VALUE CHAIN ANALYSIS

ON LIVESTOCK, LIVESTOCK PRODUCTS AND ALTERNATIVE LIVELIHOODS IN THE CROSS-BORDER AREA BETWEEN KENYA, ETHIOPIA AND SOMALIA

REPORT

BORESHA

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June 2018

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Funded by
European Union
BORESHA

ACKNOWLEDGEMENTS

SPARD Africa Consulting Ltd wish to thank WYG for the opportunity to undertake the Value Chain Analysis on Livestock, Livestock products and alternative livelihoods study in the cross-border area between Kenya, Ethiopia and Somalia. In particular, we acknowledge the great support and effective coordination by WYG team led by George Apaka and Betül Boyar. We greatly appreciate coordination and support we received from Osman Omar (WYG representative in Somalia and Awale Degewione WYG representative in Ethiopia). We express our special thanks of gratitude to Sharmake Ahmed and Brenda Nafula for their exceptional support.

A very special gratitude goes out to Bashir Osman Isaak for his wonderful logistical support during the study. We appreciate the tireless effort by the rest of SPARD Africa team Humphrey Maloba and Lilian Kiswili during the implementation of this assignment.

We are grateful to the team of data collectors; supervisors and enumerators who worked tirelessly to ensure we get quality data. This include Farahan Mohamed, Yakub Ali, Abdishukri Ahmed, Ismail Zuber, Sadik Ibrahim, Abdi Hassan, Farhan Abdi, Abdikadir Jimale, Ali Abdi, Rashid Issaak, Fatuma Sharif Omar, Kasim Maalim, Nasra Mohamed, Amina Mohamud, Halima Abdinoor, Nulia Sarah, Sahara Adan and Hajow Ibrahim. Undertaking this assessment could not have been possible without their commitment and support.

Compiling this report has been made possible because of the support and cooperation of communities and numerous individuals who took time to participate in interviews, and share information related to this study. We are grateful to all. Special thanks goes to the CEC Livestock, Mandera County, the Chief Officer Agriculture, Chief Officer Livestock, Director of Livestock Production, Mr Ibrahim - Director of trade and Director of Agriculture Mandera County, Abdiaziz - Manager Mandera Vocational training centre and Mr Abdul Haro – Senior Project Coordinator.

We hope the findings of this study will help inform ongoing interventions by the BORESHA Consortium in the cross border area between Kenya, Ethiopia and Somalia.

Josephine Nguta Mugambi
Anthony Murithi Riungu

Senior Consultants

LIST OF ACRONYMS

BORESHA	Building Opportunities for Resilience in the Horn of Africa
CBO	Community Based Organisitions
DRC	Danish Refugee Council
ETH	Ethiopia
EU	European Union
EUTF	European Union Emergency Trust Fund
FAO	Food and Agricultural Organisition of the United Nations
FGDs	Focused Group Discussions
IBLI	Index Based Livestock Insurance
ICT	Information and Communication Technology
IGAD	Intergovernmental Authority on Development
ILRI	International Livestock Reseach Institute
KAP	Knowledge Attitude and Practice
KE	Kenya
KNBS	Kenya National Bureau of Stastistics
LM	Lower Middle
LMA	Livestock Marketing Associations
NDVI	Normalized Difference Vegetation Index
OIC	Oromia Insurance Company
SMEs	Small and Micro Enterprises
SOM / SO	Somalia
VCA	Value Chain Analysis
VCD	Value Chain Development

EXECUTIVE SUMMARY

Building Opportunities for Resilience in the Horn of Africa (BORESHA) project through the funding from the European Union Trust Fund for Africa is implementing a project in cross border area between Kenya, Ethiopia and Somalia (Gedo region in Somalia, Mandera County in Kenya, Liben and Afder zones in Ethiopia) whose overall objective is to promote economic development and greater resilience, particularly among vulnerable groups. This value chain analysis on Livestock, livestock products and alternative livelihoods assessment in the cross border area between Kenya, Ethiopia and Somalia was commissioned to provide WYG and BORESHA consortium partners with proper understanding of the livestock and livestock products value chains to inform strategy for building self-reliant and resilient pastoral communities in the project area.

Data was collected from primary and secondary sources, utilizing both qualitative and quantitative approaches. Primary data was collected through quantitative surveys targeting livestock producers and traders in livestock products; Focused Group Discussions (FGD), Semi Structured Interviews with key informants and observations. A total of 309 value chain actors were interviewed through the survey and another 75 through the FGDs and Key Informants Interviews, making a total of 384.

There exists a lot of cross border interactions within the cross-border area between Kenya, Ethiopia and Somalia mainly because of trade, opportunities for shared resources/services and resources and kinships. The resources and infrastructure shared across the region include livestock markets, schools, health services, airstrips, river Daua for irrigation, mobile phone networks and currencies among others. The main livelihood systems in the triangle include (though no clear-cut distinctions) pastoralism, agro-pastoralism, formal and informal Employment, and trading mainly in the urban centres. There are also IDPS in Somalia and Somali refugees hosted in Dolo Ado Ethiopia, who largely depend on relief food.

The region constitutes an integrated cross border economy with the towns of Mandera (Kenya), Bulahawa (Somalia) and, Dolow (Somalia) and Dolo Ado (Ethiopia) being the critical set of corridors for commerce and livestock sales for the entire region. Each country has its comparative advantage which influences the direction of flow of goods and services cross the three borders. The challenges that affect the close border trade include insecurity, closure of the international border points, unfavourable government policies and infrastructural challenges.

The value chains and alternative livelihoods that were found to promise of employment opportunities, product expansion, market and linkage opportunities and quality improvement include Camel milk value chain, hides and skins, live animal, honey, riverine farming/irrigation, construction industry, agricultural drug stores and the Savings and Credit Schemes. Key findings on each of the value chain, constraints and recommendations for upgrading the value chain are discussed below:

1) Camel milk value chain:

Brief Situational Analysis

- Camel milk is an important product in the pastoral areas from a resilience, food security, income generation and inclusive business perspectives.
- The value of the total milk produced per day is approximately KES 940, 1,178.9 and 166.7 in the dry season for Ethiopia, Kenya and Somalia respectively; and 1,088, 6,340.0 and 333.3 per day in the wet season in Ethiopia, Kenya and Somalia respectively.
- The average incomes earned by households that manage to sell camel milk is approximately KES 660 in the dry season for Ethiopia, KES 825 for Kenya and KES 433 for Somalia. In the wet season, the
- total daily incomes are approximately KES 512.0 for Ethiopia, 1,656.8 for Kenya and KES 250 for Somalia.
- The value chain is affected by high seasonal fluctuations; seasonal fluctuations were found to be statistically significant ($P<0.05$) in Kenya and Somalia
- Production reduces by 30% (Ethiopia); 75% (Kenya) and 75% (Somalia)
- Milking herd reduces by 80% in Somalia and 55% in Kenya due to migrations
- Production per animals reduces. from 2.72 LPD to 1.88 LPD (Ethiopia); 2.28 to 1.3 (Kenya)
- Households are able to sell 5.63 months in Kenya, Ethiopia 4.20 months and Somalia 4.33, implying that milk enterprises are rarely operational all year round.
- The bulking and retail business is dominated by women, who operate at different levels of bulking and distribution.
- No significance difference between price of camel milk between Kenya & Ethiopia; Ethiopia and Somalia; but a significance difference exists between Kenya and Somalia ($P< 0.05$).
- Daily incomes per traders per day during wet and fdry seasons respectively were found to be KES 374 and 444 (Somalia); KES 324 and 334 (Kenya) and 248 and 656 (Ethiopia). Income per trader is lower than producers because the bulking business is dominated by many actors.

The key systemic constraints facing the camel milk value chain include:

- A fragmented bulking and retail system.
- The value chain is mainly dominated by primary bulking and retailing of raw camel milk which limits the focus to a small segment of local consumers.
- Poor hygienic practices in milk handling along the entire value chain leading to high levels of milk spoilage.
- Lack of effective systems to collect, bulk and transport milk from far flung areas
- Poor road network which sometimes becomes impassable during the rainy season..
- High seasonal fluctuations in the supply of milk to the market

A. Short term recommendations

- Support the existing ectors in bulking and retal to invest in milk enterprises or milk outlets
- owned by individuals, groups or cooperatives operating a combination of both milk bars and retail
- outlets and offering quality milk to a wider market including the quality sensitive segments.
- Increasing the supply of milk to the markets in order to meet the demand through establishment of effective collection and bulking systems in the far flung areas and increase production and productivity of the pastoralists herds .
- Enhancing clean milk production and supply by promoting the use of appropriate equipment for carrying and storing clean milk along the value chain in order to reduce on the losses due to spoilage

B. Medium to long term recommendations

- Value addition by investing in production of other products such as cheese and yoghurt.
- Stregthening the cooperation among the traders by organizing them into cooperatives to run milk enterprises with enhanced institutional capacity building
- Branding, promotion and enhanced marketing of camel milk to raise consumer awareness leading to increased consumption of camel milk.
- Undertaking KAP survey to assess training needs for camel milk producers and carrying out milk quality assessment; formation and strengthening milk bulking groups into market oriented cooperatives
- Promote strategies to increase camel milk production and productivity .

2) Hides and Skins

Brief Situational Analysis

- Over 90% of the hides and skins marketed in the cross-border area between Kenya, Ethiopia and Somalia are collected from slaughterhouses;
- There are no icentives for producers to sell hides and skins due to the following factors:
- Low annual livestock slaughters estimated at 1-2 for cattle and camels and 5- 7 sheep and goats
- Low prices per piece currently at KES 50 (Kenya) and 100 (Somalia and Ethiopa) No systems in place for the few produced to reach the markets
- Utilization of hides and skins from dead animals not encouraged based on religious beliefs
- The value chain is relatively short, involving primary and secondary bulking for traders who take to external markets.
- There are artisans, who are using their indiginous knowledge and skills to make leather products like handbags, wallets, belts and prayer mats for sale.
- There are two routes through which the hides and skins from the Triange leave for the end markets i.e (1) Mogadishu route for sun dried hides and skins from Somalia, Ethiopia and Kenya sell and
- the Nairobi route for wet salted hides and skins from the 3 countires.

Key systemic constraints in the hides and skins value chain'

- Limited systems for bulking and transportation of hides and skins households.
- High levels of rejection and downgrading of hides and skins due to defects
- Subjective and exploitative grading procedures at the tanneries.
- Low prices in the wet blue market in Kenya, attributed to the existing monopoly
- There is limited access to external markets by local traders due to control of markets by big actors who operate like cartels.
- Lack of equipment, infrastructure and efficient production technologies for upcoming local designers.
- Inadequate supply, due to lack of systems to collect from producers
- Insecurity along the trading routes especially for the traders' form Kenya who transport hides and skins to Mogadishu.
- Lack of adequate capital for traders to increase the volumes traded.

A. Short Term Recommendations

- Support in stregthening the aggregation, transportation and storage systems to meet the demand for
- hides and skins at the end markets:
- Support the trasfer appropriate tanning and leather making technologies : this intervention aims at
- supporting the current artisans and people involved in the tanning to transfer these skills to other
- people while at the same time introducing complementary technologies in order to make the tanning
- and manufacturing of leather products more effcient.

3) Honey Value Chain

Brief situational Analysis

- Production is localized in areas with adequate flowers, mainly riverine areas.
- Presence of perennial rivers Daua and Juba in this ecosystem provides a huge potential for apiculture.
- Despite the potential, honey production has not been commercialized, which was largely attributed to poorly developed marketing system and also use of traditional bee keeping technologies and equipment.
- Value chain funtions after harvesting include packaging plastic jerrycan s of either chunck (Crude) honey or semi processed honey.
- The value chain lack application of pricing and quality managment standards
- Honey marketing is mainly a retail business involving individual traders, out of which 80% are producers..
- Systemic constraints in the honey value chain
- The value chain is quite unstructured, basically characterized by individual producers and traders retailing honey in the local markets
- Lack of quality enhancement systems hence reduced consumer confidence.
- Lost value by selling of semi processed and crude honey as other hive products are not marketed
- Potential threat to apiculture thruogh environmental degradation due to changes in land use and frequent droughts.
- Lack of standards and quality assurance mechanisms along the value chain.
- Lack of appropriate production and processing equipment and technologies.
- High farm gate prices which are way above the market rates for refined and crude honey.
- Lack of entrepreneurial skills that limits adoption of other scalable business models.
- The retail market is not sustainable in the short and medium term as honey production continues to increase.

Short term recommendations

1. Increase production of honey to achieve commercial scale by supporting the current producers to scale up production through improved production methods and use of modern equipment.
2. Support an entrepreneur from each of the countries (Banisa, Bulahawa and Dolo Ado) to invest in honey processing**.**
3. Support in the establishment of collection and aggregation systems from the producers to the
4. processor: Facilitate market linkages for processed honey and other hive products, to external markets

4) Live Animal/Meat Value Chain

Brief Situational Analysis

- Several factors such as the multiple roles of livestock and increased vulnerability to external tend to affect the offtake and replacement decisions.

- Due to limited access to animal health services, majority of the producers buy drugs and treat sick animals for themselves as shown by 61 % of the respondents from Ethiopia, 75.7% in Kenya and 35.5% in Somalia.

- Livestock trade is nominated by many market intermediaries, who bulk and trade with live animals from the interior markets to the end markets. As a result, the livestock prices nearely doubles from the producers to end markets. The price of cattle shoats and camels increases by 75%, 54 % and 63% respectively.

- An assessment of whether any country has a comparative advantage as far as animal trade is concerned revealed that:
  - The price of a shoat in Ethiopia is almost the same as the average price of a shoat in the three countries hence traders are able to sell to Kenya and Somalia
  - The average price of a shoat in Somalia was significantly higher by KES 1,019.231 compared to the mean of sampled population which is attributed to availability of export markets. Hence Somalia becomes a market for the livestock from the two countries.
  - No significance difference in the price of shoats in Kenya from the sampled population mean

- which allows flow of shoats in Kenya and Somalia is both ways depending on demand.
- The price of a mature cow/bull in Ethiopia is the same as the average price of a mature
- cow/bull in the three countries hence Ethiopia largely becomes a supplier to Kenya and Somalia markets.
- The price of a mature cow in Somalia is higher than the average price of a cow in the three
- countries hence Somalia remains the main terminal market for the high valued livestock destined for the export markets
- The price of a mature cow in Kenya is slightly lower than the average price of a mature cow in the three countries hence Kenya becomes the main market for low valued livestock from
- The price of a camels in Ethiopia and Kenya are slghtly lower than the sampled average price of a camel in the three countries hence Ethiopia and Kenya are able to sell to the export
- markets through Somalia.
- The price of a camel in Somalia is significantly higher than the sampled average price of a camel in the three countries.
- Systemic constraints along the live animal value chain
- Frequent droughts leading to loss of livelihoods for pastoralists, traders and all those who are involved in the value chain
- Poor disease control systems across the region
- High cost of doing business along the value chain because of many middlemen involved, taxation both formal and informal and high transport costs.
- Limited value chain financing leading to small scale operations
- Seasonal fluctuations in the number and quality of animals supplied to the market with numbers reducing to almost half in the dry season.
- Limited entrepreneurial skills among the livestock traders, a majpr factor contributing to high costs of doing businesses.

A. Short Term Recommendations

- Support entrepreneurs and cooperatives to engage in livestock fattening at scale, building on the existing practices. The river Daua and Juba offers opportunities for irrigated fodder and to supplement other feed resources.
- Facilitate access to market information by livestock producers and traders operating in the primary markets.
- Facilitate business to business dialogues between the traders in the end markets (Nairobi, Mombasa, Mogadishu, Kismayu) and the primary market traders.
- Support in the establishment of agro input and livestock service centre in Mandera, through parnership with Sıdai and link the centre with a network of community animal health workers and other agents in Somalia and Ethiopia.

B. Medium to long term recommendations

- Lobbying for a regional approach to control of livestock diseases through partnerships with existing programs such as the FAO Regional centre for Trans boundary diseases and the Regional Resilience project which covers IGAD member states, currently covering Ethiopia and Kenya among other IGAD member states.

ALTERNATIVE LIVELIHOODS:

After assessing the many options, the follwing alternative livelihoods have been recomended:

5) Riverine farming and processing of horticultural produce:

Brief Situational Analysis

- Consultations with stakeholders in the three countries indicate that the major crops that have potential for commercialization are tomatoes, watermelons, mangoes, onions and paw paws.
- The main challengs facing commercialization of these products hence the employment and income generation potential of these vaue chains is lack of inputs, lack of technical kow how and market linkages such that significant losses are incurred during period of glut.
- The potential for irrigation along the two rivers in cross border area between Kenya, Ethiopia and Somalia is largely under utillized

Short Term Recommendations

- The long distances between cross border area between Kenya, Ethiopia and Somalia and the markets that can sustainably absorb the horticultural products and their high perishability requires a semi processing funtion be created in the region.
- Support the producers to increase production and productivity of quality and safe products through capacity building on agronomical practices and food safety, improvement of irrigation systems, facilitating access to quality inputs, formation of groups and linkages with the processor.

6) Opportunities in the Construction Sector Brief Situational Analysis

- The construction industry is experiencing a lot of growth, as many buildings are coming up to house the growing urban population as well as business establishments.
- Stakeholders indicate that the construction is quite promising in creation of employment in many ways including in the construction work itself, associated services like electrical wiring and hardware shops.

Short Term Recommendations

The following are some of the business opportunities in the construction industry that the project can promote:

a. Develop entrepreneurs to get involved in the production of building materials like brick making.
b. Establishing businesses that provide inputs in the construction industry. This include organizing groups of youth to set up hardware shops in the major towns of Mandera, Bulo Hawa, Dolow and Dolo Ado.
c. Providing services in the construction sector: This involves skills development

7) Savings and Credit Mobilization Brief Situational Analysis

- The findings of this study indicate that only a minority of producers and other value chain actors (0-10%) borrow credit from any form of institutions.
- At least 70% of the respondents indicated that the reason for not borrowing is lack of information on the available products in the market, 20% indicated that they are not aware of any interest free loans, compliant with their religious beliefs and the remaining indicated that they are not aware of credit providers.
- Although there are commercial banks available, the respondents indicated that they use them for banking services and not for borrowing.
- The most common source of credit to finance individual business in the region is borrowing from relatives and friends.
- There is therefore a gap far as business and value chain financing is concened which was echoed by majority of the respondents

Short Term Recommendations

a. Mainstream savings and credit mobilization in each of the value chain that the project will be supporting

b. Education and awareness creation on availabile sharia compliant products in the market

c. Facilitate linkages between the individual or institutional enterprises supported by the project with financial service providers.

d. Partnership with the financial institutions like banks and SACCOs to assess the needs of the entrepreneurs so that appropriate products can be provided.

e. Project to explore a guaranteed credit scheme with banks, as a way of buying in the risks for the banks.

f. Petty Trade and Merchadising Brief Situational Analysis

Petty trading is emerging as one of the popular income generating activities in urban areas in Africa. Based on stakeholder consultations, the factors that contribute to increased petty trade include:

1. Increasing urbanization as people move from rural areas to the urban areas.

2. Economic opportunities created by influx of cheap and diverse commodities from Somalia to the region.

3. Low capita investments required to engage in the business making it attractive for the youth, women and displaced persons.

Challenges facing Petty Trading:

- Competition: The petty traders usually face competitions not only from the their fellow petty traders but also from larger establishments both formal and informal selling similar good in a certain urban centre
- Limited access to financing.
- Enbaling environment: These include informal taxations by the police when they have to buy goods across the border, lack of bridge for free movement across Kenya and Ethiopian border among others

Short Term Recommendations

- Organize the petty traders into associations through which they can present their issues and opinions to the government and other support institutions for consideration
- Facilitate the formation of savings and credit schemes among the associations of petty traders.
- Provide Business Training to the traders, through their association in order to equip them with required skills and knowledge to grow their businesses.

Other Interventions Recommended for support in the Medium to Long term

The following are other opportunities that can be considered for the medium to long term interventions:

1. Catering and bakery
2. Renewable energy

1

1. INTRODUCTION

1.1 BORESHA Consortium

Funded by the European Union Trust Fund for Africa, the Building Opportunities for Resilience in the Horn of Africa (BORESHA) project's overall objective is to promote economic development and greater resilience, particularly among vulnerable groups in the cross-border area between Kenya, Ethiopia and Somalia. The project will adopt a community-driven approach to address the shared nature of the risks and opportunities in this border area. It is part of the EU's programme for Collaboration in the Cross-Border areas of the Horn of Africa, providing over 60 million euros of investment to prevent and mitigate the impact of local conflict and to promote economic development and greater resilience in four different sites cross border regions.

With a total budget of 14 million Euros, the BORESHA project targets to reach communities in Mandera County in Kenya, Dolo Ado region in Ethiopia, and Gedo region in Somalia. A consortium of partners who include Danish Refugee Council as the lead, WYG, World Vision, CARE are implementing the project from November 2017 and November 2020.

1.2 About the assignment

The value chain analysis on livestock, livestock products and alternative livelihoods assessment in the cross border area between Kenya, Ethiopia and Somalia was commissioned to provide WYG and BORESHA consortium partners' with proper understanding of the livestock and livestock products value chains to inform strategy for building self-reliant and resilient pastoral communities in the project area.

The findings of this assessment will shed more light on the status and viability of existing and potential markets. The analysis will further determine the value chains that hold promise of employment opportunities, product expansion, market and linkage opportunities, and quality improvement. Results of the study will inform the existing opportunities to promote economic and private sector development and greater resilience in the livestock value chains, with the ultimate aim of achieving self-reliance among the selected communities or individuals through enhanced skills, creation of opportunities for cross border employment and diversified enterprises and livelihoods.

The study further identified opportunities for vulnerable groups (youth, women, and displaced people) and strategies recommended for their inclusion. In addition, the findings of the study will inform the consortium partners the most viable options/ enterprises in the value chains that the project can support. The value chain analysis targeted the broader livestock value chain i.e. meat and live animals (camel, cattle and shoats), hides and skins and milk products.

1.3 Task and Duties (objectives and activities)

The key tasks and duties included:

- Reviewing existing Value Chain Analyses and Market Assessments reports of Livestock and livestock products value chains, political economy analysis and other relevant project documents.
- Drafting an appropriate methodology for primary data collection and developing data collection tools (e.g. market survey, interviews with market actors, key informant interviews) that were to be used to conduct the Market Assessment and Value Chain Analysis. The methodology specifically consulted and identified opportunities for, women, youth and displaced persons.
- Planning and conducting a Market Assessment and Value Chain Analysis that focused on:
  - identification of major local, regional and cross border markets
  - assessment of size of markets, volume of sales, market integration/ segmentation
  - local market structure and enabling environment (e.g. security issues or policies affecting market access)
  - Market actors (consumers, sellers, traders, middlemen, employers) behaviour.
- Providing a detailed analysis of the market opportunities in the region for the various livestock products that can be maximized, including linkages with local and external markets, locations, main competitors, ICT and mobile application, barriers to competitiveness, quality management and participation of livestock marketing associations, women, men and youth.
- Market Analysis and Value Chain Analysis report (this report), which include an executive summary and practical recommendations that can be used to inform private sector development and livelihoods intervention in the targeted project areas.

1.4 Scope of the Assessment

The value chain analysis identified the main primary value chain actors, market quantities, challenges and opportunities. In addition, the study further analysed the value chain actors, indicating price variations along the value chains for meat and live animals, hides and skins and milk products. The study also evaluated the social cultural aspects of the value chains. This included participation of women, men and youth and displaced persons. Specific tasks include to:

- Identify capacity gaps limiting competitiveness of key actors- traders, butchers, LMA's and Women engaged in livestock Marketing enterprises and other service providers.
- Establish gaps of actors such as community-based CBOs & other community development agents engaged in livestock trading arrangements.
- Analysing the overall business environment that facilitates regional, national cross-border market linkages
- Identifying and documenting successful livestock marketing models and enterprises for replication and scaling up
- Recommending potential business opportunities for entrepreneurs to invest in viable businesses, including livestock marketing associations, women and youth.
- Document/Recommend existing mechanisms/models that provide opportunity for Business coaching and mentoring for women and youth businesses in the livestock value chains
- Recommend interventions which will enable the livestock producers to engage more with markets and other key actors
- Recommend upgrading strategies for the selected value chains including how to grow the livestock enterprises into business hubs, increase pastoralists' bargaining power, market access and demand for services.

2

METHODOLOGY

2.1. Overview

The study applied a value chain approach where all actors in the livestock value chains were mapped out and targeted in data collection phase. This provided a broader

framework that helped to identify the principal constraints along the value chains as well as the environment in which they operate. Data collected from the value chain actors was thereafter analysed to determine the status of the value chains, systemic constraints and the opportunities to promote economic, private sector development, and greater resilience in the livestock value chains and the most viable options/ enterprises/models in the value chains that the BORESHA project can support. Data was collected from both primary and secondary sources as detailed below.

2.2. Data Collection

2.2.1. Secondary Data Collection

A desktop review was undertaken to provide an understanding of the status of the livestock and livestock products value chains while also identifying potential alternative

livelihood strategies that the project can support. Secondary information was used to guide the data collection in terms of knowledge gaps, study sites and the type of value chain actors

and stakeholders to target. Based on the secondary information, six value chains and livelihood opportunities were found to be most promising as far as building pastoralists' resilience through a market system is concerned. These included red meat value chain, camel milk value chain, gums and resins, hides and skins, horticulture and crops (along the River Daua) and honey. The following criteria was used to select the value chains/enterprises that the project can support:

- Local production (supply) capacity
- Social inclusion especially women, youth and displaced persons
- Market potential as a measure of the extent to which the product is demanded in the local market, and/or external markets
- Potential for growth to scale and employment creation through appropriate business models
- Potential to create impact in the short term
- Logistical factors in relation to production, collection, bulking and transportation

2.2.2. Primary Data Collection

Systematic collection and analysis of data using participant observation and interviews was used to gather the desired information.

2.2.3. Quantitative data

Quantitative data was collected through administration of structred quationnaires to the different categories of actors in the different value chains. The actors targeted through this survey were producers (in which case they are targeted as producers of

all other livestock products), live animals traders operating at different levels, camel milk traders, hides and skins traders, honey and the gums and resins traders. The tool was structured to provide information related to their core businesses, volumes traded, prices, relationships among the value chain actors, access to finance and the constrants in the value chain.

A non-probability, sampling methodology was applied to select the respondents, whre livestock markets were used as the entry points for finding the repondents . The approach was premised on the fact that livestock markets are the major convergent points for livestock keepers acrosss the regions strategically located to serve wider geographical areas. In addition, the livestock markets also attracts other businesses such as honey, hides and skins, gums and resins along with other household commodities. This allowed the survey to capture information from pastoralists and traders of livestock and livestock products coming from a wider geographical area than if it was localized in specifiic administrative units.

Three markets were targeted in each of the countries, making a total of 9 markets in the project area. Priority was given to the regional and cross border markets in order to capture the cross broder and regional trade dynamics. At the same time these markets tend to attract other businesses and therefore have more potential to become business hubs for private sector investments. The following are the markets where the study was carried out:

a. Ethiopia: Suftu, Dolo Ado and Dolobay
b. Kenya: Banisa, Rhamu (Mandera North) and Mandera town market (Mandera East)
c. Somalia: Bulo-Hawa, Gedweeiyne and Dolow

2.2.4. Qualitative Data:

Qualitative data was largely but not exclusively generated by direct observations, Focused Groups Discussions (FGDs) and Key Informant Interviews (KII). Nine focused group discussions were held involving producers and traders in the selected value chains. In addition, key informant interviews were made targeting specific value chain actors who could not be reached through FGDs and the survey. The FGD and the KII were also used to collect information from alternative livelihoods in the respective countries.

2.2.5. Data Collection procedure:

Data collection tools were developed in line with the information needed to respond to the TOR. These included structured and semi structured questionnaires and checklists. The paper questionnaires, after approval by WYG were uploaded into computer software called Kobocollect which is a digital platform that allows real time data collection and uploading into a central server. A data collection schedule was designed and agreed upon by WYG. The schedule provided for the various activities to be undertaken by the study team and proposed dates for each activity. Enumerators were trained for 2.5 days on research and interviewing skills and also taken through the tools in detail. In addition, they were also trained on how to use tablets to administer the digital quationnaires. Digital questionnaires were thereafter pretested and updated ready for data collection. A total of 15 enumerators and three supervisors were engaged in the excercise. The enumerators and supervisors were recruited from study sites in Kenya, Somali and Ethiopia.

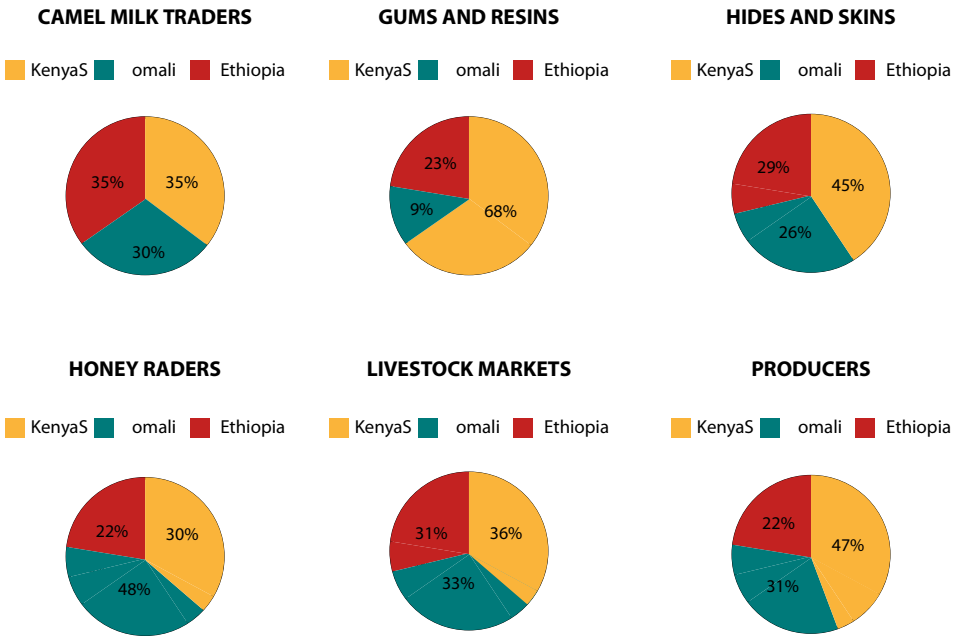
2.3. Brief description of respondents

2.3.1. Number of Respondents

A total of 309 people were interviewed through the survey and another 75 through the FGDs and Key Informants Interviews, making a total of 384. Out of all the respondents, 46% were from Kenya, 33% from Ethiopia and 21% for Somali respectively. Distribution of respondents interviewed for each value chain depended more on which

value chains were dominant in each country and also the number of actors involved. In some of the value chains like camel milk, hides and skins, and honey all the people involved in the value chain activities were interviewed. Fig 1 below presents these summaries.

Fig 1: Proportion of repondents in each country



2.3.2. Analysis of Gender by Value Chain

Table 1: Below presents a cross tabulation of gender by value chain for each fo the three countries. Atleast there is a 25% representation of women in each of the value chains. Women are the majority actors in the camel milk value chain in the three countries as presented by 68.2% , 100% and 90.5% in Ethiopia, Kenya and Solamia respectively.

Table 1: Gender of the Respondents by Value Chain

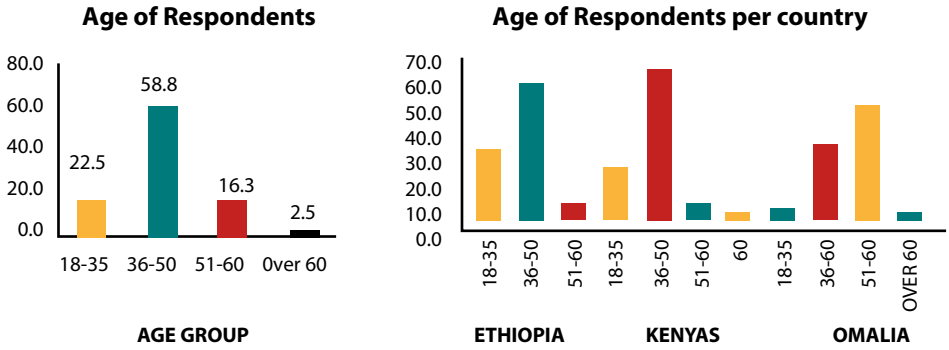
Value Chain	ETHIOPIA		KENYA		SOMALIA	
	Female	Male	Female	male	Female	Male
Camel Milk	68.2%	31.8%	100.0%	0.0%	90.5%	9.5%
Hide and Skins	29.4%	70.6%	50.0%	50.0%	20.0%	80.0%
Crop Produce	33.3%	66.7%	0.0%	0.0%	33.3%	66.7%
Livestock Trade	25%	75%	52%	48%	30%	70%
Honey	30.0%	70.0%	45.5%	54.5%	40.9%	59.1%
Livestock	46.2	53.8	24.3	75.7	52.9	47.1
Producers						

2.3.3. Age of respondents

Majority of the respondents were young adults between the age of 36 to 50 years. The second category comprised the youth with an age blanket of 18 to 35 years. Unlike in Kenya and Ethiopia where majority of repondents were between the ages of 18 to 50 years, majority of respondents in Somalia fell within the 36 to 50 years age blanket.

The results show that the project should purposevely promote inclusion of youth in the value chain activities. Fig 2 below summarizes these results.

Fig 2:Age of respondents



2.3.4. Respondents Education level

Majority of the respondents (65%) had no formal school level education (fig 3). A very low percentage (22.5%) indicated they had attended school and only 6.3% indicated they had completed primary school. Five percent of the respondents indicated they had attended adult literacy education course.

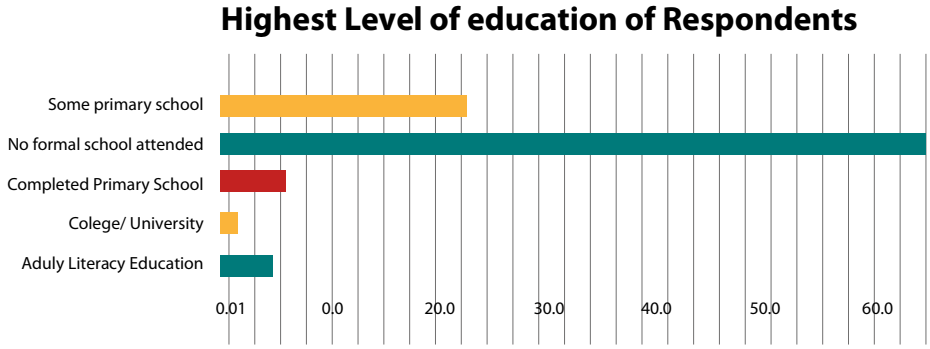


Fig 3: Education Levels

A one-way between ANOVA was conducted to compare the effect of region (country) on the level of education of the respondents. The results reveal that there was a significant effect (difference) in Level of education in the three Countries. [F (2, 76) = 4.299, p = 0.017]. Post hoc comparisons test indicated that the respondents' level of education in Ethiopia (M = 6.62, SD = 1.699) was significantly different from those in Kenya (M = 4.92, SD = 2.822). Further the post hoc test indicated a significant difference in respondents' level of education in Ethiopia (M = 6.62, SD = 1.699) with those in Somalia (M = 4.65, SD = 3.040). However, the respondent's level of education in Kenya (M = 4.92, SD = 2.822) did not significantly differ from those in Somalia (M = 4.65, SD = 3.040). Taken together, the results suggest that there are differences in levels of education among respondents from different countries. Specifically, our results suggest that Respondents in Ethiopia have the Highest levels of education (M = 6.62) implying that most of them joined institutions of higher learning after high school, the respondents in Kenya had a mean rank of 4.92 this shows that majority completed high school but very few went for higher education and Somalia had the lowest level of education levels (M = 4.65) this means that most of the respondents did not make it past high school education.

2.4 Challenges experienced during the Study

Some challenges were experienced during the study. These include:

a. The study was undertaken during a period when the region was experiencing an abnormally high rainfall which led to the flooding of river Daua as well as rendering many roads impassable. This made it challenging to cross the Kenya-Ethiopia border, which is separated by the river. Where it was necessary to cross the river after a downpour, the enumerators had to wait until the river could be passable.
b. Security: there were frequent security threats by Al Shabaab militia just before the month of Ramadhan. As a result, the consultants could not travel to the project areas beyond Mandera town. This was addressed by engaging the supervisors to undertake focused groups discussions and thereafter inviting key value chain actors from the three countries for a gap filling meeting. During this meeting all the gaps were addressed through plenary discussions.
c. Respondents' apathy: Some of the respondents were reluctant to be interviewed. They alleged that in the past several interviews which they had granted yielded no positive results. The enumerators had been trained on interviewing skills and therefore used these skills to explain to the respondents why the study was being conducted.
d. Households expectations of hand-outs: - To some limited extent, some households had expectations of support from the enumerators. This was borne out of the fact that there seemed to be a trend from previous studies done by some organizations to provide some cash payments to respondents. To cope with these demands, enumerators took time to explain the purpose of the survey and how the results would be utilized, which seemed satisfactory to those interviewed at household level.
e. The study coincided with the month of Ramadhan. Most of the respondents were not willing to participate in interviews especially after mid-day.

On the overall, these limitations did not have any considerable effect on the quality of data obtained as well as the findings of this assessment.

3

AN OVERVIEW OF THE STUDY AREA

3.1 An Overview of Gedo Region

Gedo, the second largest region in Somalia, lies on the Somalia border with Ethiopia and Kenya, and shares borders with four Somali regions of Bay, Bakool and Middle Jubba and Lower Jubba. Gedo has six administrative districts: Garbaharey, Baardheere (the capital), Ceel Waaq in the south and Bulahawa, Dolow, and Luuq in the north. Two major rivers run through the region, the Dawa and the Juba. The Dawa River runs along the border of Ethiopia into Somalia's Gedo region. The Jubba River starts from Dolow, just north of Luuq district, and flows to Indian Ocean.

The Dawa pastoral livelihood zone is comprised of Dolo, Bulahawa, Garbaherey and Luuq districts in the Gedo region. There are two rainy seasons: Gu (the main rainy season, April-June) and Deyr (the shorter rainy season, October-December). Total annual rainfall ranges between 300-400 mm and mean annual average temperature is 26 ^{0}C-28 ^{0}C. Relative humidity is between 50-65 percent (FUSNAU, 2014). The soils and the prevailing climatic conditions usually support establishment of savannah, herbaceous (grasslands) and open shrub land which provide suitable rangeland resources (browse and forage material) that sustain pastoral livelihood systems when rainfall conditions are favourable.

The economy of the Gedo region is largely dependent on crops and livestock farming. Dolow is one of the major farming towns in the region. River Juba passes through Gedweeiyne a small town in Dolow district with a lot of potential for irrigation. Bulahawa is a town of approximately 30,000 people, immedietly across border with Mandera Kenya. After the civil war, Bulahawa became an important commercial town, commanding cotrol of flow of transit goods from Mogandishu into Kenya via Mandera. Large volumes of manufactured goods flows across both sides of the border every day going to business people from both sides of the border, Dolow town obtains its good from Bulahawa. As such Balahawa is well suited for developing petty trade, riverine farming and agropasoralism.

Dolow is a relatively peaceful town compared to all other towns in the region. The peace is mainly attributed to the heavy presence of Ethiopian troops at the border. As such the town is on operational base for most of development agencies that work in the region.

3.2 An Overview of the Somali Regional State of Ethiopia

Somali Region comprises an area of around 250,000 square kilometres in the south Eastern corner of Ethiopia, bordering Djibouti to the north, and Somalia to the east and northeast; Kenya borders the region to the South, Oromiya Region to the west, while Afar Region lies to the northwest. The vast majority, around 80% of the region, is a lowland, classified as arid to semi-arid, with rainfall averaging less than 300 per year and hot temperatures, reaching 32-40°C. The mid-altitude areas account for approximately 15% of the region. Here rainfall ranges between 300 and 400 mm a year and temperatures are more moderate (20-28°C). In the higher altitude areas, such

as Jijiga, which are found in only around 5% of the region, rainfall averages 750 mm per year and the temperatures are cooler, typically just below 20° (FEG 2015). Rainfall is bimodal, falling during two distinct periods. However, the occurrence of these periods varies, and the region can be divided into two areas based on seasonal rainfall patterns: Shinile and Jijga zones to the north, and the remaining seven zones to the south. Zones in the southern parts have a *gu* season occurring from April to June, and a *deyr* season from October to December. Zones with a main rainy season starting in July/August (*karan*) and a secondary rainy season from March – May (*dira*') are found in the northern areas (Food Security Monitoring and Early Warning Programme, 2004).

Most of the region is well suited to livestock rearing, with camels, goats, sheep, cattle and donkeys owned to varying degrees throughout the region. Three permanent rivers offer opportunities for both irrigated farming and flood recession agriculture. These include the Dawa, the Ganale and the Shabelle river basins.

Livestock, sold on the hoof, are the backbone of the region's economy. Livestock provide milk, meat and cash, both from direct sales of livestock and from sales of milk and ghee. Each livelihood zone relies on a network of markets, starting with local *kebele* and *woreda* centres, connected to varying degrees with regional markets servicing external markets, with particular demand from the Gulf States, along with Kenya and Somalia and, to a lesser degree, other parts of Ethiopia.

The most important central market towns that serve to link the Somali region with local, regional and international markets are Moyale, Dolo Ado, Cherati, Gode, Warder, Kebridehar, Degahbur, and Jijiga. These markets have connection to central markets outside the region, such as Dire Dawa, Negelle, and Meisso; and outside the country, such as Bossaso, Hargeisa, Beledweyne, and Burao. The Mogadishu market, Djibouti market and Gulf States are critical end destinations.

Somali Region is still poorly integrated with the rest of Ethiopia. Although some livestock are sold to the interior markets like Addis Ababa and that some maize, sorghum and other cereals are supplied into Somali Region from the rest of Ethiopia, this is not what fuels the local economy. It is the demand from Somalia, Kenya, and most importantly, the Gulf Arab states that creates real movement in the markets (FEG, 2015).

3.3 An Overview of Mandera County

Mandera County is located in the North Eastern part of Kenya and it borders Ethiopia to the North, Somalia Republic to the East and Wajir County to the South and South West.

Mandera County covers an area of 25,991.5 Square km and a population of 465,813 (KNBS, 2009).

There are two ecological zones in the county namely arid and semi-arid zones Mandera East, Mandera North, Mandera West, Mandera Central and Banissa Constituencies are classified under LM (IVVI) zone while Lafey Constituency is classified as LM (V -VI) zone (table

2). Generally, 95% of the county is considered as semi-arid with dense vegetation mainly thorny shrubs and bushes along foots of isolated. Temperatures are relatively very high with a minimum of 24 ^{o}C in July and a maximum of 42 ^{o}C in February. Rainfall is scanty and unpredictable averaging 255mm. The long rains fall in the months of April and May while the short rains fall in October and November (Mandera County CIDP, 2013).

Table 2: Suitable enterprises in the county sub regions.

County Sub Region	Zone	Suitable Enterprises
Mandera East	LM (IV - VI)	Livestock keeping Irrigated agriculture along River Daua, Drought tolerant crops.
Mandera North	LM (IV - VI)	Livestock Keeping, irrigated agriculture along River Daua, Drought tolerant crops
Mandera West	LM (IV - VI)	Livestock keeping, Drought tolerant crops
Mandera Central	LM (IV - VI)	Livestock keeping, Drought tolerant crops
Banisa Zone	LM (IV - VI)	Livestock keeping, Irrigated agriculture along River Daua, Drought tolerant crops
Lafey zone	LM (V - VI)	Livestock Keeping, irrigated agriculture along River Daua, Drought tolerant crops

Source : Mandera County Integrated Development Plan

Most of the land is rangeland supporting livestock production. Crop production is only concentrated along river Daua and other places with laghas[1] where water settles. Mandera County is endowed with River Daua of approximated 160 km running across the county along the Kenya- Ethiopia border, a natural resource that can be harnessed by the communities for irrigation and development of both Aquaculture and capture fisheries. The range of crops that can be grown in the county includes cereals (maize, sorghum), pulses (e.g. beans, cowpeas), horticultural crops (Kale, spinach, tomatoes, onions, capsicums,), oil crops and fruits (watermelons, mangoes, bananas and oranges. Simsim is also grown as an oil crop. The major species of livestock kept include goats (galla breeds), cattle (boran breeds), camels (Somali breeds), sheep (Somali black head breeds), donkeys (Somali breed) and indigenous chicken.

Livestock, agriculture and trade sub sectors absorb the larger percentage of the self-employed population in the county. This population is engaged in livestock and livestock products selling, vegetables and fruits and operation of small businesses.

3.4 An Overview of the Cross-Border area between Kenya, Ethiopia and Somalia and the Operating Environment

Target Area is a tri-border region where Kenya, Ethiopia and Somalia converge. The region constitutes an integrated cross border economy with the towns of Mandera (Kenya), Bulahawa (Somalia) and, Dolow (Somalia) and Dolo Ado (Ethiopia) being the critical set of corridors for commerce and livestock sales for the entire region. Mandera County and the Dolow Ado Woreda of Ethiopia are separated by the River

Daua, which acts as international border. On the other hand, river Juba forms the Ethiopia-Somalia border. The river also separates the Dolow Ado Woreda of Ethiopia and the Dolow town of Gedo, Somalia. Unlike the Kenya-Ethiopia border, the Somalia-Ethiopia have a bridge that allows easy movement across the border.

3.4.1 Shared Resources across the Border

There exists a lot of cross border interactions within the cross-border area between Kenya, Ethiopia and Somalia, which is 100% inhabited by the Somali community. These cross-border movements are mainly

1. Laghas are seasonal river beds for the purposes of trade and use of one another's services and resources, including livestock markets, schools, health posts, and airstrips. Some individuals too do have families and kins across either of the borders. People tend to move, from Dolow (Ethiopia especially Suftu) and Gedo (especially Bulahawa), into Kenya due to the relatively more developed infrastructure in Mandera County in order to access markets, hospitals, banking services, and schools. As a result, the town of Mandera has a population density of 988.2 per square kilometre, which is 40.6% higher than the Kenyan national population density of 401.1 per square kilometre (European Union Emergency Trust Fund -EUTF, 2016). Somalia citizens also rely on Ethiopian health services especially in Dolow.

Residents commonly use the Kenyan currency and US dollars for cross border transactions. Other shared infrastructure includes the mobile phone networks. In the Ethiopia –Somalia border at Dolow, the available and widely used mobile network is Hormuud, provided by the Somalia based Hormuud Telecom while in the towns of Mandera and Suftu on the Ethiopia-Kenya border the widely used mobile phone service provider is Safaricom and Hormuud Telecom. Ethiopia has the, government owned ETC mobile service provider which is also shared across the border. Of all the three, Somalia's Hormuud telecom is the cheapest because of the low tariffs on mobile phone networks. All these mobile phone service providers do have mobile money transfer services, which are limited to transferring money within one network. It is common to find residents having devises that allow them to own all the three mobile phone networks to make communications across the border cheap.

The cross-border area between Kenya, Ethiopia and Somalia utilizes the water from rivers Daua and Ganale for irrigation. As such, the livelihood systems around the border in the three countries are largely riverine farming and irrigation. There is more farming on the side of Mandera side of the River Dawa than on the Ethiopian side since farmers on the Ethiopian side rely on the River Ganale (EUTF, 2016).

Despite the fact that communities in this triangle share resources, especially those concentrated in the urban centres, there are no formally existing mechanisms for the management of shared resources. According to the EUTF Report, Kenyan government, in partnership with the County Government of Mandera, is currently devising developmental plans for the exploitation of River Daua, including increased irrigation, generation of hydroelectric power, and revamping of Malkamari national park. In addition, IGAD has been facilitating a series of stakeholder meetings with the view of coordinating the plans of regional governments i.e. Ethiopian, Kenyan, and Somali governments, regarding the management of River Daua. There exist informal meetings between the local governments of the three countries to manage the security along the border.

3.4.2 Livelihoods in the Triangle

The main livelihood systems in the Triangle are as follows:

a. Pastoralism (in the pastoral livelihood zones),
b. Agro-pastoralism (along the river which include irrigation, livestock keeping and riverine farming),
c. Employment, formal and informal (mainly in the urban centres),
d. Trading (mainly in the urban centres).
e. IDPS (Somalia) and Somali refugees hosted in Dolo Ado Ethiopia, who largely depend on relief food. According to UNHCR, Dolo Ado in Ethiopia has five refugee camps that are home to 255,720 refugees from Somalia (https://data2.unhcr.org/en/situations/horn?id=7). There are two IDP camps in Dolow Somalia, which is home to 800,000 people since 2009. Aid agencies led by WFP provide support to these IDPS mainly by donating foodstuffs, food for work, cash transfer, medical services and age help. This concentration of refugees and IDPs has a direct effect on the economy of Dolow (Somalia) and Doloa Ado in Ethiopia. The refugee and IDPs provide a large market for consumer goods and basic services, which they purchase with money from aid agencies.

There exist interactions among these livelihood systems in the triangle as follows:

a. The pastoralists from the pastoral livelihood zones sell their livestock in regional and local markets to generate money to buy food items and other household commodities. Milk from the pastoral zones is also bulked and sold to the urban areas
b. Pastoralists on the other hand depend urban areas for the household commodities, trade and employment opportunities.
c. The agro pastoral/riverine zone is also a consumer of milk from the pastoral areas and supplies crop produce (maize and sorghum fodder, fruits, vegetables) to the urban and the pastoral livelihood zones

3.4.3 Cross border trade

Each country has its comparative advantage as far as trade is concerned, which include:

- Kenya has large market for livestock (cattle and shoats) from the ecosystem
- Cheap cement from Somalia
- Enhanced Security in Dolow as a result of presence of security forces in the Ethiopia /Somalia Border.
- Kenya has opportunities for education and medical service
- Cheap Telecommunication from Somalia
- Somalia is a gateway for cheap goods from Dubai and other gulf states through Mogadishu

The main corridors for crossborder trade are: Suftu- Mandera for Ethiopia and Kenya; Dolo Somalia – Dolo Ado for Somalia and Ethiopia; and Bulahawa- Mandera for Somalia and Kenya. For Kenya and Ethiopia, the towns of Mandera and Dolo Ado respectively are corridors for goods imported from Dubai and other gulf countries through Mogadishu and other Ports in Somalia. Fig 4 below presents the type of goods and direction of their flow across the tri-border.

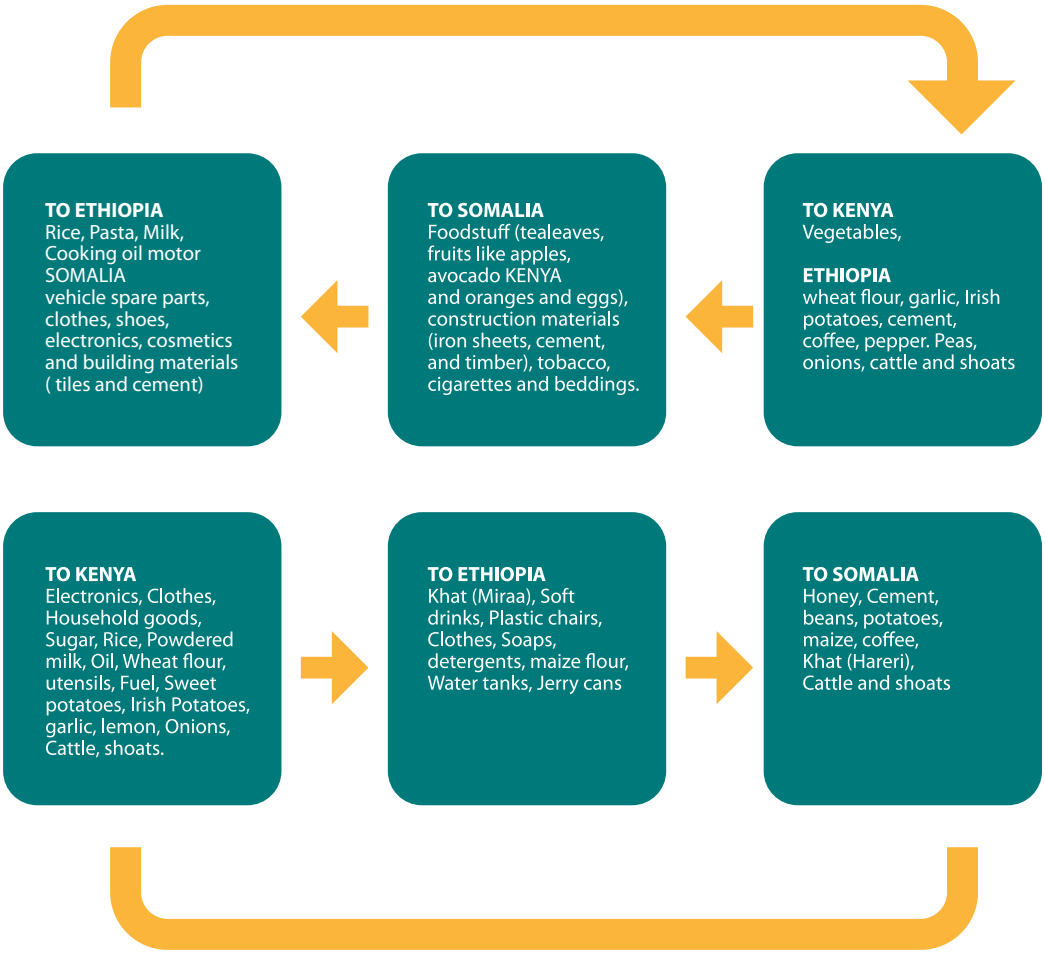


Fig 4: Flow of goods in cross border area between Kenya, Ethiopia and Somalia:

There is also a flow of skills across the border. Kenyans, who have relatively higher education and skills often, cross over to Ethiopia where the existing levels of skills are lower than in Kenya. Some Kenyans cross the border to study in colleges and universities in Ethiopia due to lower university fees and entrance qualifications for courses like medicine. There is also a trend of Ethiopians from the towns of Suftu and Dolow Ado migrating into Mandera to seek casual labour, especially in Mandera town, where they find more opportunities than in Ethiopia

3.4.4 Challenges experienced in Cross Border Trade

- Insecurity : this is mainly due to the presence of the Al Shabaab militia in the region. There are frequent attacks and uncertainties created which affect movement of poeple in the region. Some traders from Kenya indicated that they stopped supplying hides and skins to mogadishu due to frequent attacks during which they lose all their goods.

- The International border points between the three countries are offcially closed because of security reasons The Kenya- Ethiopia border on the Mandera side is closed, leaving the Moyale as the main official border point to and from Ethiopia. For Kenya- Somalia, there are three official border points i.e. at Bulahawa, Damasa off Mandera-Arabiya-Fino-Lafey road and at the town of El Wak. The border point at Bulahawa is however closed at the moment for

security reasons. The border between Ethiopia and Somalia is however open at Dolow. The effects of boder closures on trade include:

- Movement of goods and services across the border is mainly done through informal routes, sometimes creating ineffciencies for the traders. Most of them use donkey carts to transport goods across the borders.

- Without any official customs and immgration offices, the security is highly comporomised as there is potential for ilegal substances or goods to be smuggled in and out of a country without being noticed. The quality of goods coming in and out the borders cannot be guarateed as well.

- The police and other government arms responsible for manning the border points have been taking advantage of border closers to extort money from traders in order to allow them bring goods in and out through the informal routes.

- Unfavourable government policies. The government of Ethiopia has banned its traders from bringing their animals in the Kenyan markets (Mandera). As a result, traders from Kenya have to cross the border and go to buy from Ethiopiam markets. This has the following effects on the traders:

  - Before the ban, the Ethiopian traders brought livestock to mandera and returned home with other commodities. This is no longer possible.

  - In Mandera, the Kenyan traders would buy in Kenya currency; with the ban they have to go to but in Ethiopia using the Ethiopian Birr. The traders lose money in the process because the exchange rate from Ethiopan Birr to Kenyan currency is in their disfavour.

- Infratructural challenges: This mainly affects the Kenyan – Ethiopian border (suftu Mandera) because of lack of bridge. Transport across this border is over traditional rafts reinforced with oil drums.This limits free movement of people and goods across the border. During the rainy season when the river is flooded, people have to wait till the water normalized before they can cross the border. This affects access to services and also movement of goods needed from either side of the border. Discussion with stakeholders indicate that while the government of Kenya is interested in construction of the bridge, there is no goodwill from the government of Ethiopia to have a bridge constructed because of security concerns.

4

STUDY FINDINGS

4.1 Camel Milk Value Chain

4.1.1 Overview

Camel milk is an important product from a resilience, food security, women empowerment and income generation perspectives. Camels are hardy animals and are able to survive even during the prolonged dry seasons and periods of drought. They produce milk for the families when other animals have migrated to look for greener pastures. At the household level, this study established that a household produces a total of 9.4, 11.8 and 1.7 litres if milk per day during the dry season in Ethiopia, Kenya and Somalia from all camels in location (table 3). During the rainy season, production increases to 13.6, 45.5 and 6.7 litres per day in Ethiopia, Kenya and Somalia. The value of the total milk produced per day is approximately at KES 1 (Ethiopia); 178.9 (Kenya) and 166.7 (Somalia) per day in the dry season. In the rainy season these incomes increase to KES 1,088 (Ethiopia); 6,340.0 (Kenya) and 333.3 (Somalia) per day in the wet season in Ethiopia, Kenya and Somalia respectively.

Table 3: Volume and value of milk produced per day in dry and wet seasons

Country	Dry Season			Wet Season		
	Average production per day all camels	Price per Litre	Total Value of milk produced per day	Average production per day - all camels	Price. Litre	Total Value of milk produced per day
Ethiopia	9.4	100.0	940.0	13.6	80.0	1,088.0
Kenya	11.8	100.0	1,177.8	45.5	80.0	3,640.0
Somalia	1.7	100.0	166.7	6.7	50.0	333.3

Part of the milk that is produced in a household is consumed at home and the surplus is sold. Table 4 below shows the proportion of milk that is sold and the income earned in Mandela, by the Kenya producers..

During the dry season, the total income per day from camel milk is approximaterly KES 660 for Ethiopia, KES 825 for Kenya and KES 433 for Somalia. In the wet season, the total daily incomes are approximately KES 512.0 for Ethiopia, 1,656.8 for Kenya and KES 250 for Somalia.

The data shows that the income from camel milk alone can put a household above the poverty line, if producers have reliable markets. It is also observed that income s from

camel milk sold is much more than wages for casual work which is about KES 300-400 per day. This income is over and above the amount of milk that is consumed at home. There is therefore a strong justification for supporting the camel milk value chain for food security, resilience and income generation.

Table 4: Average volumes and incomes per household from sale of camel milk.

Country	Dry Season			Wet Season		
	Average litres sold per day per HH	Price per Litre	Total daily income	Average Litre sold per day - all camels	Price. Litre	Total Income per day
Ethiopia	6.6	100.0	660.0	6.4	80.0	512.0
Kenya	8.3	100.0	825.0	20.7	80.0	1,656.8
Somalia	4.3	100.0	433.0	5.0	50.0	250.0

4.1.2 Production

Only 36% of the inerviewed respondents are keeping camels. The number of camels kept per household is however relatively high as shown in table 5 below. Kenyan pastoralists have a higher proportion of pastoralists who are keeping camels compared to Ethiopia and Somalia. On average the herd is cmposed of 26 mature and 8 immature camels in Ethiopia, 50 mature and 21 immature in Kenya and 15 and 4 immature in Somalia. This structure can enable a household to have a regular supply of milk through out the year, if feed resources were equally available.

Out of the total households interviewed, only 21% had lactating camels at the time of this study (Ethiopia 19.2%, Kenya 24.3% and Somalia 17.4%). This may attributed to the fact that the study was done at the breeding season of camel, during which camels are dry as they wait to calve down.

Table 5: Number of camels owned per household

Country name		Number of Mature Camel owned today	Number of Immature Camel owned today
Ethiopia	N	4	1
	Mean	26.25	8.00
	Minimum	5	8
	Maximum	60	8
Kenya	N	12	9
	Mean	50.50	21.11
	Minimum	10	5
	Maximum	120	60

SOMALIA	N	13	9
	Mean	14.77	3.67
	Minimum	2	0
	Maximum	50	10

Camel milk production shows a very significant seasonal varation as the size of milking herd tend to reduce during the dry season (Table 6).

- Reduction in HH production by 30% (Ethiopia); 75% (Kenya) and 75% (Somalia)
- Price fluctuations between dry and wet seasons were statistically significant (P<0.05) in KE and SO but not in ETH
- Income earned from camel milk per day is far greater than the wages fro casual work (about KES 500 per day)
- Reduction in milking herd (80% in SO; 55% KE) – Migrations
- Reduction in production per animals e.g. from 2.72 LPD to 1.88 LPD (Ethiopia ; 2.28 to 1.3 Kenya)

The period when households are able to sell camel milk were fairly the same in the 3 countires with Kenya having 5.63 months, Ethiopia 4.20 months and Somalia 4.33. This implies that the camel milk enterprises do not run throughout the year hence the need for the traders to integrate with other complementary businesses.

Table 6: Average size of milking herds and milk production in dry and wet seasons

Statistic	No of Camels in the wet season	Average production by all camels in Lacta-tion (wet season)	Av no of camels in Lactation during the dry season	Average production by all camels in Lactation (dry season)
N	16	17	17	17
Mean	12.88	20.94	6.29	9.29
Minimum	2	2	0	0
Maximum	53	100	30	30

4.1.3 Camel Husbandry

The dominant breed that is kept in the region is the Somali camel, which is a high milk producing breed. Camels are herded in mixed herds with other livestock species. Husbandry practices are mainly traditional practices with minimal use of external inputs. When animals are sick the camel herders usually buy drugs from agro vet dealers in towns and livestock markets to treat their animals. The herd structure is dominated by female camels for breeding and milk production purposes. In the normal seasons, camels are herded within the vicinity of manyattas.

When the dry season sets, the herd is split, leaving behind some camels mainly for providing the household with milk and transport needs. The rest of the herd is migrated to areas with greener pastures. This movement of livestock affects supply of milk to the markets. In some cases, the traders of camel milk marketing businesses closes down until when supply improves. The study established that sale of live camels is the responsibility of men while women have full rights to make decisions on sale of milk

and use of money earned. Women are keen to sell milk because it is the most readily available commodity that can give them incomes to buy household groceries and other commodities needed in the households. Milking is usually done in many cases 2-3 times a day. Adherence to hygienic practices during milking is very limited, most herders indicating that they do not wash the udders before milking. Milk produced is usually used for household use and for the market.

4.1.4 Bulking and Distribution of Camel milk

The producers use a myriad of outlets to sell their milk. At least 87% indicated that they sell their milk individually. The most common outlet is direct retailing of milk in towns and selling to traders at the farm gate. From the FGDs and key informant interviews, milk marketing in the three countries follows a similar structure. The different selling poits for the producers are presented in fig 5 below.

Percent of households using the selling point

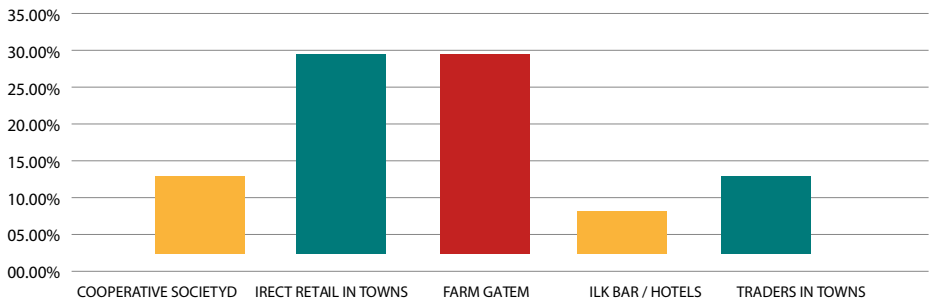


Fig 5: Major milk selling points used by the producers

Production takes place in the pastoral zones while the market is found in urban centres. Considering the long distances from the production areas to the consumption areas and the low volumes of milk sold per household, bulking becomes an important funtion for ensuring milk is delivered to the market.

The study establishes that women, operating at different levels of bulking and distribution, mainly dominate this function. Kenya had 100% women, Ethiopia 68.2% and Somalia 90.5%. Majority of the traders (45%) are aged between 36 and 50 years followed by those aged between 18 and 35% years, which constituted at least 33% of the traders. The traders between 51 and 60 years constituted only 18% of all the traders interviewed while those aged above 60 years old were the minority, constituting only 5% of the total traders interviewed. The findings established that the camel milk value chain is a source of employment for youth majority of whom are women.

The producers usually transport milk in plastic jerry cans of 5-10 litres to the nearest bulking centre while others wait for the village-based bulkers who buy at the farm gate. The study established that there were three categories of traders in most of the market as presented in fig 6 below. For Somalia, the dominant model is a one level -bulking model where traders buy from producers and retail in the same town/market. In Somalia, 19% of the traders are producers retailing their own milk. For Somalia, this implies that majority of the producers are not linked to markets. In Kenya, there is a slightly different model where traders bulk milk from one town and production area and sell to traders who retail in other towns. Only a small proportion of traders in Kenya retail milk in the same source markets and in many cases the producers are not involved in the milk retail. For Kenya, this implies that there is potential for achieving growth and scale among the traders, because they are able to access markets beyond the source markets. Ethiopia shows a mix of both Kenya and Somalia models.

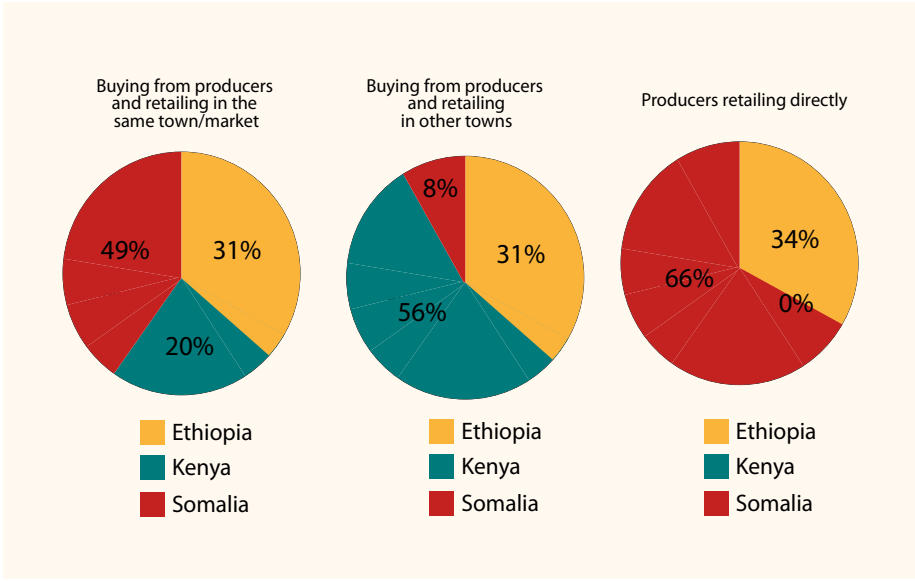


Fig 6: Milk bulking and distribution models

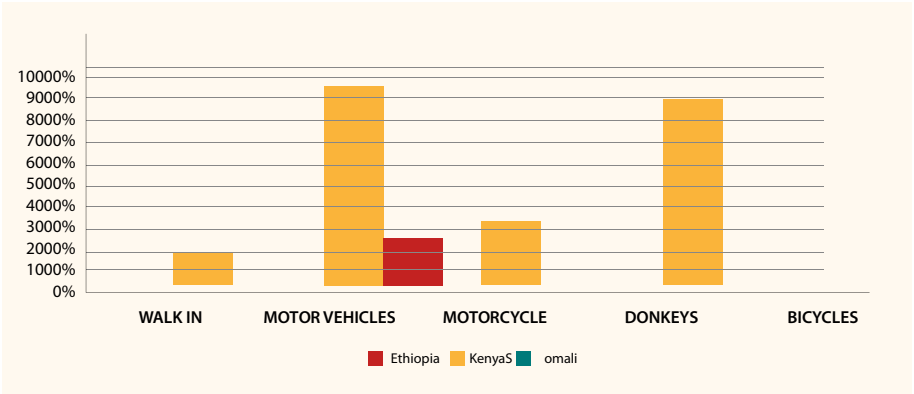
4.1.5 Transportation

There are different modes of transporting milk from producers to primary bulking points (Fig 7). These methods are highly variable across countries and are a reflection of the different business models. For instance, all the traders from Kenya use public service buses to transport milk from the production areas to the end markets, followed by use of motorcycles (30%) and a very small proportion receive milk from walk-in sellers. This is quite different from the Ethiopia and Somalia where much of the trading involve bulking and selling within the same market. In Ethiopia, walk-in sellers form the majority (50%) of the suppliers while only 4.5% of traders use buses and bicycles. In Somalia on the other hand, the donkey carts (transported together with other goods) are the main methods of transporting milk by most of the traders (95%) with 35% others depending on walk in sellers and 20% use buses.

As fig 7 below shows, the underlying cause for low supplies in Ethiopia and Somalia is limited bulking capacity as most of traders are dependent on walk-in sellers and those who can bring milk together with other goods in donkey carts hence excluding milk from far flung areas. In Kenya use of buses and motorcycles seems to allow milk to be collected from far flung areas and delivered to the market.

There is a system in place for delivering milk from traders and producers from the interior town to the major urban centres. Plastic containers, with a label of the buyer's name are used to transport milk from source markets/households to the retailers in town using different modes of transport discussed above. The transporters know who the recipient is and delivers to them. Most of the urban-based traders have specific sites in towns where they retail milk. After receiving milk, the trader sells from the same jerry can using 250 or 300 mls cups for measuring to customers. At the end of the day, he sends the transporter back with the empty container and money. The system works well and as a result, the traders in the source markets, the transporters and the retailers have established long business relationships and trust.

There is no quality assurance mechanism along the entire supply chain. Stakeholders, during the FGDs indicated that there are cases of adulteration of camel milk with dirty water, chemicals/antibiotics or mixing with goat milk. The other risk at this stage is use of plastic containers, which are known to be unhygienic as far as milk quality is concerned. There are no standard measuring systems, as milk is measured with cups of 250-300 mls.



4.1.6 Value Addition Activities

There are some limited value addition activities undertaken along the bulking and distribution points. These activities are all geared towards prolonging the shelf life of the product and not necessarily to extract more value from the products. It was observed that 39% of all the traders are involved in buying and selling of raw milk without any other intervention. Due to distances covered, a large number of traders (52%) do boil their milk to prolong its shelf life. At least 40.9%, 33.3% and 76.6% of the respondents from Ethiopia, Kenya and Somalia respectively indicated that they make fermented milk (table 7 below), commonly called *Susac* which they sell alongside the fresh milk.

It was reported that *Susac* is mainly made to milk that is fermented on arrival at the sales point or during the glut period. As such, the volumes of *Susac* sold per day tended to double in Somalia and triple in Kenya during the wet seasons while in Ethiopia, the volumes remained fairly constants in both dry and wet seasons. Only one trader is involved in yoghurt making amongst all the traders involved. There is therefore need to come up with value addition interventions that increase the value of the product while at the same time managing large volumes of milk supplied during glut period.

Table 7: Price comparisons between Susac and Fresh milk

Description	Ethiopia		Kenya		Somalia	
	N	Mean	N	Mean	N	Mean
Proportion of traders who makes Susac	40.9%		33.3%		76.7%	
Litres of *Susac* Per Day - dry season	8	9.1	8	3.5	16	4.7
Litres of *Susac* Per Day - wet season	6	9.7	6	10.3	16	7.8

4.1.7 Volumes Traded

Traders involved in bulking and distribution usually operate within one premise but trade on individual basis. The average volume of milk traded by individual traders in the three markets are presented in table 8 below. Ethiopia traders have a relatively more litres traded per day by each of the traders and also has highest seasonal variations in volumes traded per day per trader, which was established to be 32.8 litres per day during the regular wet seasons and 12.2 litres per day during the dry seasons. Kenya and Somalia have a relatively stable volumes traded per each of the traders across the wet and dry seasons. The study estimated that the total volumes of milk traded in Dolobay, Ethiopia to be 754 litres during the wet season and 273 litre per day in the dry season. In Mandera Kenya, there are about 50 women involved in camel milk trade who sell a total of about 875 and 835 litres per day during the wet season and dry season respectively.

Table 8: Daily Traded Volumes per Country.

COUNTRY/ MARKETS	Litres /Day/Trader - wet seasons							
	N	Max	Min	Mean	N	Max	Min	Mean
ETHIOPIA								
Dolo Ado	6	50	10	23.3	6	30	7	14.5
Dollobay	7	30	10	19.2	7	10	0	6.7
Suftu	7	150	5	54.5	6	35	8	17
Average-ETH	32.8				12.4			
KENYA								
Banisa	9	60	10	28.2	9	60	10	27.2
Rhamu	8	20	2	13.4	8	10	5	8.1
Mandera Town	4	5	3	4	7	15	10	12.9
Average-KE	17.4				16.7			
SOMALIA								
Dollow	7	25	5	15.1	7	20	10	15.7
Belt-Hawa	8	100	15	29.4	8	100	10	24.4
Getweeiyine	6	20	15	20.8	6	20	10	14.7
Average - Somalia	22.2				18.7			

Despite the volumes traded, majority of traders in Somalia and Ethiopia indicated that they are not able to meet the volumes demanded by their customers especially during the dry seasons. It estimated that the deficit in each of the countries is estimated at 260-280 litres per day (fig 8) mainly in the dry seasons. This is just to meet the local markets, but the market size is far much bigger if the traders improved hygiene and expanded their markets to high-end markets.

Discussions with key informants indicated that medium to low-income segments in town consume much of the milk marketed. While the Somali community is traditionally a consumer of camel milk, issues of hygiene and quality have limited the high end and health conscious market segments from accessing the milk. It was observed that the milk that is consumed in hotels in Mandera town mainly comes from Nairobi (UHT cow milk) while a great majority of consumers in the region depend on powered milk that is imported from Somalia. This shows there is potential for the local market to absorb quality milk in the local markets. In addition, there still exists demand for camel milk in major cities in these countries if the local traders could process products like yoghurt and sell to the Somali communities living in major towns and cities like Nairobi and Mogadishu. Consumption of quality camel milk by non-Somali communities is increasing because of the health benefits that are associated with camel milk. Systems however have to be developed that can be used to avail such milk to these markets.

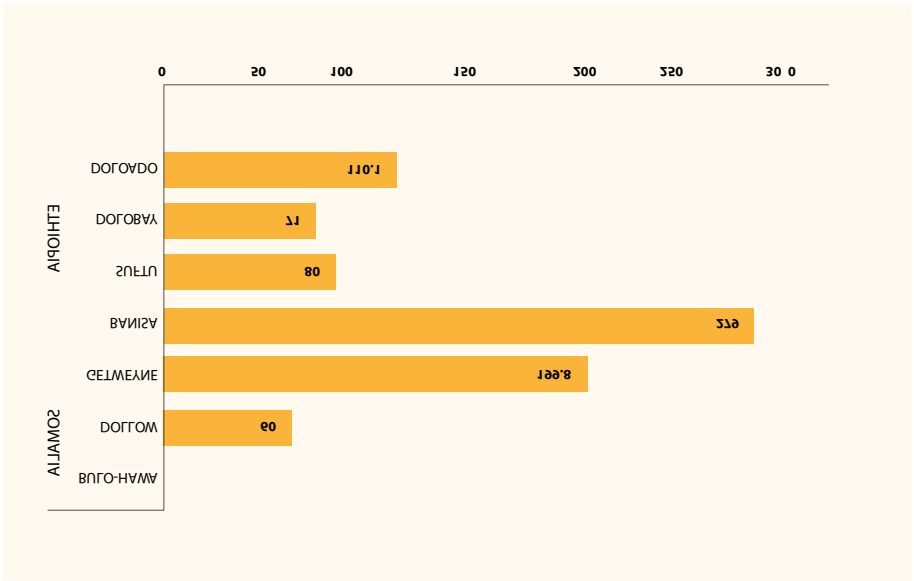


Fig 8: Unmet demand for camel milk by the existing traders in the local markets

The major reasons given by the traders for not meeting this demand are presented in fig 9 below. The findings show that lack of business skills is among the major reasons why most traders cannot meet the needs of their customers in terms of volumes as presented by 40% of traders in Ethiopia, 75% in Kenya and 67% in Somalia. Prices are a limitation to 75% and 67 % of traders in Kenya and Somalia respectively, while not affecting the Ethiopian traders. Financing is a limitation to the ability of traders to meet the demand of their customers as presented by 33% of traders in Ethiopia, 100% from Kenya and 27% from Somalia. Milk quality supplied was only limiting minority of the traders (13% Ethiopia and Somalia and, 0% Kenya).

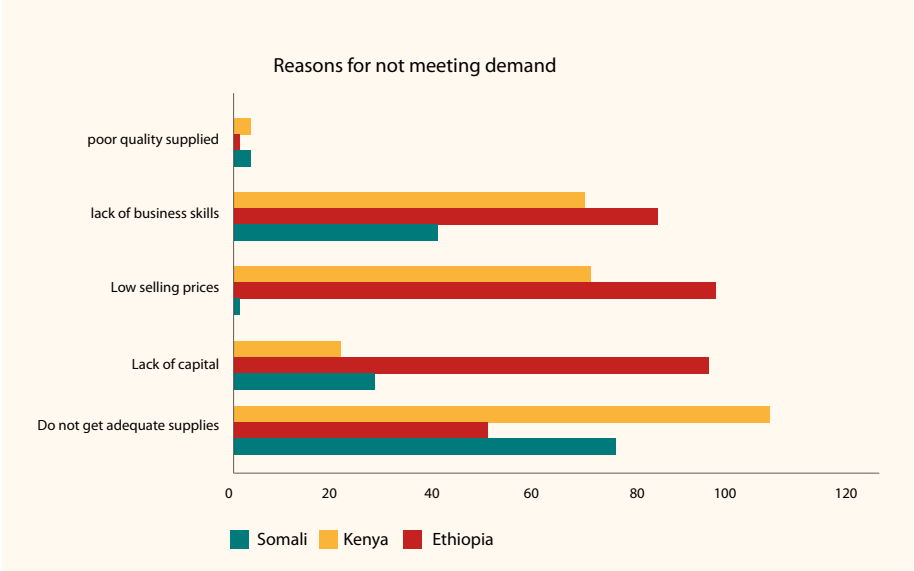


Fig 9: Reasons why traders are not able to meet demand from their customers

4.1.8 Pricing

Milk prices at the production end are variable depending on the seasons. A paired-samples t-test conducted to compare the average price of milk in the wet and dry seasons. Results indicate that average price of milk increased from 71.67 Kenya shillings in the wet season (M = 71.67, SD = 32.960) to 108 Kenya shillings in the dry season (M = 108, SD = 33.734). The increase in price of milk was statistically significant (t (44)) =-11.060, $p < 0.05$). The producers indicated that these prices are still variable because there are times where there is too much milk in the market during which the prices can go as low as KES 50 per litre. Traders on the other hand retail at KES100 and 150 during the wet and dry season respectively. There are ocassions when the retail prices are reduced to as low as KES 60, especially when during the wet season when there is plenty of milk. The price of fermented milk is slighly lower (fig 9) than the fresh milk because fermentation is done for the purpose of extending shelf life or utilizing the milk that becomes sour while on transit or at the points of sale. Addressing the seasonal fluctuation in milk supply would help stabilize the price of camel milk and make it available to more consumers.

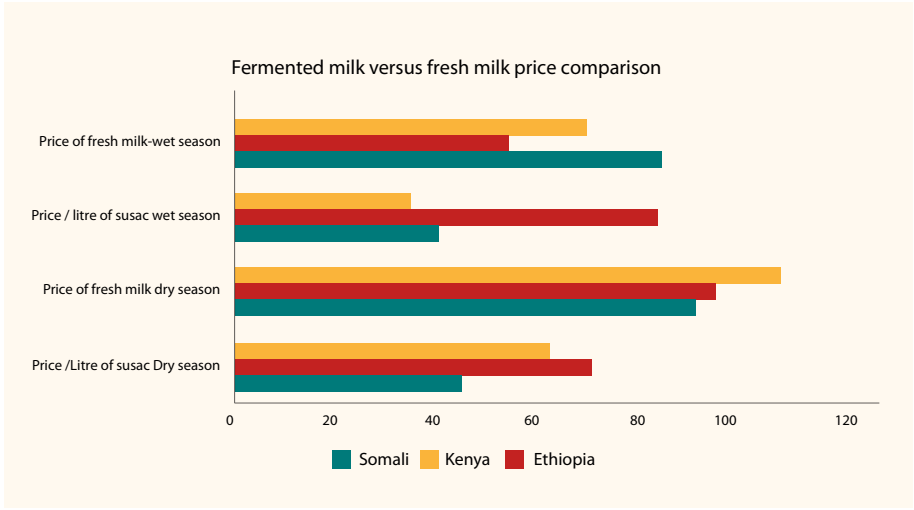


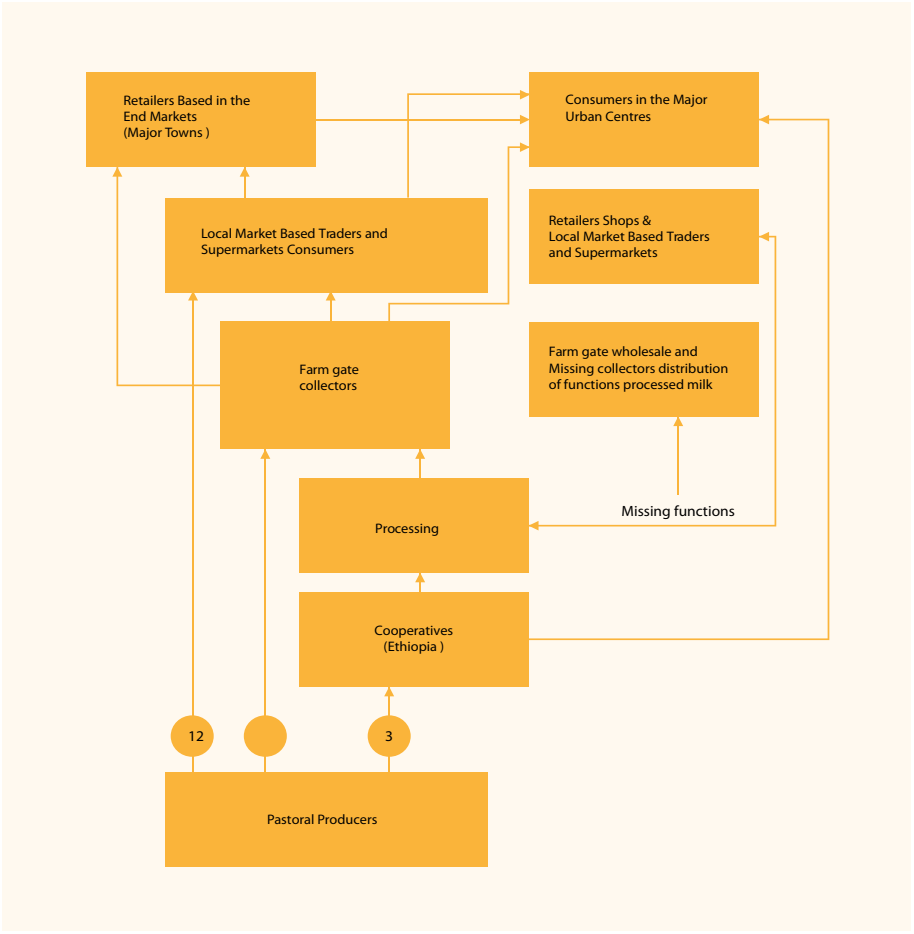
Fig 9: Price comparison for fermented milk versus fresh milk

4.1.9 Employment along the Value Chain

Currently individual business operators dominate the value chain. Only a small proportion of traders have employed staff in their businesses. The staff are mainly employed to sell milk for the business owners (20%), to boil milk at the retail outlets (10%), buying milk from source markets (40%), washing utensils (5%) and as watchmen 5%. The small-scale nature of the businesses along with the unstructured nature of the value chain is a key factor that limits the milk value chain from achieving its employment creation potential.

The number of traders who have found employment in milk bulking and retailing however best expresses the employment potential for the value chain. For instance, in Somalia, it was estimated there are about 22 traders in the town of Bulahawa. In Mandera town only, more than 50 women are engaged in camel trade. In Dollo bay Ethiopia, there are two cooperatives composed of 15 members, 20 individual retailers who sell in open markets and 3 selling in their shops. Hence, in three towns only and excluding the cooperative, at least 72 women have found employment in this value chain. Using the data in table 8 above and taking a net margin of KES 20 per litre during the dry and wet season, this analysis shows that daily incomes of the traders to be KES 374 and 444 per day during the wet and dry seasons respectively in Somalia. In Kenya the income per trader is approximately KES 324 and 334 in the dry and wet season while in Ethiopia, the trader's income averages 248 and 656 per day during the wet and dry seasons respectively. The incomes for traders in Kenya appear to be low in the two seasons mainly because there are many traders involved compared to the other two countries.

Fig: 10: Camel milk Value Chain map



The value chain can create more employment by strengthening systems for bulking from producers to increase the volumes. However to realize this benefit, there will be need to organize the traders so that they can operate at scale, share costs and earn more income.

Notes

- Milk from the producers is delivered to the market via 3 principle channels (depending on convenience, location and availability of the bulkers, distance to the market, and whether there is a cooperative or not);
- 1.1 In Channel 1producers deliver to the cooperatives (Ethiopia). In channel 2, producers sell the farm gate collectors who either sell to traders based in the local markets or retail directly to consumers;
- 1.2 In channel 3, The pastoralists sell to traders based in the rural towns who either retail at the rural towns or send to traders based in the major towns;

4.1.10 Summary of the Systemic Constraints in the Camel Value Chain:

- Milk bulking is quite fragmented, largely dominated by traders operating individual competing businesses. This market structure does not provide opportunities for growth and scale. As a result, the daily earnings are relatively low, averaging 300 per day per trader.
- The value chain is mainly dominated by primary bulking and retailing of raw camel milk. The potential for growth of this value chain is therefore limited by its focus on one market segment of the local consumers. The processing of camel milk, which extends the shelf life of the product and also enables expansion to outside markets is lacking across the three countries .
- Poor hygienic practices in milk handling along the entire value chain. This include, poor milking practices, use of plastic jerry cans, lack of milk testing services to control adulteration and drug residues among others. Many factors such as prevailing high temperatures, selling of milk in open air, the long distances between households, collection centers and retailing points all contribute to increased milk spoilage. This leads to high levels of milk spoilage which currently is estimated to be 25% of the milk produced
- Lack of effective systems and structures to collect, bulk and transport milk from far flung areas into consumption areas in order to meet the market demands
- Poor road network which sometimes becomes impassable during the rainy season. This leads to high rates of milk spoilage especially when public service vehicles get stuck on poor roads during the rainy season. The milk spoilage is also attributed to lack of cold chains along the entire value chains.
- Migrations: These affect the volumes of milk supplied and the price of the milk. For instance in Somalia, in a bad season where camel pastoralist migrate to middle juba, ,camel milk prices will be high in Dawa pastoral livelihoods and very low in Middle Juba regions where the camel migrated to.
- Seasonality has an impact on the businesses as the traders find themselves with too much milk and no market in the wet seasons and high demand and no milk in the dry seasons.

4.1.11 Proposed Strategies to Address the Systemic Constrains along the Camel Value Chain

A. Short term Recommendations

(i).**Investment in camel enterprises:** The milk enterprise centers will be basically outlets in main town where milk is sold on retail, wholesale and provides an opportunity for the consumers to enjoy a glass of milk. The enterprises could be a combination of both milk bars and retail outlets, offering quality milk to a wider market. This will provide a marketwhich will incentivice more producers to sell milk. Quality and hygiene will be a key selling point for the enterprises. As much as possible, this intervenion should target the current actors, by encouraging them to buy milk collectively or cuold target

individual entrepreneurs. This aims at addressing the current high and un-met demand for camel milk by different market ssegments in the region and form the basis for expanding to markets outside the region. To target these markets, issues of quality, hygiene and consistency in supply will first need to be addressed. Fig 11 below presents the operations of a milk enterprise centre. The following are some of the proposed actions for setting up the milk enterprise centres:

1. support the individual traders in the main towns of Dolow, Mandera, Bulahawa and Dolo Ado to come together and form marketing groups. In Ethiopia, this may involve stregthening the existing marketing cooperatives. This model does not exclude individual entrepreneurs willing to venture into such businesses.
2. Training the milk enterprise oprators on group dynamics, governance, leadership, marketing, business and entrepreneurship skills
3. Support the business centres to establish operational systems for their businesses including financial managements, marketing plans, business plans. milk procurement systems etc.
4. Facilitate exposure visits of the enterprise centres to successful models within the pastoral contexts.
5. Provide training of the operators of the entreprise centres on clean milk production and handling
6. Equipping business centres with appropriate equipment including fridges and or coolers, milk containers
7. Provide continous mentorship of the milk enterprise centres.

(ii).**Increasing the supply of milk to the markets in order to meet the demand through effective collection and bulking systems.** This will involve supporting the town based camel enterprises to establish collection centres in the pastoral areas and get into contracts with transporters for effcieint delivery of milk from production zones to the collection centres. Key actions include:

a. Mapping out the milk routes by the milk entreprises
b. Training of the operators of milk enterprises on management of bulking facilities and recording
c. Establishment of milk collection centres in the along the milk supply routes from the production areas by the milk enterprises
d. Operators of the milk enterprises are supported to form partnerships with tranporters to increase effciency in transportation

(iii). **Enhancing clean milk production and supply:** One way of achieving this is to promote the use of appropriate equipment for carrying and storing clean milk in order to reduce on the losses due to spoilage. At the enterprise centres, the equipment include deep freezers and milk coolers for those with more than 500 litres per day. The project could promote solar powered fridges and freezers in Ethiopia and Somalia, which currently don't have regular supply of electricity. At the producer and bulking levels, the project could promote food grade plastics like the *Mazzy* cans produced by Ashut Industries in Nairobi. The following are the proposed actons:

a. The milk enterprses will be supported to come up with the quality standards and the quality enhancement systems such as milk testing equipment and procedures
b. Trainings the entreprise operators on milk handling and hygiene milking techniques and thereafetr suporting them to train ther suppliers on the same.
c. Develop and implement syestems for milk quality enhancement eg milk testing etc along the supply routes
d. Promotion of recomemnded milk containers like alminium milk cans, milking buckets and food grade plastic containers for transporting milk
e. Train all the actors in the value chain on clean milk production, handling and quality enhancement.

(iv).**Institutional stregthening of groups of traders and entrepreneurs:** Many competing traders at one site limits the potential for the businesses to grow to scale and ultimately leads to low margins especialy where no effors are made to differentiate products or undertake continous marketing. There is need to educate these producers and support them so that they can form marketing groups and venture into collective marketing through the milk enterprises. Capacity building on groups dynamics, leadership, governance, business and entrepreneurship skills will be required to help the institutions manage the businesses effectively.

(v).Undertaking KAP survey to assess training needs for camel milk producers and carrying out milk quality assessment along the supply chain.

Medium to Long Term Recomendations

(vi).**Value addition:** Milk currently sold by the producers include fresh, smoked milk and *Susac*. There is need to invest in production of other products such as cheese and yoghurt. This will help extend the shelf life of the product, create more value for the traders and allow for market expansion both geographically and in terms of consumer segments.

(vii).**Branding, Promotion and enhanced marketing of camel milk:** Many non-consumers express interest and willingness to buy camel milk once they are explained factors that favor its preference. Sustained promotion and branding of camel milk products can therefore raise consumer awareness leading to increased consumption of camel milk even by communities that are not traditionally camel milk consumers.

(viii).**Promote strategies to increase production and productivity of camel milk:** This aims at increasing the volumes supplied to the marketsand reduce seasonal fluctuations in supply. This can be done by training producers to improve camel husbandry. For instance restocking their herd with quality breeds like the Somali breeds, mantaining herd structures that can allow them to have milk supply all year round, disease control and coming up with ways of reducing the seasonal migrations for instance by promoting conservation of pastures which can be used to feed the milking herds during the dry season.

4.1.12 Proposed Business Model for Camel Milk Value Chain In Cross Border area between Kenya, Ethiopia and Somalia

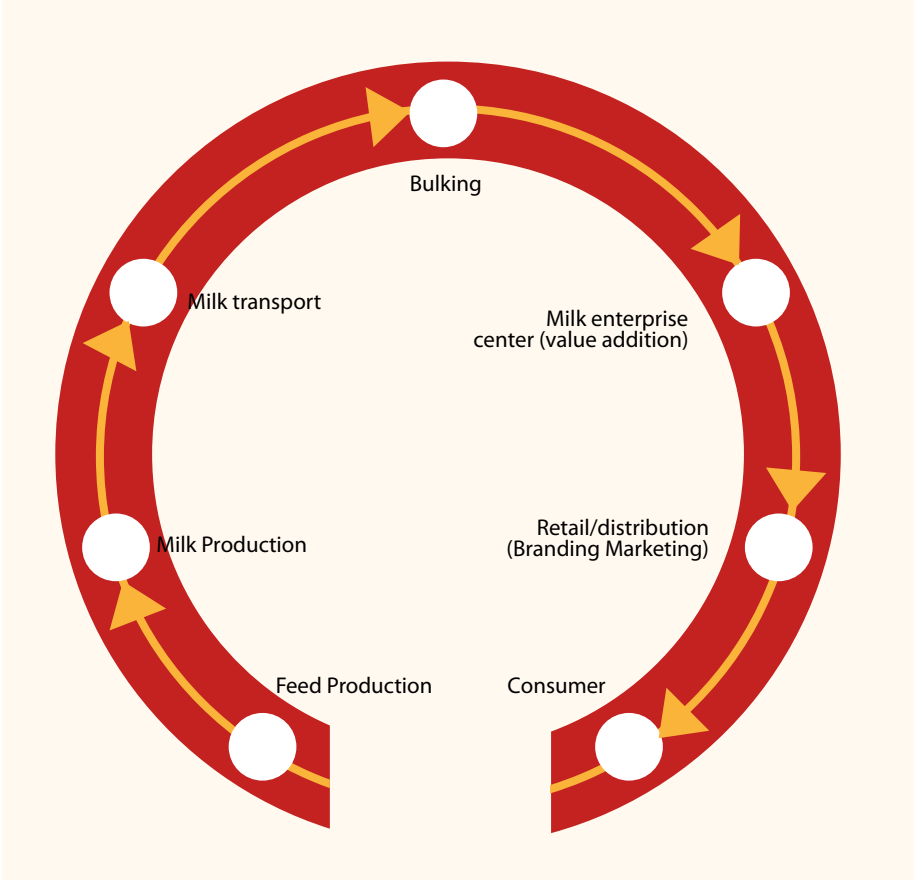


Fig 11: Summary of activities around the camel milk enterprises

4.1.13 Summary of an intervention framework for the Camel Milk Value Chain

Enhancing Camel Milk Value chain in the cross border area between Kenya, Ethiopia and Somalia

To increase incomes through camel milk production and marketing:

1) Functional milk enterprises
2) Improved milk handling
3) Enhanced collection and bulking systems
4) Longer shelf life

Milk Producers
Transporters
Bulkers
Traders
Regulatory authorities
Consumers

- Fragmented milk bulking
- Concerns over public health hazards
- Poor hygiene status in milk production and handling;
- Lack of cost-effective milk handling technologies to improve shelf-life Poor infrastructure e.g. road network
- Livestock migrations and seasonal fluctuations
- Lack of effective systems for collection, bulking and

1) Improved milk quality
2 Increase of milk sales volumes
3) Sustained supply of camel milk
4) Improved business approach
5) Improved income for value chain actors
6) Improved nutrition

Increasing supply of milk in the market to meet demand
Enhancing clean milk production and supply
Strengthening cooperation among traders and producers
KAP survey to assess training needs
Linking producers, bulkers and traders to input suppliers and markets

4.2 Hides and Skins Value Chain

4.2.1 Overview of the Hides and Skins Value Chain

Hides and skins value chain is an offshoot of the live animal/red meat value chain, which involves different actors' whose main value addition functions include collection, bulking, preservation, storages and transportation. A situational analysis is presented at production and marketing levels along with the systemic value chain constraints and opportunities.

4.2.2 Production

Hides and skins in cross border area between Kenya, Ethiopia and Somalia are generally produced from either slaughterhouse (formal and informal) or individual pastoralist's households (slaughtered animals or dead animals) within a very extensive livestock production system. Out of all the producers interviewed, only Ethiopia had a 3% of respondents who sell hides and skins. No respondents in Kenya and Somalia reported to be selling hides and skins. The reasons for not selling hides and skins are mainly two, both of which are interrelated; one at individual household level, the number of livestock slaughtered at the household level is quite low as seen in the table 9 below. According to this data, most households are slaughtering sheep and goats compared to camels and cattle. The average number slaughtered per household ranges from 1-2 for cattle and camels and 5- 7 sheep and goats. The second reason is the low prices offered to producers, which averages KES 50 in Kenya per piece of shoats skins and 100 in Ethiopia and Somalia. Farmers consider it is not economical for them to walk long distances to sell a single hide or skin at KES 50. The religious beliefs do not allow people to use skin from dead animals, hence these remain unutilized as well. These findings are in agreement with the finding by a study by Jamal, 2016 on the contribution of hides and skins to the pastoralist economy in the Ethiopian Somali regional state which revealed that the production of hides and skins has limited financial value for pastoralist households and local communities. Even though it is uneconomical at the individual level to transport single pieces to the market, significant losses are incurred at the value chain level, given the high demand for hides and skins in the international markets. For instance, taking an average of 5 sheep and goats slaughtered and 1 cow in a household, in one year, it would only take 6,000 household to bulk a consignment of 25,000 to 30,000 pieces which is considered economical for transportation to the tanneries or exporters. This however requires an efficient and effective system for bulking and collection of hides and skins slaughtered in the villages.

Table 9: Average number of livestock slaughtered per household per year

Country name		Average number of cattle slaughtered in the last one year	Average number of sheep and goats slaughtered in the last one year	Average number of camels slaughtered in the last one year
ETHIOPIA	N	5	12	5
	Mean	2.00	4.17	1.80
	Minimum	1	1	1
	Maximum	3	12	3
KENYA	N	8	21	9
	Mean	2.00	7.33	1.33
	Minimum	1	2	1
	Maximum	4	18	3
SOMALIA	N	1	3	9
	Mean	2.00	5.00	1.44
	Minimum	2	5	1
	Maximum	2	5	2

Fig 11 below presents the challenges that affect the hides and skins marketing, from the producer's perspective. In all the countries, the main challenges reported was lack of buyers and low prices.

Hides and Skins Production and Marketing Challenges

Fig 11: challenges in the hides and skins marketing

4.2.3 Bulking and Transportation of Hides and Skins

At the broader country levels, the hides and skins value chain is quite long, involving a large number of actors in bulking and distributiion, processing, manufacturing and export funtions. In the study area, however the chain is relatively short, involving primary and secondary bulking for traders who take to external markets, as can be shown by the dotted line in fig 15 below. The implication of having such a short value chain that is limited to primary level bulking is the value creation potential that is lost, along with high operational costs.

The first level of bulking in the study area involves village based traders who buy raw hides from producers in the villages (groups and individuals) and sell to primary level bulking traders in the local towns and markets (Rhamu, Banisa, Doloado, Dollo bay, Dolow, suftu and Bulahawa). Those sourced from the households however constituted a very small proportion of the volumes traded, as the traders largely depend on slaughterhouses and slaughterslabs for their supplies.

The secondary bulking traders are mainly traders located in major towns like Mandera, Dolow and Bulahawa. These traders buy from slaughtershouses and bulk for about 4-6 months before they get adequate consignments to take to external markets in Nairobi and Mogadishu. There are two outlets for the hide and skins from the region. The first outlet is from the main towns in the cross border area between Kenya, Ethiopia and Somalia to Mogadishu. This route takes the sun dried skins destined for export to the Gulf countries. The second route deals with wet salted hides and skins which are traded from the main towns in the cross border area between Kenya, Ethiopia and Somalia to the tanneries in Nairobi and Thika. The Nairobi/Thika market is not very reliable and not always assured, while the Mogadishu market is always avalable , but offers relatively lower prices than the Nairobi market.

It was also observed that in the three contries, there are artisans, who are using their indiginous knowledge and skills to make leather products, like handbags, wallets, belts and prayer mats for sale. They largely depend on traditional knowldege in tanning and design of leather products which they sell within the local markets. The operations are however at low scale due to lack of equipment and entrepreneurial skills to grow the businesses. As such artisans from other parts of the country produce in large scale and bring their stocks to the towns in the study area. This presents an opportunity for promoting a cottage undustry, bulding on exsting knowledge and skills so that production can be brought to scale.

4.2.4 Value Addition Activities along the Value Chain

Grading is done through eye appraisal. Main consideration during grading include the number of defects, location of defects, weight of the materials, type of defects and intensity of defects, size of the material and the preservation method used. The study shows that the hides and skins traded are of different grades mainly grade 1,2 and 3 (Fig 13). Ethiopian traders appear to have more grade 1

hides and skins while Kenya has the least. The relatvely low proportion of traders who achieve grade 1 and 2 for hides and skins especially in Kenya and Somalia is another indication of lost value because payment of hides and skins is based on grades.

Fig 13: Grades of hides and skins marketed in the Cross Border area between Kenya, Ethiopia and Somalia

According to the data in table 10 below, branding defects are the major causes of downgrading of hides and skins in Kenya (88% and 63% of hides and skins traders respectively) and Ethiopia (53% and 47% of hides and skins traders respectively), followed by flaying defects . In Somalia the two major causes of downgrading of

hides and skins are putrefaction and flaying deefcts. A large proportion (75%) of traders have their hides downgraded in kenya because of size while in Ethiopia scratches are responsible for downgrading of hides for 41% of the traders. All these defects are largely influenced by management of the live animal and also the process of flaying. This suggests the need to intervene on quality improvement from production, to the slaughter and post slaughter handling.

Table 10: Common Branding Defects Experienced

Causes of Down grading	Proportions %					
	Ethiopia		Kenya		Somalia	
	Hides	Skins	Hides	Skins	Hides	Skins
Branding defects	53%	47%	88%	63%	30%	20%
Ectoparasites	0%	0%	50%	25%	0%	0%
Flaying defects	18%	47%	63%	38%	40%	40%
Sores and wounds	12%	24%	0%	63%	30%	50%
Putrefaction	12%	24%	0%	0%	50%	0%
Size	35%	29%	75%	0%	0%	40%
Shape	24%	24%	25%	25%	0%	10%
Scratches	41%	29%	0%	13%	0%	20%
Lashes	18%	29%	25%	38%	0%	30%
Diseases	6%	12%	38%	0%	10%	0%

4.2.5 Preservation

Traders at the primary and secondary bulking levels mainly preserve the hides and skins through wet salting and air drying. The method use for preservation depends on the market that the trader is buling for. Air drying are the most common method because of the readily available market for air dried hides and skins in Mogadishu. This is another point where more value is lost as most of the tanneries prefer the wet salted hides and skins over those that are sun dried. This is because the sun or air dried hides and skins tend to produce poor quality leather, resulting to a decline of the market for sun or air dried hides and skins in the local and international markets. The demand for wet salted hides and skins is also growing and the prices for wet salted hides and skins are almost twice as much as the sun or air dred.

4.2.6 Demand and Supply

Globally, Africa accounts for only eight per cent of world production of cattle hides and about 14 per cent of goat and sheep skins (www.africa-business.com/features/leather-business-africa.html). This indicates that there is much room to grow Africa's market size in the global markets. Kenya, Ethiopia and Somalia are among the major exporters of raw and semi processed leather, mainly to China, India among other countries. The tanneries and private exporting companies are the major link between the in-country value chain actors and the export markets. Traders in cross border area between Kenya, Ethiopia and Somalia are directly linked to this system through large-scale traders based in the major towns like Dolow, Mandera Bulahawa and Dolo ado. Discussion with these traders indicate that there is unlimited demand for dry hides and skins in the Mogadishu route. The Nairobi route is however unstable.

Stakeholders in the end markets indicated that there is a certain level of monopoly by one of the tanneries in Nairobi that could be responsible for current low prices and general performance of the Kenyan market. This implies that the potential is there but the end markets have a lot of control on pricing. At the time of this study, the large-scale hides and skins traders in Mandera and Somalia indicated they bulk about 25,000 to 30,000 pieces after every 4-6 months. This consititutes a truckload, which is thereafter transported to tanneries in Nairobi or Mogadishu . Despite the dynamics in the Kenyan end markes the trader from mandera indiated that the demand for raw hides and skins in Kenya is way above supply. He indicated that he has a large market which can accommodate even a million pieces. Currently he is limited by lack of supplies, which is attributed to the low prices that do not incentivice the producers to sell hides and skins.

For the individual traders interviewed at least 71% of traders in Ethiopia and 38% of traders in Kenya indicated that they are not able to meet the demand from their customers in terms of volumes supplied. In Somalia, only one trader is not able to supply the volumes demanded by his cistomers. A number of reasons given by the traders from Kenya and Ethiopia to explain why they are not able to supply the volumes demanded by their customers are presented in fig 14 below for kenya and Ethiopia. Lack of business skills and capital is a major issue in Ethiopia while a quarter of the Kenyan traders seem to have problems related to captal, quality of materals and pricing.

Fig 14 Reasons why Traders from Kenya and Ethiopia do not supply adequate volumes to their customers

4.2.7 Pricing

The pricing of Hides and Skins is quite variable along the value chain and mainly skewed to favour the downstream actors. The producers in the three countries are selling goats skins at KES 100 per piece in Somalia and Ethiopia, while in Kenya this is as low as KES 50; the traders were not willing to disclose their selling prices. Consultations with other industry actors in Kenya indicate that the the selling price for sheep and goats skins in the tanneries is about KES 100 per piece .

4.2.8 Employment Creation

Analysis from this study shows that the hides and skins value chain has employed a relatively small number of people. There are about 35 traders of hides and skins in the 6 major markets/towns visited in this study (all of them were interviewed). Being an offshoot of the red meat value chain where over 90% of animals from the region are slaughtered in external markets (Nairobi, Mombasa and Mogadishu), the volumes of hides and skins collected from slaughterhouses in the region are only limited to the number of animals that can be consumed in these urban areas. This also limits the employment creation potential, hence growth of the value chain to increase its employment creation potential could be achieved through two pathways; the first pathway is improved collection of hides and skins, including those slaughtered in the household and the second is by increasing value by promoting local manufacturing of leather products. Given the few numbers of hides and skins slaughtered per household, the hides and skins business is only poised to benefit those who can invest in bulking of hides and skins from the homesteads and slaughterhouses. Individual producers (pastoralists) can only benefit if they got involved in the trade, in form of a marketing group that would allow them to bulk and sell economical volumes.

4.2.9 Systemic Challenges in the Hides and Skins Value Chain

Production constraints

a. Limited systems for bulking and transportation of hides and skins from livestock producers, thus limiting their income generation potential.
b. Poor animal handling practices, that results to downgrading and rejection of hides and skins. At farm level, these include branding, control of skin diseases and ecto parasites, flaying methods among others.

Constraints in collection, bulking and transportation of hides and skins

a. High levels of rejection and downgrading of hides and skins due to defects associated with live animal husbandry, flaying and post slaughter handling.
b. Subjective and exploitative grading procedures: The grading procedures are based on eye appraisal. After the traders deliver the materials at the tannery (Kenya), much of it is downgraded to be paid at a much lower price (almost half) and the trader is left to make decision whether to transport back or take the prices and grades offered by the tannery. Since the traders have already incurred the cost of transportation and the charges associated with2-3 days of waiting, they end up taking the prices. The traders estimated that out of 4,000 hides and skins taken to the tannery 10% is completely rejected, 50% is downgraded and sold at half price, and only 40% is considered to be of the right quality.
c. Low prices in the wet blue market in Kenya, attributed to the existing monopoly. Many producers and traders have opted out of business because of the poor pricing. For instance, there is only one trader operating in Mandera town after others quit the market due to low prices in the end markets.
d. There is limited access to external markets by local traders due to control of markets by big actors who operate like cartels. The region does not have any form of processing, which could have created more value for the traders and producers, while also creating employment opportunities.
e. Lack of equipment, infrastructure and efficient production technologies for upcoming local designers who make leather products from raw hides and skins. The tanning process uses indigenous technologies that take close to one month to produce finished leather. The vegetable tannins used are sourced from other regions, which is time consuming, costly and highly inefficient. The artisans on the other hand are operating individual level businesses at very small scale. As a result, products manufactured from other parts of the countries are brought in the meet the demand in this study area.
f. Insecurity along the trading routes. This has caused traders to avoid supplying the Mogadishu market.
g. Lack of adequate capital for traders to increase their volumes. The hides and skins is a capital intensive business as a lot of money is required to buy stock. The stock is also kept over a long period of time (4 to 6) months to allow economical volumes to be bulked. In addition to holding capital, a lot of investment is needed for storage, transportation and labour for continued preservation.

4.2.10 Strategies to Upgrade the Hides and Skins Value Chain in Cross Border area between Kenya, Ethiopia and Somalia

Above: Shoe makers of Bulahawa, Somalia.

A. Short term Strategies

i. **Support in strenthening the aggregation, transportation and storage systems:** The study clearly shows that the local traders have no control of the supply of the hides and skins despite the high demand in the terminal markets, unless they invest more on collection from households and informal slaughterhouses in the far flung areas. In addition, there is need to improve the storage systems in the aggregation centres to minimize losses associated with storage. The following key actions have been proposed:

   a. Support the aggregators who are linked to the terminal markets to engage with a network of youth in the villages as their agents.
   b. Capacity building of the village based collectors on business skills and preservantion of hides and skins
   c. Facilitate access to credit by the villabe based agents and the aggregators
   d. Support the training of flayers in the slaughterhouses on the right flaying techniques and equip them with the right flaynig knives.

ii. **Support the transfer of appropriate tanning and manufacturing technologies (fig 16)** : This intervention aims at supporting the current artisans and people involved in the tanning to transfere these skills to other people while at the same time introducing complementary technologies in order to make the tanning and manufacturing of leather products more effcient. This will create more emplyment opportunities as new people will engage in making leather products Key actions:

   a. Undertake a skills and technology audit among the exsting artisans and the people involved in tanning with a view to identifying the gaps and opportunities for improving on the current technologies
   b. Facilitate the skill transfer from the local artisans and those doing local tanning to upcming artisans through training and apprenticeship
   c. Where possible, support the existing artisans to integrate the apprentices in their businesses inorder to increase the scale of operations
   d. Support the aritisans to come up with production units as well as sales outlets where their products are displayed, and also as points of contacts with new customers
   e. Facilitate further technology transfer on tanning and making of leather products from institutions like KIRDI in order to make the processes more effcient.
   f. Provide business skills for the artisans, those operating tanneries and the apprntices to efectively manage and grow their businesses.
   g. Facilitate market linkages with external markets for leather products .

Fig 16: Proposed Business Model for leather production and marketing units

4.2.11 An Intervention framework for the Hides and Skins Value Chain

An analysis of the constraints, opportunities and the proposed strategies for upgrading the value chain are presented in the intervention framework on fig 17 below:

4.3 Honey Value Chain

Above: Packaging honey ready for the market at Banisa

4.3.1 Overview

The honey value chain in the study area involves production and retail functions. The value chain is largely dominated by men with women constituting 30% of actors in Ethiopia, 45.5% in Kenya and 40.9% in Somalia. The relatively higher proportion of men in the 3 countries could be explained by the fact that traditionally, honey harvesting was entirely undertaken by men who were able to manage the production process, which depends on traditional hives located in the wild. It is also noted that the traders involved in the majority of honey trade in Ethiopia and Kenya are youth, aged between 18 and 35 years of age as shown by 60% and 56% of the respondents in Ethiopia and Kenya respectively. In Somalia, the majority of the traders are people aged between 35 and 60 years of age (64%) with the youth constituting only 22% of the traders.

4.3.2 Production

Production is localized in areas with adequate flowers for bees to thrive, mainly riverine areas like Dolow, Bulahawa, Dolo Ado and Banisa. Presence of perennial rivers Daua and Juba in this ecosystem provides a very conducive environment for bee keeping because of availability of water and flowers all year round. It was however observed that despite the potential, honey production has not been commercialized, which was largely attributed to poorly developed marketing system and also use of traditional bee keeping technologies and equipment. Production in the three countries mainly utilizes the traditional log hives whose yields are quite low compared with modern equipment. It is estimated that a log hives yields about 5-6 kg of honey per harvest while modern hives can produce about 10kg (Langstroth hives) and 15-20kg (Kenya Top Bar Hive).

Levels of production are very variable per households, depending on the number of hives and the seasonal availability of bee flora. Harvesting is done by men, using the traditional smoking method due to lack of modern equipment and the know-how. Such methods are known to be destructive on the brood, which affects the strength of the colony.

The production potential for honey is usually unlimited especially with the use of modern hives in areas with adequate bee flora and with minimal human interference with the colonies. In areas with good beef flora, it is possible to keep 30 Langstroth hives in one acre of land, which can yield a total of 300 kg of honey per season and 600 kg in one year. Honey production is therefore a potential source of income if farmers embraced it as a business and applied the right production technologies.

4.3.3 Precessing, Grading, Packaging

After harvesting, honey is stored in jerry cans in the homes of producers. Some of the producers do nothing but package crude honey into smallers units like one litre, 5 litre and 10 litres and deleiver to the markets. Another category undertakes semi processing, using locally available materials and technologes to produce some semi refined honey. This is also packaged in smaller bottles and delivered to the market.

Quality management and grading is lacking along the value chain in the three countries. Hence producers and traders are found selling both chunck/crude honey and semi

refined honey (Fig 18); with the quality of semi refined honey differing from trader to trader. Quality issues are also noted at production level, as honey that is harvestened from traditional log hives and harvesting methods applied ends up with a significant amount of brood. Preservaton of nutrients during processing and adulteration cannot be be assured to the buyers as there are no standards.

As such, buyers test the honey mainly by tasting and also depend on either referrals from trusted friends or long trading relationships. Other consumers prefer chunck/ crude honey with a belief that crude honey is free from any form of adulteration. With increased incidences of adulterated honey in the markets, buyers tend to be skeptital on quality, which llimits access to external markets. Another quality issue noted is selling honey in open air markets, where its exposed to dust and high prevailing environmetal temperatures.

4.3.4 Marketing

Honey marketing is mainly a retail business. The traders and producers retailing honey mainly operates as individual businesses, with a few traders from Ethiopia operating under cooperatives as shown in fig 19 below. In Somalia, the producers or traders usually sell honey together with other groceries though at least there is one shop in Dolow and Bulahawa who are have shops that exclusively sell honey. It was also observed that 80% of the traders in the three countries are producers. A few of traders in the three countries buy honey from the local markets or their own produce and transport through public transport vehicles to the distance markets like Mogadishu, Addis Ababa and Nairobi. There is also an element of cross border trade in honey, albeit in small volumes. For instance, in Somalia Kenyan consumers and traders from Mandera usually cross the border to buy honey from Bulahawa. Likewise, the consumers from Dolo Ado Ethiopia usually crosses the border to buy honey from Dolow Somalia. Transportation of honey through public transport is quite common for traders who have customers in different towns. The cost of transportation depends on the size of the container holding honey. For instance, it costs KES 50; 100 and 200 to transport a 5-litre, 3-litre and 20-litre honey jerry cans from Banisa to Mandera (a distance of about 250Km).

The volumes traded in the markets were found to be variable across the three countries as shown in fig 20 below. The most notable characteristic of the honey trade is that the traders and the retailing producers tend to concentrate on and almost saturate the local markets. For instance, 80% of traders in Ethiopia and 100% of all the traders in Kenya indicated that they are able sell all the honey that they bring to the market each day. It is only in Somalia where 59% indicated that they do not sell all the honey that they bring to the market each day. Through this process, all honey produced in a given honey flow season is retailed in small quantities until the stocks are exhausted. The major reasons cited by those who do not exhaust the stock from the day-included lack of buyers (62% in Ethiopia and 90% In Somalia). Majority of the respondents usually take home any unsold honey and bring it to the same market the following day as presented by 63%, 100% and 44% of traders from Ethiopia, Kenya and Somalia respectively. This shows the need to link these traders to external markets.

Fig 20: Volumes of Honey Traded in the Cross Border area between Kenya, Ethiopia and Somalia

4.3.5 Pricing

There is no standard pricing of honey in all the markets. Price is based on the packaging container which is quite subjective. For instance the 3 litre container of semi refined honey in Somalia is sold at KES 4,000 while in Kenya the same container goes for KES 2,000. The 3 litre container is a recycled container for cooking oil, whose density and viscousity is quite different from that of honey. On average it is estimated that one kg of honey is retailed at KES 600 - to 1,300, with the crude honey attracting a lower price

than the semi processed. The prices keep rising from time of harvesting as the stocks diminishes. Some producers who do not have pressing needs for cash opt to hold their honey to allow prices to go up. Lack of standard pricing limits market expansion, as most buyers cannot compare the prices with other honey in the market. The fact that buyers continue to buy the honey from these markets despite the high pricing and lack of quality assurance is and indication of a high demand for the product both locally and beyond.

4.3.6 Systemic Constraints in Honey Value Chain

1. The value chain is basically characterized by individual producers retailing honey in the local markets. As a result the market system lacks structures and systems that be used to grow the businesses at greater scale. İn addition there is alot of inefficiency created in undertaking individual business which leads to undue horizontal competition, instead of cooperation.
2. Lack of quality enhancement systems , which otherwise increase consumer confidence in the products. In addition, the current packaging does not assure safe transportation of honey to distance markets.
3. A lot of value is lost by selling of semi processed and crude honey. The producers are currently losing the opportunity to make other hive products such as wax, propolis and royal jellly some of which are highly demanded in the local and export markets.
4. Environmental degradation due to changes in land use and frequent droughts are potential threat to apiculture in the region. These include continued use of pestcides in the upcoming irrigation farms and deforestation.
5. Lack of standards along the value chain. Honey is sold either as crude or semi processed, measured by use of jerry cans. The nutritionl profiles, and levels of adulteration cannot be ascertined. This limits the market penetration especially in the external markets. The packaging materials are usually recyled platic jerry cans, whose hygiene caonnot be assured.
6. Lack of appropriate production and processing equipment and technologies. Currently production is based on use of log hives which are known to produce low amounts of honey as compared to other hives like the Langstroth and the Kenya Top Bar hives. The processing is mainly done manually using traditional technologies. Producers do not have appropriate harvesting equipment which helps to preserve the brood (hence maintain strong coloinies) and also improve the quality of honey produced.
7. High farm gate prices which are way above the market rates for refined and crude honey. This may limit the market penetration especially when the cost of transportation to cities that have high demand for honey is factored in.
8. Lack of entrepreneurial skills; the producers are fixated on lucrative retail prices without considering the lost opportunity of selling in bulk and the time they spend at the market every week.
9. The retail market is not sustainable in the short and medium term as honey production continues to increase. It also locks out producers who are not able to bring honey to the market every market day or are not well served by the retail market.

4.3.7 Proposed Business model for an Upgraded Honey Value Chain

As indicated above, the potential for honey production in the cross border area between Kenya, Ethiopia and Somalia ecosystem is quite high because of availability of perennial rivers and technologies for production to scale. This potential has not been tapped due to challenges highlighted above. The interventions that are therefore needed should aim at linking up the producers to external markets, which will obviously create a pull on the production end. To achieve this the following strategies have been recommended to address the systemic constraints facing the value chain.

A. Short term interventions:

i. **Increase production of honey to commercial scale:** this will involve supporting the current producers of honey to scale up production through improved production methods and use of modern equipment. The proposed actions include:

a. Support the current producers to form producer groups within the catchment areas
b. Promote commercial bee production to other producers within bee keeping zones
c. Training of the producer groups of modern bee keeping
d. Support the producer groups to acquire modern bee keeping equipment for increased production
e. Facilitate training of some local artisans on how to make bee keeping equipment in order to have a sustained production of these equipment in the region. This can be done in partnership with the National Bee Keeping station in Nairobi, Africa Bee Keepers or the Honey Care Limited.
f. Support the groups to form savings and credit groups so that members can access some money to invest in bee keeping equipment.
g. Provide training to producers on environmental conservation while sensitizing local communities on the same to minimize the impacts of human activity on bee farming.

ii. **Support honey processing.** These locations selected for siting honey processing should strateically leverage the cross border trading opportunities to serve the farmers in the entire region. For instance Mandera, which is a main trade hub for the region could remain as the conduit for honey from Bulahawa and Banissa destined for the Nairobi market. At the same time, Bulahawa being busy business centre could supply honey to Modadishu and other parts of the country. Likewise coooperatives and groups operating in Dolo Ado Ethiopia will supply the Dolow market together with Dolow Ado itself. Two approaches are recommended which can be selected after intitial dialogue with the existing producers

a. Support an entrepreneur to invest in honey refining, packaging and marketing. The producer groups and individuals producing honey will be linked to the private entrepreneur as the offtaker of the crude honey.
b. Support the producer groups to start refining, packaging and marketing of honey. This will build on the existing technologies being used in refining honey with imprvements being made to ensure efficiency and sustained quality. This option will require first iinstitutional stregthening of the groups by training them on business skills, entreprebeurships, marketing and therefter introduce them to processing technologies. This option will take more time to implement, but may be feasible where producers are still holding on the high
c. farm gate prices and therefore not open to selling to bulk buyers.

iv. Support in the establishment of collection and aggregation systems from the producers to the processor: The processor will be supported to zone the honey production areas into zones where collection centres will be established. This will allow farmers from far-flung areas to access markets at the least costs possible. During the honey flow season, honey will be collected from each of the zones and delivered to the main refinery/processor. At the main refinery, honey and other hive products will be processed, packaged and dispatched to the markets.

v. Facilitate market linkages for honey and other hive products, to external markets like Nairobi Mogandishu, Mombasa etc.

Fig 21: The Proposed Honey Enterprise Model

4.3.8 An Intervention framework for Honey Value Chain

An analysis of the constraints, opportunities and the proposed strategies for upgrading the honey value chain are presented in the intervention framework on fig 22 below:

Fig: 22: An Intervention framework for honey Value Chain

4.4 Live Animal/Red Meat Value Chain

4.4.1 Overview

The live animal value chain involves various functions such as production, marketing at different levels, slaughter, processing wholesaling and retail of meat. The study shows that these functions takes place in a nonlinear function, as the market systems is quite complex and unstructured as described below.

4.4.2 Production

Livestock are produced in a pastoral production system, with mixed herds of cattle, sheep, goats and camels. The production function is important as it affects the numbers and quality of animals that are supplied to the market. The study area is largely pastoral and agro pastoral production system. Cattle, sheep and goats are kept in both production systems, while camels tend to be more concentrated in the pastoral production system. The pastoral livelihood zone is home to most of the livestock that are traded in the secondary markets in the region.

4.4.3 Herd dynamics

The dynamics of the herd size and structure for cattle, sheep, goats and camels from the producers interviewed in this study are presented in table 11 to 13. The average annual off take per producer per year is estimated at 13%, 14% and 16 % for camels in Ethiopia, Kenya and Somalia respectively; 11%, 19.4% and 17.7% for shoats in Ethiopia, Kenya Somalia respectively while Kenya and Ethiopia had 23% and 6.1% off takes cattle receptively. The high off takes reported in Kenya for cattle could be attributed to the drought that was experienced the same year, which may have necessitated the pastoralists to sell their cattle due to their high susceptibility to drought.

Table 11: Average number of livestock owned per household

Country name		Number of Mature cattle owned today	Number of Immature cattle owned today	Number of Mature Goats owned today	Number of Immature Goats owned today	Number of Mature Sheep owned today	Number of Immature Sheep owned today	Number of Mature Camel owned today	Number of Immature Camel owned today
Et	N	8	4	17	9	7	4	4	1
	Mean	14.50	51.75	37.29	7.22	12.29	3.00	26.25	8.00
	Min	1	2	2	2	4	2	5	8
	Max	60	199	120	20	50	4	60	8
K	N	11	6	20	11	9	4	12	9
	Mean	17.55	5.33	79.15	36.73	32.67	11.25	50.50	21.11
	Min	1	2	1	7	6	4	10	5
	Max	31	10	250	75	80	15	120	60
Som	N	0	0	5	5	1	1	13	9
	Mean			36.40	15.20	20.00	10.00	14.77	3.67
	Min			12	1	20	10	2	0
	Max			50	50	20	10	50	10
All	N	19	10	42	25	17	9	29	19
	Mean	16.26	23.90	57.12	21.80	23.53	7.44	31.14	12.16
	Min	1	2	1	1	4	2	2	0
	Max	60	199	250	75	80	15	120	60

Table 12: Average Number of Livestock Sold per Household per Year

Country name		Average No of Mature Sheep and goats sold per year	Average No of Young Camels sold per year	Average No of Mature camels sold per year	Average No of Mature Cattle and bulls sold per year	Average No of Immature cattle and calves sold per year
Ethiopia	N	16.00	3.00	2.00	4	1
	Mean	9.63	2.00	1.50	2.25	2.00
	Minimum	2.00	2.00	1.00	1	2
	Maximum	50.00	2.00	2.00	4	2
Kenya	N	17.00	10.00	7.00	8	5
	Mean	12.12	2.10	8.71	2.63	2.80
	Minimum	4.00	1.00	0	0	0
	Maximum	30.00	4.00	50.00	5	10
Somalia	N	3.00	0	9.00	1	1
	Mean	10.00	0	2.89	5.00	0.00
	Minimum	10.00	0	1.00	5	0
	Maximum	10.00	0	5.00	5	0

Table 13: Number of livestock bought as replacement stock per household per year

County	Statistic	Average No Mature Cattle and bulls bought	Average No Immature cattle and calves bought	Average No Mature Sheep bought	Average No Mature Goats bought	Average No Young Camels bought	Average No Mature camels bought
Ethiopia	N	1.00	1.00	4.00	12.00	2.00	3.00
	Mean	13.00	1.00	2.50	3.58	1.00	0.67
	Minimum	13.00	1.00	1.00	1.00	1.00	-
	Maximum	13.00	1.00	5.00	6.00	1.00	1.00
Kenya	N	3.00	-	1.00	5.00	2.00	2.00
	Mean	4.00		5.00	20.80	3.00	1.50
	Minimum	3.00		5.00	6.00	2.00	-
	Maximum	5.00		5.00	30.00	4.00	3.00
Somalia	N	-	-	-	1.00	1.00	2.00
	Mean				2.00	-	-
	Minimum				2.00	-	-
	Maximum				2.00	-	-
All	N	4.00	1.00	5.00	18.00	5.00	7.00
	Mean	6.25	1.00	3.00	8.28	1.60	0.71
	Minimum	3.00	1.00	1.00	1.00	-	-
	Maximum	13.00	1.00	5.00	30.00	4.00	3.00

Some pastoralists in the FDG indicated that the population of cattle is in the decline in the pastoral areas because of increased losses caused by drought. Camel, sheep and goats are more preferred because of their ability to withstand drought. A critical consideration of the production function is the off takes because its impact on the supply chain. The other consideration on herd and flock sizes is the rate of replacements against sales per household. In this study, the households had a herd replacement rate of approximately 21%, 17% and 0% for cattle in Ethiopia, Kenya and Somalia respectively; 12%, 23%, and 3% for shoats in Ethiopia, Kenya and Somalia respectively which replacement for camels was the lowest at the rate of 6% in Kenya and Ethiopia with no replacements in Somalia.

Several factors such as the multiple roles of livestock and increased vulnerability to external shocks tend to affect the herd dynamics in the pastoral production system. For instance, several factors could inform the replacements such as saving money, building stock after major loss from drought or for fattening among others. On the other hand, livestock could be sold to meet household financial needs or during the time of droughts. The type of animals to be sold or bought is therefore determined by an interplay of these factors. An example in this study where Kenya had the highest off take of cattle at 23% and with an equally high replacement rate for shoats of 23%. It means in this case that the pastoralist during drought were selling off cattle, which are vulnerable to droughts, reducing the sale of shoats and building restocking with shoats. These pastoral herd dynamics have an effect on the market system.

4.4.4 Access to Services and Inputs

Fig 23 below presents the proportion of pastoralists who are using various services and inputs. Dewormers, especially for shoats are the most used inputs by producers from Kenya and Ethiopia. Though access to inputs appear to be quite limited in the three countries, Somalia seem to be worse off while Ethiopia has more farmers accessing services and inputs than the other two countries. The study shows that generally the supply system for inputs is not developed. When data from 3 countries is combines, majority of the producers (28.8%) indicates that they buy inputs wherever they find them. This however differs from country to country as shown by 32.4% of producers from Kenya, 29.4% from Somalia and 23.1% from Ethiopia who buy inputs wherever they find them. Specifically, livestock markets were found to be the major location where livestock producers sources inputs for as represented by 25% of the producers from the three countries. Somalia had the biggest proportion of producers who source inputs from markets (41.2%) followed by Ethiopia (34.6%) while Kenya had the least with only 10.8% of the producers sourcing inputs from markets.

It was observed that agro vets/drug shops are not a source of inputs for most producers as the data indicates that the average proportion of farmers who buy drugs from the agro vet/drug shops was only 7.5%. The drug stores are mainly located in the main towns like Rhamu, Banisa, Bulahawa, Mandera, Suftu, Dollow- Somalia and Dollow Ado. As with agro vets, the Community Animal health workers are not a source of inputs for producers as the results show the only 2.5% of producers from the three countries source inputs from agro vets. While producers may be able to access inputs from any of the sources discussed here, an important component related to quality of drugs cannot be assured, and it may be challenging for regulation where the supply system is not developed. Moreover, such a fragmented system does not allow for development of business relationships between buyers and sellers which is crucial for feedbacks and even access to credit.

Fig 23: Proportion of producers accessing various services and inputs

Majority of the producers buy drugs and treat sick animals for themselves as shown by 61 % of the respondents from Ethiopia, 75.7% in Kenya and 35.5% in Somalia (Table 14). While the producers to some extent are using some local service providers, the study learnt that there is a number that do nothing, as shown by 11.5%, 16.2 and 23.5% of respondents from Ethiopia, Kenya and Somalia respectively.

As with inputs, only 17.6% of the animal health service providers are using any form of service providers who, according to the results mainly from the private sector. This was unexpected especially for countries like Ethiopia where the government plays a greater role in service delivery. In Kenya and Somalia, the role of animal health care is in the hands of the private sector. The private sector has however not effectively taken up this role in the pastoral areas due to challenges associated with accessing farmers and lack of data to show the business case for private sector investments.

Table 14: Actions taken by pastoralists when animals are sick

Country name	Action taken whenever animals are sick	Percent
ETHIOPIA	Buy drugs and treat for myself	61.5
	Invite community Based Animal health workers	7.7
	Invite the local government animal health service providers	19.2
	Nothing	11.5
KENYA	Buy drugs and treat for myself	75.7
	Invite the local government animal health service providers	8.1
	Nothing	16.2
SOMALIA	Buy drugs and treat for myself	35.3
	Invite community Based Animal health workers	5.9
	Invite private animal health service providers	17.6
	Nothing	23.5
	Sell once they fall sick	5.9
	Use herbs and other ethno veterinary practices	11.8

When asked the challenges that they experience in accessing animal health services, majority of the producers form Kenya and Ethiopia (61.5% and 40.5% respectively) indicated that the service providers are not available. Only 11.8% of respondents considered cost be a constraint in Kenya and Somalia (21.6% and 35.2% respectively) while in Ethiopia 71% considered cost of service delivery as a constraint.

The producers indicated that they mainly buy the animal health care products in the livestock markets, in the urban centres or any place they find them. To address the limited access to animal health care services and inputs, a private sector driven distribution model will be required. The analysis shows that in total producers spend KES 8,537 on animal health care services and inputs per year, which translates to about KES 711 per producer per month. With training and a well-established supply system, more farmers would be reached with animal health care services and create business opportunities for service providers. The Index Based Livestock Insurance (IBLI) is a livestock insurance product developed by ILRI that leverages the correlation between remotely sensed vegetation cover indexes with occurrence of droughts that lead to loss of livestock. This product has been designed for ASAL areas where conventional insurance products do not apply. The policy holders are paid based on external index that triggers indemnity pay outs to all the insured clients. It is suited for risks that affect a large number of people simultaneously and for which a suitable index exists. Based on satellite data on forage availability- NDVI, this insurance pays out when forage scarcity is predicted to cause livestock deaths in an area.

The Index Based Livestock Insurance (IBLI) was introduced in Mandera in January 2015 with Takaful Insurance of Africa as the commercial provider. IBLI team at ILRI has partnered with World Bank Group and the Government of Kenya to scale up the IBLI through the Kenya Livestock Insurance Programme in August/September 2015, which has been offering limited livestock insurance contracts to targeted individuals in pastoral areas with possible subsidies to the general public in later years. IBLI

was introduced in the Borana Region of Ethiopia in July 2012. OIC remains the only insurance company rendering Index Based Livestock Insurance Product in Ethiopia. The IBLI is yet to be scaled up in Somalia. Despite these initiatives, none of the interviewed pastoralists who reported to have used livestock insurance services and were not aware of the existence of the services. According to key informants, uptake of ILBLI is limited by lack of information on availability and value of the products on the side of pastoralists and limited systems for education of pastoralists and marketing of the product to the pastoralist. Given the increased drought cycles and the concomitant livestock losses, there is need for a targeted pastoralists education and development of models that can accelerate uptake of the services by the pastoralists.

4.4.5 Livestock Marketing

Key Findings:
The livestock markets, which handles almost 100% of all livestock, traded in the region provide a convergent point for all the actors in the marketing segment. The livestock marketing system involves a complex chain of producers, middlemen, distant market traders and numerous other market participants with trading networks spanning across international borders of Kenya, Ethiopia and Somalia. Sheep and goats are the most traded livestock in the three countries. Out of the 63 traders interviewed, 49% are involved in trade of sheep and goats, 27% are trading in cattle and 24% in camels and another 11% are involved in trade of a combination of cattle, sheep and goats. The livestock market system is characterized by seasonal fluctuations in the number of livestock supplied and their quality.

On average traders indicated that the number of livestock traded reduced from an average of 14 to 6 per trader per day. A case example is the Moyale market where at the time of this study the only buyers at the Mandera regional market were the local butchers who buy about 5-6 camels, 10 cattle and about 60 goats. In the normal seasons, the market has a turnover of about 1,000 heads of cattle per day. The wet season coincides with a period when pastoralists are rebuilding their herds (restocking) after the dry season losses (deaths or loss of body conditions). In addition, few producers are willing to sell their animals because of availability of pastures. This pattern of selling creates significant fluctuation in supply both the numbers and quality of the animals.

4.4.6 Key actors in the live animal marketing

Producers:
Producers participate in the market system as both buyers, sellers and traders of livestock. They mainly operate all market levels depending on distances from the markets. The study also established that some of the producers visit the markets to buy and sell. Majority of the producers visit the market weekly where they mainly engage in both buying and selling (52%) and selling only (75%). Those interviewed indicated that they prefer the markets they visited because of the nearness to their villages (Ethiopia -61%, Kenya 35.1% and Somalia 52.9%). This implies that livestock markets have potential to become platforms for bringing services and goods, as close to the producers as possible, especially by taking advantage of the fact that producers prefer markets because of the nearness to the villages.

Livestock Traders:
Livestock trade is an alternative livelihood for many pastoralists especially the youth who do not own livestock. Majority (41%) of the traders interviewed were people aged between 35-50 years, followed by those aged between 51 and 60 years (30%); youth (aged between 18 and 35 years) constituted 19% of the traders interviewed while people who were aged over 60 years were the minority (10%). On average, the youth have been involved in livestock trade for 2.75 years. The people aged between 35 and 50 years have been involved in livestock trade for 5.6 years while those aged between

51 and 60 years have been in business for an average of 13 years. Those who are over 60 years have been in livestock trade for an average of 21 year. This shows that there is low turnover after people join the trade in their youth. There are a number of trader categories observed in the livestock markets as described below:

- **Brokers:** These actors were found to participate in every market, playing the role of matching buyers with sellers and facilitating transactions. Traders from the external markets prefer to work through local brokers who are well versed with local market dynamics and also who are believed to have the capability of helping the traders to avoid buying stolen animals.
- **Bush and primary market traders** – These buy livestock from producers in the *manyattas* and bush markets and sell to other traders in the secondary markets like Suftu, Dolow (Somalia) Dolo Ado and Mandera. They use their knowledge of the local areas and social relationships to collect animals from their surrounding and other remote areas. In most cases, these animals are bought and kept in the homes of these traders until they bulk economic numbers that can be delivered to the market. They liaise with their buyers so they can deliver to the market once they have the bulked the desired number of animals. This category of traders is usually capital constrained which limits their scale of operations. Based on the developed personal trust (trust is founded on family relationships and clannism) some of the buyers from end markets usually advance some cash to the village based traders so they can buy the desired number of animals.
- **Secondary Market Traders** – These usually buy livestock from producers, bush market and primary market traders and the brokers in the secondary livestock markets and transport to the terminal markets. They either have linkages with the end market traders in Nairobi, Mombsasa, Mogadishu and Kisimayo.
- **End Market Traders**: These usually buy the animals from traders coming from the secondary markets, and deliver to the terminal markets. These are usually few in a market, about 1-2 and are well resourced to buy large number of animals which they sell to the end markets. At the time of high demand, they sometimes advance cash to the primary traders and the village based traders so that they can bulk the required number of livestock. Any market that is patronized by this category of traders is considered vibrant because they buy large number of animals and also control exploitation by local traders. These traders connected with buyers at the terminal markets in Nairobi or exporters based in Mogadishu.

4.4.7 Volumes

Majority (75%) of the traders operating in each of these markets do no sell all the livestock brought in the market on one market day. This was seen in Ethiopia where 50% of the traders are not able to sell all the livestock they bring to the market, followed by Somalia, which had only 30% who do not sell all their stock in one market day. Traders from Kenya on the other hand indicated that they are able to sell all the livestock they bring to the market. Majority of those who do not sell all their stock in one market day indicated that this happened rarely (50% in Ethiopia and 58 % in Somalia. Three reasons given for not selling all the animals presented in the market were:

iii. Few buyers visiting the markes (28%): This is more so the buyers from the end markets who create high demand and good prices
iv. Low prices (36%): This is also linked to having few buyers which leads to oversupply and therefore low prices
v. Animals supplied are of low quality the market
vi. (34%) and therefore does not meet the requirements by
vii. Animals that are not sold in one market are taken home and brought to the same market the next day (78%), others take to the neighbouring markets (12.8%) while a smaller group (10 %) take the remnant animals home for rearing till they acquire the required market weight.

4.4.8 Value Addition of Livestock through Fattening

Both traders and producers practice livestock fattening albeit at a low scale. Out of all the producers interviewed only 15%, 2.7% and 5.9 % of producers from Ethiopia, Kenya and Somalia respectively are involved in cattle fattening. Those in sheep and goats' fattening are fewer than cattle with 15.4% of producers from Ethiopia involved in sheep and goats fattening while Kenya and Somalia do not have producers involved in fattening of shoats. The fattening process involved buying emaciated livestock during the drought or prolonged dry seasons and providing them with adequate pastures for a period of 3 to 4 months. Most of those involved in fattening are individuals with large tracts of land.

During the low demand season in the importing countries, livestock traders from Somalia are involved in fattening. The traders have adequate pasture since this period coincides with the wet seasons in Somalia. This takes 3-4 months and coincides with periods when the exports markets open.

There is no specific market segment for the animals that have been taken through the fattening process as all the animals are sold at the local livestock markets. The fattening business however produces well-finished animals that attract premium prices in the market. The traders benefit from buying emaciated animals at low prices and eventually selling them at premium prices.

There is potential to promote livestock fattening in the project area because of the opportunity to produce fodder along the river. This could be achieved by integrating pasture production, mainly Sudan grass with livestock fattening. Farmers should however be trained on business to ensure that fattening brings more value to selling animals that have not been taken through the fattening process. Promotion of livestock fattening is also a good strategy to reduce the supply gaps experienced during the dry season.

4.4.9 Terminal/End Markets

The terminal markets from livestock from this region are mainly Kenya (Nairobi and Mombasa) and the Gulf countries. Animals destined from the Nairobi and Mombasa markets comes mainly from the livestock markets in the border towns of Sufu and Balahawa from Ethiopia respectively, through the Mandera livestock markets. Animals destined for the export markets mainly comes from all the interior markets of Somalia and from the Liben zone of Ethiopia mainly from Dolo Ado through Dolow Somalia. Females and other livestock that are not of export market quality are usually sold in the Kenyan market while the export market takes the prime livestock, usually males.

4.4.10 Assessing the Comparative Advantage of Different Regarding the Price of Livestock:

An independent-samples t-test conducted to compare price of camels, shoats and camels in each country with the mean of the samples populations revealed the following:

-
- There is no statistically significant difference in price of a mature cow in Ethiopia from the
-
- sampled population of 38,305.56 (M =30,000, SD = 7071.068, t(1)= -1.661, P = 0.345). *Mean Difference = -8,305.560*
-
- There is a statistically significant difference in price of a mature cow in Kenya from the sampled population Average of 38,305.56 ; (M =26,666.67) t(5)= -2.760, P = 0.040) *Mean difference*
- of -11,638.893 .
- There was a statistically significant difference in price of a mature cow in Somalia

from the sampled population mean of 38,305.56 (M =46,950, SD = 7169.573, t(9)= 3.813, P = 0.004).

- No statistically significant difference in price of a shoat in Ethiopia from average of 6,750 ; (M =4857.14, SD = 2288.272, t(6)= -2.189, P = 0.071) Mean Difference =*-1892.857*
- The average price of a shoat in Somalia was significant different from the average population price of 6,750; (M = 7,769.23, SD = 759.808, t(12)= 4.837, p<0.005). *Mean Difference* -1019.231
- The average price of a shoat in Kenya was statistically not different from the average population price of 6,750 (t= 0, p=1). *Mean Difference =0.00*
- There was a significant difference in price of a camel in Ethiopia from the aampled population of KES 51,750; (M =33833.33, SD = 16375.795, t(5)= -2.680, P = 0.044).
- No statistically significant difference in price of a camel in Kenya from the sampled population average price ofKES 51,750; (M =53571.43, SD = 18644.545, t(6)= 2.58, P = 0.805).
- There was a significant difference in price of a camel in Somalia from the sampled population

average of KES 51,750; (M =83333.33, SD = 5773.503, t(2)= 9.475, P = 0.011). **Key conclusion from the T-Test**

- The price of a cow in Ethiopia is the same as the Average price of a cow in the three countries – Ethiopia largely becomes a supplier to KE and SO markets.
- The price of a mature cow in Somalia is higher than the Average price of a cow in the three countries – Somalia remains the main terminal market for the high valued livestock destined for the export markets
- The price of a mature cow in Kenya is slightly lower than the Average price of a mature cow in the three countries - Kenya is the main market for low valued livestock from Ethiopia and Somalia
- The price of a shot in Ethiopia (mean difference is almost the same as the Average Price of a Shoat in the three countries hence traders are able to sell to Kenya and Somalia
- The average price of a Shoat in Somalia was higher by KES 1,019.231 Kenya shillings compared to the Sampled average price attributed to availability of export markets
- The flow of shoats in Kenya and Somalia is both ways depending on demand, hence no significance differences
- Significant difference in the price of camels in Somalia is attributed to the export market
- Camels in Kenya and Somalia flows both ways depending on demand hence the Kenyan price is within the average of the 3 countries
- Ethiopia has significantly lower prices because it depends on Kenya and Somalia markets

4.4.11 Livestock marketing infrastructure and governance

Most of the livestock markets have basic infrastructure as shown in table 15 below. Dolow Somalia is the only market that lacks basic infrastructure. Other structures like offices, stalls for other goods, hay barns and isolation yards for sick animals are still lacking. In all the three countries, the government does the management of livestock markets. The co management model, where community and the government co-manage the market in revenue sharing arrangements has not been adopted in the region.

Table 15: Type of infrastructure found in the major markets in the study area

Type of infrastructure	Suftu	Doloado	Dolobay	Bulahawa	Geedyine	Dolow	Whamu	Mandera	Banisa
Sale yard - cattle	yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Sale yard - shoats	yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Sale yard Camels	yes	Yes	Yes	Yes	Yes		Yes	Yes	Yes
Loading rumps	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Isolation yards	No	No	No	No	No	No	No	No	No
Stalls for groceries	No	No	No	No	Ye	Yes	No	No	No
Offices	No	No	No	No	No	No	No	No	No

4.4.12 Systemic Constraints in the Live Animal/Red meat value chain

- **Frequent droughts:** resulting from climate change phenomena, have become a challenge to extensive livestock production in the horn of Africa. The drought cycles have reduced from 10-year cycles to 2-3 year cycles with resulting decimation of herds and livestock migrations. This leads to loss of livelihoods for pastoralists, traders and all those who are involved in the value chain.
- **Poor disease control systems across the region:** This is further excercebated by cross border movement of livestock for markets or in search of pastures. As a result, there are frequent outbreaks of trade sensitive diseases like foot and mouth disease. During periods of disease outbreaks, quarantines are imposed leading to market closures. This disrupts the markets and livelihoods producers and all those who are involved in the value chain. In somalia, it was reported that at times, the importers refuse to buy livestock from the region for fear of diseases although this seem to have been settled after a delegation from the governmet of Somalia went to meet these importers.

    - **High cost of doing business:** The market system is largely unstructured with many bulking places (markets) and market intermediaries. Several facctors lead to high costs of doing business in livestock trade in the region:
    - Many market intermediries: Each market has a set of brokers and it is expected that one animal may change hands close to 10 times from the producer to the end markets.
    - Lack of good livestock marketing structures and poor road networks all lead to high cost of doing business.

- Taxation both formal and informal during the business of buying and selling and also during transportation to the end markets. The government of Somalia charges KES 50 per head of shoat while Ethiopia and Kenya gogerment charges KES 100 per head of shoat. The government of Somalia and Ethiopia charges KES 500 per head of cattle while the government of Kenya charges KES 400 per head of cattle. The revenue for camel is the same in the 3 countries.
- The transport costs are also considered quite high esepcially from Nairobi to Mombasa which costs KES 6,000 and KES 600 per head of cattle or shoats respectively. Transportation from Bulahawa to the ports of Kismayu and Mogadishu which is mainly by trekking costs about KES 100,000 for a consignment of camels and cattle and KES 10 USD per head of shoat on trucks.
- Due to the distances involved, cattle and camels are trekked to Mogadishu and other ports for a period of 25-30 days, which is not economically efficient and

also leads to loss of body condtion. Goats are transported for 5 days on truck with 2 days being travel days and 3 days resting days. These costs could have been reduced if there was a slaughterhouse within the Bulahawa area.

- **Limited acces to finance: Livestock trade is a capital intensive business.** Traders, require access to financing in order to off take a large number of livestock from the markets. This is mostly so for the primary markets which are not easily accessed by traders from end markets. Atleast 78% of traders interviewed from Kenya, 85% from Somalia and 60% from Ethiopia cited lack of capital as the major constrant that limits their businesses.
- **Seasonal fluctuations in the number of animals supplied to the market**: As indcated earlier the number of animals supplied during the dry season reduces by almost half following livestock migrations in search of pastures. The quality of animals supplied is also poor as most of the animals at this point have lost body conditions and do not meet the market requirements.
- **Limited entrepreneurial skills among the livestock traders:** as a result the market is dominated by many traders who operate as intermediaries hence increasing the costs of doing business.
- **Seasonality of export market demands.** There is usually low demand during the summer in the importing countries. This mainly takes place from May to July. This affects the demand and prices in the local markets. Traders at this time are mainly involved in fattening of livestock, as this coincdes with periods when there are good pastures. The costs incurred include herding costs which is about KES 10,000 per herder per month. On trader, depeding in the size of herd may engage 2 to 3 herders during thie period.

4.4.13 Proposed Business Opportunities for Support by the BORESHA Program

Livestock Fattening

The seasonal fluctuations in the supply of livestock to the markets can be partly addressed by promoting livestock fattening. Livestock fattening when done at scale also offers an opportunity for the livestock producers to find market for their livestock during the dry season while increasing returns for the traders. Cooperatives and entrepreneurs could invest in pasture production and conservation integrated with livestock fattening. In this case, fodder and pastures will be produced along river Daua to supplement pasture and other feeds used for fattening. A well-managed fattening program takes about 3 months. Fattening cycles should be organized to ensure that the animals are ready for the market during the low supply. A visit to the livestock fattening programs in Adama in Ethiopia would provide insights about the program.

Livestock drug store linked to a community-based animal health service delivery system:

Access to quality and affordable animal health care service and inputs is a major challenge facing livestock keepers in the arid and semi-arid areas. As indicated elsewhere in this report, majority of the pastoralists are treating their own livestock because they lack quality an affordable animal health care service. In addition, agro pastoralists cited lack of inputs like certified seeds and fertilizers for crop farming. Some of them depend on the government and donations from development agencies. Seeds are mainly recycled indigenous seeds. The growing riverine farming and irrigation together with livestock production presents a case for establishment of drug stores in the region.

It is recommended that the BORESHA program collaborates with Sidai Africa to establish an agor inputs and livestock service centre in Mandera. Sidai uses a franchise model to deliver veterinary drug, vaccine, feed, breed and farm input to livestock producers and farmers in Kenya. The company works with a network of

franchisees as the outlets throughout the country. BORESHA will therefore identify an existing animal input shop in Mandera who will be willing to scale up his business and link the entrepreneur to Sidai.

To address the service delivery gaps the project will thereafter identify and train Community Animal Health Workers who will be the frontline agents and service providers. These Community Animal Health workers will be linked to the Mandera distributor for technical support and for supplies. This will create a sustainable cross border animal health and agricultural inputs business system that will reach pastoralists with quality and affordable services. It is important to note that the law in Ethiopia and Somalia allows the practice by Community Animals Health Workers which does not apply in Kenya. The project will have to seek other service providers in Kenya in order to comply with the law. The role of project will be to facilitate capacity building of the franchisee on business skills to become a distributor for the region and to support the establishment and linkages with the grassroots providers and agents. The consultants came across some entrepreneurs in Mandera who were interested in this partnership and can link them to BORESHA project. The proposed model for establishing a cross border animal health and agro inputs system is presented in fig 25 below.

Lobbying for a regional approach to control of livestock disease:
The regional resilience project, which covers the IGAD member countries, has been supporting a regional approach in the control of animal diseases. BORESHA project can work with this program, which is operating in Kenya and Ethiopia in order to lobby the three governments to come up with a regular program for cross border disease control. Another potential agency to work with is the FAO, through its regional centre for control of trans boundary diseases.

An Intervention framework for Live animal / Red meat value chain:
An analysis of the constraints, opportunities and the proposed strategies for upgrading the Live animal / red meat value chain are presented in the intervention framework on fig 26 below:

4.4 ALTERNATIVE LIVELIHOODS

4.4.1 Riverine Farming and Semi Processing of Horticultural Project

Crop farming in cross border area between Kenya, Ethiopia and Somalia is enabled by availability of two main rivers namely River Daua that flows along the Kenya-Ethiopia boarder and the Ethiopia-Somalia borders and River Genale in Ethiopia before it joins with River Daua around Dolow town to flow as river Juba into Somalia, eventually emptying in Indian Ocean. Crop farming is mainly practiced by the riverine agro pastoralists in Dolow Somalia, Gedweeiyne Somalia, Rhamu in Kenya, Dolo Ado Mandera East, and Suftu in Ethiopia. As such, these riverine areas will be the focus areas for development of crop enterprises, building on the existing production. The main crops grown long these rivers include bananas, lemons, pawpaw, oranges, mangoes, tomatoes, water melons, onions, cow peas, maize, and fodder crops in form if Sudan grass among others.

Tomato farming, watermelon, onions and mango farming have been these commercialized along rivers. There is potential for commercial sorghum production, but the local consumption for sorghum is still quite low in Kenya, while in Ethiopia, the local market is quite large. In Somalia, lime is produced at commercial scale, which traders from Kenya buy and thereafter dry and sell to exporters to Arabian countries through Nairobi.

Consultations with stakeholders in the three countries indicate that the major crops that have potential for commercialization are tomatoes, watermelons, mangoes, onions and paw paws. From a food security perspective, cereals like maize and sorghum could also be produced. Farmers from both Ethiopia, Somalia and Kenya are faced with challenges of dealing with tomatoes, watermelon and mangoes during the periods of glut. The Onion value chain is highly commercialized, mainly dominated by well-resourced farmers who produce for Nairobi Mombasa and South Sudan markets. Water melon though it has a high potential for going commercial is limited by increased chances of breakages if transported over long distances. The project eventually could also target other high value vegetables like bird eye chilli and the export variety avocadoes, which are very much demanded in the export markets.
Based on this analysis, this study proposes a focus on commercialization of the tomatoes, watermelon, mangoes and paw paws. Table 16 below presents the total acreage and yields of these crops in 2017, from Mandera North and East. The major constraints in commercialization of these crops are as follows:

h. Limited access to markets: The producers are mainly dependent on the local consumers within the cross border area. Often markets get flooded during the harvest period leading to low prices. In some cases produce like tomatoes are left to rot when there is glut. There are two factors that limit access to markets:
i. High perishability of the crops especially tomatoes and water melons; this limits the potential of the produce to reach end markets in good conditions. Some produce like water melons often break when transported for long distances.
j. Long distances between production areas and the end markets: Market opportunities for these produce exist in large cities like Nairobi, Mogadishu, Mombasa etc. the challenge is the long distances involved plus the poor road conditions some of which are impassable during the rainy seasons.
k. Limited access to inputs: there are no local suppliers of certified vegetable seeds, as a result farmers tend to recycle their own seeds. For instance the County Diretor of Livestock production indicated that the Kenya producers usually buy indigenous tomato seeds from the Ethiopia which bring long diseases. In addition to indigenous seeds, there is no supply of fertilizers to farmers. This is due to the regulations that limit sale of fertilizers in the region, for security purposes. This calls for the respective governments to vet and licence specific suppliers of fertilizers
l. Limited knowhow on production technologies: the existing potential has not been fully achieved due to lack of knowhow on agronomy and irrigation

management. For instance the varieties produced would not capture high value in the end markets Opportunities

m. The irrigable water resource: The irrigation potential River Daua is believed to be between 10,500 to 15,000 hectares. In Mandera alone, where the river covers a strethch of 160km has about 4,100 hectares under irrigation (EUTF, 2016)
n. Opportunity to build on existing interventions by other agencies like Islamic relief, ADRA, Save the Children and the respective governments. In Kenya in particular the county government of Mandera has been supporting the farmers by establishing green houses for some of the farms. The county of Mandera is also keen to construct a processing facility for the fruits and vegetables
o. Establishment of a semi processing plant: This is the missing function in the value chain and it's the one that can potentially trigger the required growth of the value chain.
p. Large market for semi processed pulp in the respective countries. Most of the food processing companies are keen to buy from farmers and not produce for themselves.

Table 16: estimated acreage and yields of proposed crops in Mandera East and North in 2017

Type of Crop	Area (Ha)	Yield (Ton)	Value (KES)	Irrigated Area (Ha)
TOMATOES				
Mandera East	70.00	490.00	24,500,000.00	67.00
Mandera North	43.00	322.00	16,000,000.00	40.00
Sub Total Tomatoes	113.00	812.00	40,500,000.00	107.00
MANGOES				
Mandera East	45.00	360.00	15,480,000.00	40.00
Mandera North	60.00	474.00	20,382,000.00	50.00
Sub Total Mangoes	105.00	834.00	35,862,000.00	90.00
PAWPAW				
Mandera East	58.00	464.00	32,480,000.00	50.00
Mandera North	22.00	165.00	22,550,000.00	20.00
Sub Total Pawpaw	80.00	629.00	55,030,000.00	70.00
WATERMELON				
Mandera East	200.00	2,200.00	121,000,000.00	180.00
Mandera North	40.00	42.00	23,320,000.00	35.00
Sub Total Watermelon	240.00	2,242.00	144,320,000.00	215.00

Recommendations for enhanced commercialization of the Riverine farming:

Short Term Recommendations

Support an entrepreneur to invest in processing of the produce into pulp for the

manufacturing industries

- The situational analysis shows that a processing function is the major gap in the vegetable and fruit value chains, owing to their high perishability and long distances to other markets. This necessitates establishment of a semi processing facility within the cross boder arrea. The study therefore proposes that the BORESHA program supports a private sector investor to become the market anchor for the small-scale producers. The role of the private investor is to put up a processing facility through a matching fund arrangement with the project, which will provide a reliable market for the producers. This is should incentivise more producers to engage in commercial production of the vegetables and fruits. In addition, this market anchor could supply the producers with required inputs, through a check off system. The Project could also partner with the county government of Mandera so that the county constructs the facility while the project supports the entreprenuer (mainly business skills and market linkages) to operationalize and manage the plant.
- The processing facility could be set up in Mandera town to serve Farmers from the Triangle. The facility will be involved in semi processing of fruits and vegetables into pulp for other agribusiness companies like Coca Cola, Del monte among others. The choice of Mandera for establishment of a processing facility is strategic as it is the business hub for the three countries. Mandera has a comparative advantage of having much cheaper electricity than Somalia and Ethiopia plus the potential to link with large agribusiness companies in Kenya as end markets. Producers from Dolow Somalia can access the factory through Bulahawa one of the busy cross border trade hub In Somalia. In Ethiopia, there are a number of vibrant cooperative societies that can be supported to market their produce to the processor.
- To stimulate interest by entrepreneurs, the project should buy in some risk on the part of the investor, by proposing a matching grant model.

Proposed actions:

- Invite prospective entrepreneurs in a meeting together with farmer representatives in order for them to understand the current production level and the existing potential
- Present the business case to the prospective entrepreneurs after meeting with producers
- Invite the prospective entrepreneurs to present their business plans for consideration
- Support the winning entrepreneur to establish the facility by providing technical backstopping e.g. in design of the facilities, training on business skills, refinement of the business plans, branding, development of the operational systems and structures etc.
- Facilitate linkages between the processor with producers through business to business meetings which should culminate into supply agreements
- Facilitate linkages between the processor with food manufacturing companies as end markets Facilitate linkages between the processor with the financial services providers

2. Support the producers to increase production and productivity of quality

4.4.2 Opportunities in the Construction Sector

As with other urban areas in Africa, the increasng urbanization is one of the factors stimulating growth of the construction industry in the cross border area between Kenya, Ethiopia and Somalia. As a result, the construction industry is experiencing a lot of growth, as many buildings are coming up to house the growing population as well as business establishment. In Mandera for instance the devolution has provided resources to the county government for its development. The county government is prioritizing infrastructure development that is providing a lot of employment to the local people. In addition to the government projects, establishment of county headquarters is attracting many people to invest in buildings to host the growing workforce in the county. In Somalia, a lot of work is going on to reconstruct the country, which will involve development of infrastructure and housing, All these indicate that the construction industry will continue to grow in this region and is quite promising in creation of employment in many ways including in the construction work itself, associated services like electrical wiring and hardware shops. The following are some of the business opportunities in the construction industry that the project can promote:

1. Develop entrepreneurs who can get involved in the production of building materials. One of the most common construction materials that can be made by local entrepreneurs is brick making. This is very applicable in Somalia because of the availability of low cost cement from Ethiopia and abundance of sand. The quarries in Mandera, which were providing employment to many people in the county, were abandoned due to insecurity posed by the Al Shabaab militia. There is therefore need to explore other low cost building materials like bricks that can be promoted.
2. Establishing businesses that provide inputs in the construction industry. This include organizing groups of youth to set up hardware shops in the major towns of Mandera, Bulo Hawa, Dolow and Dolo Ado. These youths are supported to access financing which they can use to operate the businesses.
3. Providing services in the construction sector: As the number of buildings, continue to increase, so will the demand for service providers in the industry. This involves building capacity of youth on skill such as masonry, plumbing, electrical installations, paintwork, carpentry, welding etc. The trainees are thereafter supported with initial start-up kits so that they can employ themselves as service providers.

4.4.3 Petty Trade and Merchandising

Petty Trade

Petty trade and merchandizing is one of the growing livelihood activities in cross border area between Kenya, Ethiopia and Somalia. A study by CARE (2008) in Gedo region indicated that the petty trade was the most common enterprises among the respondents interviewed with 38.6% respondents. Other enterprises included pastoralism with (31.7%) and Agro pastoralism with 18.1% of the respondents. Based on stakeholder consultations, the factors that contribute to increased petty trade include:

1. Increasing urbanization as people move from rural areas to the urban areas.
2. Economic opportunities created by influx of cheap and diverse commodities from Somalia to the region.
3. Low capita investments required to engage in the business making it attractive for the youth, women and displaced persons.

The actors in petty trade and mechanizing can be classified as wholesalers, middlemen and retailers. The wholesalers are defined as those who import commodities (clothes, utensils, electronics etc.) via Mogadishu and bring them into the region. These also

include those who order big consignments of certain commodities from Nairobi. Depending on the product and whether it is imported or not the second category of actors are the middlemen. These mainly buy imported commodities from wholesalers at whole sale prices and sell item by item to retailers. The retailers can be classified into stall keepers, street hawkers' ad rural market traders. In some cases, the retailers are given the merchandise on credit by the middlemen or wholesalers.

Challenges facing Petty Trading:

- Competition: The petty traders usually face competitions not only from the their fellow petty traders but also from larger establishments both formal and informal selling similar good in a certain urban centre
- Lack of capital: as with other enterprises, limited access to finances has been a major limitation in growth of SMEs sector. Most of these traders depend in their own savings or family support to grow their businesses. In most cases the financial institutions find them risky for loans,
- Enbaling environment: These include informal taxations by the police when they have to buy goods across the border, lack of bridge for free movement across Kenya and Etgiopian border among others

Short Term Recommendations

- Organize the petty traders into associations through which they can present their issues and opinions to the government and other support institutions for consideration
- Facilitate the formation of savings and credit schemes among the associations of petty traders. These will provide a mechanism for internal lending among the members. These will also be used to link the traders to the formal finance sector
- Provide Business Training to the traders, through their association in order to equip them with required skills and knowledge to grow their businesses.

4.4.4 Other Medium to Long Term Alternative Livelihoods

Food and Catering

The food and catering industry is growing rapidly as a result of increasing number of people moving to live in the urban areas, growing middle class populations and the refugee population in Ethiopia. In addition, there are a number of development agencies working in these areas which in many cases require training and conference facilities. Interventions here will involves careful market segmentation and identification of unmet needs and supporting the entrepreneurs to invest in filling in these needs. The most promising livelihood opportunities include:

- Baking bread, biscuites and cakes for local and external markets. These are fast moving products that can generate profits if quality is mantined. The project could partner with agencies like GIZ to come up with low cost but effcient ovens, in order to reduce the costs of baking.
- Providing catering services: Groups of women could be trained in coockery and supported to start catering services. The market for catering services is quite large, as it includes home parties and funtions, office workers and outdoor trainings.

This is an enterprise for both women and youth empowerement in the three countries and is best implemented through groups or companies. As fast moving products, the return are also likely to be quite high, so long as the businesses will be keen to maintain quality and address all the cstomer meeds. Depending on the nature of business the initial investment to actualize this busienss is quite low. The main investment will be in

quality assurance and marketing. The following are some of the key startegies that the project can adopt to support in establishment of a viable business systems:

- Support the formation of the groups or companies. Thie will involve presenting value propositions to groups of youth and women and seeking their willingness to invest in the business
- Provide training on catering and bakerly, depending on the market needs. The trainings should also focus on business and etrepreneurial skills, organizational development and marketiing.
- Support in the acquisition of appropriare equipment for the businesses.
- Promotion of the products through the use of social media, flyers and word of mouth
- Facilitate linkges with external markets

a. Renewable Energy

Access to reliable and affordable energy plays a critical role in the growth of businesses, especially the SMEs. Where energy is expensive the costs of doing businesses are equally high which pushes up commodity prices. Kenya has a good suply of energy mainly hydroelectric. In Somalia on the other hand, energy is supplied by a few private companies, which emerged post civil war. These companies are currently playing monopoly, blocking competition and opposing regulation. As such the cost of electricity in Somalia is high. Stakeholders indicated that 1 KW is sold at 1-1.5USD while in Kenya it goes for about 0.18 USD. This is quite probibitive for businesses and families, which eltimately slows down the economy. In ethiopia, lectricity is provided by private companies. Though it was deemed affordable compared to the Somalia costs, the power is highly rationed with residents having power on for 12 hours a day ie 3am to 3 pm. Residents especially those who are operating businesses uses generators to supplement the power supply.An opportunity is however created here for promotion of energy from renewable sources. Use of solar power stands out as the most feasible rebewable energy source for Somalia because of the ready availability of siolar power throughout the year. The use of solar power is has been sucessfully applied in countries like Kenya for both cmmercial and domestic purposes, in areas that are located far from the naional grid. Provision of renewable energy is an opportunity for employment creation among the youth and the displaced persons.

The following models have been proposed for providing solar power at a commercial scale:

Provide training to the youth and displaced persons and support them to come up with microgrid solar lighting system. This will involve supporting some entrepreneurs with start-up capital in form of a loan or a revolving fund to set up some solar panels and storage batteries with capacity to supply several households and businesses with electricity. Technology for the installation and maintenance is provided by the private sector. The impact of the intervention will be at the level of entrepreneurs and at the level of businesses which will be supported through provision of electricity. Climate Innovation Centre and a private sector company called Equatorial Energies in Kenya could be good providers of the required technologies for installation of these microgrids. The entrepreneurs will come up with rates for supply of electericity, which sould be cost effective for the businesses.

Develop and implement a business model for distribution of solar equipment for homes, businesses and the refugee camps. The Boresha project could set up a revolving fund for the entrepreneurs to access the start-up capital. Key actions here

include:

1. Identification of solar equipment producers or importers and present the market potential for the suppliers. There will be a need to lobby the suppliers to consider discounts to the local distributors in in order to make the equipment affordable and to minimize the impact of long distances on the margins.
2. Identify potential agents/distributors of solar equipment who should be providers of the same services to households and camps.
3. Provide business skills trainings on the selected agents/distributors to effectively manage the businesses.
4. Provide technical training to entrepreneur's installation of solar equipment in homes and business premises.
5. Facilitate linkages between the distributors and the producers/importers so that the two parties can enter into a contractual agreement on the business
6. Explore opportunities for supporting entrepreneurs to import the components which they come to assemble locally.

An Intervention Framework for Riverine Farming: An analysis of the constraints, opportunities and the proposed strategies for upgrading the horticulture / riverine value chain are presented in the intervention framework on fig 27 below:

4.5 Skills Development & Capacity Building

Overview

Closing economic gaps requires promotion of right technologies and matching these technologies with the right skills. The skills needs are varied depending on individuals; hence the development process should address individual needs. This study has recommended a number of enterprises that have potential to grow to scale, create employment and enhance resilience of the pastoral communities. The first step in development of these enterprises is to equip the entrepreneurs with the right skills and knowledge needed for each of the enterprises. The following phases have been proposed for skills development process

4. Institutional capacity development: This applies to enterprises that will be implemented through institutions like groups and cooperatives. The first step is to bring the members together and support them to form institutions if they do not exist. This should be followed by trainings on group dynamics, leadership, creating of joint vision and mission etc. In the course of institutional capacity development, skills gaps relevant to the enterprises will be identified
5. Skills development: Based on the skills gaps identified, the participants should be taken through a practical skills development process. In addition to classroom based trainings, the project should link the participants to similar enterprises for on the job learning or apprenticeships. Where possible the participants should be supported with start-up kits
6. Trainings on business skills: The participants should be taken through business skills sand entrepreneurship trainings which include profit and loss analysis, simple book keeping, and profit and loss analysis and be supported to develop operational systems such as financial management systems etc. Business development is a continuous process involving couching and mentorship

Proposed skills for development

Based on the recommended models in this report, the following skills (table 17) will need to be developed:

Table 17: Skills needed to implement the proposed interventions

Type of Value Chain	Skills Needed
Camel milk value Chain	• Milk Handling and hygiene • Flaying • Salting • Grading • Tanning • Leather processing • Manufacturing leather products • Creative designs in leather work
Livestock fattening	• Use of modern bee keeping equipment • Honey harvesting • Extraction of other bee products • Setting and operationalization of a semi-processor
Riverine farming and processing horticultural	• packaging • Cost effective finishing programs • Herd management • Grading • Low cost feeding techniques • A gronomy • Packaging • Marketing • Setting and operationalization of a semi-processor • Masonary • Plumbing • Electricals • Paintinng • Furniture and ftttings • Welding • Solar installations
Renewable energy	• Electricals • Identfication of the right model/capacitiess • Repairs • Diagnstics on performance of the system

4.6 Access to Finance

The study observed that in Kenya and Somalia, no livestock producer had borrowed a loan in the last one year while in Ethiopia only 3.8% of the respondents had borrowed a loan in the last one year. It was observed that most of the producers are members of groups from where they borrow money to fund their ventures. In this region, the proportion of producers who are members of groups is the minority as indicated by 19.2% of respondents from Ethiopia, 13.5% from Kenya and 0% from Somalia. For those who indicated that they are members of a group, it was observed that they belong to a wide variety of membership which include cooperatives, merry go round, self-help groups and SACCOS.

In Ethiopia, majority (20%) belong to self-help groups, while 20% are members of cooperatives and another 20% members of the merry go round. In Kenya, 40% are members of merry go round 40% members of SACCO and 20% self-help groups. It was surprising to note that though there are producers who are members of merry go round and SACCOs some have never borrowed loans. It was observed that although they do not borrow directly, there exists some elements of social cohesion that benefits those who are in groups financially. These benefits include buying inputs collectively, raising capital. Sharing information etc. Fig 28 below summarizes these findings.

Group Membership benefits

Fig 28: Benefits from Group Membership

In all the value chains, it was observed that less than 10% of the respondents who indicated that they have ever borrowed credit. On average 70% of them indicated that the reason for not borrowing is lack of information on the available products, 20% indicated that they are not aware of any interest free loans, compliant with their religious beliefs and the remaining indicated that they are not aware of credit providers. Although there are commercial banks available, the respondents indicated that they use them for banking services and not for borrowing.

The most common source of credit to finance individual business in the region is borrowing from relatives and friends. Personal savings or family financing supports most of the businesses. Traders who have had established close business relationship often lend one another credit. This is based on high level of trust among the community members. Furthermore, there are strong community institutions that are prevailed upon should a person default.

BORESHA project should leverage this trust and community structures to support groups to come up with a table-banking model that is *sharia* compliant. General sensitization of the community of the existing products in the market that are sharia compliant is recommended, This will help businesses that need large financing beyond the table banking.

Recommendations

Regarding the access to finance, the recommendations herewith are more applicable in the short term, depending on the available project resources:

Regarding the access to finance, the recommendations herewith are more applicable in the short term, depending on the available project resources:

- Mainstreaming Savings and Credit Schemes in the value chain upgrading activities: A value chain based savings and credit scheme is proposed in order to build on existing relationships and trust among the actors. In this regard, it is recommended that a savings and credit mobilization scheme is mainstreamed in each of the value chain that he project will be supporting. A participatory approach should be used so that members of the institutions engaged in the

value chain activity will be the ones to determine the best model that will work for them, given the many concerns about sharia compliance.

- Education and awareness creation: Some investments may not be adequately financed by the group based village savings and credit schemes. In other instances the schemes may require to work with a lead financial institution in order to manage its cash flows. A lot of education and awareness creation is required for change of attitude towards commercial banks and MFIs. The project should work with religious leaders from the communities to increase the adoption. Business centres will be key platforms for disseminating this information
- Facilitate linkages between the individual or institutional enterprises with financial service providers.
- Partnership with the financial institutions like banks and SACCOs to assess the needs of the entrepreneurs so that appropriate products can be promoted. In addition, banks and other financial
- institutions should continuously engage with entrepreneurs and institution's in order to come up with repayment structures that are aligned to realities in the business environment.
- Explore the possibility of guaranteed lending scheme, which helps to buy in the risks for the banks to engage in commercial lending. İn thi cas the project will get in partnership with financial institutions in the region and deposit some fund in the banks. This fund, which will be managed by the banks will be used to lend loans to the businesses and groups of producers .

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6. ANNEXES

Annex 1:. Enumerators Bio Data forms

The form below will be used to collect data on the enumerators to assist in selection and gauging suitability:

Date…….....……

Name……. Gender M/F…….....……

Address: …….....……

Mobile Phone No: …….....…….....…….

Highest Level of Education Attained…….…….....……..
(Form College/Diploma; University Degree).

Area where the enumerator comes from: ……....…… (Ethiopia -Dolo Ado Woreda, Dolo Abay Woreda, Afdel zone and Liben; Somalia – Dolo and Gedo; Kenya Mandera East and Mandera North, Banisa and Lafey.

Level of Education……....…….
(None, Primary, Secondary College, Tertiary)

Have you been involved in data collection or Surveys Before ……....……?
Yes/No

If you have been involved in any survey,
please provide details of the surveys you have

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This publication was produced with the financial support of the European Union. Its contents are the sole responsibility of BORESHA Consortium and do not necessarily reflect the views of the European Union

Funded by European Union