied and very satisfied). Indicator computed by average scores of all services.

3.5.2 A1: Develop Business Service Providers

This section presents the write-up on service providers' information and data collected via individual surveys, focus group discussions, key informants and review of literature from various sources. The individual survey collected information from forty-five service providers across the meat value chain.

3.5.2.1 Selected characteristics of sampled service providers

The main service providers interacted with across the study sites ranged from Agrovets, animal health service providers, paravets and Artificial Inseminators. Agrovets were by far the most common livestock service providers dealing directly with farmers in the target counties. Generally, the age of the service providers ranged from 26 to 68 years with a sample mean of 38.5 and 52 percent being youth (Table 13). Service provision is dominated by men with females comprising just one-third of the total sample. According to key informant and focus group discussions, female service providers were generally accepted among the target communities although in some cases such as in Taita Taveta, they are often subjected to ridicule from men from the local community who request free services as a demonstration that they could actually carry out the services (See case study in Box 3 from the gender analysis study). About 71.9% have their businesses officially registered with nearly all sampled (97.1%) service providers keeping records. The kind of records kept ranged from expense accounts, sales and payable.

Table 13: Distribution of sampled service providers by selected characteristics

Variable	
Age (Years)	38.5
Sex	
Males	66.7%
Female	33.3%
% keeping records	97.1%
% whose businesses are registered	71.9%

3.5.2.2 Range of Services offered

The range of services offered by the input service providers ranged from animal health services, financial services, training services, agro-vet services. Majority of those sampled were offering at least three services with majority of them being agro-vet dealers (Table 14). According to those consulted, artificial insemination was not popular in the meat value chain, with most farmers opting to use bull schemes and own bulls across the study sites.

Table 14: Kind of services offered by the service providers

Type of services	Percent	Percent of Cases
AI service provider	10.00%	14.30%
Agro vet input supplier	50.00%	71.40%
Animal health service provider	26.00%	37.10%
Training provider	2.00%	2.90%
Financial services	4.00%	5.70%
Transportation	4.00%	5.70%
Others	4.00%	5.8%
Total	100.00%	142.90%

3.5.2.3 Types of Clients Served

The kinds of client served by the service providers were varied. The most popular were farmers (33.3%), farmers groups (11.1%), among others (Table 15). Individual clients were described as the agro-vets as those who walked and made purchases over the counter without leaving their contacts. This category was the main customer served by those sampled. As it is none of the service providers had any written supply contracts with any of the clients. The service was based on convenience and past performance with those served. The main method of business promotion (25%) is via family and friends and good mouthing and recommendations from current and previous clients. About 9.3% used field days organized by other stakeholders to market their services (Table 16).

Table 15: Type of clients served

	Percent
Farmer groups	11.1
Farmers	33.3
Individual clients	44.4
Others	11.1

Table 16: Methods of business promotion used by service providers

	Percent	Percent of Cases
Family/friends	25.20%	75.00%
Business partners	15.90%	47.20%
Business associations	6.50%	19.40%
Newspaper/media	2.80%	8.30%
Field days	9.30%	27.80%
Telephone directory	1.90%	5.60%
Baraza	7.50%	22.20%
Clients association	9.30%	27.80%
Community members	13.10%	38.90%
Business brochures	7.50%	22.20%
Branding	0.90%	2.80%
Total	100.00%	297.20%

3.5.2.4 Ownership of key assets

This study also examined a number of assets owned by the service providers particularly motorcycles and AI equipment. About 19.7% of those interviewed indicated owning a motorcycle that allowed them to traverse the poor roads and serve farmers and areas located in the interior (Table 17). Only 6.1% had AI equipment which also attests to key informants observations that the service is generally not popular among the livestock producers yet critical in producing improved breeds with higher market value and returns for the farmers. Lack of access to credit was cited by the service providers as a key constraint in acquiring stock and assets.

Table 17: Ownership of Assets by various service providers

	Percent	Percent of cases
Motor vehicle	22.70%	60.00%
Furniture & fittings	51.50%	136.00%
AI equipment	6.10%	16.00%
Motor bike	19.70%	52.00%
Total	100.00%	264.00%

3.5.2.5 Access to credit

This surveyed access to credit by various service providers in the value chain. About 35.3% of those consulted had applied for loan in the past in the past two years with only 12.6 % getting the loans (Table 18). The loans were sourced from various financial service providers mainly banks, K-REP, Savings and Credit Societies among others.

Table 18: Loan application in the last 2 years

	Percent
% applying for loans	35.3
% receiving loans	12.6

3.5.2.6 Challenges facing service providers

Table 19 illustrates the key challenges facing service providers in the study sites. Lack of awareness of the services by livestock producers was cited as a key hindrance to service provision in the livestock sector. This implies need for a number of demand-side pull factors such as general farmer education to enhance demand for the various services offered. Lack of capital for stocking various inputs was also mentioned as a key factor with majority of those consulted citing lack of collateral as a major hindrance to accessing credit. High inputs costs particularly attributed to poor road infrastructure was also stated. The service providers stated incurring costs to purchase their stock from nearby towns which in turn affected the prices they charged for the services offered to the farmers. On the other hand, the farmers have responded by carrying out diagnosis by themselves, buying antibiotics over the counter and administering treatment to their animals. According to county livestock officials, this has partly contributed to livestock deaths, abuse of antibiotics and some cases of drug resistances as farmers administer under doses to avoid expenses of consulting a certified practitioners.

Table 19: Challenges facing service providers

	No. of times mentioned
Lack of awareness by customers	13
Lack of capital	10
High input costs	6
Competition	4
Poor means of transport	4
counterfeits in the market	3
High interest rate	3
High transport costs	3
Delay in transportation of goods	2
Farmer prescribing the animal treatment	2
High maintenance cost of a vehicle	2
High prices fend off customers	1
Low turnout of customers	1
Non trained practice	1

Other challenges cited were competition from what was described as uncertified practitioners ‘quacks’ who also contributed to the livestock producers’ distrust for service providers. The other source of competition is government veterinary officers who also reportedly offered private services to farmers at a fee. Presence of counterfeit drugs in the market is also a key concern for the service providers as this also contribute to the distrust among livestock producers.

3.5.2.7 Key Program Indicators and their Baseline Values

Table 20: Key performance indicators and their baseline values

Key Program Indicator and Number	Baseline Value	Targets	Suggestions for revisions of PMP and future monitoring
Result Area: Develop Business Service Providers			
Number of business service providers trained to deliver inputs and services that enhance agricultural productivity	0	Target re-distributed over the program period	Year one of program focusing on program setting up
Number of business service providers trained in business management skills.	0	Target re-distributed over the program period	Year one of program focusing on program setting up
Number of county level livestock trade shows supported.	0	Target re-distributed over the program period	Year one of program focusing on program setting up

3.6 FFPr 1.2.2: Improved Infrastructure to Support On-Farm Production

3.6.1 Access to water for livestock use

3.6.1.2 Household Sources of Water for Livestock Use

Water is critical for livestock production. However, this commodity is scarce in the ASAL areas such as the ones targeted by projects. According to the results of the survey, water for livestock is mainly sourced from rivers and streams (cited by 42.1%, Table 21). The other sources of water for livestock are piped water (7.6%), dams (14.9), boreholes (8.2%), communal water points and public taps (4%). Water shortage during dry seasons is cited as a major challenge for livestock production across all study sites (Table 22). Notably, distances travelled to water points increased significantly during dry seasons, 6.5 Kms and 7.1Kms, respectively, with the major water source being the permanent rivers and streams (Table 21). The common practice is for livestock keepers to move with their livestock in search of water and pasture.

Table 21: Household Sources of water for livestock use

	Piped into homestead /compound	Public Tap	Borehole	Communal water point	Rain water	Vendor / tanker truck	River/ stream	Water Kiosk	Dam / pan/ sand dam	Other
Whole sample	7.6	4	8.2	1.7	16	2.7	42.1	1.5	14.9	1.3
Sex of HH Head										
Male	7.7	3.1	8.3	1.6	16.6	2.7	43.4	1.2	14.1	1.2
Female	4.9	10.4	8.6	1.8	12.9	3.1	36.2	3.1	17.1	1.8
Age										
below 35 years old	5.6	4.3	8.6	1.2	22.2	1.9	43.2	1.9	9.2	1.9
above 35 years old	7.5	4.1	8.3	1.8	15.1	2.9	42.2	1.4	15.4	1.2
County										
Meru	1.4	10.5	19.5	4.3	38.6	13.3	9.5	0	1	1.9
Tharaka Nithi	17.3	0.5	0.5	0	4.8	0.5	72.6	0	3.4	0.5
Kitui	0.5	4.3	1.6	0	3.2	0	63.8	3.7	20.3	2.7
Makueni	6.5	7	5	1.5	27.6	28.6	4.5	4.5	14.6	0
TaitaTaveta	15.7	4	6.1	2	8.6	1.5	35.9	1	23.2	2
Machakos	3.3	1.6	13.7	0.5	11.5	0	43.7	0	25.1	0.5

Similarly the cost of water increased significantly during the dry seasons with most farmers unable to afford as the private vendors charge exorbitant prices.

Table 22: Access and cost of water during wet and dry season

	Whole sample			
	Distance to the water supply infrastructure Used during wet season (Kms)	Distance to the water supply infrastructure Used during dry season (Kms)	Cost of buying a 20L Jerrican for watering livestock during DRY season	Cost of buying a 20L Jerrican for watering livestock during WET season
Whole sample	6.5	7.1	15.4	9.8
Male	6.1	7.1	15.8	9.9
Female	4.7	5.2	13.6	9.8
Meru	2.0	3.9	28.7	7.6
Tharaka Nithi	2.0	2.8	19.5	16.0
Kitui	9.1	14.7	13.8	11.9
Makueni	4.0	4.1	8.1	5.8
TaitaTaveta	18.0	14.1	15.9	13.2
Machakos	4.5	3.1	5.2	4.9

Practices adopted to cope with dry season are very crucial in the beef value chain as there are gender constraints that are associated with climate related constraints. During drought season pastures are limited, most of the rivers are also dry. This therefore means that women and men have to travel long distances in search of water. But during this same period there are a lot of livestock diseases hence caring for the sick animals is at its peak. Caring for sick animals is the woman's role. Water shortage places a heavier burden on the women as she is in charge of cleaning and cooking activities in the home. The impacts of drought are heavier on the woman and risks of household falling into poverty higher given that health of animal is compromised. For instance, in Tigania East Sub-County in Meru, the coping mechanisms include migrating to far areas where there is pasture, reducing the amount of water taken by livestock, and stock reduction through sale of animals. It includes having to spend money to buy water (at ksh.25 per 20 Litre jerrican).

3.6.2 Membership and Satisfaction with Water User Associations⁵

Table 23 illustrates sampled households' membership and satisfaction with the services offered by the Water User Associations (WRUA). About 18% of those interviewed indicated that they were members of various Water User Associations in the project targeted areas. Membership of the water user association was higher among the male-headed households than female-headed households. Water User Associations were more common in Meru (22.5%) and Kitui (32.5%) and least in Taita Taveta (just 4.5%). In Taita for example, those consulted stated existence of Upper Water Resources Users Association and the Lower Water Resources Users Associations. According to key informants in all the counties, water user associations are mandated to sensitize members on the rules and regulations governing use of water resources, which they have failed to effectively. This explains why just a third of the members (34.1%) stated moderate to high levels of satisfactions with the services provided by the WRUAs. A number of challenges such as lack of involvement of local communities in management of water resources, drop in water levels due to destruction of water catchments, settlements along the river banks and around other water sources and illegal abstraction of water through illegal water pumps for private farms for irrigations, that continue unabated have undermined the effective management of the resources for the benefit of the whole community. Construction of watering trough along the river canals/banks has potential to reduce erosion as a result of direct watering of animals in rivers and other water points. This also has potential for reducing water resource-based conflicts between pastoralists and agro-pastoralists. The county government and its partners can take lead in ensuring that such projects are implemented successfully. On the other hand, Water Resources Management Authority (WARMA), the National Authority that owns and mandated with effective management of all the water resources should also step up efforts to enhance enforcement of the law and regulations that govern management of water resources so as to eradicate illegal exploitation of the available water resources. Mechanisms such as payment for environmental services (PES) should be instituted for sustainable management of the

⁵ A WRUA is an association of water users, riparian land owners, or other stakeholders who have formally and voluntarily associated for the purposes of cooperatively sharing, managing and conserving a common water resource (WRM Rules 2007).

resource.

Table 23: Membership and Satisfaction with Water Users Association Services

	% of farmers who are members of Water User Association	Satisfaction with the service offered by the Water User Association				
		Not satisfied at all	Fairly satisfied	Neutral	Satisfied	Very satisfied
Whole sample	18.1	21.6	37.5	6.8	20.5	13.6
Male	18.7	22	35.8	6.3	20.8	15.1
Female	14.6	17.6	52.9	11.8	17.6	0
Below 35 years old	18.6	23.1	38.5	0	15.4	23.1
Above 35 years old	18.1	21.3	37.3	8	21.3	12
Meru	22.5	12.5	62.5	5	2.5	17.5
Tharaka Nithi	10.8	31.2	25	6.2	31.2	6.2
Kitui	32.5	33.9	23.2	8.9	25	8.9
Makueni	23.2	15	27.5	7.5	27.5	22.5
TaitaTaveta	4.5	25	25	0	37.5	12.5
Machakos	13.9	6.2	68.8	6.2	12.5	6.2

3.6.3 Access to on-farm modern structures for livestock production

This study also examined household's ownership of various modern on-farm structures critical for meat production. The on-farm structure includes crushes, crop enclosure, water tank, hay ban and holding pens. Study results reveal that just 10% of the total sampled households had access to the modern structures on-farm, an indication of low adoption rates (Table 24). Apart from water tank, the adoption rates of all the other modern on-farm structures were below 10%. This is opportunity for the program to work with various stakeholders to promote adoption of these structures through on-farm demonstrations using the farmer field school approach.

Table 24: Access to On-farm Structures by sampled Households

	Whole sample	Male	Female	Below 35	above 35 years	Meru	Tharaka Nithi	Kitui	Makueni	TaitaTaveta	Machakos
% of farmers owning crush	3.0	3.4	0.7	0.0	3.5	3.9	8.2	1.0	0.0	3.4	1.2
% of farmers with Pasture/crop enclosure	7.0	7.2	5.6	2.1	7.7	3.4	4.6	6.0	14.1	4.5	9.6
% of farmers owning water tank	28.9	29.9	22.2	26.9	29.1	33.7	40.2	10.5	26.6	33.5	30.1
% of farmers owning feed store	9.3	10.3	2.8	6.2	9.8	2.8	1.0	23.0	11.9	1.7	15.1
% of farmers owning Hay Ban	4.4	4.5	3.5	3.4	4.6	1.7	2.1	3.5	11.3	3.4	4.8
% of farmers of owning holding pen	3.2	3.6	0.7	3.4	3.2	2.8	3.1	7.0	0.6	5.1	0.0
% of farmers with access to two or more modern on-farm structures ⁶	10.6	11.5	4.9	5.5	11.4	7.9	9.8	11.0	12.4	7.4	15.7

⁶ On-farm structures examined here are: hay ban, feed store, water tank, holding pen, crush)

3.6.4 Key Program Performance Indicators

Table 25: Key Performance Indicators for Result Area

Key Performance Indicator	Baseline Value	Target	Suggested Amendments to the PMP and Future Monitoring
Result Area: Increased Access to Clean Water Systems			
Number of community-based water points constructed or rehabilitated	0	Target redistributed over the program period	Indicator is output based and will be monitored during program roll-out; Year one focus is on setting up of the project
Number of water user association trained to administer and maintain community based water points	0	Target re-distributed over the program period	Indicator is output based and will be monitored during program roll-out; Year one focus is on setting up of the project
Value of In-kind grants dispersed to water user Associations	0	Target re-distributed over the program period	Indicator is output based and will be monitored during program roll-out; Year one focus is on setting up of the project
Number of farmers and community members benefiting from the new or rehabilitated community based water points	0	Target re-distributed over the program period	Indicator is output based and will be monitored during program roll-out; Year one focus is on setting up of the project
Result Area: Infrastructure: On farm			
Number of on-farm infrastructure projects carried out	0	Target re-distributed over the program period	Year focus is on setting up project operations
Number of cooperatives trained to manage and maintain on- farm infrastructure projects	0	Target re-distributed over the program period	Year focus is on setting up project operations
Value of in-kind grants to cooperatives investing in on-farm infrastructure	0	Target re-distributed over the program period	Year focus is on setting up project operations
Number of farmers benefiting from new or rehabilitated on-farm infrastructure	0	Target re-distributed over the program period	Year focus is on setting up project operations
Result Area FFPr 1.2.2 Improved infrastructure to support on- farm production			
Number of farmers with access to sufficient water inputs through off-farms structures supported by USDA	0	No change	
Number of farmers with access to two or more modern on-farm structures	0 Baseline (10.6%)	No change	

3.6.5 Challenges facing Livestock Producers across the sites

Water shortage during dry seasons: Frequent and prolonged droughts cause huge herd losses as farmers move the livestock across the counties in search of pasture and water. This was mainly noted in parts of Tharaka and Tigania East. Although water is available from boreholes and private venders, the cost is prohibitive for farmers with large number of animals as a 20L Jeri can retails for between Kshs. 5- 20.

Insecurity and cattle rustling: This was cited as a key challenge by livestock producers in Tigania East. The local communities recommend establishment of a well-equipped police post to stem insecurity.

Cattle rustling has resulted in loss of human life and large herd of animals. The locals are clustered and live in small crowded village around administration police post to beef up their security.

Livestock diseases: Livestock diseases such as East Coast Fever are common across the study sites. This is mainly due to inadequate tick control and livestock movements along the corridor enroute to major livestock markets in Nairobi and other part of the country. Transmission also occurs during interaction in search of pasture and water. Other major diseases are Anaplasmosis, East Coast Fever (ECF), Contagious Caprine Pneumonia (CPP), Contagious Bovine Pneumonia (CBP), Foot and Mouth Disease (FMD), Anthrax, Black Quarter, Rinderpest, Rabies. The situation is worsened by delayed in response by government vaccinations outreaches.

Inaccessibility and unaffordable inputs: Livestock farmers consulted cited inaccessible veterinary services and expensive farm inputs as contributing to spread of diseases. Most farmers resort to self- diagnosis and buying antibiotics for treating their livestock, a factor that has led to abuse of antibiotics and death of livestock.

Inadequate markets infrastructure: Lack of markets for livestock was cited as a key factor in the stagnation of growth of the livestock. For instance, Tigania East and Taita Taveta have not no single livestock market within the sub-county. According to key informants, farmers mainly sell to middlemen. Lack of market during the dry seasons or at onset of droughts is also a key concern raised by farmers consulted in the survey.

Human Wildlife Conflict: Human wildlife conflict was reported mainly in control sites in Kibwezi (Makueni) and in Taita Taveta counties, which boarder the Tsavo national parks. According to those consulted, wildlife cause injuries to herders and death to livestock – in Taita Taveta, a farmer narrated how his 30 goats were mauled by a leopard that strayed from the park. Furthermore, no compensation has been offered by the Kenya Wildlife Services personnel who accused the farmers of grazing their livestock in the park.

Due to subdivision of the formerly communal ranches after the land was bought by the government for resettlement of squatters, the pastures or grazing lands have shrunk leading to inadequate pasture.

Conflict over pasture: It is important to note that 62% of land in Taveta Sub County constitutes a national park. This deprives the local livestock farmers of grazing lands especially during droughts. However, the participants shared in confidence that although the national parks are located within their county, politicians from Maasai and Somali communities pushed for their pastoralists to be allowed a corridor in the national parks to graze their animals, yet local livestock farmers get arrested when they are found grazing in this corridor during droughts.

Lack of good breeding stock: The major breeds in the region are indigenous which are small bodied and have low body weight. This challenge can be addressed by introducing improved breeds to make crosses with these local ones.

Insufficient pastures: The bare land should be re-seeded with improved pastures. Farmers should be taught and be encouraged to do fodder conservation and good use of crop residues.

Lack of extension services: There are only very few government livestock officers covering the sub-counties of study. There are also very few private providers offering extension services. The solution is to have employment of technical support staff in veterinary and livestock production sectors, also get involvement of private service providers.

3.7 FFPr 1.2.3: Increase Use of Financial Services

3.7.1 Access to credit

According to the results of this survey, 26% of livestock producers interviewed that applied for credit, with 25% stated receiving credit from various sources in the past two years (Table 26). The main sources were Merry-go round and Rotating Savings and Credit Associations (ROSCAS) and SACCOs. Others were commercial banks, ag finance cooperatives, and micro-finance institutions.

Table 26: Credit access by sampled households

	Percent applied for loan/credit from any financial institution source in the last one year	Percent that received the loan/credit applied for in the past one year
Whole sample	25.9	25.0
Male	26.1	25.2
Female	25.1	24.0
Below 35 years old	21.1	18.7
Above 35 years old	26.8	26.1
Meru	25.4	24.4
Tharaka nithi	22.4	21.4
Kitui	18.1	17.6
Makueni	24.0	22.5
Taitataveta	47.5	46.5
Machakos	17.9	17.4

Credit received was put to varying uses such as purchase of livestock, livestock inputs and other farm inputs (Table 27). Across the counties, there was general fear of taking loans because property would be confiscated in case of default. The lending terms of most of the financial institutions were prohibitive. For instance, one that requires a land title deed as a collateral requirement for loans have kept most people away especially where land is communally owned. Other financial institutions charge interest as high as 16.9% per annum. Livestock producers prefer individuals from amongst them who issues them with credit

at lower interest rates. Others felt that the loan applications were ‘invasive’ requiring one to provide so many details of oneself and activities. According to county livestock officials, the volatile weather situations coupled with frequent and prolonged droughts have made the areas generally unattractive for any financial service provider. Livestock insurance is generally not known by farmers across all the study sites.

Table 27: Uses of credit/loans received

	Livestock	improved livestock inputs	Building (livestock related)	Livestock equipment	Other livestock assets	Other Farm Inputs	Fees	Other
Overall	13.1	6.1	4.8	2.2	1.0	11.9	31.7	29.2
Sex of HH Head								
Male	12.2	6.5	5.7	2.7	0.4	11.8	31.2	29.7
Female	21.4	4.8	0.0	0.0	2.4	14.3	35.7	21.4
Age								
below 35 years old	9.4	12.5	3.1	6.3	0.0	18.8	18.8	31.3
above 35 years old	13.9	5.5	5.1	1.8	0.7	11.4	33.3	28.2
County								
Meru	14.5	1.8	1.8	0.0	0.0	12.7	50.9	18.2
Tharaka Nithi	10.4	8.3	6.3	0.0	0.0	22.9	20.8	31.3
Kitui	16.7	8.3	2.8	2.8	30.6	33.3	2.8	2.8
Makueni	16.7	0.0	4.8	4.8	40.5	28.6	4.8	0.0
TaitaTaveta	7.1	7.1	5.1	10.2	30.6	35.7	3.1	1.0
Machakos	24.2	12.1	9.1	18.2	9.1	21.2	3.0	3.0

The table highlights that the extent to which youth are taking loans and investing in livestock inputs(such as livestock equipment and farm inputs) is higher (12.5% and 9.4%, respectively) than the other ageset. The age set older than 35 invest more of the loan they access in buying livestock (13.5% and 5.5%) than in inputs for livestock. This may indicate that youth are more likely to adopt new techniques than the older set of farmers.

3.7.2 Key Program Indicator and their baseline value

Table 28: Key Performance Indicator and Baseline Value

Key Performance Indicator	Baseline Value	Target	Comments
Result Area FFPr 1.2.4: Increased use of financial services			
Number of farmers and other accessing financial services as a result of USDA assistance	0	Targets re-distributed	Year one focus is on setting up the project operations
Proposed Indicator: Proportion of farmers accessing credit services as a result of USDA assistance	25.6%		
Facilitate Agricultural Lending			
Number of livestock enterprises linked to financial institutions	0	Targets re-distributed	Year one focus is on setting up the project operations
Number of loans disbursed to livestock enterprises as a result of USDA assistance	0	Targets re-distributed	Year one focus is on setting up the project operations
Number of farmers and other receiving financial training as a result of USDA assistance			
Number of livestock cooperative /producer group members benefiting from financial services as a result of USDA assistance			
Activity: Financial Services			
Number of financial institution partners identified	0	Targets re-distributed	Year one focus is on setting up the project operations
Value of agricultural and rural loans provided as a result of USDA assistance	0	Targets re-distributed	Year one focus is on setting up the project operations

3.8 FFPr SO2: Expanded Trade of Agricultural Products

3.8.1 FFPr 2.1: Increased Value added to Post-Production Agricultural Markets

3.8.1.1 Key Features of Processors

This study examined the post-production, processing and handling practices of slaughterhouses, slaughter slabs and butcheries operating the project targeted counties. All the slaughterhouses were fall under category C classification⁶. All the slaughterhouses are owned and managed by the Counties, while some are leased to private operators for a fee. The slaughterhouses charge a fee of between Kshs. 150-300 for individual butchery owners for the use of the slaughterhouse/slaughter slabs.

3.8.1.2 Post-Production, Processing and Handling Practices

- Live animals are held in the holding pen outside slaughterhouses. Humane slaughtering is done using a captive bolt pistol. Blood is then completely drained, before flaying is done using normal knives. According to key informants, few of the slaughterhouses had specialized knives for flaying to ensure high quality hides and skin.
- Evisceration is then done (removal of internal organs) and the products washed outside the slaughtering room. A key feature of most of the slaughterhouses was lack of separate rooms for the

⁶ This is the lowest category of local slaughterhouse as per Kenya Meat Control and Regulation 2010.

bowels – no separation from clean and dirty room. As observed by one meat inspector, this is a main cause of contamination of meat products.

- The carcass is then split into two and a meat inspection is undertaken by an authorized veterinary officer. According to key informants, splitting is mainly done manually using an axe or saw, causing bone shattering. Winches and chain links to hoist carcass were also lacking.
- If inspection finds carcass fit for human consumption, it is transported to local butcheries. A condemned carcass is thrown into a pit within the slaughter compound.
- The main livestock products processed from the slaughterhouses are beef, chevron and on rare occasions, mutton.
- None of the slaughterhouses had chilling facilities or cold rooms. This is essential in terms of preserving and maintaining meat quality so that processed products fetch the best prices in the market. This is the same scenario observed for nearly all the butcheries sampled in the study sites which lacked deep freezers, mostly due to affordability and in some cases lack of electricity or power connection.

3.8.1.3 Hygiene practices at the Slaughter Houses

According to the Meat Control and Regulation 2010, slaughterhouses are supposed to observe a number of practices in compliance with hygiene standards. These include:

- Personnel dealing with or handling any meat products must be medically approved and certified by the Public Health department
- They must also be in protective gear such as white clean gum boots, white clean dust coats, and white clean caps. They must all observe hygiene within and without the slaughter area
- For the sake of taking into account issues of religious sensitivities in the slaughtering of livestock products, a Muslim appointed by the local mosques must participate in the slaughtering processes. This person must also observe the hygiene standards set by the operating rules and regulations
- Transportation of the processed products must also be done in a hygienic manner, using specially designed metal containers marked 'MEAT' to the local butcheries or institutions conducting business with the meat suppliers

However, hygiene standards are way below recommended practices and laid down rules and regulations. This is according to information obtained from key informants.

3.8.1.4 Transportation and Marketing of Processed Beef Products

- Meat products and other by-products are delivered to the local butcheries or institutions using meat boxes either carried by motorcycles, bicycles, auto rickshaws (tuk tuk) or station wagon cars.
- The metal containers are painted white with a red band across with an inscription 'MEAT' along the red band. They also supply to local secondary schools, boarding primary schools as well as hotels. The meat products processed include beef and chevron (goat meat), and offals.

3.8.1.5 Disposal of Wastes

- All slaughterhouses have a pit where the stomach content is drained. This is later scooped as manure for use in the farms after decomposition.
- Effluents from skins and hides are drained into a pit while meat based wastes are disposed at the condemnation Pit which is located within the slaughter house compound and later incinerated
- Blood and other liquid based wastes are dispatched to the Soak Pit
- None of the slaughterhouses had NEMA environment certification

3.8.1.6 Business Management Practices

Nearly all the slaughterhouses sampled had some basic records of invoices, sales, and expenses. All the slaughterhouses also kept records on number of livestock slaughtered and condemned which were also kept with the meat inspector. None of the facilities filled financial returns except where they were lease out.

Table 29: Turnover in Slaughter Houses in Mwingi Sub-County

Year	Bovines	Goats	Poultry	Pigs	Revenue	Estimated loss
2011	4161	7663	398	-	612321	490,312/=
2012	4057	10856	1410	35	681195	790,540/=
2013	5863	11627	500	82	809787	699,695/=

3.8.1.7 Handling processes at the butcheries

- Once the meat is in the butchery, it is further split for easy handling and hoisted using metal hooks. There is no specialized processing of meat apart from cutting into required weights as per customer requirement.
- Manual weighing scales is commonly used except in town centres where digital ones are used. The use of digital was common in Makueni and is recommended as manual weigh scales are open to manipulation by unscrupulous butchery owners.
- Splitting is done using axe and wooden stocks to cut meat into required weights are per customer instead of a splitting machine
- Butcheries lack class white cover slab necessary for recommended high standards of hygiene
- Record keeping is very basic – recording made of stock bought, expenses and sales.
- Some butcheries also engage in cooking processed dairy products by boiling, frying and roasting meat
- Polythene papers and old newspapers as wrapping materials for meat sold except in town centres

3.8.1.8 Hides and Skin Traders

- Hides and skins are also sold to local traders who resell them to traders in either Mombasa or Nairobi
- The main method of preservation is wet salting
- Tanneries were lacking in most of the counties surveyed, affecting effective processing and trading in hides and skins

- The Common feature across the sites is a local structure used for treating and drying the hides ready for sale to traders from either Nairobi or Mombasa where most buyers are based.
- Lack of use of specialized flaying knives contributes to poor quality of hides and skins.

3.8.2 FFPr 2.1.2 Increased Efficiency of post-production processes

Box 1 is an illustration of cost of processing per unit as per estimates from livestock processors consulted during the survey. Reliable statistics from the slaughter houses are lacking to enable statistical computation.

Box 1: Processing costs of livestock based on focus group discussions.

The cost of slaughtering a goat is Ksh 250 (inclusive of Ksh 50 for the vet doctor) while the cost of slaughtering a cow is Ksh 750 (inclusive of Ksh 200 for the vet doctor)

Most butchers transport the meat in boxes using carts, motorbikes or pick-ups whose price range from Ksh 1,000 (goat) to Ksh 4,000 (cattle) per animal

The price of a goat equivalent to 25kg of meat after slaughtering is Ksh 6,000 while the meat is sold at Ksh 400/kg leading to a gross return and an estimated profit of Ksh 10,000 and Ksh 2,000 respectively

The price of a bull to 150kg of meat after slaughtering is Ksh 30,000 while the meat is sold at Ksh 350/kg leading to a gross return and an estimated profit of Ksh 52,500 and Ksh 15,000 respectively

3.8.3 Key Challenges facing processors in the study sites

- Lack of cold chain management
- Lack of access to credit: most financial institutions especially the banks tend to lock out processors due to the potential risks involved and also the requirement of collateral
- Lack of hygienic packaging materials
- Lack of constant water supply which is a major contributing factor to observing hygiene standards in the slaughterhouses. The tap water flow to slaughterhouses is inconsistent, forcing the owners to use alternative supplies which are very expensive, affecting profits margins.
- Lack of modern equipment and technologies such as digital weighing machines as well as proper cutting instruments which prevents bone shattering.
- Lack of records (on prices, animals slaughtered etc.) and knowledge on simple gross margin analysis
- The licensing regime is also tedious. There are so many licenses for the marketing players required by varied governmental agencies e. g. public health department, county government etc. This is expensive and cumbersome for the players and there is need for harmonization.
- Frequent power blackouts at the slaughterhouse affects operations especially in regards to refrigeration, occasioning losses to the marketers. This problem also affects water supply.

3.8.3 Some Opportunities for K-SALES Program and other stakeholders

- Some groupings exist such as in Taita Taveta. These are important avenues for program to mobilize stakeholders
- Bones, horns and hooves are regarded to have little economic value and are used as fuel in the butcheries. This remains largely unexploited in the study areas.
- The processors interacted with were generally unaware of the quality standard certifications such as HACCAP. Yet these are critical if they are to access export markets.
- Support in terms of initiating tanneries at various locations
- Training of processors on good hygienic practices
- Training of processors on good financial management practices
- Linking processors to financial services to access credit for investment in digital weighing machines and specialized flaying machines
- Support for livestock processing infrastructure. A number of slaughterhouses/structures remain incomplete or are operating under-capacity. For instance, one slaughterhouse which according to key informants requires less than Kshs. 1,000,000 to become fully operational yet has been lying incomplete since 2010 having being initiated as part of Decentralization Agricultural Sector Support (DASS) Program.

3.8.4 Key Performance Indicators and their baseline values

Table 30: Key performance Indicators

Key Performance Indicator	Baseline Value	Target	Comments
Result Area SO FFPr 2.0 Expanded trade of Agricultural Products (Domestic, Regional and international)			
Percent increase in the value of locallytraded livestock products (meat and skin) (38)	TBD		
Number of jobs attributed to USDA assistance	0		
Result Area 2.1: Increased value added to post-production agriculture products			
Percent increase in the average margin between farm gate price and price of processed product (39)	0, Baseline margins TBD		Indicator more suited to dairy set-up. It is suggested that this indicator be dropped
Results Area: 2.1.1 Improved quality post-production agricultural products			
Percent increase in volume of processed products certified as meeting Kenya Bureau of Standards (KEBs) quality requirements (40)	0, Baseline volumes TBD		30% appears ambitious since this may begin to be realized after the second year. We recommend a target of 15% over the three year period. Further given the standards in the slaughter houses, use of KMC standard A is deemed suitable.
Result Area: 2.1.2 Increased use of improved post-production processing and handling practices			
Percentage of livestock enterprises using modern equipment to process livestock products as a result of USDA assistance (41) (Listed as flaying knives, stunning gun, sharpening steel, block and tackle, skinning rack, working platforms)	TBD		
Percentage of livestock enterprises using improved techniques to process livestock products as a result of USDA assistance (42)(this describes how the processing is done using the equipment above)	TBD		
Post-harvest handling and processing			
Number of post-harvest handling and processing facility employees trained in improved processing techniques (43)	0		Indicator is output based
Number of post-harvest handling and processing facility employees trained in sanitary standards (44)	0		
Increased efficiency of post-production processor			
Average percentage decrease in post-harvest processing cost per animal (45)			Statistics could not be computed as slaughter houses visited did not keep comprehensive records on costs
Improved post-harvest infrastructure			
Number of new post-harvest handling infrastructure projects completed as a result of USDA assistance (46)	0		

3.9 FFPr 2.2 Increased Access to Markets to sell Agricultural Products

3.9.1 Key Features of livestock markets in study counties

- The farmer choice of market for livestock is mainly determined by distance, prevailing price of livestock and mode of transport
- The dominant mode of transportation of livestock from neighboring villages to the market is trekking. Value addition is limited to castration and feeding of livestock of multi-vitamins and salt lick to improve quality of meat before selling.
- There are few or no marketing associations in most of the targeted areas
- The livestock markets are controlled by middlemen
- Price of livestock is negotiated based on stature, age of animal and body condition. Sale of livestock based on weight is yet to take root in all counties
- Lack of market infrastructure – livestock markets were lacking in Tigania East in Meru County and in Taita Taveta.
- A common feature of the local livestock markets was a fenced perimeter that helped restrain livestock during auctioning. None of the holding yards had watering troughs, which is a source of strain for animals in auction. Some of the markets have loading ramps while most did not. Some also had pegs for tethering shoats.

3.9.2 Household incomes from sale of Livestock

Table 31 shows the distribution of households' income from sale of livestock. Mean income from sales of livestock is significantly higher among male-headed households (Kshs. 18,321) than for female-headed households (Kshs. 7424). Those above 35 years of age also had significantly lower incomes than the youth. With regard to the counties, higher incomes were reported in Meru and Makueni counties, respectively. Notably, shoats have a high share (75%) in the total household income from livestock sales.

Table 31: Household income from livestock sales (Kshs)

	Beef (KES)	Goat (KES)	Sheep (KES)	Shoats (KES)	All livestock (KES)	% contribution of income from sale of shoats to total household income from sale of livestock
Whole sample	16883.3	8702.1	2498.6	11200.7	28084.0	73.4
Male	18321.6	8889.4	2530.0	11419.4	29741.1	71.9
Female	7424.3	7470.0	2292.0	9762.0	17186.3	83.1
below 35 years old	23958.6	8999.3	2723.8	11723.2	35681.8	74.3
above 35 years old	15815.6	8655.1	2464.7	11119.8	26935.4	73.2
Meru	22762.9	7135.5	2554.6	9690.1	32453.0	71.3
Tharaka Nithi	16558.2	9375.7	2836.6	12212.3	28770.5	64.6
Kitui	15606.0	8751.3	2169.2	10920.5	26526.5	70.0
Makueni	19779.7	9113.5	2355.8	11469.4	31249.0	74.7
Taita Taveta	9733.0	8827.5	2835.4	11662.9	21395.8	82.7
Machakos	16990.4	8963.7	2235.5	11199.2	28189.5	78.7

3.9.3 Livestock Farm-gate prices

Table 32 shows the farm-gate prices received by farmers from sales of livestock in 2013. Mean farm-gate prices ranged from Kshs. 27,000 for cows to Kshs. 2,217 for shoats (Table 32). Kitui enjoyed relatively high farm-gate prices of cattle as compared to the other counties.

Table 32: Mean and Median Livestock Farm-gate Prices

			Cattle			Goat			Sheep	
	Project area	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median
County	Whole sample	1091	27013	29467.1	1091	3744.3	3556.5	1091	2217.2	1826.2
Meru	Control	102	27537.8	29467.1	102	3924.4	3619.4	102	2368.5	1766
	Treatment	76	27062.2	24093.4	76	4082.5	3559.7	76	2621.2	2966.7
Tharaka Nithi	Control	101	23214.8	25000	101	3266.3	3000	101	2033.9	1826.2
	Treatment	93	29407.7	30000	93	3628.6	4000	93	2037.6	1826.2
Kitui	Control	102	26744.2	28733.6	102	3630.9	3162.1	102	2051.6	1766
	Treatment	98	28115.1	30000	98	3686.2	3500	98	1790.6	1766
Makueni	Control	102	26354.5	21645.4	102	4176.7	4500	102	2332.1	2692.3
	Treatment	75	26355.2	25000	75	4120.4	4000	75	2342.6	2692.3
TaitaTaveta	Control	87	26446.1	29467.1	87	3806.1	3619.4	87	2426.9	2966.7
	Treatment	89	28683.4	29508.8	89	3544.8	3619.4	89	2304.8	1833.3
Machakos	Control	98	26416.2	23145.4	98	3606.4	3324.1	98	2329.8	2692.3
	Treatment	68	28463.6	30558.3	68	3536	3556.5	68	2113.3	1833.3

3.9.4 Key Performance Indicators

Key Program Indicator and Number	Baseline Value	Targets	Suggestions for revisions of PMP and future monitoring
Increases access to markets to sell Agricultural products			
Percentage increase in number of distinct markets to which livestock and livestock products are sold as a result of USDA assistance	0		
Proposed Indicator: Mean Farm gate price per unit of livestock (Kshs)	Cattle –27,013 Goat- 3744 Sheep - 2217		Disaggregated by livestock type, prices will be deflated at the baseline value
Improved linkages between buyers and sellers			
Number of agreements, signed contracts, and/or MoUs between buyers and sellers as a result of USDA assistance (51)	0		Indicator is output based and will be tracked during the roll-out of the project. No marketing associations exist in the targeted counties
Develop Cooperatives Business Capacity			
Number of livestock enterprise staff and cooperative members trained to market agricultural products (52).	0		
Number of livestock enterprise staff and cooperative members trained in improved business management (53).	0		Indicator is output based and will be tracked during the roll-out of the project. No marketing associations exist in the targeted counties
Infrastructure Off: farm			
Number of livestock enterprises investing in new or rehabilitated livestock marketing and trade infrastructure (47)	0		
Value of in-kind grants provided to livestock enterprises investing in off-farm infrastructure (48)	0		
Number of infrastructure projects carried out (49)	0		
Number of study tours facilitated (54)	0		
Value of private and public sector investment in market and trade infrastructure as a result of USDA assistance (55)	0	Target re-distributed	
Increased use of financial services			
Number of livestock enterprises in target region accessing credit through formal financial products as a result of USDA assistance	0	No change	
Improved transaction efficiency			
Per-cent reduction in cost required to trade goods (57)	TBD	No change	
Improved management of Buyer/seller groups within Trade Sector			
Number of livestock enterprises that actively use business/marketing plans as a result of USDA assistance (58)	0		
Number of livestock enterprises using improved financial management tools in decision making as a result of USDA assistance (59)	0		
Improved market and trade infrastructure			
Value of private and public investment in the market and trade infrastructure as a result of USDA assistance.			

3.10 Impact Indicators

3.10.1 Household Food Security

Household food security was examined using Months of Adequate Household Food Provision (MAHFP) and Household Dietary Diversity Score (HDDS). MAHFP score basically indicates how many in the year the household had adequate food while HDDS examines the household consumption of different categories of foods to meet various nutrition requirements (See Hoddinot and Yohannes, 2002; FAO, 2010). Household diversity score is a qualitative measure of food consumption that reflects household's access to a variety of food, and is a proxy for nutrient adequacy of the diet of the individuals. The reference period for HDDS in this study was the last 24 hours following Savy et al. (2005). Table 33 displays the distribution of the study sites by MAHFP and HDDS. Generally, the farm households have 6 months of adequate food provision within the year. According to key informants, these months coincide with the crop harvesting seasons in most of the study sites. Households employ a number of strategies such as disposal of household's assets mainly livestock (50%) to meet their food requirements while others rely on relief food (10.2%) (See table 41). The mean dietary diversity score is 4.3 with the lowest score being reported in Meru, perhaps because of the pastoral nature of surveyed households.

Table 33: Household Food Adequacy and Dietary Diversity Score

	Months of Adequate Household Food Provision (MAHFP)	Household Dietary Diversity Score
Whole sample	5.8	4.3
Sex		
Male	5.9	4.3
Female	4.9	4
Youth		
Below 35 years old	6.1	4.2
Above 35 years old	5.7	4.3
County		
Meru	5.1	3.6
Tharaka nithi	5.8	4
Kitui	5.7	4.6
Makueni	4.1	4.8
Taitaveta	6.5	4.3
Machakos	7.6	4.4

3.11 Re-examining K-SALES Evaluation Design

This section details the baseline survey findings by making reference to Treatment and Control sites selected as part of K-SALES Project impact evaluation design. It compares selected variables across the treatment and control sites in all the targeted counties. These variables include value of household livestock ownership (in TLUs), average livestock body condition score, land size (acres), mean volumes and values of livestock sales and farm gate prices. Others are the household dietary diversity score (HDDS) and months of adequate food provisioning (MAFHP).

Generally, the data shows limited variance across the sites earmarked for program interventions and control (Table 34). Similarly, variations within targeted counties with respect to the treatment and control sites are mostly statistically insignificant (See Tables 40 – 44 in Annex 10). This implies a generally good match of the treatment and control sites and their suitability for impact evaluation implicit in the evaluation plan. However, caution is needed to ensure that most farmers sampled in the proposed treatment sites participate in the program to ensure adequate observations for impact assessment. It is also strongly recommended that follow-on surveys consider the effect of seasonality as some variables such as average livestock body condition score and HDDS are highly sensitive to weather patterns. One way of reducing the effect of seasonality would be to ensure that follow-on surveys are undertaken within the same period of the year as this baseline survey. While one would argue that the boost to the resilience of the targeted communities from K-SALES program would reduce effects of seasonality on livestock production, from an impact evaluation perspective this may likely result in underestimation of the impact of the study.

Table 34: Selected variables by treatment and control sites

Key Variable	Results	
	Treatment	Control
Livestock TLU	4.6	4.7
Size of land owned (acres)	7.3	8.1
Average Body Condition Score for Beef	2.7	2.7
Average Body Condition Score for Goats	2.8	2.8
Average Body Condition Score for Sheep	2.7*	2.9
Total current livestock value(USD) per household	1,653	1,749
Value of livestock sales per household (USD)	347*	316
Mean months of household food provision	5.7	4.9
Household Dietary Diversity Score	4.4	4.3
Mean number of beef sold	1.9	1.7
Mean number of goats sold	2.6	2.1
Mean number of sheep sold	1.2	1.1

Notes: * **Mean value different from control group at 0.05 significance level (T test)**

3.12 Policy Issues and Implications

Kenya has a land surface area of 582, 646 square km, of which 2% is under water, 16% is classified as high and medium potential (suitable for arable agriculture) while the remaining 84% as arid and semi - arid lands (ASALS) suitable for extensive livestock production, wildlife and irrigated farming (KNBS, 2014). Kenya's economy is characterized by high poverty rates, high dependency rates, high and increasing population as well as high dependency on subsistence smallholder agriculture (Republic of Kenya, 2013). Attendant issues such as increased subdivision, land degradation, reduced crop productivity and production within the arable lands, presents both opportunities and challenges for the livestock subsector especially in the ASALS. The opportunity presented is that of increased role of the sector in terms of livelihoods and supply of food while the challenge can be viewed in terms of the increased demand for staple food crops which is going to put part of the ASALS in irrigated farming. This puts pressure on resources for livestock production that is viewed to be more viable given the prevailing conditions in the ASALS.

3.11.1 The Livestock Sub-Sector

The livestock sub sector is vital to the country's economy. For instance, the sector employs close to 50 percent of Kenya's agricultural labor force and is a primary source of livelihoods for the 6 million pastoralists and agro-pastoralists that live in the country's arid and semi-arid lands (ASALS). However, the sub-sector's potential for poverty-reducing opportunities has largely been untapped, yet in the ASALS lies an immense base of natural resources endowment for the development of the meat, and associated by products such as hides and skins.

Generally, the livestock sub sector has been faced with many challenges and constraints that have impacted negatively on the rate of livestock development. These include weak policy and legal frameworks in livestock sub-sectors, low livestock productivity, erratic and unpredictable weather conditions which affect the quality and quantity of livestock feed and water supply. Others factors constraining the development of the livestock sub sector include the prevalence of trans-boundary animal and zoonotic diseases and pests coupled with inadequate technical capacity for disease control; weak delivery of extension services; and international market; and unreliable data and information management in the livestock industry.

The wealth of livestock-based economies of the ASALS is finally been recognized as an economic driver in the country with the development of national policy and frameworks to spearhead the region's development. To address the above challenges, the government of Kenya proposes to implement the following strategic interventions aimed at driving the transformation of the livestock development as outlined in the ASDS (2009-2020): i) Reviewing of policy, legal and institutional frameworks, some of which are outdated, ii) Improvement of livestock productivity, iii) Integrated development and

management of rangeland, iv) Improvement of animal health and quality assurance services; v) Improvement of access to market, vi) Establishment of a centrally coordinated livestock database, and vii) Implementation of disease free zones as a flagship project of Vision 2030.

A number of policy and legal frameworks of general and specific relevance to the livestock subsector, are already in place. The general policy documents include 1) the Constitution of Kenya, 2) the Vision 2030, and 3) the Kenya Comprehensive African Agricultural Development Plan Compact (based on the CAADP). Specific policies include: 1) the Medium Term Investment Plan (MTIP) for Kenya's Agricultural Sector-2010-2015, 2) the Agricultural Sector Development Strategy (ASDS), Vision 2030 Investment Projects-2012, 3) the National Livestock Policy (2008), 4) the land bill (2012) 5) the land policy (2009) and 6) the National water policy (2012). Under the devolved system, the relevant supportive policies include 1) the County Integrated Development Plans (CIDPs), 2) Urban Areas and Cities Act, 2011, 3) The County Governments Act, 2012, 4) The Transition to Devolved Government Act, 2012, 5) The Inter- Governmental Relations Act, 2012 and 6) The Public Finance Management Act, 2012. The Livestock policy (2008) in particular recognizes that over 80% of the land is in ASALS whose main livelihoods in livestock. The policy has an objective of revitalizing the livestock sub-sector and guaranteeing the sustainability of livestock farming as an economic activity in Kenya.

New opportunities for shared objectives in the livestock subsector are presented by the Jubilee Coalition Manifesto launched in February 2013 that provides for a more focused and lean institutional framework⁸ by merging ministerial functions. The Manifesto proposes establishment of national livestock insurance scheme, putting a million acres of land under modern irrigation, revamping the mandate of the National Livestock Board to ensure continuous research on livestock, improve the marketing and value addition of livestock produce and extend services to pastoralists and supporting the necessary infrastructure to support commercial agriculture and livestock production, among others.

3.11.2 Devolution and Opportunities for expanding Livestock sub-sector growth

The transition to devolved county governments presents huge opportunities for spurring the development of the livestock sector which is a devolved function. With the county government, the decision making is brought closer to the people to ensure that local livestock sub-sector needs are prioritized and resources allocated to actualize those needs. The following are some of the issues that relate to the livestock sub-sector that need urgent attention as the county governments look to support key economic drivers to expand its revenue base.

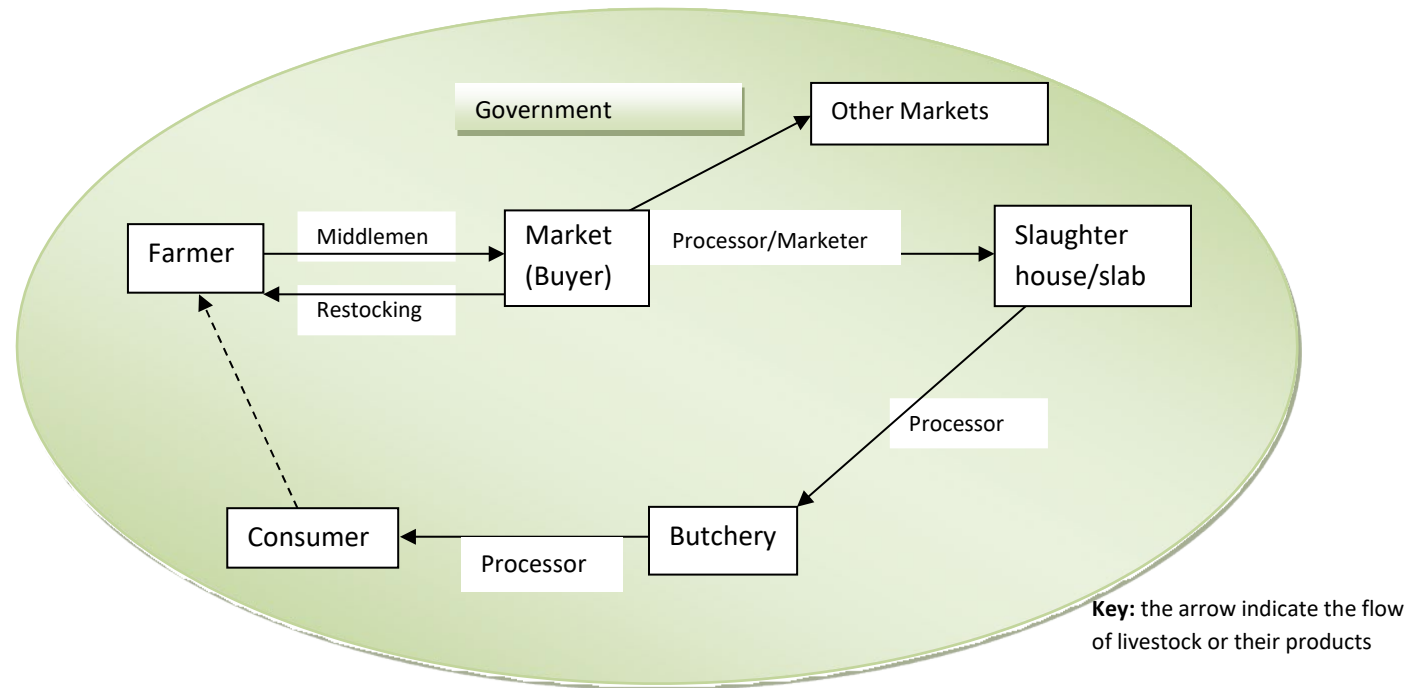
- Policies and legislative frameworks: the county governments are required to cascade national policy and legislative frameworks to the local priorities. This presents opportunity to revise some of the outdated policies with the K-SALES providing technical support. Additionally, Ministry of Livestock

⁸ Available at (<http://softkenya.com/jubilee-coalition-manifesto>)

Development has various institutions, occasioned with overlaps in mandates leading to duplication of efforts (Republic of Kenya, 2010). Reforming the legal and institutional frameworks, building capacity for delivery of animal health and quality assurance services and domestic and implement regional and international sanitary measures is also a key priority for the counties.

- Support for market and marketing infrastructure such as holding grounds are key priorities for the county government. For instance, most of the slaughterhouses in the counties are category C level and substantial investment in upgrading the infrastructure is necessary for them to adopt necessary quality certifications to supply local and export markets, thereby expanding the revenue base of the counties and local communities.
- Promoting suitable mechanisms for production and dissemination of real-time market price information among livestock producer
- Measures to enhance access to productive assets as land reforms, financial services for various players in the meat value chain, expanding and putting in measures for sustainable water resources management, while putting in place mechanisms to stimulate emergence of private sector players
- Strengthening local institutions such as marketing and water user associations while also harmonizing the role of key authorities such as National Drought Management Authority in sustainable management of the rangelands.
- Finally, more attention needs to be given to public private co-operation within the livestock sector such as the county government involving private veterinary practitioners in the distribution of vaccines and providing capacity building for livestock producers on importance of veterinary services and symptoms of livestock diseases. Special consideration should also be given to private vets in the semi-arid areas who wish to apply for loans from the government fund to enhance their businesses.
- K-SALES can support in advocacy and implementation of some of the jubilee manifesto strategies which are in line with its objectives
- Further research is needed to inform proper enterprise choice and mix for the targeted counties as the counties look to support enterprise diversification as risk reduction strategy but also recognizing the viability and fragility of the ecosystem.

Figure 2: Meat value chain flow diagram



4.0 CONCLUSION AND RECOMMENDATIONS

4.1 CONCLUSION

This baseline survey for the K-SALES project was carried out with the twin objectives of obtaining more information to aid design of interventions and benchmark the program performance indicators for future monitoring of its initiatives. The baseline survey was carried out across all the six counties working with the program, spanning the whole of the meat value chain.

Livestock Production Systems

The results of the survey show growing preference for goat enterprise because of resilience to drought, ease in rearing and marketing, although most farmers still place high value on cattle. Livestock kept are largely indigenous breeds which fetch little returns for farmers at the point of sale. Use of breeding improvement services such as bull schemes and artificial insemination is not widely practiced. There is low to moderate adoption of improved livestock husbandry and farm management practices with disease control measures such as de-worming, vaccinations and hand spraying being widely practiced across the six counties except for Taita Taveta. With regard to farm management practice, record keeping is least practiced across all the sites. Livestock production is still largely taken as a way of life and there is need for extensive farmer education for commercial orientation.

Water for livestock is a challenge in most of the program sites especially during the dry seasons. The current practice is to move with the livestock in search of water. Distances travelled to water points increased significantly during dry seasons with water shortage placing a heavier burden on women as they are also responsible for meeting other household water needs and chores. There is also need to promote water use and conservation efforts by strengthening water resource user associations for effective management of the scarce resource. Further support from the county governments and other development partners is also needed in developing appropriate community water supply systems for livestock and domestic use.

This calls for integrated and comprehensive programs to enhance access to productivity-enhancing affordable farm inputs, water for livestock use, disease control, credit, extension services and measures to manage other factors such as human wildlife conflict and insecurity due to cattle rustling that continue to impact negatively on the productivity of the sector. From the study, it appears the current extension system and technology and support is strong on providing veterinary care service but weaker on building other skills such as breeding, value addition, farm management and nutrition.

Business Service Providers

With regards to service providers, agrovets were the most common livestock input service providers providing a range of services from animal health services, stockiest of farm inputs. Adoption of farm management practices such as record keeping is low and at its basic level. Lack of credit is also cited as a key constraint in acquiring stock. Other challenges facing service providers in the meat value chain were lack of appreciation of the services by livestock producers, implying need for demand-side pull factors such as general farmer education to enhance demand for the various livestock production services offered. High cost of inputs is also a major hindrance with farmers responding by carrying out diagnosis by themselves, buying antibiotics over the counter and administering treatment to their animals. Other challenges cited were competition from what was described as uncertified practitioners and presence of counterfeit drugs in the market is also a key concern for the service providers as this also contribute to the distrust among livestock producers.

Livestock Processing

From the study, used of modern and specialized facilities such as cold storage, digital weighing machines, specialised knives for flaying. Proper cold chain management was lacking yet it is essential for preservation of meat quality to fetch premium prices in the market. Similarly, lack of awareness of the quality standard certifications such as HACCAP and observation of recommended hygiene standards are major concerns. Most of the processing facilities require upgrading and renovation and most operate under-capacity as they serve the local market and are mostly active on market days. Good management practices such as record keeping are not well adopted.

Tanneries for effective processing hides and skin are lacking with wet salting being used as the main method of preservation. Erratic water and power supply, lack of access to credit were some of the other challenges facing livestock processors that should be prioritized and addressed by counties and development partners.

Marketing of Livestock and Livestock By-Products

Results of this study indicate limited value addition at farm level. There are few marketing associations with marketing being dominated by middlemen. Selling of livestock is based on negotiated prices depending on observable characteristics of the animal such as body condition and age. Most of the study sites have designated places and dates for selling livestock except for Taita Taveta and Tigania East in Meru. Most of the place lack basic infrastructure such as watering troughs. At the processors level, value addition to bones, horns and hooves are largely unexploited.

In this regard, developing reliable market infrastructures ought to be a major priority. On one hand, the communities need to intensify their demand for this through the local leadership with the county

governments prioritizing these needs to spur local development. In addition, other infrastructural facilities like good roads and rural electrification that have impact of livestock marketing also need to be addressed.

Building Institutional capacities

The role of institutions in promoting sustainable livestock production especially in the ASALs cannot be overemphasized. Farmer groups are one way of ensuring a collective bargaining power. As per study findings, farmer groups, marketing associations and water user associations are either non-existent or faced with serious management challenges. Perhaps capacity building in leadership and governance to enable them function effectively and channel livestock producers' interests. At the higher level, there are numerous institutions and authorities such as Drought Management Authority which are critical for livelihoods in the ASALs yet their roles are not yet known. There is need for awareness creation and harmonization of their roles to serve local interests and priorities of livestock sub-sector in each of the counties.

Priorities for the County Government

On the policy front, the transition to devolved county governments provides huge opportunities for spurring the development of the livestock sector. With the county government, the decision making is brought closer to the people to ensure that local livestock sub-sector needs are prioritized and resources allocated to actualize those needs. This is particularly so as the county governments look for economic drivers to expand its revenue base. According to this survey, the following areas need the urgent attention of the county governments: cascade national level policies to local policies and legislative framework to support livestock development. This requires technical support. Support for rehabilitation of the dilapidated processing and marketing facilities in the counties is also a key priority as substantial upgrading the infrastructure is necessary for them to adopt necessary quality certifications to supply local and export markets.

Other areas are production and dissemination of real-time market price information among livestock producer, enhancing access to financial services for various players in the meat value chain, expanding water sources and domestic water harvesting, expanding veterinary extension services while putting in place mechanisms to stimulate emergence of private sector players, support for basic infrastructure such as roads and power. At farm level, there is need to support formation and strengthening of marketing associations and breeding enhancement programs to stimulate commercial livestock production.

Finally, more attention needs to be given to public private co-operation within the livestock sector such as the county government involving private veterinary practitioners in the distribution of vaccines and providing capacity building for livestock producers on importance of veterinary services and symptoms of

livestock diseases. Special consideration should also be given to private vets in the semi-arid areas who wish to apply for loans from the government fund to enhance their businesses.

4.2 RECOMMENDATIONS

This survey identifies a number of opportunities for enhancing productivity and competitiveness of the value chain at various levels.

At farm level

- Support for rehabilitation of water infrastructure and strengthening of water management committees remain urgent
- Increasing access to affordable recommended productivity-enhancing practices and technologies such as breeding improvement programs is critical. Use of participatory methodologies such as the farmer field school will enable farmers to test and validate some of the technologies for wide-scale adoption and to mainstream issues of gender.
- Mechanisms to enhance access to credit through alternative collateral arrangements will be vital
- Facilitating formation and strengthening of producer and marketing associations to provide farmers with platforms for better negotiation to reduce exploitation by middlemen
- Farmer education on importance of recommended technologies and practices such as seeking veterinary attention when livestock is sick.

At service provider level

- Capacity building on recommended technologies and farm management practices
- Enhance linkages to various input suppliers
- Enhance linkages to financial service providers

At processor level

- Capacity building on meat handling and hygiene practices and standards such as HACCAP and Good Manufacturing Practices
- Enhancing linkages to financial institutions to acquire modern facilities
- Support for rehabilitation or upgrading of processing facilities and market infrastructure

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ANNEX 1: TERMS OF REFERENCE FOR BASELINE SURVEY



Kenya Semi-Arid Livestock Enhancement Support (K-SALES) Project

Baseline Study Terms Of Reference



Kenya Semi-Arid Livestock Enhancement Support (K-SALES) Project

**Baseline Study (2014)
Request for Proposals**

Request for Proposals (RfP)

Applications are invited from recognized qualified firms to conduct a baseline survey for the Kenya Semi- Arid Livestock Enhancement Support (K-SALES) Project to collect baseline data to enable the project team to understand the current situation and inform target setting as per the attached solicitation. Under this solicitation, K-SALES, based on an open competitive selection process, will award a subcontract with a value of an agreed upon amount. If you decide to submit a bid, it must be submitted in accordance with the attached solicitation and received no later than the date and time indicated.

Land O'Lakes values consistency in M&E activities over the life of the project; as such, if the selected baseline firm conducts high quality activities within the agreed timeline and budget, and submits quality deliverables on time, Land O'Lakes will first consider proposals from the selected firm for future K-SALES mid-term and final project evaluations. Proposals for future activities will still be subject to the same rigorous assessment criteria, including a full cost-price analysis on the proposed budget. Any subsequent contracts for services will be at the sole discretion of Land O'Lakes, and Land O'Lakes reserves the right to reject any future proposals from the selected firm and reissue a full and open Request for Proposals for future evaluation activities. Award of a contract for baseline services does not guarantee future work under K- SALES or other Land O'Lakes projects.

1.0 Background

1.1 Project Overview

Box 1: Project identifying information

1. Program: USDA Food For Progress
2. Project Title: Kenya Semi-Arid Livestock Enhancement Support (K-SALES)
3. Project Number: OGSM: FCC-615-2013/030-00
4. Project Dates: September 2013 – September 2106
5. Project Funding: \$14,400,000
6. Implementing Organization: Land O'Lakes Inc, Kenya

Additional information on the project, including the project design document, the Evaluation Plan, the Performance Monitoring Plan will be made available to the winning bidder. Bidders may find it useful to consult a broad range of background documents apart from project documents provided by the K-SALES team. These may include documents that relate to livestock production and marketing (Central and County governments' policy documents), various value-chain assessments, public health documents, especially on safety requirements around slaughterhouses and butcheries, and water user associations, especially in the project area.

1.2 Target area and partners

K-SALES will operate in Meru, Tharaka-Nithi, Kitui, Makueni, Taita Taveta, and Machakos Counties. The counties have high poverty levels, high population diversity and high potential for staple food crop and livestock production. Additionally, the counties have large livestock holdings, local unmet demand for livestock and livestock products, and are strategically located within livestock trading corridors serving both

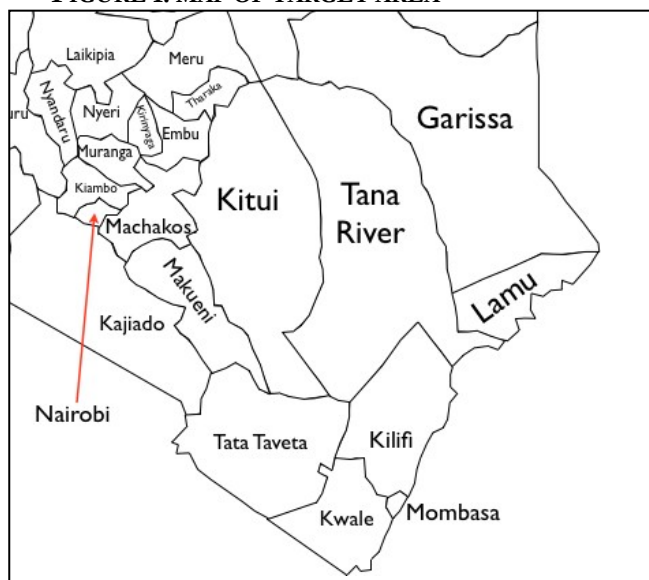
Nairobi and Mombasa markets. Within these counties, K-SALES will work with enterprises (farm and firm) that: have demonstrated farming or business stability with a clear interest and commitment to competitive growth through expansion and quality improvement; possess and operate livestock related agribusiness, and/or offer inputs to livestock producers and agribusinesses; exhibit a willingness to cost share on certain activities (as outlined above); and demonstrate knowledge, ability and motivation to participate in project activities. Livestock value chains are potentially profitable livelihoods for traditionally marginalized populations. K-SALES will focus on women, youth and economically marginalized populations as potential target beneficiaries. At least one-third of target beneficiaries will be women.

For activities that involve value-addition, K-SALES will directly work with and assist Kenyan organizations such as Business Development Service (BDS) providers, meat processors, wholesalers, financial service providers and retailers. K-SALES will select beneficiaries for value-addition activities who are:

- Active and contributing members of the Kenya Livestock Marketing Council, Kenya Livestock Producers Association, and/or Kenya Tanneries Association. In cases where small holder farmers who are nonmembers of these associations demonstrate interest in value addition, they will also be considered.
- Demonstrate the ability to adopt innovative practices and technologies aimed at improving productivity, product quality and food safety standards;
- Are willing and able to adhere to acceptable environmentally sound practices and demonstrate a commitment to social responsibility; and,
- Demonstrate the ability to raise financial resources needed for investing in improved marketing, quality and food safety; and,
- Show clear dedication to market-oriented business expansion.

An estimated 80,000 farmers, 700 providers of livestock inputs and services, and 2500 employees of livestock processing enterprises (slaughter houses and butcheries) are anticipated to benefit.

FIGURE 1: MAP OF TARGET AREA



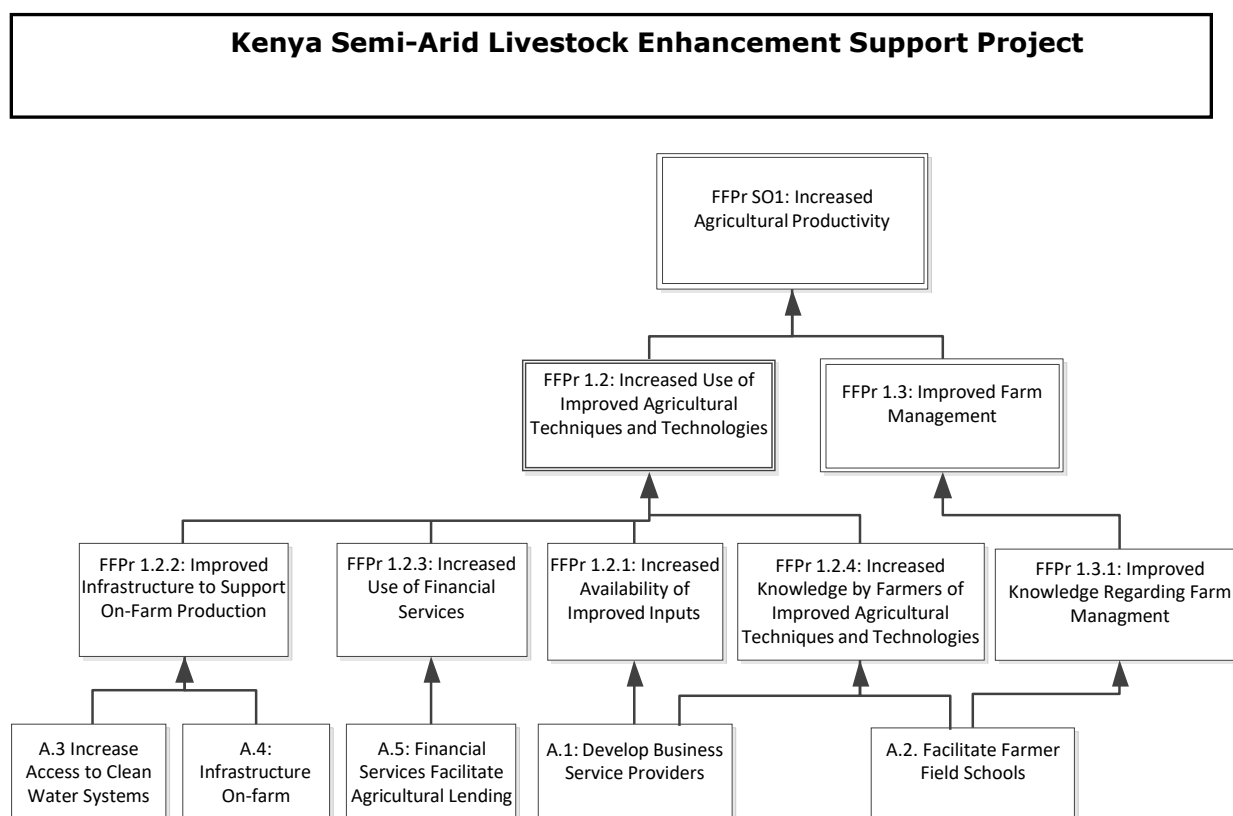
1.3 K-SALES Objectives

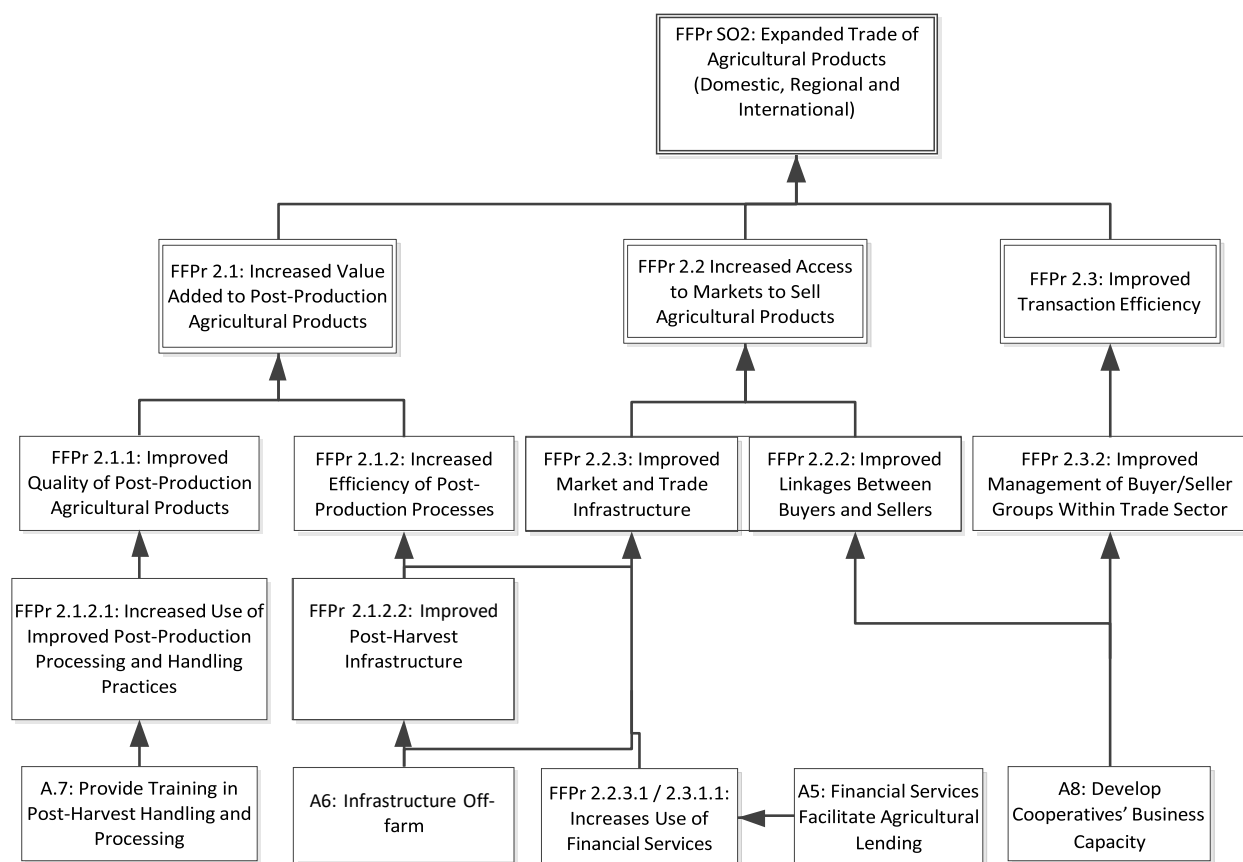
K-SALES aim to achieve the following objectives:

- Increase productivity of live animal and meat (cattle and shoat), and hides and skins value chains. K-SALES interventions will increase the availability of productivity and quality enhancing inputs, technologies and services, while increasing adoption of improved livestock and farm management techniques.
- The K-SALES Business Development and Water Development Funds will provide grants to leverage private financing for increased investment in business expansion, improved technologies and infrastructure, while the Capacity Building Fund will leverage grants to facilitate peer-to-peer learning.
- Following an increase in productivity, the project will increase producer and processor capacity in providing hygienic quality meats, hides and skins. K-SALES will stimulate and leverage public and private investment in infrastructure and technologies through matching grants. The project will strengthen vertical and horizontal linkages through capacity building and mentorships to improve linkages between buyers and sellers, buy-down risk of investment and reduce transaction costs.

The planned results from these activities are as shown in the Results Framework diagrams below. A detailed description of objectives and anticipated results is Appended (Annex 1).

Figure 2: K-SALES Results Frameworks





1.4 Project approach and implementation

K-SALES will engage with industry stakeholders who will assume project activity implementation, with staff playing a more facilitative role. Project staff will monitor activities without performing market functions directly. By overseeing the implementation of project activities, staff will build upon existing knowledge and experience of local organizations operating in the target Counties. An illustrative list of potential recipients include: Kenya Livestock Marketing Council; Kenya Livestock Producers Association; Kenya Tanneries Association; Kenya Meat Commission; Kenya Slaughter House Owner's Association; Livestock Producer Associations and Livestock Marketing Associations; Water User Associations.

This assignment will help identify existing organizations that K-SALES can partner with to achieve its objectives.

2.0 Baseline study

2.1 Purpose

The baseline study will help the project team to understand the prevailing livestock production, marketing and socio-economic situation of the targeted households and firms. It will also assess the target population's perceptions, levels of awareness, knowledge, attitudes and practices related to livestock production and marketing to allow proper formulation of capacity building interventions. The study will also capture baseline

data for all applicable K-SALES indicators that will be used to assess progress towards results at midterm and final evaluation. K-SALES will conduct impact evaluations to enable attribution of results to the project interventions. This study will therefore lay the foundation for attribution, and shall involve use of a control group.

Specific objectives of the baseline survey are:

- Assess the prevailing conditions relating to livestock (beef and shoat) value chains where K-SALES plans interventions,
- Establish both qualitative and quantitative baseline information for the indicators for which the project will regularly measure performance,
- Gather findings in light of which the annual targets for the indicators will be established or validated in the Performance Management Plan (PMP) which is available as Annex-2. Consulting firm will be required to provide recommendations on appropriateness of indicators and targets set as contained in the project PMP, and suggest improvements as appropriate.
- Establish quantitative and qualitative methodologies for specific indicators according to which subsequent data will be collected and compared to track and evaluate the project's progress and impact over the project lifespan,
- Gather necessary information regarding the situation and challenges on ground to make appropriate implementation decisions to maximize efficiency, effectiveness and impact of the project,
- Explain and/or validate the relevance and potential impact of K-SALES to key stakeholders,
- Incorporate stakeholder views and ensure strong partnerships, and
- Generate accurate information that can be used by Government of Kenya, Governments of targeted Counties, partners and stakeholders in developing the livestock sector.

To meet the purpose and specific objectives, this study will raise and answer critical questions in categories targeting each of project objectives and stakeholder category. Example of such categories and data to be collected will include:

Livestock producers: Current livestock husbandry practices, knowledge and skills on animal husbandry, access to water sources for domestic and livestock production, distance to providers of improved livestock inputs and service providers, livestock sales and income derived from livestock, livestock body condition, membership to livestock production and marketing groups and water user associations, need for credit, uses of credit, existing sources of credit, process of securing credit, repayment terms of credit, challenges in securing credit, and size of loans knowledge gaps, opportunities and challenges

Livestock producer and marketing associations: Membership, total cost of operations, current profit margins, number of marketing outlets used, current business operations practices, including existence of contracts with buyers, need for credit, uses of credit, existing sources of credit, process of securing credit, repayment terms of credit, challenges in securing credit, and size of loans gaps, opportunities and challenges

Business service providers: Knowledge and skills, current demand for services as depicted by input and services sales volumes and income, need for credit, uses of credit, existing sources of credit, process of securing credit, repayment terms of credit, challenges in securing credit, and size of loans, knowledge gaps, opportunities and challenges

Livestock processors (slaughter houses and butchers): Current practices (hygiene, meat handling, and transportation and storage practices), existing infrastructure (storage, hauling, holding pens, etc.) compliance

with set industry standards, need for credit, uses of credit, existing sources of credit, process of securing credit, repayment terms of credit, challenges in securing credit, and size of loans, gaps, opportunities and challenges.

Prospective partners: Roles in sector, challenges and opportunities project team would tap into/experience working with them.

2.2 Methodology

The baseline study will employ a quasi-experimental design, using mixed methods in data collection to allow triangulation, with carefully selected treatment and control groups will be used to lay the foundation for an impact evaluation, and thus enable attribution of results to the intervention. Bidders are required to demonstrate competence in impact evaluations, especially on impact studies that employ a quasi-experimental design.

K-SALES intends to utilize a combination of a) propensity score matching (PSM) and Difference in Difference (DiD) in selecting livestock producers to include in study. Using the Propensity score matching (PSM) methodology, K-SALES will replicate the project selection process to the control group – i.e. non- project stakeholders- making sure the selection process is based on observable characteristics in order to infer what would have happened to the beneficiaries without the project. K-SALES intends to include households that are statistically similar in all observed characteristics to those who received the project services and products. The selection criteria will include but is not limited to, gender, average livestock holding, household size, membership to a communal water group, membership to a livestock production cooperative/group.

Given the nature of the K-SALES, matching alone may not provide all the necessary information to make concrete attribution of project results to the intervention since non observable farmer characteristics may affect both outcome variables and project placements. For instance, participating farmers may self-select themselves based on the interest of forming a livestock producer group because of motivational or skill related characteristics and the outcome variable may also relate to motivational factors or skills, such as the case of livestock body condition measures. Thus, it will be necessary to combine the PSM and Difference in Difference approaches to compare the changes in the indicator under consideration over time. The comparison in a DiD approach will be between the trends in the control group from before and after the project, versus the trends in the treatment group. The double difference will refer to the difference over time (the first difference) and difference between the control and treatment (the second difference). This will remove the bias due to the unobservable characteristics such as motivation and attitudes.

While a PSM/DiD approach is relevant to assess the impact of the interventions focused on livestock farmers, this methodology is not relevant for assessing activities working directly with Kenyan organizations/businesses such as Business Service Providers (BSPs), meat processors, wholesalers, financial service providers and retailers. As such, the proposal should outline other relevant methodologies for assessing these additional project stakeholders, with strong attention to qualitative approaches. Applicants must delineate evaluation questions that will be answered by each methodology (PSM/DiD vs. non-farmer assessments). The proposal should particularly address the most effective methodology given the implementation area of the project and cultural norms in these target regions.

Additionally, the bid document will contain the detailed methodology including the sections on sampling, data collection methods, data validation and data analysis. The methodology section should explain how the data entry will be made efficient and error free. Mechanism of verification and ensuring correctness of data e.g. through re-verification of filled questionnaires with beneficiaries should also be elaborated. Baseline qualitative description of project indicators will be highly important to analyze changes in awareness, perception, and knowledge of beneficiaries related to improved opportunities available to them. It is recommended to build in a series of focus groups/interviews to describe beneficiaries' business orientation, behavior and relationships, access to and use of agricultural/financial services and inputs and technology, and perceptions of service and input supply system.

Land O'Lakes recommends participatory approaches to data collection and appraisals. The consultant will propose the methodology and finalize it in consultation with Land O'Lakes.

3.0 Study team and responsibilities

3.1 Study team

The proposed study team should have relevant formal qualification and practical expertise, and should demonstrate skills in areas of: livestock production and marketing, notably livestock farm management/husbandry, veterinary, livestock business & value chain, financial services, rural development and agriculture economics. The team will be composed of specialists, enumerators, and data entry assistants. The team will be proficient in statistics, and quantitative and qualitative survey methodology. In addition, the team will have at least one person with proven experience in participatory evaluation, community based approaches, developing and evaluating agribusiness development programs. S/he will have broad understanding of Kenya livestock sector and have skills in measuring and assessing the effectiveness of rural production and marketing systems. Experience in survey planning and directing is required while understanding of County government structure in Kenya, and related private businesses and government institutes is required. Bidders should demonstrate work experience in evaluation of agricultural value chain related projects (preferably in the livestock sector); previous experience in evaluation of USDA/USAID implemented programs would be an asset, and knowledge of the project target regions. A team leader will be designated who will be the point of contact and will have the overall responsibility for the implementation of the baseline and the deliverables. This team will work closely with K-SALES M&E Manager, project staff and Land O'Lakes M&E Global team to include their input into all baseline activities.

3.2 Key responsibilities

Team's responsibilities will include:

- Achieve understanding of project background documentation
 - Project design document
 - Performance Management Plan (PMP)
 - Evaluation Plan
 - Livestock policy documents
 - Any other documents and data considered helpful for the purpose this study, and suggested by Land O'Lakes
- Present and finalize study methodology in collaboration with M&E Manager and Global M&E team
 - Prepare the sampling design and framework for the survey, sample size and sample weight calculations by County, and sampling procedures, including selection of sampling areas/units, and identification of households to be surveyed.

- Design the sampling frame to be used to select respondents, submitting fully explained sampling procedures
- Participate in the selection of control and participating livestock farmers
- Selecting data collection methods
- Preparing data collection tools (questionnaire, focus group checklist, application of gender analytical framework, key informant interview guide etc.)
- Pre testing of survey tools/instruments
- Presenting and getting approval of data collection and analysis templates
- Data collection activities
 - Translating the final questionnaire into the appropriate language(s) for interview
 - Formatting and printing all questionnaires
 - Recruiting and training of enumerators in selection of respondents
 - Training data collection and data entry teams in use of data collection and entry instruments
 - Conducting a pretest to ensure that the questionnaire elicits the information required
 - Supervising the field administration of the questionnaire
 - Supervising the data entry process using appropriate software package (eg. MS-Excel, SPSS, Minitab, ArcGIS etc.) and in a data model finalized in consultation with K-SALES staff
 - Arranging all the logistics related to the study
 - Informing and coordinating with local authorities for the administration of the baseline
- Data entry and analysis
 - Editing and coding responses and entering and processing data
 - Analyzing collected data and submitting a complete standard report with outlines and fully written text in a timely manner
 - Organize all data collected in a database in MS Excel. This database will ensure anonymity of survey participants by using identification numbers and separating names from survey participants' data
- Quality control
 - The contractor will implement quality control measures to ensure a high level of interviewer performance. A full description of these measures and the results of the quality control must be included in the final technical report
 - The contractor shall ensure that every respondent can be matched to a questionnaire and an interviewer
 - The time and duration of the interview must be recorded and included in the final dataset
- Report production and presentation:
 - After concluding the field work, findings will be presented to K-SALES team for their comments and input via a PowerPoint presentation
 - A draft report, that will incorporate comments on presentation, will be prepared and shared with K-SALES team for further commenting and inputs
 - Amendment will be made to the draft report incorporating K-SALES team's input for production of final report
 - Final report along with all the documents related to the study (filled questionnaires, electronic versions of the collected data and so on) will be submitted to K-SALES staff from Land O'Lakes.
 - Revised Evaluation Plan which incorporates recommendations and includes methodologies to be used during the life of project.

4.0 Timeframe

Land O'Lakes will accept proposals against this RFP till 3rd February 2014 and plans to finalize the award of this contract by 17th February 2014. The study must be completed and the final report submitted to Land O'Lakes on or before March 26, 2014.

The contractor will propose a timeline for every identified deliverable and obligate himself to adhere strictly to the agreed-upon schedule. Failure to observe the schedule may result in a penalty at the discretion of the Land O'Lakes. Land O'Lakes agrees to consider, at the contractor's request, reasonable changes to the schedule, but is in no way obligated to grant them. All reasonable extension requests will be considered. Delays in the schedule that are the fault of Land O'Lakes may be considered by the contractor as a justification in any ensuing delays of an equal length on the part of the Contractor.

5.0 Deliverables

The contractor is expected to produce the following deliverables under this assignment:

- Inception report
 - Understanding of the project based on project documents and literature review
 - Finalized methodology including detailed sampling plan, sample size, control and treatment groups
 - Quality control measures
 - Communication protocol
 - Finalized timeline (activities, responsible party, outputs, and timing)
- Survey instruments, both quantitative and qualitative data collection instruments
- Presentation on major findings and identified trends after the conclusion of fieldwork
- 20-30 high resolution pictures with description on CD-ROM or thumb drive to show the field activities and inform of beneficiaries present practices/situation
- Draft of the baseline report
 - Baseline report will include recommendations on indicators, targets, suggest partners who K-SALES can work with to achieve its objectives and any changes/improvement of project design/interventions
- Cleaned quantitative and qualitative datasets in Microsoft Excel (.xls) or SPSS format
- Revised Evaluation Plan which incorporates recommendations from the final report document.
- 2 bound copies of the final comprehensive baseline report with an electronic copy on a CD-ROM or thumb drive that includes, but is not limited to, the following:
 - Acknowledgements
 - List of Acronyms and abbreviations
 - Table of Contents
 - Executive Summary
 - A brief description of the program and purpose of the study
 - Methodology
 - Results and Findings
 - Baseline values for indicators as set in the Results Table (APDT)
 - Supporting information in order that K-SALES may set the annual and overall targets
 - Suggest amendments to the Results table (APDT), supported by data
 - Suggest improvements to the PMP

- Establish baseline description and values for other monitoring and impact variables supporting program's strategic objectives as discussed with the program team during the inception
 - Analysis of anticipated problems or constraints for the implementation of activities
 - Actionable recommendations to improve the design and implementation of the program
 - Annex - Terms of Reference for the evaluation
 - Annex - Survey instruments: questionnaire, interview guide (s), etc. as appropriate
 - Annex - Monitoring tools (questionnaire) to assess indicator performance in future
- An electronic version of the final Power Point presentation based on the baseline report. A presentation to the Land O'Lakes/Bangladesh office and stakeholders.

6.0 Submission of Proposal

Qualified consulting firms are required to submit a detailed technical and financial proposal with the following components to Procurement.KSALES@idd.landolakes.com:

- Technical proposal
 - The Contractor's understanding of the study objectives
 - A detailed methodology on how the assignment shall be conducted
 - A clear and comprehensive work plan, outlining the major activities and implementation time schedule
 - Organizational/individual capacity statement, past experiences and activities related to theme of the study
 - Curriculum vitae of the team members
 - At least two references of other clients for which similar assignments were undertaken
- Financial proposal with itemized budgets and explanation notes

Both the technical proposal and the financial proposal should be submitted together but in separate documents (very important).

The proposals will be shortlisted based on:

- Relevant experience of the firm/team in agriculture development projects, especially the ones sponsored by USG donor agencies
- Demonstrable experience and technical competence in the dairy sector
- Understanding of local government structure, private dairy business, rural development, dairy sector etc.
- Qualification/experience of the team members
- Quality of technical proposal (methodology, sample design, key questions raised etc.)
- Suitability of time lines
- Realistic budgets

7.0 Annexes

Annex 1: Project Objectives

Strategic Objective 1 – Agricultural Productivity: K-SALES will directly benefit 80,700 SA2 households and build the capacity of 700 business service providers (BSPs) to deliver productivity enhancing inputs and services to farmers. To achieve this, K-SALES will increase access to and use of improved livestock inputs; support the development and management of off-farm infrastructure, including water points for livestock; increase the use of financial services for sector investment; increase farmers’ knowledge in the use and benefits of improved techniques and technologies; and strengthen farm management practices. As a result, livestock owned by participating farmers will have an **ideal** body condition score, and the **value of livestock will increase by 30 percent** in the region by the end of the project.

IR1.2 Increased Use of Improved Agricultural Techniques and Technologies: K-SALES will facilitate the training of 80,000 livestock producers in the use of improved agricultural techniques and technologies. As agricultural productivity increases, we will build producer confidence in inputs and service providers, and ultimately grow demand for private sector provision of goods and services. As a result, more than **64,000 farmers will apply new techniques and technologies**.

Sub IR 1.2.1: Increased Availability of Improved Inputs. Under this IR K-SALES will address key barriers, such as insufficient water resources and poor animal health, to livestock production in SA2, while building the capacity of private input providers to embed service delivery. As a result, **700 additional agri- dealers will supply improved inputs and services**, thus enabling all targeted farmers to be within 5 kilometers of improved inputs.

Sub IR 1.2.2: Improved Infrastructure to Support On-Farm Production: K-SALES will organize communities around common issues, such as limited access to water and animal health services, to establish or rehabilitate key infrastructure. Examples of infrastructure include cattle crushes/pens for delivery of animal health services and veterinary inputs, dip tanks and water systems that are easily accessible by livestock. Since increasingly erratic rainfall patterns and long dry seasons contribute to low livestock productivity in SA2, provision of water for livestock will be a priority activity. K-SALES will promote a commercially minded management approach to ensure continual re-investment. As a result, **189,000 farmers and community members will have access to sufficient water inputs** from our rehabilitation or development of 250 water points.

Sub IR 1.2.3: Increased Use of Financial Services: K-SALES will collaborate with producers, agri-businesses and financial institutions to overcome barriers to the formal financial sector. The project will work with banks and micro-finance institutions to develop and deliver demand-driven financial products and services including livestock insurance. Activities associated with this Sub IR will enable **50,000 households and 2,250 firms in the livestock value chain to benefit from financial services**.

Sub IR 1.2.4: Increased Knowledge by Farmers of Improved Agricultural Techniques and Technologies: K-SALES will facilitate training of 80,000 farmers through Farmer Field Schools (FFS), and via peer-to-peer learning between commercially oriented livestock farmers and study tours to build relationships between producers and BSPs. We anticipate an 80 percent adoption of new technologies and techniques because of the trainings.

IR 1.3: Improved Farm Management (Operations, Financial): Land O'Lakes will promote a commercially oriented farm management style that will more profitably allocate limited resources, capture investment opportunities and upgrade technologies and techniques. As a result, at least **80 percent of farmers trained will apply improved management practices** as a means of increasing output and lowering production costs by the end of the project.

Sub IR 1.3.1: Improved Knowledge Regarding Farm Management: K-SALES will train farmers in farm financial management and resource allocation decision making. By doing so, farmers will increase the profitability of their livestock farming systems, boost food security and household incomes, and increase the flow of products into the market. The project will link trainings to finance opportunities, access to productivity enhancing inputs and off-farm infrastructure development. By the end of the project, **80 percent of farmers will demonstrate financial literacy** and will be able to identify the key characteristics of a well-managed farm.

Strategic Objective 2: Expanded Trade of Agricultural Products (domestic, regional, and international): K-SALES will support livestock producer, processor and marketing associations to enhance the quality of livestock and livestock products delivered to the market. We aim to improve post-harvest and market infrastructure, increase access to and use of financial services, facilitate buyer and seller relationships, and improve association management with a customer-oriented approach. As a result of these activities, the **value of livestock sales will increase by 30 percent** by the end of the project.

IR 2.1: Increased Value-Added to Post-Production Agricultural Products: K-SALES will increase adoption of value-adding practices by livestock producers and processors, and expand post-harvest processing and handling/storage infrastructure through increased access to and use of financial services. The project will create at least **1,200 new jobs geared towards providing value-adding services**, and result in a 30% increase in the average margin between farm gate price and price of processed product.

Sub IR 2.1.1 Improved quality of post-production agricultural products: K-SALES will support livestock producer, processor and marketing associations to enhance the quality of livestock and livestock products delivered to the market. This is anticipated to result in a 30% increase in the volume of processed products certified as meeting Kenya Bureau of Standards quality requirements.

Sub IR 2.1.2: Increased Efficiency of Post-Production Processes: By directly linking production increases experienced under SO1 with better product handling, storage, transport, and value-addition, K-SALES will enable producers and processors to capture the potential value of increased livestock production. By increasing overall efficiency of the post-production process, we will **decrease the average cost of producing livestock and livestock products by 20 percent**.

Sub IR 2.1.2.1: Increased Use of Improved Post-Production Processing and Handling Practices: K-SALES will facilitate the training of 2,500 processors of livestock and livestock products employed at slaughter facilities and butcheries. At least **50 percent of firms participating in the project will use modern equipment and techniques to process livestock products** by the end of the project. Land O'Lakes will work in close collaboration with GoK Health Inspection Officers, meat and hides/skins lead firms, the Kenya Meat Commission, the Meat Training Institute at Athi River, the Kenya Leather Development Council, and the Tanner Association of Kenya to ensure success and buy-in.

Sub IR 2.1.2.2: Improved Post Harvest Infrastructure: To improve the safety of and hygienic practices in post-harvest handling and storage, K-SALES will utilize in kind grants to stimulate investment by local firms and industry associations in infrastructure development. K-SALES will help build cold storage facilities and improve or expand transportation options that are currently limiting meat processing and driving down demand for red meat and livestock products. As a result, 50 new post-harvest infrastructure projects will be completed.

Sub IR 2.2: Increased Access to Markets to Sell Agricultural Products: K-SALES will facilitate the training of producer and marketing cooperatives to understand market demand, identify new markets and promote premium quality products for higher per unit prices. We will also mentor cooperatives in negotiating contracts with buyers and facilitate study tours and bring producer and marketing cooperatives and potential buyers together for discussions and negotiations. Investment in targeted infrastructure will lead to higher quality products, lower transaction costs and increased market access. These efforts are expected to realize a 50% increase in the number of distinct markets to which livestock and livestock markets are sold.

Sub IR 2.2.2: Improved Linkages between Buyers and Sellers: Through the Business Development Fund Competitive Service, K-SALES will initiate sub-awards with organizations and enterprises to serve as Market Linkages Facilitators. Such facilitators will foster market linkages – forward and backward in the value chain – and serve as an honest broker between buyers and sellers. These facilitators will increase buyer's confidence, while educating sellers on potential buyers and negotiating supply contracts. Through these efforts, **300 contracts will be negotiated between buyers and sellers** by the end of the project.

Sub IR 2.2.3: Improved Market and Trade Infrastructure: K-SALES will utilize an in kind grants scheme to Invest in targeted infrastructure that will lead to higher quality products, lower transaction costs and increased market access. These efforts will be expected to increase the number of markets through which livestock enterprises in the target area sell their livestock and livestock products.

Sub IR 2.2.3.1: Increased Use of Financial Services: To fuel investment in improved processing and marketing technologies and infrastructure, K-SALES will increase the flow of financial resources into livestock value chains. Land O'Lakes will collaborate with financial institutions to build their capacity in livestock financing and to help them design accessible financial products and services. As a result, K-SALES will facilitate access to formal credit and other formal financial products for 150 partner firms. Lead firms and industry associations will be encouraged to co-finance investments, develop supply contracts and provide capacity building workshops on product quality and market standards.

IR 2.3: Improved Transaction Efficiency: K-SALES will **build the capacity of 300 producers, processors and marketing associations** to enable them to operate as successful, sustainable businesses, and gain the trust of buyers. These efforts will reduce transaction costs by 20 percent.

Sub IR 2.3.2: Improved Management Practices of Buyer/Seller Groups: Achieving scale requires the creation of effective, commercially oriented producer and marketing cooperatives. K-SALES will identify existing and emerging livestock producer cooperatives and facilitate cooperative business capacity building using the Land O'Lakes Agricultural Producer Organization (AgPro) methodology. As cooperatives develop, their capacity to deliver services to their members improves, and ultimately, increases productivity and their ability to market livestock products. As a result, **150 livestock producer and marketing groups will actively use business/marketing plans.**

ANNEX 2: DETAILED GENDER ANALYSIS COMPONENT REPORT

1.0. INTRODUCTION

K-SALES Program's overall objective is to improve the productivity and competitiveness of the livestock value chains in Meru, Tharaka-Nithi, Kitui, Makueni, Taita Taveta, and Machakos Counties. The program specifically targets beef production and marketing systems. However, more than 50% of pastoralists in Kenya live below the poverty line, i.e., they survive on less than USD\$1 per day (Thornton et al., 2007) in the ASAL areas in spite of the high potential for livestock production and trade. This paradox points to the need to establish the real constraints in order to find a strategy to get the whole community participating in the KSALES livestock improvement intervention.

The specific objectives of the K-SALES program are:

- Increase productivity of live animals and meat (cattle and shoat), hides and skins value chains.
- Expanded Trade of Agricultural Products (Domestic, Regional, and International)

This report presents the Gender analysis component that was undertaken as part of the K-SALES project's baseline survey. It highlights the different roles and behavior of men and women based on gender attribute which vary across culture, class, ethnicity, income, education and time. It is a qualitative approach examining how community members interpret their world and the constraints they face.

1.1 The role and contribution to livelihood

The potential benefits of a well implemented livestock project are immense. They include building human, social, natural, physical, financial capitals. However as has commonly happened gender insensitivity could exclude especially women and youth from participation and accruing gains. In addition poor communities are held responsible for - and shared the consequences of - poor management, low productivity and continued deterioration of the renewable resources when projects are policies are implemented without their full participation.

Conventionally UN's goal is that rural women and men in developing countries are empowered to achieve higher incomes and improved food security at the household level. In this way it will contribute to the achievement of Millennium Development Goal #1 and 3 which is to eliminate hunger and promote gender equality and empower women.

One way of understanding the prevailing status in terms of promoting gender equity and empowerment was to find out how members of these communities through livestock keeping accessed assets that they needed for building livelihoods.

Livestock per se is a **natural capital** that has shaped the lifestyle of communities with its products and services. To many communities, households and individuals, it is essential in enabling effective use of

natural resources towards secure and sustainable livelihoods. The livestock best use the ASAL forages and produce milk and meat and its manure supports crop production. In this respect, livestock also contributes to household **financial capital**, as it can be a primary source of saving, income, credit, insurance, loans, gifts and investments. Experience attests that poor households often reinvest remittance resources in livestock. It could be used as collateral for financial services.

Livestock is also used as a productive **physical capital**. For ASAL societies it represents the vital 'technology' that allows producing valuable products from limited resources. Livestock can store and transfer food from one season to another, thus buffering critical seasonal food gaps, and its transport capacities allow for mobility and trade patterns covering the gaps existing in poor transportation systems in the ASALS. Animal traction is a relevant factor for poor agro-pastoral and farming smallholders where animal driven ploughs are used instead of motorized tractors.

Livestock helps generate **social capital** by traditionally providing employment, wealth, prestige, identity, respect and connectedness within and outside the community. Exchange of animals among households or groups creates exclusive ties, which are relevant for risk minimization, conflict resolution and business relationships. Livestock also plays an important role as **human capital** by enabling more healthy lifestyles and empowering people and communities. Income generated through livestock- related activities improves educational levels among poor groups and participation of women in household decision-making processes. Moreover, pastoral livestock keeping is an art whose knowledge is not well understood by outsiders and skills, often shared through gender, classes, generation and across cultures.

Gender analysis in this study highlights the different roles and learned behavior of men and women based on what society attributes to them because of being born male or female. The differences across cultures and age classes were also pursued especially to understand the views of youth. Government of Kenya policy documents define youth as population ages 18-35 years.

This baseline study was guided by the following gender sensitive interests:-

- f. To obtain information regarding Gender roles, power dynamic, asset ownership and management, and decision making related to Livestock production and marketing
- g. To identify gender gaps and constraints to address in the project work plan
- h. To understand factors that influence power and gender
- i. By understanding the above the project will enhance the competitiveness of meat value chains by reducing inefficiencies that originate from gender-based constraints.
- j. Increase the opportunities for all and particularly women who may have been disadvantaged at all levels of the chain due to gender constraints

2.0 METHODOLOGY

The counties covered are Machakos, Makueni, Taita Taveta, Kitui, Meru and Tharaka Nithi. The target audiences were interacted with through focus group discussion and Key informants interviews. The participants were women, men and youth who are resident or have with livelihood activities that keep them in close contact with rural men, women and youth in these areas to obtain their comprehensive picture of constraints and opportunities. (See Annex 2)

This data collection process engaged with Key Informant and in particular local leaders, government officials from the Ministry of livestock to locate women and youth groups who own business along the meat the value chain. The key nodes of the value chain studied were Input supply services, Production and Marketing which includes value addition and processing.

Key issues we sought to understand were what happen to the roles of men and women in the periods of when the household faces high labour demands, how to apportion benefits especially income from livestock sale and salaries when men and women are employed in a formal setting (processing plant and agro vet).

Well aware that social capital in terms of Networks and connections, kinship, Relations of trust and mutual support, Formal and informal groups, Collective representation, Mechanisms for participation indecision-making, Leadership is a real asset to women or nay member o f a society where they were marginalized we sought more information about memberships of women and youth to groups. This enabled us to start understanding what was their need and to what extent they realized achievements. Specific areas of interests were current extents in decision making, power dynamics and social and financial capital empowerments.

3.0. RESULTS AND DISCUSSIONS

This section discusses Gender gaps and constraints to address in the project at each stage of the value chain.

3.1. GENDER AWARENESS

There was minimal open acceptance of the need to analyze community beliefs with the objective of defining gender roles and power relationships between men and women and the need for women empowerment in all the counties. Disaggregation of participants by sexes for interviews was not very welcome as it seems to put especially men in a defensive position about their customs.

Women in these communities were quite apologetic in discussion of gender roles and control over benefits. The men and especially youth of male sex were defensive and asserting their position as heads of the family who must be in control of commercial activities.

3.2. Gender and Livestock roles and control over benefits

Livestock management roles are mostly influenced by the cultural practices and patterns formed at very young ages remain as customs. Women and men seem to transmit knowledge and skills of livestock keeping through the gender roles. According to women FGD it appears that the boys bear a heavier burden than girls and learn special skills (trekking, medication, construction) that can be paid for more than girls do. From a young age culture plays a big role in widening or limiting livelihood opportunities for either male or female child.

Table 1: Activity role and responsibilities in livestock production (women FGD in Taita Taveta)

Activity		Average % role of participation				
		Women	Girls	Men	Boys	Hired labour/ professional hire
a	Breeding	55	-	40	-	5
b	Rearing – Making decision of what kind of livestock to keep	50	1	48	1	-
c	Housing	40	-	50	-	10
d	Hygiene	60	10	20	10	-
e	Grazing/ Tethering	45	10	20	25	-
f	Fodder Production	25	5	60	10	-
g	Collecting Dung	60	10	20	10	-
h	Watering	55	15	10	15	5
	Medication for sick animals	20	-	65	-	15
j	Milking	75	-	25	-	-
k	Making butter	80	20	-	-	-
l	Slaughtering	-	-	85	5	10
m	Processing/ Value Addition	20	-	80	-	-
n	Storing (dry vegetation)	40	10	30	10	10
o	Livestock trekking	45	10	20	25	-
p	Marketing	15	-	85	-	-

From the women's perspective it appears that hired labour covers roles that are traditionally apportioned to men (housing, medication, slaughtering, fodder production hence dry season preservation).

3.2. Decision making

Women have been customized to see livestock production as a male dominated field. In Meru community, women value crop farming highly and expresses lack of control by saying that if a woman purchases a livestock and takes care of it she can sell it after getting consent from her spouse. Such strong statements were also rare in the other counties.

The communities involved in this study across all counties could be broadly categorized as practicing mixed farming and agro pastoralism types of agriculture. These are labor intensive production systems. Assessing the dry season and intensive crop production periods expose the power dynamics in the use of cash that are not easily mentioned in discussions.

Our study found out that women's lack of ownerships and control over certain livestock this may be a disincentive in management especially in mixed crop farming areas like Taita. Although women are in charge of care giving for livestock during the periods when crop related activities are at peak the livestock suffer from inadequate attention as women would first spend time and resources to ensure they provide the care the crops needs in time..

The FGD discussions revealed that culture has loaded family chores squarely on women with the expectation that she takes over the livestock duties of men in case he is away. There is an inequality in the use of income that was observed in how household allocated cash to cope with need to find water and pasture in the dry season high labor peak related to crop production. However as indicated from the table below, relying on reciprocal group arrangement rather than employing casual worker is the practice women use to cope with laborious tasks of crop farming. Men on the other hand hire labor to supplement livestock keeping activities sin this same period.

4.0. EXTENSION SERVICES AND GENDER GAPS

In general the farmers who access any extension service from government officers were very few. An interview with Female vet for Taita reveals quality issues in delivery of services with the presence of too many '**quacks**'. Many areas are without any service provider and some areas with basic trained officers to answer to quick and small problems acting as qualified veterinaries resulting to loss of farmers' livestock. Also there is unwarranted competition to private practitioners deriving from; some government employees officially stationed in the area who want to supplement their income by providing private services.

Some of her suggested solutions to these challenges is the need train community based animal health workers who are monitored and supervised by government extension officers at the county livestock development office. This will reduce poor vet services being offered by untrained personnel. Further the government working together with the private vets need to conduct livestock farmer training programmes to sensitize them on the importance of vet services and the symptoms of livestock diseases. The county government livestock department should also make ensure that livestock and pastoral interests are adequately represented and receive appropriate budgetary allocations to reduce the cost of obtaining livestock inputs from Nairobi.

Finally, more attention needs to be given to public private co-operation within the livestock department. E.g. the government should involve the private vets in the distribution of vaccines. Special consideration should also be given to private vets in this semi-arid area who wish to apply for loans from the government fund to enhance their businesses i.e. the woman in Box 3 (below) would wish to get funds to buy a motorbike or a car to be able to manoeuvre through the poor roads within the county.

There needs to an effort to train more female vets. There are differences in men's and women preferences in getting vet services. A female vet serves more women than men while a male vet serves more men than women. Unfortunately , from an interview with livestock officer in Kitui he portrayed that women access less extension services from him about cattle. He say "from my experience in servingthe Kitui community; *I receive more requests for service from men than women as they are the owners ofthe cattle. "*

The case study below shows how a male youth Vet business attracts more male customers than women and the entrepreneur believes in employing a female employee front office assistant because of her good customer relations. In Kathonzweni from a discussion with a women group, they didn't think highly of a scenario where women have women's only business outlets starting from production to processing of specific livestock meat because they consider that women need men's input in the area of marketing and sourcing for information.

Box 1. Agrovvet dealership

Female youth reaches more women farmer

*A young woman works as an Agrovvet dealer in Tharaka Nithi. She also sells stationeries. There are only two agrovvet shops in this specific market that are owned and managed by women that serve the entire area. The demand for livestock inputs such as medicine is usually very high during the dry seasons when the chances of livestock disease outbreaks are high. A bulk of sales occurs during the harvesting season because most farmers usually have income from crop sales. The dealer says **the bulk of her customers are women since in most cases they are the ones who care and manage livestock in the community.** To get started, she raised the capital from the savings arising from her stationery shop. She offers credit in terms of inputs e.g. drugs, to customers that are well known to her. The drugs are available but are not affordable. It is very difficult to access credit from finance institutions or suppliers due to the low sale turnover per month. In addition banks, ask for collateral or banking patterns to evaluate the credit worthiness of a business which many input service providers do not meet.*

Box 2. Male Youth :Operating multiple business believing in female employee

A young man doubles as an Animal Health Assistant and an Agrovvet dealer, his area of operation is Kathonzweni market for the agrovvet business and the surrounding area for the animal health business.

*According to him, the situation with supply of livestock inputs by service providers in the area is wanting. The suppliers visit the market place once in a week and due to limited funds, the service providers are not able to purchase enough supplies for the whole week. This dealer has employed a young woman in the agrovvet shop while he does the animal health business himself. His choice for a woman employee was informed by the fact that ladies are **more accountable** than men and is polite to customers thus attracting business. He however hires men on casual basis to help the lady with lifting the supplies and arranging the shop.*

*In the two businesses, **there are more men customers than women**. This is because men are generally the family decision makers. However, there are no differences in preferences in purchase of inputs made by men and those made by women.*

The extension services to improve productivity of the meat value chain needs to be more than dealing with (vet inputs). It needs to include capacity building in areas not commonly covered as a way to empower women and youth. These areas are livestock sales agency, field workers for livestock seasonal financial services including livestock and crop insurances, artisan skills for construction of farm structures and harnesses for animal drawn tools (ferry water, live animals, meat), ICT for market information services, operating cold storages, processing of hides and skin and making leather craft products etc.

5.0. INPUT SUPPLY AND GENDER GAPS

There is an inequality over opportunity to assume better rewarding position in the processing level of the value chain based physiological differences and technology used. Women are perceived weaker because of their level of strength. In these communities men mostly do the trekking, livestock medication and slaughtering and housing of the animals because they are considered to have more knowledge and skills while milking is mostly done by the women. Unfortunately investment in technology to ease work and open spaces for women outside home setting is limited in these counties.

As in the case study below women and youth can be spotted all over the landscape demonstrating that if and when they are supported by having basic skills education, capital, and collective action they can take up new position where they can earn additional income which is well spent on family welfare.

Box 3: Case study of a woman private vet (input supplier) where *Trust and Proximity to field condition work for her as a woman vet*

A middle-aged woman is a single mother of two children and the only woman veterinarian in the sub-county. Her professional training has been anchored in: vet, agro-vet and AI service provision, animal health, animal nutrition, business management and accounting.

Following her year of graduation from Kabete technical training institute, she and her husband moved to the nearby town where she started her first private practice. In the year 2005, she separated from her husband and moved with her two children. With no job or capital to restart her private practice in the new area and with a need to shoulder the entire responsibility of taking care of her two children, she started a small business of buying and selling farm produce in town. Within a span of one year she managed to save Kshs 48,000 with Equity Bank, which she used to register her business Taveta Veterinary mobile Services, paid rent for the business premises and equip it with small supplies

to restart her work.

Three years after opening the shop the owner of the premises request back his premise. She says “when I think about it now the office was an extra cost in terms rent and personnel because all the same, I have retained a good customer portfolio and most of my operations are done in the villages where these community members reside.”

From our interactions with the community members, when they need her service they give her a phone call which they have resulted to calling her ‘hallo hallo’.

Within the sub-county, she has clustered her operations in the following locations relating to her frequency of operations in those areas per week. This helps her to budget and keep records of operations on expense, payables, and invoices.

Gender inequality in Entrepreneurial opportunities can be observed from this case study. The youth are in desperate need of opportunities to own and build up assets. The approach commonly exhibited by those who are succeeding is one of self-development in business management skills. The nature of operating Vet service by female youth is one dependent on working extra hard building trust and confidence from male farmers, maintaining a closer contact with more female farmers, closes to the farms, good phone connectivity, categorizing the markets and providing services during various market days.

Table 3. The female Vets her contacts with livestock keepers

	<i>Market</i>	<i>% of operations</i>
1	Mirabani, Lotima & Kitobo	30
2	Lesesia, Mjini & California	15
3	Mboghonia, Kimundia & Msengoni	10
4	Eldoro, Ngutini & Marodo	9
5	Kaza moyo & Mtakuja	8
6	Makiloriti, Darajani & Mahoo	7
7	Timbila & Kingwarini	6
8	Kinalwa, Kimorigo & Abori	5
9	Ludawai, Rekeke & Kimala	4
10	Chala, Chumvini & Maandakini	3
11	Orukungu, Jipe & Lesuyai	2
12	Njukini & Elerai	1

On average she earns net of Kshs 20,000 from her business per week. Her services include: livestock treatment, livestock disease control & vaccination, provision of artificial insemination (AI) services, offering trainings on tick control and treatment, livestock feeding and livestock management. Some of

her inventory of inputs and equipment's include: livestock drugs, syringes & needles, disbudding iron, burdizzo, hoof trimmers, teat cannula, troca & cannular, thermometer, mobile phone etc.

"Every business has its ups and downs" she says and running her business alone has its challenges such as lack of reliable transport. She has to hire a motorcycle whenever she has to go to the farmers' homesteads which sometimes mean travelling at night. Poor physical environment is also a challenge as the area is vast with poor road network and getting to the farmers' takes time and it's costly.

As a woman, sometimes she also feels ridiculed by some community members who wish to *test her expertise by asking for trial services* from her. They feel a vet should be a man. She says that most of this attitude comes from women as a lot of her customers are men who are the owners' of the cattle. They treat her well, don't bargain a lot on her prices and help her with the livestock treatment process i.e. like holding of the animal.

6.0. FINANCIAL SERVICES AND GENDER GAPS

Ownership of livestock gives a cultural opportunity to getting financial services. Livestock contributes to household **financial capital**, as it can be a primary source of saving, income, credit, insurance, loans, gifts and investments. A female vet expressed her frustration with accessing credit from finance institutions or suppliers due to the low sale turnover per month. In addition banks, ask for collateral or banking patterns to evaluate the credit worthiness of a business which many input service providers do not meet.

On the other hand, a male Vet had the opportunity to build asset because of livestock ownership. He bought two bulls and left them with his parents for fattening which he sold after some time and opened the agro vet shop with the proceeds.

The lack of good access to seasonal credit can be demonstrated by an observation made from FGD in Tulai Kitui division. During the rainy season, women tend to ignore livestock farming and concentrate more on crop production thus increased number of livestock diseases as they prefer to buy crop farm inputs than purchase livestock drugs.

7.0. TECHNOLOGY AND GENDER GAPS

Practices adopted to cope with dry season are very crucial in the beef value chain as there are gender constraints that are associated with climate related constraints. During drought season pastures are limited, most of the rivers are also dry. This therefore means that women and men need to walk far distances to look for water. But during this same period there are a lot of livestock diseases hence caring for the sick animals is at a peak. This is a woman role. Water shortages place a heavier burden on the women as she is in charge of cleaning and cooking activities in the home. The impacts of drought are heavier on the woman and risks of household falling into poverty higher given that health of animal is compromised. An example from Meru indicates that during this period, the coping mechanisms include

migrating to far areas where there are pastures, reduce the amount of water taken by livestock, and stock reduction through sale of animals. It include having spent money to buy water (at ksh.25 per 20 Litre Jerri can) for household needs and fodder for animals, employing someone to trek the animals to areas with pastures and waters and stock reduction through sale of animals.

Table 4. Effects and coping mechanism of drought in Mahoo ward Taita Taveta County

Effects		Coping Mechanisms
Men	Women	
A lot of theft of animals in the community	Travel for long distances in search of water	Men sell off part of livestock in many cases at a loss Use of the preserved grass feeds and crop stocks. men move the livestock to hired lands where pasture is available
Death of livestock	Food insecurity	
Selling animals at a loss	Increased burden as they try to care for the children and livestock animals	
Food insecurity	Vulnerable to violence at the water sources as herders from all the community members scabble for the scarce resource	
Poor agricultural productivity		

We observed an insufficient adoption of technologies for mitigating drought. This perpetuates a situation of only men trekking the animals to look for pastures and water, and provide security to both the animals. Livestock management should be seen as a family art and it may be useful for household to agree on what to do so as not to interrupt the livestock management system but reallocate resources to invest in technologies that do not overburden the woman but improve efficiency in livestock management. It may entail allocating the hired labor to some of the roles held by women instead.

8.0. LIVESTOCK OWNERSHIP AND GENDER GAPS

Livestock ownership is largely defined by culture and the man being the head of the home is the owner of most livestock.

Box 3. Gender gaps in ownership. Among the livestock keepers in Meru most cattle and camels are owned and controlled by men because they require more capital and as such are more demanding in terms of maintenance (feeding) and security because they are the prime targets of rustlers. Men are also able to trek the cattle in search for pasture and water. Cattle and goats are sometimes jointly owned by both men and women in Meru community because both may contribute to the purchase of these animals as the capital required is much, and whenever they receive them as dowry payment, they become a property of both. The youth mostly own and control sheep and goats because they are easy to manage, their reproduction rate is high, do not require big piece of land to keep, require less security, and that they are cheap to purchase. Most goats and sheep are owned and managed by women in Meru but women in the Boran communities can only manage these animals and not own them.

Livestock that comes into the home as dowry is often owned jointly by spouses. These communities are demonstrating that other means exist to owning an animal and have more access and control in livestock production. Women in Meru community can make decisions on the number of sheep and goats to keep and also when and how much to sell. This is because women at times are able to acquire these animals from the proceeds of merry-go-round social groups.

In Tharaka Nithi, the youth mostly own and control rabbits and in some cases pigs because they are easy to manage, their reproduction rate is high, do not require big piece of land to keep, and they are cheap to purchase. In the box below is a different way of owning animals that gives women and youth more control over livestock and it is the most likely way introduce improved breeds in the communities.

Box 4. Journey by youth to own livestock A youth group in Tharaka Nithi started in 2008 with 16 youth. 15 of them are men while only one is a woman. They started by contributing ksh.200 each and bought one goat for each member. Initially they were able to buy goats for four members but currently all the 16 members have goats. Though the goats are in the custody of members, they are still owned by the group and only the group decides when to sell. The goats have since multiplied and the group is now selling some of the goats to buy cows for members. Three members have so far been bought a cow each and the project is ongoing. This group came together with the aim of uplifting each other's quality of life. They are also looking for an opportunity to access government youth funds to expand livestock farming.

Box 5. Umoja Women Group: Location: Tharaka Nithi County; Chuka/Igamba Ng'ombe sub-county; Kathwana ward: The group was formed in April 1996 and initially had 40 members. Currently it has 32 active members after some died and others dropped out. Initially it was a merry go round assisting each other to buy chicken and goats but later registered with 'Mutino friends'. In the year 2000, the group wrote a proposal to 'Njaa Marufuku' to help them obtain cash to buy goats. The proposal went through and they obtained Ksh.120, 000. Using this amount, the group bought 34 gala goats and one Toghenberg He goat for breeding. The current total Membership; 32 (All female) Youth = 10. The Group objectives are to increase the number of animals in households and to assist members financially when needs arises.

9.0. TECHNOLOGY (SPECIES) PREFERENCES AND GENDER GAPS

Access and control over technology was analyzed by finding out which species is preferred by either women or men. We also sought to establish what practices they adopted to improve the value of beef animal before or after slaughter.

Among the participants of the baseline study the production level is not commercial, these are small scale producers. The typical number of cattle per farmer averages between 2 to around 8; very rarely would you get a farmer with sheep. The average number of goats per farmer ranges between 4 to around 20.

In all the counties it became clear that women have need for very short term and daily benefits (cash /food (milk/ meat) and this makes goat and cattle as the most preferred species. It is only in Makueni that sheep was valued for meat production. In other counties women associate the sheep with high labour

requirements and without much attention it would not do well and even survive in tethering system of grazing. It may be an opportunity to facilitate commercial pasture production in areas where cattle will be the preferred species.

Commercialization of beef producing animals may not benefit women and men equally and it will required that women spend extra hour in caring as is needed in a more intensive system of production. Activity time profiles show that women are always focusing on securing household welfare and livestock for contribution to nutrition. Therefore in choosing goat breeds a dual purpose breed could be preferred to plain meat breeds.

Table 5. Technologies used to livestock production

	Description	By Men	By Women
	The most commonly used practice to fetch best value (cash, quality) when animal is solid live	Tethering Zero Grazing Breeding With The Best Bull that grow very fast and big in size Bull castrating if one doesn't want the breed to spend within his livestock	Feed preservation and storage for the dry season to prevent animals from walking long distances in search of pasture Use of group grazing De-worming
	The most commonly used practice to fetch best value when animal is sold slaughtered	Boiling the meat and nyama choma,	

There are a few gender gaps in regard to ownership and marketing of livestock in the Meru community even though both men and women make decisions jointly. Women do not own cattle due to their inability to provide adequate security and meet their demand such as provision of pasture and water.

10. LIVESTOCK MARKETING AND GENDER GAPS

Season, distances, security, age and experience of women seem to play a role in how society defines marketing roles for women. In most communities interviewed female youth even when married are not allowed to directly engage in sale of livestock even goats. Women older than 35 can be involved more in marketing of livestock as they are considered more skilled.

Due to the insecurity in the area, women do not participate in marketing of livestock since they require services of men to escort them to the market, and the charges are very high for them to afford (They are charged Ksh. 1500 for each guard). They perceive this as a gender gap as it gives men the privilege to own these precious animals and do the marketing. Due to cultural values and practices of the Boran community, women are not allowed to own, market and/or make any decisions pertaining to livestock. Farmers sell their livestock to other farmers, institutions such as schools and hospitals. Other buyers include brokers and butchers.

11. PROCESSING AND GENDER GAPS

It appears as though traditional knowledge in sun drying of meat is not a common practise anymore a situation that weakness food security plans, a big concern for women more than men given that men can migrate to far location leaving the women, children and old people with less food. Opportunities to provide clean environments and facilities where this technique could be repackaged to make special delicacies a marketable product are needed.

The lack of modern technology and mechanization continues to lock women out of participation in the meat slaughtering stage of the value chain. According to a slaughter house owner the highest salaries are paid to those who slaughter (men) rather than cleaners of the environment (women).

Box 6. A woman entrepreneur: Slaughterhouse operator

The business employs a total of 10 employees i.e. seven men and three women. Men play the following roles; washing the slaughter, loading the meat to the vehicles, racing the animals to the slaughter, skinning the carcasses, bringing water to the slaughter in case of water shortage and cleaning the offals. In addition one man acts as the slaughter supervisor. Women clean the compound, wash the dust coats, clean the office and office furniture and prepare and sell tea in a small outlet inside the compound. *“I employ more men than women because of the nature of this business, you require a lot of energy to handle a cow that is being slaughtered, a lot of energy is also required to load the carcasses into the van, in addition many women are scared when livestock are stunned”*. The highest paid employee is the supervisor and the lowest paid is the compound cleaner. She does not do marketing for now. *“I do not directly market since I’m doing service provision but I intend to change in future and slaughter my own animals, add value and source for markets.”*

A woman entrepreneur in the livestock sector does not belong to any marketing cooperative though she is a member of a butchers group that acts as a merry go round. She has been the secretary of the group since 2009. She is a retired officer, and her area of expertise is animal health. She also has training in business management. When asked why women fail to take leadership roles, she said *“Generally women fail to take leadership roles in group activities due to lack of confidence, low self-esteem, lack of leadership skills, the notion that leadership belongs to men and cultural limitations requiring women to remain at home most of the time”*.

12. POLICY GENDER GAPS

Lack of mechanizations and technology at certain point of value chain continue to lock women out of positions with better wages.

Transport system had worked against having carriers on many vehicles. This is a gender insensitive policy as it doesn't facilitate needs of small traders who are mostly women and youth who cannot hire pick-ups or Lorries.

Unclear county strategies of raising taxes open up spaces for corruption. For instance when livestock trespasses in the town, Ksh 500 per animal by the city council is demanded from the farmer.

Women are generally employed at the front desk as receptionist, however continuous training for agro-vet workers could give women and youth opportunities to gain skills that earn better wages or lead to self-employment.

13.0. RECOMMENDATION

The baseline study recommends a participatory learning process such as the Farmer Field School where it is expected that women and men and youth can continuously identify and deal with gender blindness in selecting technologies to improve production of meat without having inefficiencies and inequality. The goal is to improve efficiencies in the roles, enrich outcomes by participation of women and youth as livestock owners, processors and users of livestock products in decision making. The ultimate goal is to break the cycle of poverty with sustainable meat production practices and sharing of benefits.

Within this context, recommendations for project design include an emphasis on:

- Organising communities in acceptable viable and legal entities that will enable all to participate effectively
- Create awareness to all beneficiaries and players the importance of gender mainstreaming and how all will benefit
- Participatory monitoring processes with actors that also facilitate mainstreaming of gender awareness in designing and operating at all stages of the value chain.
- Develop and package viable Business opportunities and promote them among all through Business Opportunity seminars conducted close to beneficiaries
- Understanding the needs of youth for successfully doing business as groups for building assets from keeping few shoat or rabbits to larger animals with certainty of success.
- Understanding the basic needs of women for daily cash and animal nutrition while they rear animals for meat.
- Developing viable forage production business that are linked to large consumers on contractual agreement possibly through the groups/ legal entities that are viable for sustainability
- Turning the goat rearing groups into a FFS Business entities that are viable and can operate a feed store where they can access inputs (as seasonal credit) for fattening animals before selling specific (graded) goats for a specific market.

- Looking in particular at how to ensure that women capture the benefits of spending time in marketing associations, viable businesses by having clearly rewarding and self development opportunities for example they could develop as sales agents of certain input and services providers
- Supporting women's access to productive resources and main assets (water, land, fuel-wood, markets, knowledge),
- Strengthening young women role in decision-making processes and especially in negotiation skills even at farm gate and in the livestock market place. Provision of market information through Mobile phones or market boards accessible to them/ local magazines or FM radio stations
- Understanding that women use group membership to improve access and control over livestock and benefits from livestock. Although the membership of a few men In such groups is allowed women should make up the highest number and occupy the key leadership positions, especially managing finances.
- Empower the communities to conduct livestock and other businesses as a family business
- Incorporating the concerns of women in modifying public transport vehicles to facilitate transportation of their wares to and from markets. Understand viable volumes for long distance transportation and encourage transport business as a business opportunity to all gender
- Supporting diversification of farm level businesses income-generating activities (for instance, processing and selling of livestock, forage) as a way to enhance agro-pastoralist women's socio-economic position in the household and empower them to take a greater role in the community.

At the same time, it is important to recognize that inability to lift heavy loads need not limit opportunities to participate in other levels of the value chain where returns are higher. Energy and time-saving appropriate equipment to be introduced along the processing, packaging and loading stages of livestock value chain.

The consumption of beef and shoat meat in the households is low and may not support larger off-take from producers. Developing clean outlet for eating by travelers at several strategic points could provide employment for youth and stimulate and stabilize a production level.

Large kitchens in business centers can be built where traditionally preserved meats are prepared and sold. This will preserve indigenous knowledge and stabilize consumption of meat.

Promote local tourism and create demand for the sweet meat in these areas. Infrastructure to support this should be encouraged and partners should be encouraged to lobby the county leaders to invest in infrastructure.

Identify policies that will support gender mainstreaming and identify champions to work with to sensitize the community to lobby for implementation in the various counties.

The household intake of beef and shoat is linked to purchasing power which is higher after successful crop harvest. The FFS could have an integrated curriculum that facilitates efficient use of oxen and bullock land preparation and transport.

Good practices of rearing cattle just for beef are few. In many instances animals slaughtered are the same one that for seasons have been used for ploughing and the quality of meat may not fetch high process in the specialized meat markets.

Identify private partners that the program can encourage to invest (leverage their investments) and they will stimulate further development of the Value chain.

The KSALES project may partner with others to develop capacity of using more and more donkeys in land preparation. This would create addition employment for youth in production workshops and trade in animal harnesses.

ANNEX 3: HOUSEHOLD QUESTIONNAIRE

KENYA SEMI-ARID LIVESTOCK ENHANCEMENT SUPPORT (K-SALES) PROJECT: BASELINE SURVEY MARCH 2014

HOUSEHOLD QUESTIONNAIRE

QUESTIONNAIRE ID	
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A. HOUSEHOLD IDENTIFICATION

A1.1 Date of Interview.....

A1.2 Start Time End Time.....

A2 IDENTIFICATION

	Response	Use codes as applicable
A2.1 Interviewer's Name		
A2.2 Name of the Respondent		
A2.3 Gender of the respondent	1. Male 2. Female	
A2.4 Name of Household Head		
A2.5 County	1= Meru ; 2= Tharaka Nithi ; 3= Kitui ; 4= Makueni ; 5= Taita Taveta ; 6= Machakos	
A2.6 Sub-County		
A2.7 Division		
A2.8 Project Area		
A2.9 Village		
A2.10 GPS Reading	N/S	
	E/W	
A2.11 HH Head Mobile Number		

B. HOUSEHOLD DEMOGRAPHIC CHARACTERISTICS

B1. What is your total household size?		
--	--	--

B2. Household head and spouse demographic data (Fill in the table below)

No.	B2.1: Household member	B2.2: Age (In years)	B2.3: Sex CODE: 1= Male; 2= Female	B2.4: Marital Status CODE: 1=Single; 2=Married; 3=Widowed/ Separated; 4= Others (specify)...	B2.5: Education level: CODE: 1=No formal school; 2= Attended primary; 3 = Completed primary; 4 = Attended secondary; 5 = Completed secondary; 6= Post secondary; 7= Adult education.	B2.6: Main occupation	B2.7: Period as Main source of occupation (in years)
01	Head						
02	Spouse						

MainOccupation (CODES for 2.6):1=Crop farming; 2=Livestock farming; 3= Mixed farming; 4= Formal employment (Salaried or permanent); 5= Informal employment (wage & casual labor); 6= Small/ micro enterprises; 7= Petty trade; 8= Others (specify)....

B3. Please provide information on the following

Age category (years)	Total in the household		Total
	M	F	
Under 15			
15 – 40			
41 – 64			
Over 64			

B4.1 What is the main source of income for your household?(**USE CODES Below**)

1=Crop farming; 2=Livestock farming; 3= Formal employment (Salaried or permanent); 4= Informal employment & casual labor; 5= Small/ micro enterprises; 6= Petty trade; 7= Others (specify)....

B4.2 What are the other two important sources of income for your household? (In order)

B4.3 When did you start keeping livestock?

B4.4 How did you acquire your initial herd?

1= inheritance, 2 = bought 3 = relative 4 = Other (Specify).....

B4.5 Who in your household is primarily responsible for making key decisions regarding the following livestock activities? **USE CODES Below**

Activity	Person responsible	If 18-35, Also tick here
Watering		
Herding		
Spraying/dipping		
Feeding on minerals		
Breeding		
Cleaning shed		
Pasture management		
Sale/marketing of livestock		

1= Household Head, 2= Spouse; 3 Both HH Head & spouse; 4= Son; 5= Daughter; 6= Others (specify.....)

B4.6 Who in your household spends most the time performing livestock activities?

1= Household Head, 2= Spouse; 3 Both HH Head & spouse; 4= Son; 5= Daughter; 6= Worker; 7= others (specify....)

B5.1 Type of livestock shed owned

1= Bricks 2= Pole; 3= Boma; 4= Open 5 = others (specify).....

B5.2 Type of floor of livestock shed

1= Mud 2= Concrete; 3= Stones/gravel; 4= Others (specify)

B5.3 Do you have separate sheds for different livestock types and ages? 1 = Yes, 2 = No

If YES, Explain.....

B6.1 Do you keep records of your livestock activities?

1= Yes 2= No

B6.2 If yes, which ones? And for which livestock type?

1= Breeding; 2= Livestock sales; 3= Feeding; 4= Health; 5= Expense; 6= Others (specify)

In Yes, for which Livestock Type 1 = Cattle, 2 = Sheep, 3 = Goats, 4 = All

B7How did you learn about record keeping? (Record in verbatim)

B8Income status of household (Average total income from livestock related activities) per month

1=<5,000; 2= 5,001-10,000; 3= 10,001-20,001; 4= 20,001-30,000; 5= >30,000

C. PRODUCTIVE RESOURCE ENDOWMENT

C1.1 Provide information on land tenure and use in the table below

Land tenure structure	Size (Acres)	Size of land under (Acres)					Rented out or Given out
		Annual crops (1year)	Perennial crops (More than 1year)	Grazing	Fodder	Fallow	
Owned land							
Leased land							
Borrowed land							
Communal land							
Total							

C2. Provide information on the following productive assets **OWNED** by the household

Functioning asset	Do you own any of the assets? 1=Yes, 2=No	Number owned	Working status 1 = most working properly; 2 = most working moderately; 3 = most working improperly	Current Value (Ksh) (if liquidated)	Total value (Ksh)
Crush					
Ox/donkey cart					
Pasture/crop enclosure					
Water tank					
Borehole					
Feed store					
Hay Ban					
Dip					
Holding Pen					
Hoof Trimmer					
Drenching gun					
Horn Cutter					
Sprayer					
Irrigation equipment					
Tractor					
Pickup, lorry					
Slaughter Slab					
Others (Specify)					

D3 LIVESTOCK PRODUCTION

D3.1Please indicate the types of livestock you **OWN** in your household (2014)

Type	Number owned by breed	Number lost	Current average value/unit (Ksh)	Service 1=AI 2= own bull 3= Bull	Average Body Condition Score for the Herd

						scheme	
	Indigenous	Improved	Pure/exotic breed				(USE CODES)
Beef							
Goats							
Local goats							
Sheep							
Others (specify)...							

Average body condition Score: 1= Backbone prominent and sharp

2= Backbone prominent but smooth

3= Backbone can be felt but smooth and rounded

4= Backbone detectable with pressure on the thumb

5= Backbone can be felt with firm pressure on the thumb

NOTE: Rank with the help of the farmer using the **SHOW CARD** provided separately

D2.2. What was the cause of livestock losses(**Circle all that apply**)?

1= Drought related, 2= Disease related, 3= Skills related, 4= Wildlife attacks 5= Other (specify).....

D2.3 Which of the following livestock herding practices do you practice?

Herding Practice	Whether practiced by the farmer? 1=Yes 2=No	
Paddocking		
Semi-paddocking		
Open grazing		
Tethering		
Zero grazed		
Other (Specify)		

D2.4. Use and satisfaction with Livestock Services in the past 1 year

Livestock		Whether	Who provided	Reliability of	Affordability of	Satisfaction level
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Technology/service	Is the household aware of service?	household has used service in the past 1 year	the service	provider	service	with service
	1=Yes 2= No	1= Yes 2= No	Private service provider Government extension agent Marketing association Other (specify)	Not reliable Neutral Reliable	Very expensive Fair Affordable	Dissatisfied Fairly satisfied Satisfactory Very Good
Hay Conservation						
Vet services & Vaccinations						
Dipping for tick control						
Spray race for tick control						
Hand spray for tick control						
Pour on for tick control						
Branding						
De-worming						
AI service/Breed improvement services such as bull schemes						
De-stocking/re-stocking						
Use of crop residue						
Livestock transportation						

D2.5 Do you practice on-farm feed conservation? 1=Yes 2=No

D2.6a If yes, which method did you use in the past 12 months?

1=Hay 2=Silage 3=Both (i.e. hay & silage); 4 Other (specify)

D2.6b Which feed materials do you use for feed conservation?

Feed material	Whether used by the farmer? 1=Yes 2=No
Natural grass(pasture)	

Napier	
Sudan grass	
Boma Rhodes	
Crop residues	
Fodder tress	
Acacia pods	

D2.7. In which year did you first use this method?

D.2.8. Who is your nearest stockist or supplier of livestock inputs?

D.2.9 What is the distance to the nearest stockist of livestock inputs in Kms?

D.2.10 What is the distance to the nearest market where you sell or buy livestock in Kms?

D.2.11 What is the mode of transport used to the nearest market for livestock?

Mode of transport 1=Walking, 2=Bicycle, 3=Matatu/Bus, 4=Motorbike, 5= Others (specify.)

D2.12 What is the cost to and from the nearest market for livestock?

D2.13 Who in your household makes decision on sale of livestock?

1=Husband, 2 = wife, 3 = Both, 4 = Son, 5 = Work, 6= Other (specify).....

D2.14 Who in your household controls income from sale of livestock?

1=Husband, 2 = wife, 3 = Both, 4 = Son, 5 = Work, 6= Other (specify).....

E1: ACCESS TO WATER FOR LIVESTOCK AND DOMESTIC USE

E.1.1 Water Source for Domestic and Livestock Use

Water Use	E.1.1.2: What is the main source of water for this use during wet season? 1=Piped into homestead/com pound 2= Public Tap, 3= Borehole, 4= Communal water point, 5=Rain water, 6=Vendor/tanker truck, 7=River/stream, 8= Water Kiosk 9= Pan, 10= Dam, 11=Sand dam 12= Others (Specify)....	E..1.1.3: What is the distance to the water supply infrastructure mentioned in E.1.1.2 in wet season?	E.1.1.4: What is the main source of water for this use during dry season?	E.1.1.5: What is the distance to the water supply infrastructure mentioned in Q C3.4 in dry season?	E.1.1.6 (a): Cost of buying a 20L Jerrican for domestic consumption / cost of watering one livestock unit (1 fully matured beef equivalent to 5 shoats) during DRY season	E.1.1.6 (b): Cost of buying a 20Ljerrican for domestic consumption / cost of watering one livestock unit (1 fully matured beef equivalent to 5 shoats) during WET season
Livestock production						
Domestic use						
Processing and value addition						

E1.2If used for livestock production, is water supply adequate for continuous planning of your activities?

1=Yes; 2=No

E1.3 If No to Q E1.2, what mechanism do you use to cope with water scarcity during dry seasons?(Circle all that apply)

Develop water harvesting structures e.g. water pans,

Move to other locations in search of water

Reduce the scale of operation

Withdraw from water demanding activities

Do nothing

Other (specify).....

E1.4 Are you a member of a Water User Association in this area?

1= Yes, 2 = No

E1.5 If Yes,Which one?(Actual Name)

E1.6 Are you satisfied with the service offered by the Water User Association?.....

1= Not satisfied at all, 2 = fairly satisfied, 3 = neutral, 4 = satisfied, 5 = very satisfied

E1.7What is your reason for the level of satisfaction with the service above?

.....

E1.6.1 Have you attended any capacity building training organised for the group members?

1= Yes, 2 = No

E1.6.2 If yes to E1.6.1, please explain the type of capacity building attended and state who organized?

Capacity building	Who organized
1	
2	
3	
4	

E2. LIVESTOCK OUTPUT AND MARKETING

E2.1 Livestock and livestock products produced in the past 1 year.

E2.1.0 Livestock and related products	E2.1.2: Total herd size in 2013	E2.1.3: Number of months of sales	E2.1.4: Average quantity sold per month	E2.1.5: Average unit sale price during a peak month of sale	E2.1.6: Who is mostly involved in selling these products? **	E2.1.7: Buyer type of largest sale***	E2.1.8: Market place where most of the produce was sold****	E2.1.9: Main marketing challenge
Cattle								
Goat								
Sheep								
Meat (slaughtered)								
Hides and skin								
Other (specify):								

***Unit of Production:** 1= Kgs, 2= Numbers

Specify the units (products like milk can be captured on a daily basis and computed before entry in the table)

****HH member involved:** 1= HH Head; 2= Spouse; 3= Son/Daughter; 4= Hired labour; 6=Others (specify...)

*****Buyer type:** 1=Cooperative societies, 2=Farmer group, 3= Private processors/abattoirs; 4= Middlemen/informal traders; 5=Institutions/Hotels, 6= Consumer/Neighbour/Farmer, 7=Other (specify)

****** Market place:** 1=Village, 2=Neighboring village/location/road/junction, 3=Nearby township, 4=Distant township, 5=Regional market, 6=Others (Specify)

******* Constraint:** 1=Low price, 2=Poor road to the market, 3=Poor access to information, 4=Lack of reliable transport, 5=Others (Specify)

E2.2. What are your main sources of market information?

1= Mass Media – Radio; 2= Brokers; 3= Neighbours/friends; 4= Private sector; 5= Group /members;

6= NGOs/CBOs; 7= Others -.....

E2.3. Do you add value to your livestock products before selling?

1=Yes; 2=No

E2.4. If yes, what value adding activities do you carry out?

E2.5. Do you have any formal marketing arrangement for your livestock?

1=Yes; 2=No

E2.6. If yes, explain?

E2.7. What determines your choice of market to sell your livestock?

1= Price, 2. = distance, 3 = convenience, 4 = Other (specify)

F. MEMBERSHIP TO FARMER GROUPS AND OTHER SOCIAL GROUPS

F1.1 Are you a member of any farmer group? 1=Yes; 2= No

F1.2 If Yes to F1.1 above, please provide the following information if you or any member of your household belongs to any local association/group

Household member 1=Head, 2=Spouse, 3=Both (i.e. 1&2); 4= Son/daughter; 5=Others (specify).....	Association/ group type*	Year joined	Main activities of the association/ group		
			1.	2.	3.
			1.	2.	3.
			1.	2.	3.
			1.	2.	3.
			1.	2.	3.

***Association/group type:** 1=Farmers Field School (FFS), 2=Cooperative/marketing, 3=Faith based group, 4=Credit and savings group, 5=Extension group, 6= Common interest group e.g. water users association, 7=Community self-help group, 8=Others (specify)

F1.3 If Not a member of a marketing association, why?.....

F1.4 Has the group assisted you in solving problems experienced in livestock production or marketing?

1=Yes, 2=No

F1.5 If Yes, how.....

F1.6 How has your membership to the group **MAINLY** impacted on your household?

Type of impact on the household	Ranking of main reason
Has raised household living standard	
Increased level of livestock productivity	
Increased level of awareness	
Increased access to markets and inputs	
Has assisted during time of need	
No impact at all despite undertaking group activities	
A waste of time –opinion that participation in groups yields no change and would better be spent in alternative activities	
Others (specify)	

F1.7 Are you satisfied with the service offered by the Marketing Association?.....

1= Not satisfied at all, 2 = fairly satisfied, 3 = neutral, 4 = satisfied, 5 = very satisfied

F1.8 What is your reason for the level of satisfaction with the service above?

.....

G. ACCESS TO FINANCIAL SERVICES

G1. Financial capital

Have you applied for loan/credit from any financial institution source in the last one year? 1= Yes; 2= No

Have you received any loan/credit in the past one year from any financial service provider? 1= Yes; 2= No [if question G.2 is No, move to G.3]

G.2.2.1 Person who received the loan Codes: 1=Household head 2= Spouse	G.2.2.2: If Yes to G.2; from which source? USE CODES BELOW*	G.2.2.3: What was the amount received?	G.2.2.4: What was the loan received used for? USE CODES BELOW**	G.3: If did not receive the loan applied for, why? CODES:	

G.2.2.2* Codes: 1=AFC; 2 =K-rep; 3 =Merry go round/ROSCAS; 4 = SACCO; 5 =Cooperative; 6=Commercial bank; 7=MFIs; 8=Other (specify).....

G.2.2.4 Codes:** 1 = Livestock; 2 = improved livestock inputs; 3 = Building (livestock related); 4 = Livestock equipment;

5 = Other livestock assets; 6 = Other Farm Inputs; 7 = Fees; 8 = Other (Specify)

G.3 If No, to G1, why?-----

G4. What are the main obstacles you face in accessing credit services for your livestock enterprise?

1.----- 2----- 3-----

H4.1: Extension services received

H.4.1. Which type of extension services are you aware of in the area (circle all that apply)

- 1 Breeding (including AI, bull selection, etc)
- 2 Feeds and feeding
- 3 Animal health
- 4 Animal nutrition
- 5 Fodder establishment
- 6 Record keeping
- 7 Financial services
- 8 Managing livestock enterprise as a business
- 9 Acaricides/pesticides storage, handling, use and disposal
- 10 Integrated Pest management
- 11 Other (Specify)

H.4.2: If aware, please indicate the services have received and the source received from

	Type of extension/training received in the last 2 years	Whether received service/training 1=Yes; 2=No	Source/provider
1	Breeding (including AI, bull selection, etc)		
2	Feeds and feeding		
3	Animal health		
5	Animal nutrition		
6	Fodder establishment		
7	Record keeping		
8	Financial services		
9	Managing livestock enterprise as a business		
11	Acaricides/pesticides storage, handling, use and disposal		
12	Integrated Pest management		
13	Other (Specify)		

***Providers code:** 1= Vet; 2 = Ministry; 3 = Research Organization; 4 = Private company; 5 Farmers Field School (FFS); 6=Farm visits; 7 = Other (Specify)

H4.3: How long do you take before selling livestock after de-worming(Days)?

H4.4: How long do you take before selling livestock after use of anti-biotics(Days)?

H4.5: How do you dispose of acaricide/pesticide containers after use?

1=Burying; 2=Throw away; 3= Throw in pit latrine; 4=Other Specify

H4.6: What in your opinion are key challenges that you face as a livestock farmer in this area (list in order of priority?)

- 1.....
- 2.....
- 3.....
- 4.....

I: TRENDS AND IMPACTS ON THE LIVESTOCK SECTOR

I.1. List the **3 Major factors** which have caused **positive or negative changes** in your livestock enterprise production in the last five years?

KEY: V for positive change; while X represents negative change; and blanks no change (Mark as appropriate).

<i>Factors</i>	<i>Change observed</i>
1. Rainfall/weather changes	[]
2. Change in techniques of livestock farming	[]
3. Change in market prices	[]
4. Change in labour and cash availability	[]
5. Change in prices of improved inputs	[]
6. Incidences of livestock diseases	[]
7. Increased inputs usage	[]
8. Others specify	[]

-END-

ANNEX 4: CHECKLIST FOR KEY INFORMANTS

Key Informant Interview Schedule

Basic Information

Name of respondent.....
County..... Sub County.....
Occupation.....
Tel/cell No.....
Name of interviewee.....
Age of Respondent.....

Questions Checklist

A] Livestock Producer

What livestock enterprises do you have?

In your opinion, what factors influence the choice of livestock breeds in this community?

Do you have livestock insurance cover? What is your opinion about livestock insurance?

What is the situation with livestock insurance amongst livestock producers in this area?

What inputs are used in livestock production in this community? Where are these inputs obtained? (List)

Do livestock producers face any major challenges in producing livestock in this community?

What suggestions would you give for these challenges is any?

What kind of technologies do you use in livestock production in this area?

What is the situation with keeping of records by livestock producers in this area?

Do livestock producers undertake any value addition before selling off their stock to the market? What kind of activities?

Do you think livestock producers face any challenges in selling their stock in this community? What kind of challenges? What are the solutions?

What is your opinion about livestock extension service provision by government? Is it accessible and reliable?

What public institutions support beef stockbreeding and regeneration in the community? (List all the institutions and kind of support offered)

What government regulations affect [positively and negatively] livestock producers in this community?

What is the situation with water availability and management for livestock in this community?

What is the situation with financial credit access by livestock producers in this area?

What is the situation with market prices for beef animals during disposal?

Key Informant Interview Schedule

Basic Information

Name of respondent.....
County..... Sub County.....
Occupation.....
Tel/cell No.....
Name of interviewee.....
Age of Respondent.....

B] Livestock Input Service Provider

What is the general situation with supply of livestock inputs by service providers in this area?
What categories of inputs are sold to beef livestock producers in the area?
How accessible are these inputs in terms of availability and affordability?
How have input service providers been purchasing and stocking their products for onward sell to the livestock producers?
Have there been major challenges for beef livestock producers in this area?
What is the general condition of major infrastructure in the community where you operate? [roads, communication, power, market centres etc]
What is the situation with record keeping by input service providers in this area?
What has been the situation with access to credit by input service providers in this area?
What is the situation with technology in input supply for input service providers in this area?

Key Informant Interview Schedule

Basic Information

Name of respondent.....
County..... Sub County.....
Occupation.....
Tel/cell No.....
Name of interviewee.....
Age of Respondent.....

C] Livestock Marketer

What marketing channels are available for livestock and livestock products in this community?
In your opinion, what factors influence choice of markets for livestock sellers in this community?
Comment on the off-farm infrastructure in the livestock trading centers?(Fenced Livestock markets, water troughs for animals brought for sale, Loading ramps etc.)
Which producer and marketing associations are found in this community?
Are community members selling their livestock through these marketing associations?
Please elaborate your answer in question 4 above
Are marketing associations facing any challenges in this community? If so, explain
What potential solutions exist that could resolve the challenges mentioned in question 6 above?
What is the situation with policies and regulations on livestock /livestock product marketing in this area?
What is the situation with record keeping on marketing transactions by members in this area?
What is the situation with availability and access to credit by marketers in this area?

Key Informant Interview Schedule

Basic Information

Name of respondent.....
County..... Sub County.....
Occupation.....
Tel/cell No.....
Name of interviewee.....
Age of Respondent.....

D] Livestock Processor

What are the current practices in livestock slaughtering houses in this county?
What are the current practices in handling processed products? What facilities do you have in the butcheries?
What livestock products do you process from the slaughter houses in this community?
What are the current practices in transporting processed products?
What are the current practices in chilling processed products?
What packaging materials do you use for processed products?
What are the current practices in handling livestock by-products?
What is your opinion on the sanitary standards observed in the slaughter facilities?
What is the situation with beef livestock supply for processing?
Where do you sell the processed livestock products? What is the situation with demand and supply of beef products in both local and export markets?
What are the challenges facing beef processors in this community? What are the possible solutions?
What is the situation with financial credit access by processors in this area?
What is the situation with beef processing technologies in this area?
What is the situation with record keeping by beef processors in this area?

Key Informant Interview Schedule

Basic Information

Name of respondent.....
County..... Sub County.....
Occupation.....
Tel/cell No.....
Name of interviewee.....
Age of Respondent.....

E] Livestock Transporter

How long have you operated as a transporter of livestock/beef products in this community?
What is the situation with current transport modes for beef/beef products in this area?
What is the situation with beef transport/packaging technologies in this area?
What is the situation with record keeping by beef/beef products transporters in this area?
What is the situation with financial credit access by transporters in this area?

Key Informant Interview Schedule

Basic Information

Name of respondent.....
County..... Sub County.....
Occupation.....
Tel/cell No.....
Name of interviewee.....
Age of Respondent.....

F] Livestock Financier

How long have you operated as a livestock financier in this county?

What is the situation with financial products for beef value chain actors? (What kind of financial products are available)

What is the situation with access and affordability of financial products i.e. interest rates

What is the situation with spread of financial services in the area?

Key Informant Interview Schedule

Basic Information

Name of respondent.....

County..... Sub County.....

Occupation.....

Tel/cell No.....

Name of interviewee.....

Age of Respondent.....

G] Water Resources Management Committee Member

What water resources exist in this community for livestock usage?

Who owns and manages these water resources?

Does this community have any water users associations?

Are the water users associations functioning effectively in this community?

If water users associations are not function properly, what are the challenges facing water user associations in this community? What are the possible solutions to these challenges?

What is the community involvement in the management of the water resources within this community?

Key Informant Interview Schedule

Basic Information

Name of respondent.....
County..... Sub County.....
Occupation.....
Tel/cell No.....
Name of interviewee.....
Age of Respondent.....

H] County Officials

What factors influence the choice of livestock breeds in this county?
What is the situation with livestock production in this county?
If there are challenges, what are the possible solutions?
What kind of value addition is done to livestock before selling off in this county?
In your opinion, what is the situation with farmer access to markets of livestock and livestock by-products in this county? (probe for current practices, challenges and opportunities)
What is the status of producer and marketing associations in this county?
Are community members selling their livestock through these marketing associations? If not why?
In your opinion, what factors influence choice of markets for livestock in this community?
Generally, how effective are beef livestock value chains in this county?
What is the status, numbers and distribution of key infrastructure (market, slaughter houses, by products (tanneries) in the county?
What is the situation with policy and regulations for beef value chain actors in this county? (Probe for what regulations are there and what are their impacts on the various actors in the value chain)
What are the on-going and planned investments in the beef value chain by county government?

ANNEX 6: CHECKLIST FOR FGDS

NOTE: In operationalization, these questions will be interspersed within the Gender Analysis Tools to obtain comprehensive information from the communities.

A] FGD for Livestock Input Service Providers

What are the disease outbreak patterns, history and maps in the area?

What has been the disease prevalence amongst **beef, goats and sheep** producers in the past 5 years?

When are the diseases most prevalent in this region?

What has been the average cost of disease control amongst producers per animal?

Who finances the cost of disease control?

Which **beef, goats and sheep** livestock species do they affect most?

What are the major methods of control of these diseases in the region?

What is the history of control of these diseases, focusing on the policies, institutions, and organizations involved?

Have there been any major shifts in preferred disease control technologies?

Indicate the extent of impacts of these livestock diseases on the **beef, goats and sheep** sub sector in the area?

What inputs do **beef, goats and sheep** producers purchase for livestock production in this community?

Where do you obtain the various inputs stock for re-sale to livestock producers?

What are some of the challenges you face with each of the inputs supply sources?

What is the nearest source of inputs stock for your agro-vet shop?

How does distance from the nearest stock supply point affect the price of your inputs to livestock farmers?

How is the transport infrastructure affecting the cost of your inputs to livestock producers?

Do you keep accurate records of your inputs and services transactions?

B] FGD for Livestock Producers

What livestock do you produce for the meat market?

What factors influence the choice of livestock breeds in this community?

What technologies (herding practices, feeding, spraying e.t.c) do you use in production of **beef, goats and sheep** animals?

What are the main challenges faced with livestock rearing in this community and what are some of the solutions?

What are the main feed resources that **beef, goats and sheep**, shoats producers use in this area?

Do you benefit from agricultural extension services?

Who are the providers of livestock extension services in this area?

Do you benefit from the services of District/Divisional Veterinary officers?

What is the current breeding stock situation for **beef, goats and sheep** cattle in the area?

What is the level of **beef, goats and sheep** stock regeneration in the area?

What are the public institutions involved in **beef, goats and sheep** stockbreeding and regeneration in the area?

What are the private/other institutions/organizations involved in **beef, goats and sheep** stockbreeding and regeneration in the area?

What has been the disease prevalence in the herd for the past 5 years?

What have been your disease control methods in the area?

How often do you administer diseases control within 1 year period to yourherd?

Who has been financing the cost of disease control and by how much?

Has there been involvement of other players in disease control for your **beef, goats and sheep** cattle herd?

Are there challenges with drought and water scarcity in this community? If Yes, how do you cope with droughts and water scarcity in this community?

What other livestock inputs do you use? Where are these sourced from?

What government regulations do you face in production/marketing of your **beef, goats and sheep** cattle?

What value addition do you do to your livestock before selling off in this community?

What marketing channels do you have for livestock in this community?

Are there producer marketing associations in this community? Are they functioning well?

Are you marketing your livestock through the marketing associations? If No Why?

What is the average price that you dispose off your meat herd stock in the market? [Separate for **beef, goats and sheep** and shoats] and why?

What is the average weight you dispose off your meat herd in the market?[Separate for **beef, goats and sheep** and shoats] and why?

What is the average price you receive per animal (disaggregate by livestock type – cow, goat and sheep)

Do you keep accurate records of your production transactions?

C] FGD for Livestock Marketers

Where do you get/source of your animals?

Which markets do you sell your **beef, goats and sheep** herd/**beef, goats and sheep** products?

What is your opinion on the off-farm infrastructure in the livestock trading centres? (Fenced livestock markets, water troughs for animals brought for sale, loading ramps etc.)

What is the average number of **beef, goats and sheep**/cattle, goats and sheep sold in these markets weekly? (be specific on each species)

What **beef, goats and sheep** products do you market?

How far is this market from where you source the animals/**beef, goats and sheep** products?

What mode of transport do you use to transport your animal/products to these markets

How much does it cost you per week to bring your **beef, goats and sheep** animals/products to these markets?

What are the **Beef, goats and sheep** prices (both live and product) for domestic market?

What are the **Beef, goats and sheep** prices (live/product) for export market? Where are the **beef, goats and sheep** exported?

What factors influence choice of markets (live and product) for livestock and livestock products in this community?

Which producer and marketing associations are found in this community? Are community members selling their livestock through these marketing associations? If not why?

Are there any problems facing the marketing associations in this community? What are some of the solutions?

Are there any challenges faced by marketers in marketing of livestock and livestock products in this community?

Do individual marketers or marketing associations have access to credit facilities for their business? If so, what interest rates do you face? What institutions extend the credit to you?

Do you keep accurate records of your marketing transactions?

What technologies do you use in marketing your animals and meat/ by products?

What are the regulatory market requirements for domestic **beef, goats and sheep** supply markets?

What are the regulatory market requirements for the export **beef, goats and sheep** supply markets?

What are the institutions involved in regulation of the **beef, goats and sheep** marketing?

D] Livestock Processors

What meat products do you process?

What meat animals do you process?

What is the average number of meat animals you process weekly?

Who supplies you with meat animals for slaughter?

What is the average price you purchase meat animals/per animal [cattle and shoats]?

What is the capacity of your meat processing facility

What equipment do you use in the facility?

What are the average **Beef, goats and sheep** consumption volumes for the domestic market?

What are the average meat product prices for the domestic market?

What are the average meat prices for the export markets?

What export markets do you sell your meat products?

What are the major urban **beef, goats and sheep** consumption centres in this county?

What **Beef, goats and sheep** consumption volumes for the export market do you process?

What are the other **beef, goats and sheep** by products do you process and dispose?

Where do you dispose the other **beef, goats and sheep** by products

How do you deal with **beef, goats and sheep** waste and environmental/disposal issues?

Do you have access to financial credit? If so, from what sources and at what interest rates? What is your opinion of the credit market?

Do you own transport mode for transporting your meat and by products?

Do you hire transport? What mode do you use to transport your meat/by products?

What packaging materials do you use to package your meat and by products?

Do you have access to processing infrastructure like power, water, cold storage etc?

What technologies/innovations do you use in processing your meat and by products?

Do you keep accurate records of your processing transactions?

E] Livestock Transporters

What transport modes do you use?

Are your transport modes hired or owned?

Who are your **beef, goats and sheep** animal transport customers [producers/processors/marketers]

Where do you frequently transport the **beef, goats and sheep** animals/products?

What is the capacity of your transport mode?

What are your average prices per animal/animal product?

Do you have access to financial credit? If so, from what sources and at what interest rates? What is your opinion of the credit market?

Do you keep records for your business transactions?

F] Livestock Financiers

What financial products do you offer to **beef, goats and sheep** animal producers

Do you finance individual and group producers?

Who else do you finance in the **beef, goats and sheep** animal value chain?

What interest rates do you charge?

G] Water Resources Management for Livestock

How many livestock water users associations are in the area?

Who are the other actors in water resources management?

What water resource types do you manage in the area?

What is the capacity of the water resources in your area?

What is the capacity of the water user groups to manage and maintain water resources for livestock use in the area?

How many animals are served by the water resources in your area?

Do you charge any fee for livestock producers? And if so, how much per animal?

Are there any inherent conflicts in water use in the area?

How do you manage to maintain the water resources in your area? Do you receive any support from any institution/organization/development partner?

Do you have access to financial credit to maintain your water resources? If yes, from whom and at what interest rate?

What technologies do you use in water resource management?

What environmental management practises do you conform to in your management of the water resources in the community?

ANNEX 7: AVERAGE BODY SCORE CONDITION

Introduction to Body Condition Scoring System for Beef Animals

The SCOTTISH SYSTEM has been adopted globally for measuring livestock body condition scores. The East of Scotland College of Agriculture was the forerunner in establishing a scoring system. Body condition is scored from 1 (very thin) to 5 (grossly fat).

Condition Scoring Beef Cattle

Body condition scoring is a subjective or “hands on” method of determining the amount of fat an animal is carrying.

The advantage of a condition score measurement is that it is easy to learn, fast, simple, cheap, does not require specialized equipment and is sufficiently accurate for many research and management situations.

Body condition is scored from 1 (very thin) to 5 (grossly fat). The fat cover over the loin area between the hip (hook) bone and the last rib is the major location on the animal’s body used for condition scoring, especially in thin animals. The area is measured by placing your hand on the loin area, fingers pointing to the opposite hip bone. With your thumb, feel that fat cover over the ends of the short ribs.

The Condition Scoring System

The system uses the following descriptions to define each score:

Score 1: The individual short ribs are fairly sharp to the touch, and there is no fat around the tail head. The hip bones, tail head and ribs are visually prominent.

Score 2: The short ribs can be identified individually when touched, but feel rounded rather than sharp. There is some tissue cover around the tail head, over the hip bones and the flank. Individual ribs are no longer obvious.

Score 3: The short ribs can only be felt with firm pressure. The areas on either side of the tail head now have a degree of fat cover that can be felt easily.

Score 4: Fat cover around the tail head is evident as slight “rounds,” soft to the touch. The short ribs cannot be felt even with firm pressure. Folds of fat are beginning to develop over the ribs and thighs of the animal.

Score 5: The bone structure is no longer noticeable, and the animal presents a “blocky” appearance. The tail head and hip bones are almost completely buried in fat, and folds of fat are apparent over the ribs and thighs. The short ribs are completely covered by fat, and the animal’s mobility is impaired by the large amounts of fat carried.

NOTE: In practice, an animal’s condition may fall between the above values, in which case intermediate numbers (halves) can be used. For example, a 2.5 score indicates the animal is intermediate between a 2 and a 3 for body condition.

ANNEX 8: ANNUAL PERFORMANCE DATA TABLE

Table 35: Updated Annual Performance Data Table

			Targets				Revisions				Justification
Indicator	Baseline Value	Suggested Amendment	2014	2015	2016	Total	2014	2015	2016	Total	
Number of business service providers trained to deliver inputs and services that enhance agricultural productivity	0	Target re-distributed	150	400	150	700	75	500	125	700	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Number of business service providers trained in business management skills.	0	Target re-distributed	150	400	150	700	75	500	125	700	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Number of county level livestock trade shows supported.	0	Target re-distributed	6	6	6	18	4	8	6	18	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Number of farmers trained in improved agricultural techniques and technologies	0	Target re-distributed	5,000	50,000	25,000	80,000	2,000	38,000	20,000	60,000	Baseline findings indicate relatively low population densities in the target Counties, with land owned by sampled farmers of more than 20 acres in some cases. Given the structured training modules delivered by the Farmer Field School approach, aggregating farmers will be a difficult task. It is suggested that the number of farmers

			Targets				Revisions				Justification
Indicator	Baseline Value	Suggested Amendment	2014	2015	2016	Total	2014	2015	2016	Total	
											benefitted directly be reduced to 60,000.
Number of farmers trained in improved farm management practices	0	Target re-distributed	5,000	50,000	25,000	80,000	2,000	38,000	20,000	60,000	Baseline findings indicate relatively low population densities in the target Counties, with land owned by sampled farmers of more than 20 acres in some cases. Given the structured training modules delivered by the Farmer Field School approach, aggregating farmers will be a difficult task. It is suggested that the number of farmers benefitted directly be reduced to 60,000.
Number of producer group/cooperative members benefiting from peer-to-peer learning tours	0	Target re-distributed	1,000	4,000	1,000	6,000	600	4,000	1,400	6,000	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Number of community-based water points constructed or rehabilitated	0	Target re-distributed	50	150	50	250	10	150	90	250	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Number of water user association trained to administer and maintain community based water points	0	Target re-distributed	50	150	50	250	10	150	90	250	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.

			Targets				Revisions				Justification
Indicator	Baseline Value	Suggested Amendment	2014	2015	2016	Total	2014	2015	2016	Total	
Value of In-kind grants dispersed to water user Association	0	Target re-distributed	425,000	850,000	425,000	1,700,000	136,000	1,020,000	544,000	1,700,000	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Number of farmers and community members benefiting from the new or rehabilitated community based water points	0	Target re-distributed	37,500	114,000	37,500	189,000	10,000	114,000	65,000	189,000	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Number of on-farm infrastructure projects carried out	0	Target re-distributed	30	160	120	310	20	160	130	310	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Number of cooperatives trained to manage and maintain on- farm infrastructure projects	0	Target revision	30	160	120	310	10	150	90	250	K-SALES will work with 250 cooperatives total. This figure represents the cooperatives that will be trained.
Value of in-kind grants dispersed to cooperatives investing in on-farm infrastructure	0	Target re-distributed	425,000	850,000	425,000	1,700,000	136,000	1,020,000	544,000	1,700,000	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the

			Targets				Revisions				Justification
Indicator	Baseline Value	Suggested Amendment	2014	2015	2016	Total	2014	2015	2016	Total	
											numbers in FY 2015 and FY 2016.
Number of farmers benefiting from new or rehabilitated on-farm infrastructure	0	Target re-distributed	5,000	50,000	25,000	80,000	2,000	38,000	20,000	60,000	Baseline findings indicate relatively low population densities in the target Counties, with land owned by sampled farmers of more than 20 acres in some cases. It is suggested that the number of farmers benefitted directly be reduced to 60,000; the revised figures indicate a percentage reduction based on the reduced number of direct beneficiaries.
Number of financial institution partners identified	0	No change	5	5	-	10	5	5	-	10	NA
Number of livestock enterprises linked to financial institutions	0	Target re-distributed	200	1,500	850	2,550	50	1,500	1,000	2,550	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Number of loans disbursed to livestock enterprises as a result of USDA assistance	0	Target re-distributed	100	500	200	800	-	500	300	800	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Number of farmers and others receiving financial training as a result of USDA	0	Target re-distributed	5,000	30,000	15,000	50,000	2,000	30,000	18,000	50,000	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May -

			Targets				Revisions				Justification
Indicator	Baseline Value	Suggested Amendment	2014	2015	2016	Total	2014	2015	2016	Total	
assistance											September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Number of livestock cooperative/producer group members benefiting from financial services as a result of USDA assistance	0	Target re-distributed	2,500	12,000	5,500	20,000	2,000	12,000	6,000	20,000	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Number of livestock enterprises investing in new or rehabilitated livestock marketing and trade infrastructure	0	Target re-distributed	50	150	100	300	20	150	130	300	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Value of in-kind grants provided to livestock enterprises investing in off-farm infrastructure	0	Target re-distributed	425,000	850,000	425,000	1,700,000	136,000	1,020,000	544,000	1,700,000	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Number of infrastructure projects carried out	0	Target re-distributed	75	250	225	550	50	250	250	550	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.

			Targets				Revisions				Justification
Indicator	Baseline Value	Suggested Amendment	2014	2015	2016	Total	2014	2015	2016	Total	
Number of post-harvest handling and processing facility employees trained in improved processing techniques	0	Target re-distributed	500	1,500	500	2,500	250	1,500	750	2,500	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Number of post-harvest handling and processing facility employees trained in sanitary standards	0	Target re-distributed	500	1,500	500	2,500	250	1,500	750	2,500	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Number of livestock enterprise staff and cooperative members trained to market agricultural products	0	Target re-distributed	100	300	200	600	50	300	250	600	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Number of livestock enterprise staff and cooperative members trained in improved business management	0	Target re-distributed	100	300	200	600	50	300	250	600	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the numbers in FY 2015 and FY 2016.
Number of study tours facilitated	0	Target re-distributed	25	50	25	100	10	50	40	100	Per USDA guidelines, all USDA activities need to begin after approval of the baseline. Due to limited time remaining in FY 2014 (May - September 30), Land O'Lakes proposes to reduce target outputs in year one and redistribute the

			Targets				Revisions				Justification
Indicator	Baseline Value	Suggested Amendment	2014	2015	2016	Total	2014	2015	2016	Total	
											numbers in FY 2015 and FY 2016.
Number of individuals receiving short-term agricultural sector productivity or food security training as a result of USDA assistance	0	Target revision				83,200				63,200	Baseline findings indicate relatively low population densities in the target Counties, with land owned by sampled farmers of more than 20 acres in some cases. It is suggested that the number of farmers benefitted directly be reduced to 60,000; the revised figures indicate 60,000 farmers plus facility employees (2,500) and business service providers (700).
Number of farmers and other received training on improved farm management practices (i.e. governance, administration or financial management) as a result of USDA assistance.	0	Target revision				80,000				60,000	Baseline findings indicate relatively low population densities in the target Counties, with land owned by sampled farmers of more than 20 acres in some cases. Given the structured training modules delivered by the Farmer Field School approach, aggregating farmers will be a difficult task. It is suggested that the number of farmers benefitted directly be reduced to 60,000.
Number of farmers and others who applied new techniques or technologies as a result of USDA assistance.	0	Target revision				64,000				48,000	The number of farmers benefitting directly has been reduced from 80,000 to 60,000 based on the baseline findings. This reduction corresponds to the proposed reduction in direct beneficiaries.

			Targets				Revisions				Justification
Indicator	Baseline Value	Suggested Amendment	2014	2015	2016	Total	2014	2015	2016	Total	
Number of farmers and others who have applied improved farm management practices (i.e. governance, administration or financial management as a result of USDA assistance.	0	No change				64,000				48,000	The number of farmers benefitting directly has been reduced to 60,000 from 80,000 based on the baseline findings. This corresponds to the proposed reduction in direct beneficiaries.
Number of jobs attributed to USDA assistance	0	No change				1,200				1,200	NA
Value of incremental sales attributed to USDA assistance	347	Indicator addition				NA				399	Added per USDA's request after revision of the K-SALES Evaluation Plan.
Percentage increase in value of production per producer	0	Replace indicator with "Percent increase in mean farm gate price of livestock sold"				30				30	Based on the baseline findings, Land O'Lakes proposes to drop the indicator "Percent increase in value of production per producer" and replace it with "Percent increase in mean farm gate price of livestock sold". Improvement in animal health and care will be measured by average body condition score, while improved market value from earnings from the sale of healthy animals is proposed to be measured by the farm-gate prices of livestock. Data collection for the original indicator is complex when it takes into consideration the realities of different livestock types and ages within the herd of a farmer, and hence there are high chances that data will be inaccurate. Baseline values for the proposed replacement indicator are as follows: (USD): Beef - 311 ; Goats - 52 ; Sheep - 33

			Targets				Revisions				Justification
Indicator	Baseline Value	Suggested Amendment	2014	2015	2016	Total	2014	2015	2016	Total	
Average livestock body condition score	Cattle - 2.7 Shoat - 2.8	Target increase for shoats				3				Cattle - 3.0 Shoat - 3.2	Based on the baseline findings, Land O'Lakes proposes to increase the target to 3.2 for shoats. This is only an increase of 0.4 from the baseline value and is reasonable given the project objectives, and is informed by the fact that local markets emphasize the body condition of livestock.
Number of individuals benefiting directly from USDA funded interventions	0	Target revision				192,200				63,200	The original target included household members of the 80,000 farmers targeted to benefit directly, who are also counted as part of "Number of individuals benefitting indirectly from USDA funded interventions". This would have been double counting. In addition, the number of farmers benefitting directly is proposed to be reduced from 80,000 to 60,000 based on the baseline findings. The number of post-harvest handling and processing facility employees (2,500) and business service providers (700) is unchanged, bringing the total to 63,200.
Number of individuals benefiting indirectly from USDA funded interventions	0	Target revision				274,380				214,880	Land O'Lakes proposes to reduce the number of farmers benefitting directly from 80,000 to 60,000 based on the baseline findings. This reduction in indirect beneficiaries is a direct calculation based off of the reduction in direct beneficiaries.

			Targets				Revisions				Justification
Indicator	Baseline Value	Suggested Amendment	2014	2015	2016	Total	2014	2015	2016	Total	
Percentage of farmers participating in project interventions who have applied new techniques or technologies as a result of USDA assistance	0	No change				80				80	NA
Percentage of farmers within 5 kilometers of supplies that sell improved inputs	48.90%	No change				100				100	NA
Number of farmers in target regions who have access to sufficient water inputs through off-farm sources as a result of USDA assistance	0	Target revision				80,000				60,000	Baseline findings indicate relatively low population densities in the target Counties, with land owned by sampled farmers of more than 20 acres in some cases. Given the structured training modules delivered by the Farmer Field School approach, aggregating farmers will be a difficult task. It is suggested that the number of farmers benefitted directly be reduced to 60,000.
Number of farmers in target regions that have access to two or more modern on farm structure as a result of USDA assistance.	0.00%	No change				25,000				25,000	NA
Number of farmers and others receiving financial services as a result of USDA assistance	0	No change				50,000				50,000	NA

			Targets				Revisions				Justification
Indicator	Baseline Value	Suggested Amendment	2014	2015	2016	Total	2014	2015	2016	Total	
Value of agricultural and rural loans provided as a result of USDA assistance	0	No change				500,000				500,000	NA
Percent farmers who can demonstrate a threshold level of proficiency in a least five new livestock husbandry and herd management techniques as a result of USDA assistance.	68.90%	No change				80				80	NA
Percentage of farmers who have applied 60 percent of recommended improved farm management practices as a result of the USDA assistance.	0	No change				80				80	NA
Percentage of farmers in target regions who can identify key characteristics of a well-managed farm as a result of USDA assistance.	0	No change				80				80	NA
Percent increase in the value of locally traded livestock products (meat and skin)	0	Target revision				30				15	Baseline findings indicate high prices of the meat products sold in the project area, with no significant difference with prices in the Nairobi market. Since value is a product of both price per unit of product sold and volume, K-SALES will strive to increase the volume sold. Price change will be minimal if any. A 15% target therefore is

			Targets				Revisions				Justification
Indicator	Baseline Value	Suggested Amendment	2014	2015	2016	Total	2014	2015	2016	Total	
											more realistic.
Number of jobs attributed to USDA assistance	0	Delete – duplicate indicator				1,200				1,200	This indicator is listed twice in the agreement; it is already captured above.
Percent increase in average margin between farm gate price and price of processed product	TBD	Target revision				30				5	Baseline findings and key stakeholder interviews indicate a very low level of value addition by current players and low demand for value added products in the local market (Project area meat market). A 30% change in three years is not achievable.
Percent increase in volume of processed products certified as meeting the Kenya Bureau of Standards (KEBS) quality requirements.	TBD	No change				30				30	NA
Average percentage decrease in post harvesting pricing costs per animal.	TBD	No change				20				20	NA

			Targets				Revisions				Justification
Indicator	Baseline Value	Suggested Amendment	2014	2015	2016	Total	2014	2015	2016	Total	
Percentage of livestock enterprises using modern equipment to process livestock products as a result of USDA assistance	0	No change				50				50	NA
Percentage livestock enterprise using improved techniques to process livestock products as a result of USDA assistance.	0	No change				60				60	NA
Number of new post-harvest handling infrastructure projects completed as a result of USDA assistance	0	No change				50				50	NA
Percentage increase in number of distinct markets to which livestock and livestock products are sold as a result of USDA assistance	0	No change				50				50	NA
Number of agreements signed, contracts, MOUs between buyers and sellers as a result of USDA assistance.	0	No change				300				300	NA

			Targets				Revisions				Justification
Indicator	Baseline Value	Suggested Amendment	2014	2015	2016	Total	2014	2015	2016	Total	
Value of private and public investment in the market and trade infrastructure as a result of USDA assistance.	0	No change				1,500,000				1,500,000	NA
Number of livestock enterprises in target region accessing credit through formal financial products as a result of USDA assistance	0	No change				150				150	NA
Percent reduction in cost required to trade goods		No change				20				20	NA
Number of livestock enterprises that actively use business/marketing plans as a result of USDA assistance	0	No change				150				150	NA
Number of livestock enterprises using improved financial management tools in decision making as a result of USDA assistance.	0	No change				150				150	NA

ANNEX 9: TABLES

Table 36: Percent (%) aware recommended technologies

		Sex		Youth				County			
	Whole sample	Male	Female	Below 35 years old	Above 35 years old	Meru	Tharaka Nithi	Kitui	Makueni	Taitaveta	Machakos
Pasture conservation	68.3	69.5	66.5	66.3	69.7	71.4	76.2	58.8	96.5	35.1	72.1
Vet services & Vaccinations	89.3	90.9	85.0	89.8	90.2	85.0	98.1	86.8	98.0	90.1	77.4
Dipping for tick control	80.3	82.0	73.1	79.5	81.0	76.5	95.7	85.3	98.0	51.5	74.2
Spray race for tick control	67.9	69.4	62.3	68.1	68.5	77.0	83.3	89.7	58.5	34.7	62.6
Hand spray for tick control	93.7	94.2	90.4	95.2	93.4	90.6	99.0	96.6	98.5	88.1	88.9
Pour on for tick control	63.8	65.6	54.5	61.4	64.5	54.9	91.4	64.7	68.0	40.6	62.6
Branding	81.8	82.3	77.2	82.5	81.5	77.0	91.0	85.8	91.0	76.2	68.9
De-worming	87.9	88.1	88.6	88.0	88.2	90.6	94.8	81.4	97.5	77.7	84.7
AI service/Breed improvement services such as bull schemes	69.7	71.2	62.3	64.5	70.9	67.1	89.5	66.7	83.0	33.7	78.4
Castration	67.1	67.3	62.9	62.7	67.3	71.4	93.8	44.1	82.0	45.5	64.7
De-horning	65.4	65.8	61.1	60.8	65.8	72.3	95.2	42.6	82.0	34.7	64.2
Hoof trimming	59.2	60.5	54.5	59.6	59.6	71.4	93.3	40.2	68.0	25.7	54.7
De-stocking/re-stocking	69.5	70.2	68.3	66.3	70.6	66.7	82.4	64.7	90.5	39.6	73.2
Use of crop residue	81.0	81.3	79.6	80.1	81.3	76.1	86.2	77.9	97.0	58.9	90.5
Livestock transportation	58.3	59.1	53.3	57.2	58.5	57.7	60.5	70.6	62.1	28.4	71.1
Livestock insurance	25.5	26.0	20.4	26.7	25.1	44.1	23.8	32.0	15.5	13.9	22.5

Table 37: Use of Recommended Technologies and Techniques

		Sex		Youth	County						
	Whole sample	Male	Female	below 35 years old	above 35 years old	Meru	Tharaka Nithi	Kitui	Makueni	Taita Taveta	Machakos
Pasture conservation	46.7	46.6	50.9	41.1	48.1	32.2	13.8	44.5	79.3	28.8	67.2
Vet services & Vaccinations	69.8	69.9	68.3	62.4	71.0	74.0	35.4	68.4	90.3	70.9	85.7
Dipping for tick control	20.6	20.8	18.0	15.9	21.2	4.3	25.4	39.7	23.5	18.3	7.1
Spray race for tick control	19.5	19.9	15.4	16.8	19.7	14.6	21.7	37.7	2.5	15.7	14.3
Hand spray for tick control	81.3	82.1	75.5	82.3	81.0	78.2	71.6	82.7	90.4	78.1	88.2
Pour on for tick control	32.8	33.7	27.5	22.5	34.6	23.9	30.2	53.8	28.7	51.2	14.3
Branding	51.6	51.3	56.6	62.8	50.2	57.3	50.3	80.0	14.8	76.0	30.5
De-worming	86.4	86.3	90.8	83.6	87.3	89.7	84.9	77.7	94.9	79.8	90.1
AI service/Breed improvement services such as bull schemes	20.5	20.6	20.2	18.7	20.9	39.9	18.1	37.7	3.6	20.3	8.1
Castration	13.6	13.6	13.3	10.6	14.0	13.2	6.6	51.1	2.4	20.7	7.3
De-horning	17.2	17.0	18.6	10.9	18.2	16.9	17.4	56.3	2.4	15.3	10.7
Hoof trimming	13.4	13.3	14.1	9.1	14.1	19.0	3.1	50.0	7.4	15.1	2.9
De-stocking/re-stocking	36.4	35.8	37.7	27.3	37.3	33.3	9.8	40.2	55.2	37.0	43.9
Use of crop residue	79.7	80.3	76.7	82.0	79.5	84.0	60.2	83.6	95.9	53.8	92.4
Livestock transportation	16.4	16.4	19.1	12.6	17.2	3.3	6.2	48.6	9.6	6.8	14.1
Livestock insurance	1.7	1.8	1.8	3.3	7.7	1.1	2.0	5.7	12.9	6.5	2.2
Percent (%) of farmers who have used at least five (5) different livestock services	55.6	57.2	49.7	49.4	57.2	46.5	37.1	78.4	84.5	31.2	57.4

Table 38: Households Roles and Responsible for various livestock activities

	Watering	Herding	Spraying/dipping	Feeding on minerals	Breeding	Cleaning shed	Pasture management	Sale/marketing of livestock
Overall								
Household Head	31.2	34.7	44.6	41.9	44.1	32.5	42.3	45.6
Spouse	38.2	33.9	28.5	31.3	30.2	40.3	31.6	23.6
Both HH Head & spouse	14.7	14	13.6	14.6	13.8	12.9	14.7	23.6
Son	3.8	4.2	4.2	3.3	3.3	3.5	3.3	2.6
Daughter	0.9	0.7	0.5	0.5	0.4	1	0.5	0.4
Others	11.1	12.6	8.6	8.3	8.2	9.8	7.5	4.1
Male headed								
Household Head	27.2	31.4	43	39.5	42.9	29.6	40.4	43.1
Spouse	42.1	36.4	30.6	33.7	31.6	43.6	33.6	24.2
Both HH Head & spouse	16.8	16	15.7	16.8	16	14.6	16.6	27
Son	3.3	3.8	3	2.2	2.2	2.5	2.3	2
Daughter	0.7	0.4	0.2	0.3	0.3	0.4	0.1	0.2
Others	9.9	12	7.5	7.5	7	9.2	6.9	3.5
Female headed								
Household Head	56.4	56.4	56.8	58.1	54	53.6	56.9	64.7
Spouse	17	19.6	15.4	17.4	19.8	19.9	16.7	16.3
Both HH Head & spouse	2.4	1.8	1.9	2.6	1.6	2	3.5	3.9
Son	7.3	7.4	11.7	9.7	10.3	9.3	9.7	6.5
Daughter	2.4	2.5	2.5	1.9	1.6	4.6	3.5	2
Others	14.5	12.3	11.7	10.3	12.7	10.6	9.7	6.5

Table 39: Who control of proceeds from sale of livestock in the Household

Control of income from sale of cattle															
	Whole Sample					Control					Treatment Site				
	Husband	wife	Both	Son	Other	Husband	wife	Both	Son	Other	Husband	wife	Both	Son	Other
Overall	33.8	10.5	49.3	1	5.5	38.2	11.4	45.8	0.6	4	29.6	9.6	52.6	1.3	6.9
Sex of HH head															
Male	37.7	2.7	56.5	0.7	2.3	41.4	2.6	52.8	0.5	2.8	34	2.8	60.3	0.9	1.9
Female	15.2	50.7	7.2	2.9	23.9	20	63.3	3.3	1.7	11.7	11.5	41	10.3	3.8	33.3
Age															
below 35 years old	32.4	7	51.4	0.7	8.5	37.7	6.6	42.6	1.6	11.5	28.4	7.4	58	0	6.2
above 35 years old	35	9.8	49.3	1.1	4.8	39	10.5	47.2	0.5	2.8	31	9	51.4	1.7	6.9
County															
Meru	60.8	13.9	17	1.5	6.7	58.6	12.1	22.2	2	5.1	63.2	15.8	11.6	1.1	8.4
Tharaka Nithi	23.6	6.9	62.6	1.5	5.4	41.7	8.7	45.6	0	3.9	5	5	80	3	7
Kitui	30.3	12.1	51.5	3	3	28.6	7.1	64.3	0	0	30.8	13.5	48.1	3.8	3.8
Makueni	27.5	9	57.5	0.5	5.5	23.5	8.8	61.8	1	4.9	31.6	9.2	53.1	0	6.1
TaitaTaveta	25.6	15.3	53.4	0.6	5.1	30.2	19.8	46.5	0	3.5	21.1	11.1	60	1.1	6.7
Machakos	32.6	7.1	54.9	0	5.4	37.8	9.2	50	0	3.1	26.7	4.7	60.5	0	8.1

Table 40: Awareness of extension services

	Breeding	Feeds and feeding	Animal health	Animal nutrition	Fodder establishment	Record keeping	Financial services	Managing livestock enterprise	Use and disposal of acaricides	Integrated Pest Management
Overall	30.2	10.8	66.9	28.1	7.9	12.9	17	8.6	50.1	4.8
Sex of the HH Head										
Male	31	10.8	67.1	27.5	8.1	13.2	17.9	9.5	49.6	5.1
Female	22.2	12.6	63.5	24	8.4	9.6	10.8	4.8	51.5	2.4
Age										
Below 35 years old	32.9	9	66.5	22.2	7.2	12.6	17.4	9.6	49.7	2.4
Above 35 years old	29.2	11.5	66.6	27.9	8.2	12.7	16.9	8.8	50	5.1
County										
Meru	53.5	17.8	50.7	21.1	14.6	12.2	16.9	11.3	60.1	0.9
Tharaka Nithi	43.8	16.7	78.6	27.6	9	10	14.8	18.1	53.8	2.4
Kitui	14.2	3.4	59.8	24	4.4	9.8	24.5	8.3	32.8	5.4
Makueni	20.5	23	76.5	28.5	7	7.5	10	3	47	4.5
TaitaTaveta	29.7	0.5	55	35.1	1.5	26.7	18.8	7.9	48	10.4
Machakos	16.8	2.6	82.6	32.6	10.5	11.1	16.8	2.1	58.9	5.3

Table 41: Extension service provided in the past years

	Breeding	Feeds and feeding	Animal health	Animal nutrition	Fodder establishment	Record keeping	Financial services	Managing livestock enterprise	Use and disposal of acaricides	Integrated Pest Management
Overall	14.4	23.1	43.7	17.1	4.3	6.2	7.7	6.3	27	4.5
Sex of the HH Head										
Male	14.5	22.5	43.9	16.7	4.4	6.1	7.7	6.4	26.7	4.5
Female	15	29.9	43.7	17.4	4.8	6.6	7.2	6	31.1	4.8
Age										
below 35 years old	15	16.2	37.7	11.4	2.4	5.4	6.6	5.4	24	1.8
above 35 years old	14.5	24.7	44.8	17.7	4.7	6.4	7.9	6.5	27.8	5
County										
Meru	35.7	27.7	31	7	5.6	11.7	14.6	8.9	37.6	2.3
Tharaka Nithi	5.2	21	42.9	19	1.4	3.8	1	4.3	26.7	1
Kitui	15.2	15.7	46.6	18.6	6.4	7.8	8.8	6.4	13.2	5.9
Makueni	13.5	37.5	52.5	25	6.5	4.5	7	6.5	27	5
TaitaTaveta	5	2	20.8	5	2	3.5	6.9	5	15.3	7.4
Machakos	11.1	35.8	71.1	28.9	4.2	5.8	7.9	6.8	42.6	5.8

Table 42: Distribution of selected characteristics of livestock enterprise by treatment and control groups

County	Intervention Area		Livestock TLU	size of land owned (acres)	Average Body Condition Score for Beef	Average Body Condition Score for Goats	Average Body Condition Score for Sheep	Total current livestock value(KES)
Meru	Control	N	102	97	85	74	13	102
		Mean	2.7	4.1	2.7	2.8	3.2	84891.6
		Median	2.1	2	3	3	3	61365.1
	Treatment	N	76	67	37	66	39	76
		Mean	3.2	3.8	2.2	2.4	2.4	102817.9
		Median	1.8	3	2	2	2	63000
Tharaka Nithi	Control	N	101	86	72	96	53	101
		Mean	2.7	4.9	2.7*	2.6	2.7	54793.2
		Median	2.33	4	2.5	2	2	44000
	Treatment	N	93	88	52	86	68	93
		Mean	3.9	8.2	2.4	2.5	2.5	99974.6
		Median	3.43	6.5	2	3	3	76000
Kitui	Control	N	102	100	95	83	13	102
		Mean	5.7	14.8	2.5	2.7*	2.6	207950.6*
		Median	4.88	7	2	3	2	145000
	Treatment	N	98	94	79	88	15	98
		Mean	5.2	8.7	2.6	2.8	3.0	188425.5
		Median	4.54	5.5	3	3	3	147000
Makueni	Control	N	102	99	98	89	37	102
		Mean	4.6	8.5	2.7	2.9	3.1	129714.3
		Median	3.5	5.0	3.0	3.0	3.0	90212.6
	Treatment	N	75	73	73	71	15	75
		Mean	4.2	11.2	3.0	2.9	3.3	118478.2
		Median	3.32	7	3	3	3	90000
TaitaTaveta	Control	N	87	87	69	71	12	87
		Mean	7.4**	6.8	3.0**	3.2	3.6	242489.8**
		Median	4.55	5	3	3	3	110000
	Treatment	N	89	86	71	81	25	89
		Mean	7.0	4.1	3.4	3.3	3.3	198065.9
		Median	4.32	3.25	3	3	3	112850.5
Machakos	Control	N	98	98	93	96	27	98
		Mean	5.3	9.0	2.6	2.9**	2.9	186589.1
		Median	3.765	5.75	3	3	3	99500
	Treatment	N	68	50	46	46	2	68
		Mean	4.0	7.8	2.5	2.9	3.0	117747.1
		Median	2.55	4.5	2	3	3	87000
Total	Control	N	592	567	512	509	155	592
		Mean	4.7	8.1	2.7	2.8	2.9	148677.8

		Median	3.215	5	3	3	3	84250
	Treatment	N	499	458	358	438	164	499
		Mean	4.6	7.3	2.7	2.8	2.7	140477.0
		Median	3.55	5	3	3	3	96000
	Total	N	1091	1025	870	947	319	1091
		Mean	4.7	7.8	2.7	2.8	2.8	144926.9
		Median	3.33	5	3	3	3	88850.5

Table 43: Household Food Security Indicators by Treatment and Control Sites

County	Intervention Area		Mean Months of Food Provision	HDDS Index
Meru	Control	N	94	98
		Mean	6.6*	3.7
	Treatment	N	63	74
		Mean	4.3	3.5
	Total	N	157	172
		Mean	5.6	3.6
Tharaka Nithi	Control	N	98	99
		Mean	5.7	4.1
	Treatment	N	92	83
		Mean	5.9	3.9
	Total	N	190	182
		Mean	5.8	4.0
Kitui	Control	N	46	87
		Mean	1.6	4.2
	Treatment	N	69	64
		Mean	4.1	6.6
	Total	N	115	151
		Mean	3.1	5.2
Makueni	Control	N	102	58
		Mean	3.6	5.5
	Treatment	N	74	18
		Mean	4.4	4.9
	Total	N	176	76
		Mean	3.9	5.4
TaitaTaveta	Control	N	78	49
		Mean	5.1*	4.6
	Treatment	N	87	64
		Mean	6.6	4.3
	Total	N	165	113
		Mean	5.9	4.4
Machakos	Control	N	93	26
		Mean	5.4	4.7
	Treatment	N	49	62
		Mean	9.5	4.0
	Total	N	142	88
		Mean	6.8	4.2
Total	Control	N	511	417
		Mean	4.9	4.3
	Treatment	N	434	365
		Mean	5.7	4.4
	Total	N	945	782
		Mean	5.3	4.4
		Median	5	4

Table 44: Mean number of livestock sold in 2013

	Intervention Area		Mean number of beef sold	Mean number of goats sold	Mean number of sheep sold	Mean number of shoats sold
		N	Mean	Mean	Mean	Mean
	Whole sample	1091	1.7	2.4	1.1	3.5
Meru	Control	102	1.2	1.3	1	2.3
	Treatment	76	2.8	2.3	1.3	3.6
Tharaka Nithi	Control	101	1.4	2.6*	1.3	3.9
	Treatment	93	1.3	3	1.5	4.5
Kitui	Control	102	1.2	2.6	1.1	3.7
	Treatment	98	1.3	2.4	1.1	3.5
Makueni	Control	102	2.6	2.5	1.1*	3.6
	Treatment	75	2.2	1.9	1	2.9
TaitaTaveta	Control	87	1.7	2.4	1.1	3.5
	Treatment	89	2.1	2.7	1.2	3.9
Machakos	Control	98	1.8	1.9	1	2.9
	Treatment	68	1.9	3.2	1	4.3

Table 45: Mean Farm-gate prices of livestock in 2013

			Cattle			Goat			Sheep	
	Project area	Count	Mean	Median	Count	Mean	Median	Count	Mean	Median
County	whole sample	1091	27013	29467.1	1091	3744.3	3556.5	1091	2217.2	1826.2
Meru	Control	102	27537.8	29467.1	102	3924.4	3619.4	102	2368.5	1766
	Treatment	76	27062.2	24093.4	76	4082.5	3559.7	76	2621.2	2966.7
Tharaka Nithi	Control	101	23214.8	25000	101	3266.3	3000	101	2033.9	1826.2
	Treatment	93	29407.7	30000	93	3628.6	4000	93	2037.6	1826.2
Kitui	Control	102	26744.2	28733.6	102	3630.9	3162.1	102	2051.6	1766
	Treatment	98	28115.1	30000	98	3686.2	3500	98	1790.6	1766
Makueni	Control	102	26354.5	21645.4	102	4176.7	4500	102	2332.1	2692.3
	Treatment	75	26355.2	25000	75	4120.4	4000	75	2342.6	2692.3
TaitaTaveta	Control	87	26446.1	29467.1	87	3806.1	3619.4	87	2426.9	2966.7
	Treatment	89	28683.4	29508.8	89	3544.8	3619.4	89	2304.8	1833.3
Machakos	Control	98	26416.2	23145.4	98	3606.4	3324.1	98	2329.8	2692.3
	Treatment	68	28463.6	30558.3	68	3536	3556.5	68	2113.3	1833.3

Table 46: Mean household income from sale of livestock in 2013

	Project Area	Beef (KES)	Goat (KES)	Sheep (KES)	Shoats (KES)	All livestock (KES)	% contribution of income from sale of shoats to total household income from sale of livestock
Whole sample	Control	16238	8071	2519	10590	26,827	73
	Treatment	17,595	9398	2476	11870	29,469	74
Meru	Control	12478.4	5093.6	1741.5	6835.2	19313.6	71.4
	Treatment	36565.8	9875.9	3645.8	13521.7	50087.5	71.2
Tharaka Nithi	Control	15408.9	8080.1	2424.6	10504.7	25913.6	60.5
	Treatment	17806.5	10782.8	3284.0	14066.8	31873.2	69.1
Kitui	Control	18232.4	8948.6	2361.4	11310.0	29542.3	64.5
	Treatment	12872.4	8546.0	1969.1	10515.2	23387.6	75.8
Makueni	Control	18058.8	10142.4	2633.2	12775.6	30834.4	78.8
	Treatment	22120.0	7714.2	1978.7	9692.9	31812.9	69.1
TaitaTaveta	Control	11183.9	8712.0	2944.1	11656.1	22840.0	78.2
	Treatment	8314.6	8940.4	2729.1	11669.5	19984.1	87.0
Machakos	Control	12989.8	7061.5	2341.8	9403.3	22393.1	84.0
	Treatment	22755.9	11705.1	2082.3	13787.4	36543.2	71.1