



The Systemic Analysis of the Livestock Sector in the FCDC Region

About FCDC

The Frontier Counties Development Council (FCDC) is a collective platform composed of the County Governments of Lamu, Tana River, Garissa, Wajir, Mandera, Marsabit, Isiolo, Turkana, Samburu and West Pokot in the aftermath of devolution. The Council promotes cooperation, coordination and information sharing between Counties in view of enhancing socio-economic development and promoting peaceful co-existence among its members. FCDC wants to enhance the benefits of the devolution process in their member counties by serving as a catalyst and trigger for sustainable development and prosperity in the FCDC region. FCDC experiences could then also serve as a model for other regions in Kenya.

Specifically, FCDC aims to:

- Address short term regional problems and opportunities;
- Build a foundation for medium and long term sustainable, broad-based development;
- Strengthen resilience in the face of new opportunities and traditional problems;
- Take advantage of technology, regional synergies and economies of scale to reduce costs and boost efficiency;
- Genuinely involve the citizens in developing and implement solutions.

FCDC actively contributes to the development and enforcement of plans, policies and systems in FCDC counties especially where needs are similar. Special expertise is brought in to develop and finalize bills that can be discussed and approved by County Assemblies, for in-stance to build foundations for peace in the region.

FCDC also assists in developing systems that increase accountability and efficiency of county departments. FCDC advocates and lobbies for Peace & Cohesion in northern Kenya and to trigger socio-economic development in the FCDC region. The secretariat advocates for increased sovereignty of counties vis-à-vis the central Government and represents the interests of its members in meetings & conferences at national and international level and with national and international partners.

FCDC brings key stakeholders together and partners, to enhance learning and knowledge transfer among member counties and communities and to accelerate socio-economic development in the FCDC region. FCDC fosters collaboration and partnerships among its members to create synergies between counties, promote cooperation and co-ordination, share information and to promote inter-county values on peace & cohesion. Collaboration and partnerships are also enhanced with external partners to spearhead development in the FCDC region.

FCDC has set up a Sector Forum for Agriculture and Livestock (SFAL) as an instrument to enhance cooperation, coordination and information flow between counties on issues related to Agriculture and Livestock. County Executive Committee Members (CECs) meet regularly and the SFAL secretariat that works under FCDC implements requests and decisions taken by the Forum. Other Sector Forums are the Sector Forum for Health and Sector Forum for Lands and the Sector Forum for Peace and Cohesion.

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Acknowledgment

The Sector Forum for Agriculture and Livestock (SFAL) of the Frontier Counties Development Council (FCDC), has commissioned a systemic analysis of the livestock sector in FCDC Counties as a basis for the development of the livestock sector and initiatives by national, regional and international partners. The analysis aims at identifying key challenges and opportunities as well as livestock sector functions that need improvement.

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Abbreviations

ASAL	Arid and Semi-Arid Counties
ASDS	Agricultural Sector Development Strategy
CAHW	Community Animal Health Workers
CCI	Chamber of Commerce and Industry
CECs	County Executive Committee
CIAT	International Centre for Tropical Agriculture
CIDP	County Integrated Development Program
CLMC	County Livestock Marketing Council
DALF	Departments of Agriculture, Livestock and Fisheries
EPZ	Export Processing Zone
FCDC	Frontier Counties Development Council
GDP	Gross Domestic Product
Ha	Hectare
ILRI	International Livestock Research Institute
KALRO	Kenya Agricultural and Livestock Research Organization
KEBS	Kenya Bureau of Standards
KLIP	Kenyan Livestock Insurance Program
KLMB	Kenya Livestock Marketing Board
KLMC	Kenya Livestock Marketing Council
Km2	Square kilometers
KMC	Kenya Meat Commission
KNBS	Kenya National Bureau of Statistics
KNCCI	Kenya National Chamber of Commerce and Industry
KSH	Kenyan Shillings
LMA	Livestock Marketing Association
M4P	Market for the Poor
Mm	Millimetre
MoALF	Ministry of Agriculture, Livestock and Fisheries
NDMA	National Drought Management Authority
NGO	Non-Governmental Organisation
NRT	Northern Rangeland Trust
OCHA	UN Office for the Coordination of Humanitarian Affairs
PPP	Public-Private Partnerships
R&D	Research and Development
SFAL	Sector Forum for Agriculture and Livestock
TLU	Tropical Livestock Units
ToR	Terms of References
UNICEF	United Nations Children’s Fund
UHT	Ultra-High Temperature (processing)
VET	Vocational Educational Training
VSF	Vétérinaires Sans Frontières
WRUA	Water Resources Users Associations

Executive summary

The Sector Forum for Agriculture and Livestock (SFAL) of the FCDC recognises the importance of livestock, as a source of food and an important driver of the economy within the FCDC counties. An estimated 86% of the population in the FCDC counties live in rural areas, where most livelihoods depend to a large extent if not entirely, on livestock. Even urban populations are dependent on livestock, either directly as a source of food or indirectly as a source of income through sales at markets. Livestock, therefore, presents a great opportunity for the FCDC counties to improve the availability of food (increasing food security), incomes, social well-being and revenue through improved productivity and marketing. Ruminants, including sheep, goats, camels and cattle are the most important species and provide meat, milk, hides and skins, and other by-products, which generate economic and social wealth.

The FCDC counties are well suited for raising livestock on pastures and benefit from a competitive advantage, over other counties in Kenya. Most of the livestock in Kenya is found in the FCDC and other ASAL counties, which supply over 80% of the meat consumed in the country. Livestock production in these areas follows an extensive production system; which continues to undergo systemic changes, mainly as a result of climatic factors, human factors, and changes in pastoralists behaviours. The high population growth in the FCDC counties of 4% per year is a key challenge: new livelihoods for 8 to 10,000 households per year are needed. It also generates increased demand for meat and other products. Opportunities for new livelihoods may be found on a limited scale with increasing subsistence options, through improved productivity and commercialisation, and on a larger scale with the commercialisation and modernisation of meat, but also in the dairy sector and other industries.

The livestock sector is poised to grow but continues to face a number of challenges and constraints. The production system is characterised by low input, with unviable stocking rates and limited forage resources. Data indicates that the **actual carrying capacity of the pastures in the region has been**

surpassed. As communal pastures are free, and with a lack of other feeding options people tend to overstock these forages and harm their future use and sustainability. The mobility of pastoral herds and free access to communal pastures in the face of a breakdown of traditional grazing management has been a driver of conflicts when the successive low rainfalls have reduced dry season grazing resources. Other than poor nutrition, the other underlying causes of production inefficiencies include poor animal health, inefficient marketing, inadequate infrastructure, low levels of education, poor entrepreneurial and technical skills of producers, and weak institutional support. A more sustainable natural resource management system, which addresses the need for deliberate and increased investments in capitals and technologies for better use of rangelands is now required. Improvement of productivity of pastoralism (higher access to and availability of adequate and quality pastures, fodder and improved productivity of herds) can be achieved if commonly shared pastures are managed in line with the traditional system. **Improvement in the productivity of livestock is expected, with better management of rangeland and herd and enhanced fodder production.**

As described in the study, improvement of rangeland management is twofold: Increase the production of pastures and fodder and ensure peace and equity in the sharing of the forage resources. Technical measures like high yielding (quantity and quality) pasture and fodder cultivars have to be studied. Other technical measures, including irrigation, plant nutrition and protection can ensure the consistent supply of the required fodder across space and time. The bottom line is a reliable system that monitors and predicts pasture potentials. To incentivise herders and communities to invest in rangelands, ways to protect them have to be developed and implemented with them. Additional fodder through a **stronger fodder value chain plays a large stake in balancing the seasonal or drought-induced fluctuations in yields.** The condition is that these value chains are established and developed towards the commercial level of production and be able to support feedlots.

There are several possibilities for the improvement of herd management. Focusing on genetics, animal health, feeding, and off-take. There are many local breeds which have low productivity, but the good traits they have include; resistance to diseases and drought or the ability to digest the low-quality grass. These are good traits for a successful selection program. The limited effectiveness of animal husbandry, combined with open pasturing in the FCDC counties, increases the spread of transferable diseases leading to poor animal health and relevant losses in production. This affects the supply of livestock products in the market, and some of the diseases may also affect human health. **Improving veterinary services and combining them with general extension services** (knowledge building and sharing, training of skills, capacity building and assisting change management on a household/enterprise level as well as at an organisational and network level) and the **availability of quality drugs is another field of investment which will help improve the productivity of pastoral herds.**

Investments should be combined with a strategy to strengthen the formal and informal producers' organisations. These organisations can help in upscaling and out-scaling of best practices, including the cultivation and use of pastures, fodder and feeds; animals off-take, quality of especially meat and milk as well as access to the market for goods and services. They may play a decisive role in rangeland management and the way herders cope with risk, using the herds as insurance and a form of savings, rather than as a production resource to generate income. Finally, producer organisations can be instrumental in lobby and advocacy for the interests of pastoralists and livestock holders.

Forage and water, the two most important inputs in livestock production, are shared resources across the Maasai, Somali, Karamoja and Borana pastoral clusters. Utilization of pasture/fodder and water will need to be planned at regional, county and

community levels. Interventions have either not holistically addressed the needs of the sector, or have had negative impacts on the performance of the sector. **There is need to balance the availability of pasture/fodder and water when planning for new settlements and infrastructure.**

Live animal trading on the hoof was reared through pastoral herding and which is also linked to ethnic groups. Public markets are important to increase transparency are crucial for a strong meat sector and job creation. In the milk market, the region can gain a niche position with camel milk. The integration of fodder trade within the livestock markets could enhance its visibility as well as sale and generate income especially for the women who may lack a voice in the sale of animals but have a higher role in these items.

The livestock sector is characterised by low levels of presentation, organisation and strategic leadership, in the private sector, county or national government. The sector is fragmented and fraught with competing interests. There is the **need for a neutral facilitator such as SFAL that can navigate these interests and build a coalition that can advance the sector priorities and objectives.**

Investment into the sector is currently low, even in the FCDC counties, where livestock is considered the main driver of the economy. FCDC and county governments may incentivise private sector investments by allocating a higher share of their budgets into supporting functions like infrastructure, coordination, research, information, skills and capacity, and a favourable environment for related services.

SFAL could facilitate the establishment of at least two export processing zones (EPZ) in the FCDC region. The EPZs could encourage the entrance of investors and exportation of livestock products, fodder products as well as rangeland products such as herbs, gums and raisins.

1. Introduction

The Frontier Counties Development Council (FCDC) is a shared platform which was created in 2015, by the seven Kenyan frontier county governments of; Marsabit, Wajir, Mandera, Isiolo, Tana River, Garissa and Lamu. In December 2017, Turkana joined the FCDC, while West Pokot and Samburu joined in July and September 2018 respectively.

The FCDC intends to take advantage of the devolution process in its member counties and acts as a catalyst and trigger for sustainable development and prosperity in its designated region. The FCDC set up the Sector Forum for Agriculture & Livestock (SFAL) to promote cooperation, coordination and the flow of information between the counties and the Ministry of Agriculture Livestock and Fisheries on issues related to agriculture and livestock. County Executive Committee members (CECs) of the eight FCDC counties have started to meet regularly to deliberate on issues and topics raised by the counties, the board or by development partners. They decide on what issues and businesses, their newly set up SFAL-secretariat should work on. This secretariat has now started to mobilise resources and implement these requests and decisions.

The FCDC, SFAL and other partners in the region aim to continue coordinating their development efforts and take advantage of new opportunities in the aftermath of the national devolution process. One example of the coordination of development efforts is the ongoing *Livestock Sector Strengthening project* funded by the Embassy of Switzerland

in Kenya. Its objective is to support national, regional and county institutions in their efforts to strengthen the livestock sector in northern Kenya. The program offers an opportunity to link county specific agendas with regional development interests. On a national level, the project opens up political dialogue and policy formulation to enhance livestock productivity to improve resilience and sustainable livelihood options of pastoralist communities in Northern Kenya. Additionally, the project seeks to promote peace and cohesion through reduced intra- and inter-communal conflicts, for sustainable socio-economic development.

SFAL has conducted this systemic analysis of the livestock sector in FCDC counties, as a basis for the development of the livestock sector and initiatives by national, regional, and international partners. The goal is to identify key challenges and opportunities as well as livestock sector functions that need improvement. The overall objective of this report is “to provide details of a systemic analysis in the FCDC region that will serve as a basis for interventions in the livestock sector by national and international organisations and for the development of an SFAL strategic plan and new County Integrated Development Programs (CIDPs).”

In particular, this study was carried out through detailed context analysis of key functions in the livestock sector as well as institutions involved, and to come up with concrete suggestions on how livestock sector development in the region can better be monitored.

2. Methodology

The methodology was developed by the lead team, based on the ToRs (see annex 1) and presented in the inception report. It included several steps and activities:

- *Desk review:* existing studies and analyses were reviewed. The desk review aimed to be a first analysis of the livestock sector and for the preparation of the inception report.
- *Field visit:* the team went on a field visit from October 9th to 21st, 2017.
 - o Briefing and debriefing with the SFAL team, joined by SDC;
 - o Workshops: several workshops were organised during the field visit: a first workshop with the expert group in Nairobi, a second with a delegation of the county government in Isiolo, a third with representatives of on-going relevant projects in Marsabit, and a last one with the experts' group during which key institutions were selected and analysed.
 - o Interviews with relevant stakeholders, among others: a project coordinator of Veterinarians Without Frontiers (VSF) in Isiolo, a coordinator of the county government in Marsabit for a regional project of the World Bank and a staff member of the Kenya Livestock Marketing Council in Nairobi.
 - o Visited a milk collection center in Isiolo and a slaughterhouse in Nairobi.
- *Analysis:* the analysis was done in the field and then in the office using varied computer programmes and software.
- Redaction of the report.

The overall approach used for the analysis of the livestock sector is based on the M4P/Inclusive Market approach (**see Figure 1**) which examines the various functions of the sector.

The livestock sector is complex, particularly when dealing with the production and trading system of ruminants. Production is linked to fodder production, open access pasturing, increased transferable diseases, ecological problems and conflicts that are difficult to resolve. Additionally, trading is woven into this pattern, as it is often done on the hoof. The ruminant market is diverse as animals are not only traded from the local areas but are also come from Somalia and Ethiopia. Animals are traded mainly in the terminal markets of Nairobi and Mombasa, but sometimes also exported alive or as meat.

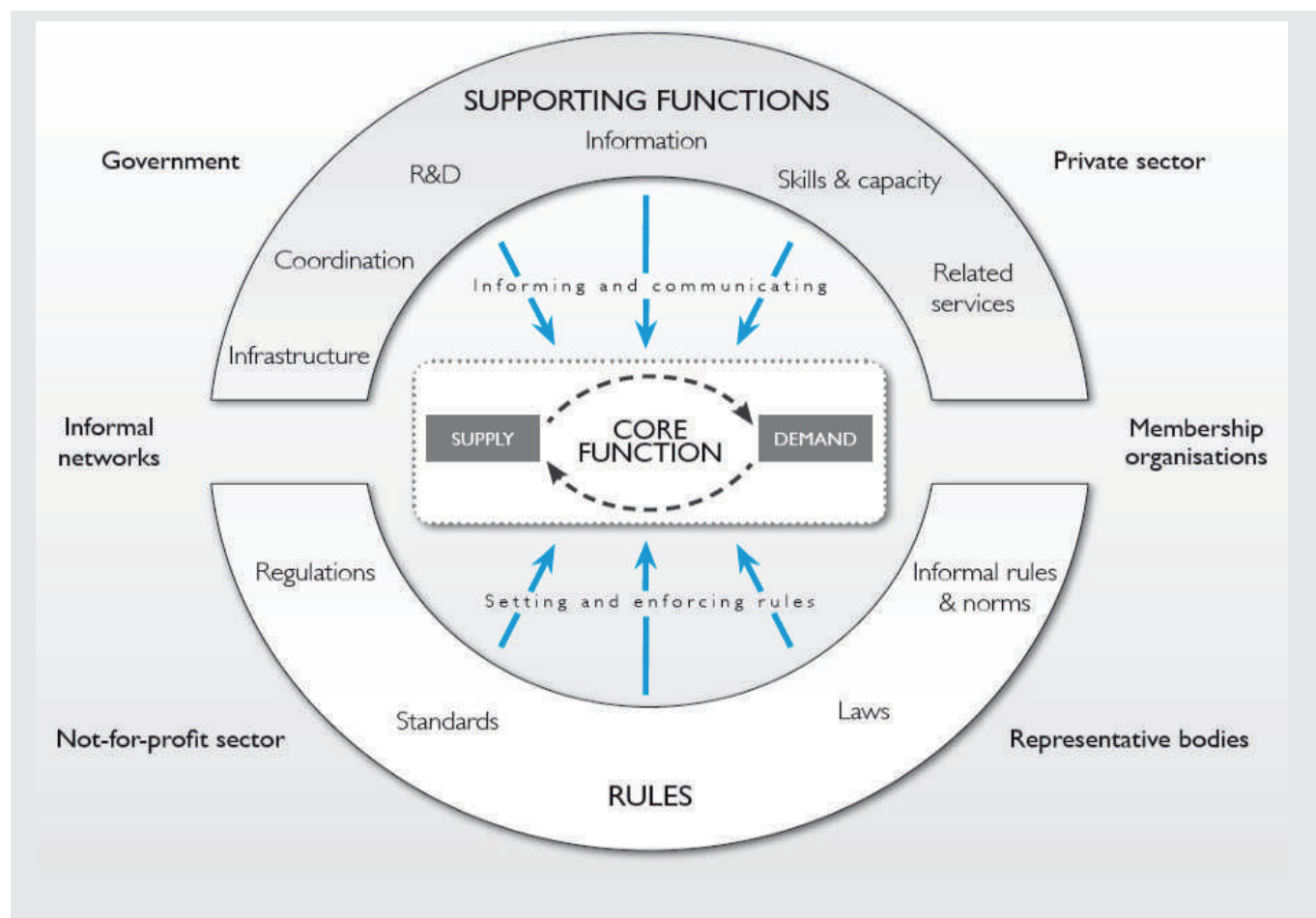
This complexity makes it more challenging to identify the important functions of the sector and to describe how they should be performed.

An initial version of the M4P for the FCDC counties was made based on the desk review. It was presented to the expert group for completion and was then refined following discussions during workshops, interviews and visits.

Availability of actual and consistent data proved to be challenging. New data is being published every year, but may not cover all the counties or the aggregation and standards may differ. Data in the pastoral context fluctuates greatly as herders and herds move around. This results in changing numbers of people and animals per county per year, and no trends could be found. By mixing county data from different years, the same person or animal might be counted twice. Another example is the changing numbers that are a fluctuation and not a trend. Animals die during a drought and are restocked later. The same fluctuations happen with county live animal markets. They include national and imported animals, and the same animal may be sold several times, in different markets.

Statistical data was taken from Kenyan National Bureau of Statistics (KNBS) whenever possible

Figure 1: Market System with M4P/Inclusive Market Approach



Source: The Springfield Centre (2014) The Operational Guide for the Making Markets Work for the Poor (M4P) Approach, 2nd edition funded by SDC & DFID.

to foster consistency. The 2009 census is still the data-basis for many studies including this one. The 2016 National Abstracts, the 2015 County Integrated Development Reports and the UN Office for the Coordination of Humanitarian Affairs (OCHA) in 2015, still use the 2009 Census for their population projections. The housing survey of 2012/13 gives more recent information but does not cover all counties. The use of older data is not considered to be a problem in this study because the focus is not on statistical analysis and it is assumed that the general picture of the situation does not change quickly. Older data is more consistent and provides a wider perspective.

Livestock is a very broad sector, which includes many species, each with different importance depending on the exact focus of intervention and planning. This study is limited to the ruminants relevant for FCDC counties, which are; cattle,

camels, goats and sheep (also referred to as shoats). The literature describes the livestock sector in Kenya's Arid and Semi-Arid (ASAL) region focusing on the same species. Donkeys are only important for transportation and are fewer in number compared to other ruminants.

Poultry is relevant for nutrition and food security for sedentary people, especially for those who dropped out of pastoralism or have lost all their animals during a drought. It is also more relevant for women than for men. However, for the overall economy of the livestock sector in FCDC counties, poultry is not relevant. Fish offers an interesting alternative to livestock production near lakes or rivers and is an activity that is often more associated with men than with women. However, like poultry, fish production is not priority within FCDC counties except for Lamu and Turkana.

3. The FCDC region

3.1 Framework conditions

3.1.1 Land

The FCDC region includes eight counties situated along the Somalia, Ethiopia and Sudan borders, **(Figure 2)** and covers **61% of the Kenyan land area**. The size of the FCDC counties is larger than most of the other Kenyan counties, except for Lamu. Marsabit is the biggest FCDC county and nearly the double of the average size of FCDC counties (38 357 km²). Wajir and Garissa are about 50% and 15% above the FCDC county average, Tana River is slightly above the FCDC county average, and Isiolo and Mandera are around 1/3 below.

The table in Annex 2 shows that 98% of the FCDC land is of low potential and cannot be used for farming¹. Almost 100% of the land is considered to be rangeland.

The general potential in the FCDC land is considered low, and the percentage of arable land is much lower in all counties, except for Lamu where 50% of agricultural land is considered to have medium potential. According to IIASA/FAO (2014)², the FCDC area has more areas with severe constraints in soil fertility than in other areas in Kenya. A case study in Wajir county revealed soils that are largely saline or acidic **(Figure 3.)**

Figure 2: Map of the FCDC counties



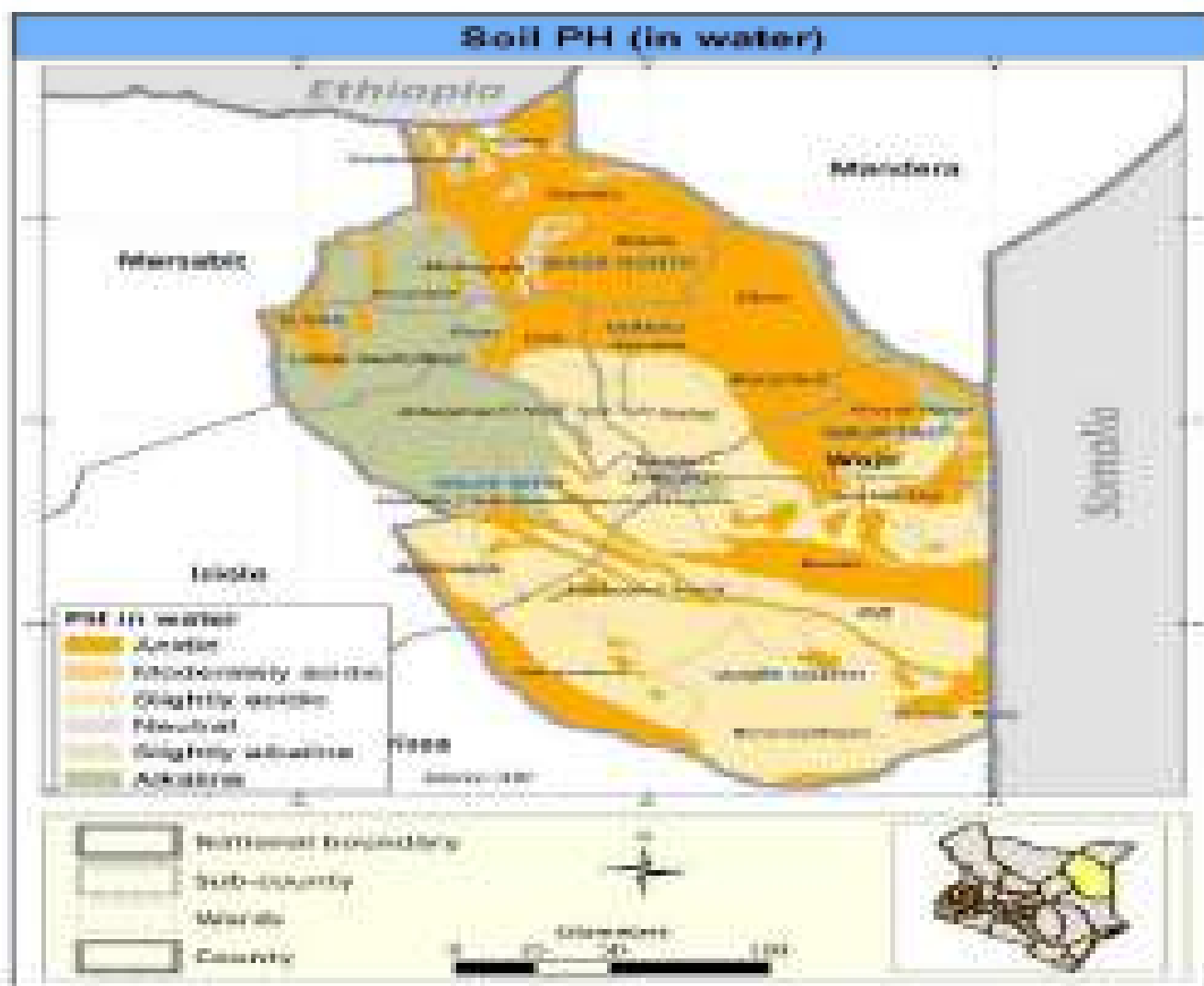
Source: <https://d-maps.com/m/africa/kenya/kenya19s.gif>

Note: FCDC counties are in golden colour.

¹ The data about agricultural land by county highlights the problem of data quality mentioned in Chapter 2.

² IIASA/FAO. (2014). Global Agro-ecological Zones (GAEZ v3.0.1 beta). IIASA, Luxemburg, Austria and FAO, Rome, Italy.

Figure 3: Map of soil/watepHPh in Wajir



Compared to Kenya as a whole, the FCDC counties have a smaller share of agricultural land and lower agricultural potential. Along the trophic levels, FCDC region is rangeland with pockets suitable for dryland crop cultivation.

3.1. 2 Climate

All FCDC counties are arid, except for Lamu, Samburu and West Pokot which are semi-arid. Most areas have annual temperatures of over 30°C. The long-term average annual rainfall in FCDC counties is low, around 400mm, except for Lamu (Annex 3). In the latter county, the average rainfall is close to 1,000 mm. These low rainfalls also seriously limit diversification into cropping.

The average annual rainfall across seasons, years and decades vary in the FCDC region. The figure in Annex 4 presents the monthly rainfall in four counties. There are two rainy seasons: i) from March to May and ii) from October to December. This applies to most FCDC counties except in south Tana River, where the MAM season is from April to June and in Lamu, where there is only one rainy season.

On-going global climate change does not spare rainfall in the FCDC region. An analysis of annual rainfall received in Wajir between 1981-2015 revealed a decreasing amount of between -ve 100 to +30. A coefficient variability (%CV) analysis revealed values between 60 to 120 in October – December rainfall.

The changes seemed quiet localised suggesting the need for localised assessment prior using the general data in decision making.

The realised rainfall trends and variability is a worry to many pastoralists. Availability and access to adequate and quality forages required for fodder, pastures and to a smaller extent compound-feed production is diminishing. As a response, various adaptation technologies have been embraced including the use of exotic-high yielding fodder crops, high-input-irrigated fodder cultivation technologies, delimitation of pasture lands, importation of fodder and feeds and in extreme situation intra-clan conflicts. To enhance management, the government has formulated laws to guide on the use of communal grazing lands.

Adverse effect on pastures and fodder has significant effects on the live animal market; Poorly nourished animals tend to produce low milk quantity and poor body condition. In fear of loss of animals, herders tend to sell them. According to Eastaugh³, "After three years of poor rains, swaths of the country have had their grazing pasture scorched, leaving animals and humans desperate. Government and humanitarian agencies estimate average livestock losses of 40%-60% in Kenya's worst hit north-east and coastal areas. In some places, the figure is as high as 80%."

Loss of live animals, whether by sale or death or migration hurts pastoralists. The people depend almost 100% on these animals; their absence exposes them to risk of food insecurity and general poor well being.

Estimations for TLU carrying capacity in the FCDC counties (Annex 5) tend to show that the carrying capacity is low on average (5 ha/TLU). Hectares per TLU vary between 1.3 in Lamu

and 6.4 in Marsabit and Isiolo. Calculations were also used to estimate the maximum TLU carrying capacity. Based on these estimations, the **total number of TLU in the FCDC counties already exceeded the maximum carrying capacity in 2009. This is a serious concern for sustainability in the region.** This will be discussed later in the book.

3.1.3 Human population

The FCDC counties host 10% of estimated Kenya's 46 million human population. Mandera has the highest population of 1.4 million inhabitants. This represents 35% of the total FCDC population. Wajir and Garissa each represent around 21% of the population. Marsabit, Isiolo and Tana River have less than 0.5 million inhabitants, representing about 5% to 7% of the FCDC population. Lamu has the smallest population, 0.1 million inhabitants.

In production, the human population is a useful indicator of the potential labour force and is defined in two folds; the total labour available and the human capital-the skills. In Marsabit county, 67% of the population is considered youth and the structure seem similar in the entire FCDC region.

The average population density is much lower in FCDC counties than in the rest of Kenya: 15 persons/km² and 78 persons/km² respectively (Annex 6). The population density also differs among the FCDC counties. Mandera has the highest density, with 50 persons/km² and Isiolo, Marsabit and Tana River the lowest with 5 to 7 persons/km².

The annual population growth in FCDC counties is higher than the one in Kenya on average. Projections from county CIDPs and UN-OCHA show the same trend, but the magnitude is very different. This trend represents around 10,000 new households per year. Households are also

3 Eastaugh S (2017). Satellite images trigger payouts for Kenyan farmers in grip of drought. www.theguardian.com/global-development/2017/apr/25/satellite-images-trigger-payouts-for-kenya-farmers-in-grip-of-drought (accessed in November 2017)

Table 1: Direct and indirect roles and values of pastoralism

Measured	Unmeasured	Measured	Unmeasured
<ul style="list-style-type: none"> - Subsistence from livestock products, mainly milk - Livestock sales - Milk sales - Livestock derivatives: hides, skins, wool, leather 	<ul style="list-style-type: none"> - Risk management through animal diversity and using animals as banks - Animal husbandry knowledge and skills - Dryland environmental management knowledge and skills 	<ul style="list-style-type: none"> - Inputs to agriculture: manure, traction, transport - Inputs to dryland products - Inputs to tourism - Forward and backward linkages - Taxes and levies 	<ul style="list-style-type: none"> - Agricultural services: labour and finances - Ecological and rangeland services - Global climate control - Indigenous knowledge - Prestige

Source: Slightly adapted from the Republic of Kenya (2011). *Vision 2030 Development Strategy for Northern Kenya and other Arid Lands*. August 2011.

larger in FCDC counties on average than in the rest of Kenya. More food and income is required to be generated in FCDC region.

Around a third of the Kenyan population is urbanised, the urban population is 16% in FCDC counties. Urbanization comes along with a change of lifestyle, including nutrition and flow of the cash economy.

3.1.4 Income and Poverty levels

Taking household expenditure as a proxy for income, the Kenyan average is 3,440 Ksh per adult equivalent⁴. Income levels in FCDC counties are lower than the national average, except for Lamu (Annex 7).

The FCDC region is very poor on average. The figures in Annex 8 show that a large share of the population lived below the poverty line of 1,562 Ksh/month in 2009. The population below the poverty line is highest in Mandera (86%) and Wajir (84%). Lamu county has the lowest proportion of the population living below the poverty line at 32%. Marsabit, Tana River, Isiolo and Garissa counties have a proportion of the population below the poverty line that lies between these extremes: 76%, 76%, 65% and 59% respectively. The proportion of the

population living below the poverty line in the FCDC is higher than the Kenyan average of 45% (51% in rural areas and 33% in urban areas)⁶.

There are other manifestations of poverty and inequality. The proportion of the population with no education is larger than 50% in Isiolo, Tana River, Marsabit, Mandera, Garissa and Wajir⁷. In Lamu, it is 33%. Access to infrastructure and services is low in general. An estimated 60% of the population of the FCDC area have access to improved water sources; with Lamu having the highest: 90%, and Garissa the lowest: 35%⁵. The share of the rural population with access to improved sources might be lower. In 2009, 56% of the rural FCDC population were relying on springs, wells and boreholes⁶. The Kenyan average for rural population relying on springs, wells and boreholes was 43%.

3.2 The role and relevance of livestock in FCDC

Natural pasture in the mostly arid FCDC region gives it a comparative advantage in livestock production. There is more recognition of the roles and values of livestock production and pastoralism. Table 1 gives an overview of the direct and indirect values of pastoralism.

⁴ KNBS and SID (2013). Exploring Kenya's inequality. Pulling apart or pooling together. www.inequalities.sidint.net/kenya/wp-content/uploads/sites/3/2013/10/SID_Abridged_Small_Version_Final_Download_Report.pdf

⁵ Water Services Trust Fund. 2015-16. www.waterfund.go.ke/publications?download=3:maji-insight-2015-2016

⁶ Kenya National Census 2009

An estimated 86% of the population in the FCDC counties live in rural areas⁸, where livelihoods mainly depend on livestock. Urban people often also keep animals. Livestock production is the dominant activity in the region. The livestock sector accounts for almost 80% of the economic performance in the FCDC counties. No data was found on the share of livestock income, in FCDC counties agricultural or total GDP.

Livestock provides subsistence food, mainly milk and meat, and income from animal selling. A key issue for families is having access

to milk all year round. Meat production is complimentary.

Subsistence is the main objective of livestock production for the traditional herders. Livestock also provides hides and skins from home slaughtering, manure for vegetable gardening and transportation. Other roles and values are gifts, festive and ritual slaughtering, show wealth and prestige.

The accumulation of animals is also used as a buffer strategy in case of a crisis and as a form of savings. This strategy has been found to be effective, but also quite costly.



The latest studies on livelihood strategies,⁷ and share of cash income from livestock,⁸ covering all FCDC counties are from 2003 to 2005. **The share of cash income from livestock was over 75% in Marsabit and Isiolo.** In most parts of Mandera, Wajir and Tana River, this share was lower, between 50% and 75%. In some areas within these counties, it was estimated as being between 25% and 50%. In Garissa, the situation was varied: in the area close to River Tana, the share of cash income from livestock was between 25% and 50%. In the North, it was between 50% to 75%, while in the South it was less than 10%. The area in the East shows a high dependence on livestock. In Lamu, the share of cash income from livestock was between 10% and 25 %.

Pastoral production is the predominant livelihood strategy. In Marsabit and Isiolo, the herds are mixed: cattle, camels and shoats. There are some spots where agro-pastoralism is predominant: around Marsabit, at the border to Wajir and around Merti. Mandera, Wajir and Garissa are more divided. In the North of Mandera, there is some irrigated cropping. In the East, West and North of Wajir, agro-pastoralism is predominant. In East Mandera and West Wajir, pastoralism is predominant, with some spots that specialise in shoats (sheep and goats) production. In South Wajir, livelihood production is based on cattle and shoats. In Garissa, all three types of pastoralism exist with all species. Along River Tana and at the coast, there is some agro-pastoralism. In Tana River county, there is mainly pastoralism with all species, except along River Tana where there is marginal mixed farming with food crops and livestock. In Lamu, marginal mixed farming is combined with cash crops.

Herders have diversified income sources. These

can be labour migration, food and fodder crop farming, trade, etc. This income diversification is critical for income risk management, particularly during drought periods.

In Kenya, the livestock sub-sector contributes over 30% of the farm gate value of agricultural commodities, about 10% of the national GDP and at least 50% of the agricultural GDP. The sector employs about 50% of the agricultural labour force. Domestic livestock also supplies the local requirements of meat, milk, dairy products and other livestock products while accounting for about 30% of the total marketed agricultural products⁹.

The livestock sector in the FCDC region

Figure 3 below, visualises the livestock sector in the FCDC region.

The middle part visualises the **main functions in the supply and demand of livestock and livestock products**; it includes production, marketing & processing, and retail & consumption.

- **Production** includes rangeland and water management, pastures and fodder production and herd management.
- **Marketing & processing** embodies water, pastures, fodder, milk, live animal and meat markets (water & pasture markets are important elements but are not further covered here).
- **Retail & consumption** includes the various retail and wholesale markets as well as consumer relations, but is not further covered in this report.

The upper part of the model summarises **all Support Functions** that contribute to or influence the sector. These include available or planned infrastructure, coordination, research and development (R&D), information

⁷ <https://en.slideshare.net/virtualkenya/chapter-4-food-maps-natures-benefits-in-kenya/3>

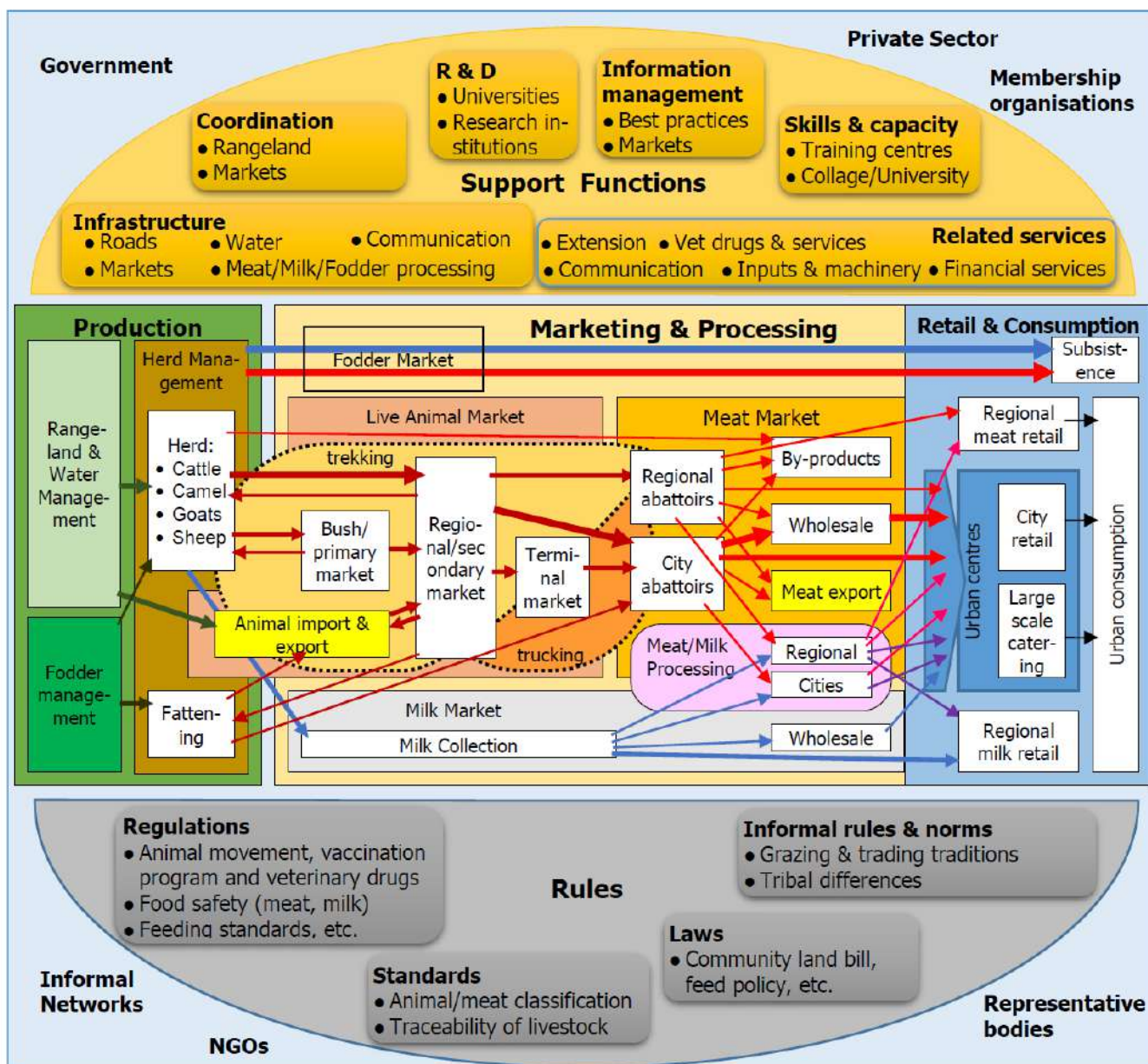
⁸ <https://en.slideshare.net/virtualkenya/chapter-4-food-maps-natures-benefits-in-kenya/13>

⁹ <http://www.kalro.org/livestock>

management, skills and capacities development and other related services such as extension and veterinary services, communication, and access to finance, inputs and equipment.

The bottom part includes legal and informal rules, norms, regulations, standards and laws that provide a legal framework for the livestock sector.

Figure 3: Livestock Sector in the FCDC region/counties



Source: Authors

3.3 Production

3.3.1 Rangeland & Water Management

Rangeland & water management (herein referred to as resource management) is defined as the management of the resources available to the herders for livestock production. The most relevant range resource for herders

includes; (a) vegetation; forage plants (herbaceous) as well as trees, shrubs, roots and tubers. (b) Water: taken as it is or as part of the feed, water also forms a key resource for livestock production. (3) Minerals: To a lesser yet essential, a mineral such as salt licks in Marsabit form a vital resource for livestock production. This item forms a complete diet of animals.

Open access grazing and mobility are the main strategies used for rangeland management in the FCDC region. This is mainly due to the seasonal and spatial variability in yields of the range resources. The objective of rangeland and water management is to maintain a constant availability of the range resources throughout the year by balancing the stocking density and available resources. The constant availability of quality and adequate range resources is not only relevant to ensure and enhance productivity and to reduce conflict but also for ecological health.

Open access grazing has advantages and challenges. The main advantage is that it is the cheapest way to feed ruminants and therefore a strategic asset of the region. It represents one aspect of reduced costs in livestock rearing relative to ranching and dairying areas. As there are few fixed costs, this system is less vulnerable to changes in market prices of inputs and outputs. **The main challenge is the organisation of the grazing, particularly during the dry season when the availability of the range resources is low.** The seasonal mobility occurs among tribes. In case the organisation is not well done, or it is not respected, herders may face conflicts.

Another source of conflict is the increased competition between land for grazing and human settlement. Unorganised settlements or settlements driven by political objectives rather than the need for pastoralism, lead to local overgrazing and reduced herd movement. The lack of spatial planning can also be observed in other ASAL counties in northern Kenya, as well as Southern Kenya and Tanzania too. While neighbouring counties are interested in joining FCDC, to strengthen their position and create further synergies, Southern Kenya and Tanzania would rather play a role in the competition. The communities and clans have traditional mechanisms to deal with conflicts,

like grazing committees and negotiation delegations between clans and ethnic groups. There are many different ethnic groups in the FCDC region (Annex 9). The grazing areas cut across four pastoral clusters; Somalia, Karamoja, Oromos, Maasai spread in the FCDC region and the Horn of Africa. Their pastoral traditions and customs may differ more community-oriented or more individuals; more business-oriented or otherwise.

A second challenge is related to the fact that it is a low-input management system. There are therefore limited opportunities for stabilising or smoothing variable yields of the natural resources. The system is vulnerable to natural hazards and climate change. However, studies have shown that growing of improved forage plants such as high yielding species of genera *Brachiaria*, *Cenchrus*, *Sporobolus* may increase milk yield by 15 – 40 %¹⁰. Often the cultivars require a high-input level of management, and often the approach has yielded little impact in the FCDC region where the reseeded plants are left at the mercy of the mother nature.

Open access grazing schemes also have the disadvantage of spreading pests and diseases. Combined with low veterinary services in the FCDC region, the presence of herd diseases is high, reducing herd productivity.

Other factors that might increase the conflict risks are administrative boundaries and competing forms of land use, particularly during a time of scarcity. Land tenure might also influence conflict risks. Some newer settlements have also limited the age-old practice of mobility that has allowed pastoralists to make use of scarce resources. It must be noted that the weakening of the traditional grazing systems is not uniform all through the FCDC counties.

¹⁰ <http://blog.ciat.cgiar.org/study-finds-40-more-milk-and-tens-of-millions-of-dollars-in-revenue-possible-for-african-farmers-adopting-new-drought-resistant-pasture-grass/>



For example, better traditional grazing management is still practiced in the Borana dominated counties of Isiolo and Marsabit compared to the North-eastern belt. The main challenge has been that these better-managed areas have been invaded by pastoralists from other counties, because of differences in their traditional grazing management. Still herding labour is scarce and expensive as more youth are enticed into urban life or engagement in school.

Traditionally grazing committees decide, where and when the communities can send

the animals. For example, more humid areas cannot be grazed during the wet season, while they are accessible during the dry season. Lactating animals are usually grazed near homestead while the dry herds are migrated further from settlements. In case of grass and water resource shortages, grazing committees may negotiate with other communities to gain access to their pasturelands. Formally registered producer organisations can play this role too. Extension services in connection with action research may facilitate the implementation or reactivation of such grazing schemes where

modern technologies such as remote sensing and geographical information system are used to assess vegetation health and density using parameters such as vegetation indices

Water management is crucial. Water is acquired from underground, surface runoff or rainfall in the FCDC region. The FCDC region is endowed with many water sources, including boreholes, water pans, Charco-dam, mega-pans, earth dams, spring, river, shallow wells, ocean and lakes. Wajir, for example, has over 400 sources of water. In general, the distribution of water sources is poor in the FCDC region with an apart average distance of 15 km or more.

Well-managed water facilities are a crucial means to improve accessibility and utilisation of grazing land. Except for some specific areas, it is suggested that water resource management is more important than increasing water provision in volume¹¹. Suggesting improved planning, design, installation and management of such facilities.

3.3.2 Fodder cultivation/production

Fodder refers to plant materials that are cultivated, harvested and brought to the animal as a cut and curry feed. On-farm or off-farm acquired fodder is in the form of silage, hay and processed products such as pellets. A key difference between fodder and pastures is that whereas the former involve human intervention in the form of capitals and technologies, the later is more dependent on nature.

In the FCDC region fodder is grown by small-scale holders in the form of fodder crops such as perennial grass species, residues of food crops such as maize, bananas and pods of legume species such as Acacia pods and bean husk. The crops are produced under irrigated

systems, for example, in Mandera and Garissa Counties. Fodder is also produced under a rain-fed system in the mountains of Marsabit and Wajir. In addition to irrigation, the farmers invest moderately in other capitals such as labour, machinery and technologies. There is a clear indication that producers are interested in intensifying pasture and fodder cultivation, conservation, processing and marketing. It is perceived as building the resilience of their production system in the face of drought.

Fodder is an important supplementary feed for extensively reared ruminants. When fed consistently and in the right quality it enhances the functions of the rumen and thus increasing the efficiency in the use of the often lignified pastures. **Fodder usually is of better quality compared to pastures. It may have a positive effect on livestock productivity, health and on herders' income.** Fodder production improves the management of pastures and water all year round, a key challenge in the FCDC region.

However, fodder production also faces several challenges. Fodder production is an intensive process that generates more costs. At (production) cultivation stage, the inputs need to be sourced, and crops need to be sowed, nourished, protected, harvested and transported. At markets and processing stages, fodder is processed prior feeding to animals, sold at markets or preserved and stored for later use which again cost money and time.

3.3.3 Herd Management & Off-take

Herds are used as a bank account and insurance, particularly by traditional herders. They accumulate livestock and **only sell in case of urgent need.** They mainly sell for slaughtering, sometimes for fattening or breeding. The cash is mainly needed for additional food during

¹¹ Republic of Kenya (2011). Vision 2030 Development Strategy for Northern Kenya and other Arid Lands. August 2011.

droughts, but also for other expenditures such as water, energy, transportation, restocking, clothing and education. Selling milk generates cash, but competes with the main purpose of pastoralists which is to produce milk for home consumption – especially in times of drought. Traditional herders tend to accumulate animals because of the value attached to them, even when environmental conditions are unfavourable. Modern herders are more market-oriented and more integrated into the economy. They do not keep all young bulls until drought but sell them when the market is demanding. They get higher prices and may get a bonus for the quality of the meat compared with older bulls. Higher productivity is the key driver to increase income. Improved meat quality and adapted timing regarding demand may also allow higher prices and income. Training of new practices, improved financial services and the provision of insurance enabling more security, may make it easier for herders to switch from a traditional to a monetised view of their herds.

Herd management refers to the decision-making of the herders. These decisions include:

- **Improve the herd genetics, reduce inbreeding and increase productivity, quality and resilience of animals.** The traditional renting and exchange of animals contributes to reduced inbreeding. Community-based breeding programs with locally adapted breeds can focus on the genetic improvement of livestock. National breeding institutions and extension services can help contribute to this. Producer organisations can channel public and private extension services to their members or offer it as an own service.
- **Maintain the health of animal herds:** prevent, detect, control, and treat non-transferable diseases. The availability of drugs and veterinary services is a key factor for improvements. Regulation

with disease-free zones and vaccination schemes will improve animal health, especially in the case of transferable diseases. Producers' organisations can provide a valuable channeling of public and private services or offer them themselves.

- **Optimise grazing:** as the grazing scheme is open access, it encompasses a strong social aspect. Herders have to balance between taking immediate advantage of the available grass and water and respecting the governing rules as described under Rangeland & Water Management.
- **Optimise productivity:** Balance off-take, herd composition and size to mitigate risk. Ensure the hygiene of milk and meat (home slaughtering) products and the quality of sold animals, as well as guarantee traceability where needed. Again, producer organisations can provide a valuable channeling of public and private services or offer these services themselves.

The relevant livestock species kept in the FCDC counties are indigenous breeds of cattle, camels and shoats. Donkeys account for 4% of TLU of the species above in 2009 census. The table in Annex 11 displays livestock composition by FCDC county. Livestock census is complex. Again, some inconsistencies or missing data have been found; for example, in the Statistical Abstracts of Isiolo, Wajir and Lamu for 2014.

Livestock in the FCDC region represents 31% of Kenyan TLU, while the human population in the region is estimated at 10% of the Kenyan total and land 46%. The average composition of livestock in the region is similar to the Kenyan one for donkeys, sheep and goats. Compared with the Kenyan average, the FCDC region has fewer cattle and more camels.

Except for donkeys, there are large differences in the total number and the composition of the animal population among FCDC counties as well as in the number of TLU/rural household. Mandera has the largest livestock population: 2.3 million TLU, representing just over one-third of the FCDC total TLU. Wajir and Garissa have over 1 million TLU, 1.4 and 1.2 million respectively. This represents around 20% of FCDC TLU each. Lamu has the lowest number of animals, representing 1% of FCDC TLU. The other three counties have between 4% and 12% of FCDC TLU.

Cattle represents over 50% of TLU in the more humid counties. It represents 85% of TLU in Lamu, 59% in Tana River, 52% in Isiolo and 51% in Garissa. The national average is 59%, while it is 41% in FCDC. 21% of Kenyan cattle are in the FCDC region.

Camels are much more important in the FCDC region than in the rest of Kenya with 31% and 14% of total TLU respectively. **An estimated 67% of Kenyan camels are in the FCDC region.** They are more important in the drier counties of Mandera (40% of TLU are camels), Wajir (36%) and Marsabit (27%).

Goats and sheep represent between 7% to 17% of total TLU in the FCDC region. In Lamu, sheep only represent 2% of TLU. On a national and regional level, this leads to 13% - 15% of the respective TLU being goats and 8% - 9% being sheep. Donkeys account for 2% - 4%. A third of Kenyan shoats and donkeys are to be found in the seven FCDC counties.

More recent data from 2013 and 2014 covers only Marsabit, Mandera, Garissa and Lamu. However, the data is difficult to interpret, as it is inconsistent (different numbers for the same item) and with high fluctuations. For the four mentioned counties, the total TLU dropped by 12% according to these figures.

Data from 2014¹² suggests that there may have

¹² County Statistical Abstracts 2016.

been a change from the 2009 period, suggesting that in Mandera a part of the animals may have moved out of the county. In Garissa, the switch from cattle to camels might be linked to climate change adaptation. The changing herd composition in FCDC counties over time – producers tending to keep more camels and shoats, reducing cattle numbers, which are more vulnerable to climatic conditions and feed scarcity – is a success story of adaptation.

The average TLU per person and household were calculated. It lies between 2.8 and 3.7 TLU/person. The drier counties have the highest number of TLU/person. In Tana River and Lamu, these numbers are lower, namely 1.8 and 0.9 TLU/person and 8 and 4 TLU/household. Data on the distribution and composition of animals per herder; by size, gender, tribe were not available.

The numbers for 2009 suggest that, in four counties, the actual livestock amount exceeds the estimated optimal carrying capacity. In Mandera, the actual stocking rate is exceeded by 500%. However, some animals might graze outside the county¹³. Factors related to animals' ownership, household composition, gender and poverty were not analysed.

Breeding

There is no formal breeding objective for livestock in the FCDC counties, despite the importance of pastoral livestock production in the FCDC to the national economy. Consequently, pastoral producers have therefore been left to define their breeding objectives. Willingness and ability to introduce breeding improvements are affected by:

- The reluctance of producer to invest in breed improvement. They prefer to increase the number of animals;
- The lack of specialised extension services

¹³ Carrying capacity were crosschecked with TLU/person and TLU/household. It does not appear that the very high figure for Mandera is wrong.

and breeders' organisations to assist herders willing to invest in improved breeds;

- The lack of access to tried and tested improved breeds.

However, it must be noted that **indigenous breeds have special adaptive traits, including disease resistance, climatic tolerance and the ability to consume poor quality feed and survive with reduced or irregular supplies of feed and water.**

Attempts to improve productivity by cross-breeding with exotic breeds have not been successful because of diseases and environmental conditions. Furthermore, under experimental conditions, local breeds show good performance aptitudes in weight gain, fertility, etc. **This suggests that local breeds would react positively to improvement in their management conditions, especially those concerning feed and diseases.** Therefore, local breeds need to be conserved, as they can make the best use of their actual environment, and with better management, performance can be improved.

Animal Health

Herd health management, among pastoral producers in FCDC counties, revolves around ensuring animals have adequate feed, water and husbandry practices are carried out depending on seasonal conditions. There is less emphasis on specific disease management as with more intensely managed herds. **The control of animal diseases is a high priority; as infectious diseases cause huge losses.**

The livestock disease conditions in the FCDC region are not uniform. For example, in parts of the lower Tana River and parts of Lamu, the weather is wetter leading to a higher prevalence of trypanosomiasis with constraints on livestock productivity.

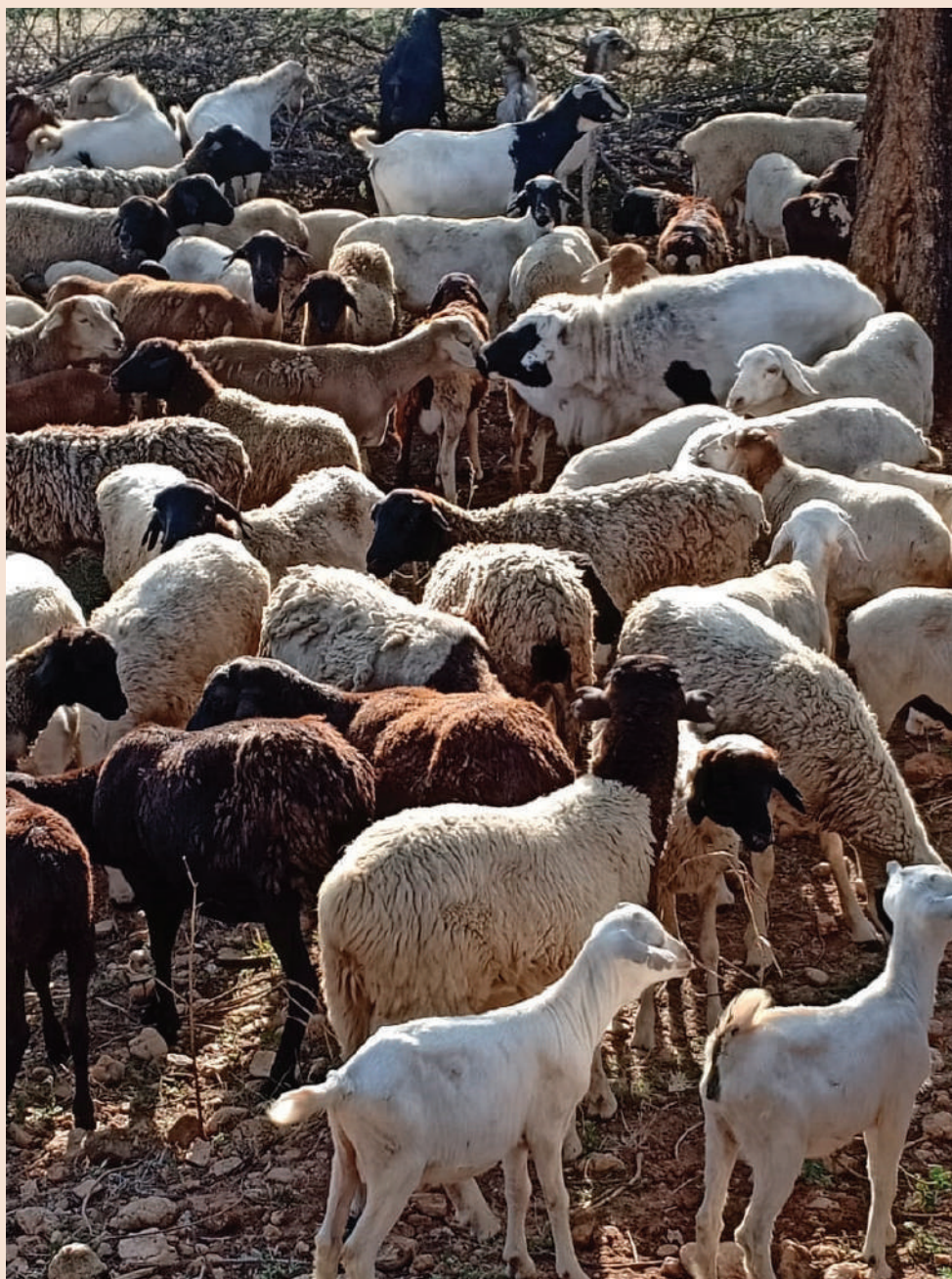
Open access grazing may increase the spread of transferable diseases when there is no adequate prevention. Other influencing factors are the population growth and the lack of job options other than herding that may lead to increased stocking; climate change-inducing more frequent and longer droughts; and the mobility of herds and their management. Some of these diseases can be controlled with relatively cheap vaccines and with a sound animal health management plan.

One of the most frequently mentioned constraints by the pastoralists is access to animal health inputs. The majority of producers attend to their animals. Government extension services do not provide timely and effective services. The privatisation of these services has not led to the improved provision of livestock health services in the FCDC counties. Complimentary routes for improving government led extension services may include:

- Leveraging the private sector in the provision of some of the services – addressing barriers to expanding commercial distribution of animal health inputs and services;
- Providing livestock health education directly to pastoral households;
- Improving the level of communication between producers and agricultural extensionists and providing incentives to extension providers to visit producers if and when requested.

Livestock and extension services are inadequate in the region. **While 80% of the cattle in Kenya is produced in the ASALs and it supplies 70% of the beef consumed in Kenya, less than 10% of government supplies focusing on livestock are being allocated to the region.**

The low-input/low-output character also makes it difficult for pastoralists to take advantage of opportunities in the market.



Around 30% of cattle meat is imported. Fattening grounds near Nairobi and in the Coast around Mombasa feeding concentrates and cheap by-products of crop production may fill this gap.

Off-take and income

The livestock sector contributes largely to the counties' GDP. Cattle, camel and goats produce both milk and meat, with milk having more importance than meat. Sheep are mainly for meat production. Milk is the basis of a herder's livelihood, meat being a complementary

product, particularly during drought. Livestock also produces minor values: transport, skins, hides and bones, traction and manure for agro-pastoralists.

The table in Annex 12 shows the estimations of milk and meat value for the FCDC region and for each FCDC county. The total value of milk and meat is estimated at 89.6 billion Ksh, representing 25% of the Kenyan production with 31% of Kenyan animals. This suggests lower productivity in the FCDC region than in Kenya on average.

Nationally, the largest share of milk and meat value is generated by cattle at 73%, 15% is generated by goats and the last 8% by camel and sheep production. Looking at the FCDC region, the picture is similar. Cattle production is a bit lower, in favour of goats and camels. Calculations suggest that the contribution of non-ruminants, as well as hides and skins to livestock, is minimal (4 resp. 2 % of total livestock value) in the FCDC region. Mandera generates 34 % of total milk and meat value of the FCDC region, Wajir and Garissa 22 % and Marsabit 11 %. Tana River, Isiolo and Lamu produce 6 %, 5 % and 2 % respectively.

The calculation of the value of milk and meat per rural person, in each of the FCDC counties, shows that there are large discrepancies among the counties. In Lamu, it represents a 1,383 Ksh / month while it represents a 4,276 Ksh / month in Isiolo. The FCDC average is around 3,000 Ksh/month. This seems high compared to the poverty line estimate of 1,562 Ksh per month, per adult, but the estimate contains correct milk and meat values.

Livestock in FCDC counties is kept on natural pastures (instead of processed feed). It gives the meat a unique taste and aroma that can be used for product differentiation and marketing. The quality of the meat, when the animal is taken from the herd at the right moment, is higher than the quality from (old) dairy cattle genetically selected for milk and not for meat. This applies, e.g., to Holstein Frisian cows which are more frequently kept in intensive dairy production. On the other hand, in intensive dairy production, meat is a by-product. Such farms tend to sell their cows off cheaper to the meat market leading to price pressure on the market. The breeding objective of pastoralists is access to milk and meat; milk being the most important component of their diets. Locally milk is an important commodity due to the cultural and dietary habits of the households in the FCDC counties. New potential products have

come up in urban centers; As more Kenyan Somalis move to cities, namely Nairobi, the demand for marketing camel meat and milk increases – products that are mainly consumed by them and less by other Kenyans.

3.4 Marketing & Processing

This section focuses on meat and milk. Marketing and processing also generate employment and income. Taxes and fees allow the county government to develop the sector.

The meat value chain is much more complex than the milk one as shown in Figure 3. The live animal market and the meat market are being treated separately. Milk trade often occurs through contracts, while animal trade is generally through spot exchanges. Animal trading has many steps and complex flows, integrating animals from imports and exports. Large shares of the animal and meat markets are transferred as live animals and far away from local markets. To get edible meat, a complex process of slaughtering that involves a lot of investment is necessary. Milk is regularly collected, and no complex processing is required.

3.4.1 Live Animal Market

Livestock sale is the largest source of household incomes for producers in the FCDC counties. **Pastoralists typically sell their animals when they need money and not when market prices are high.** During the rainy season, they take advantage of the higher grass availability and grow their young animals while sustaining the older ones. This leads to market supply fluctuations between seasons.

Pastoralists also buy animals. They may need a young female or male animal for reproduction or, in some cases, for investment. Even though the local breeds are highly adapted to the local



environment; mortalities are high, limiting offtakes. The activity of trading is manifold. Small traders collect ruminants from bush markets to bring them on the hoof to regional markets. Animals are then sold to bigger traders and further trekked or trucked to the next regional market, to a terminal market and sometimes to the coastal ranches for fattening. Animals may be transported for weeks, even months. Trekking is preferred between primary and secondary markets within FCDC, while trucking is preferred between FCDC markets and terminal markets. Traders also buy from abroad – in the FCDC region typically from Ethiopia and Somalia – or they sell there. While cattle flows from north to south, camels may also be sold northwards, exported to the neighbouring countries.

The market organisation is an important issue. Adequate infrastructure facilitates the handling of animals and enables disease

control. Market rules and information, foster transparency and allow fairer transactions. An additional provision of services; inputs, extension, training, veterinary services and options for social contacts increase the market attractiveness. The prices are a key factor in a marketplace. Low prices may be attractive for buyers, but not for sellers. Consequently, animal supply may be low. When prices are high, it is the opposite. Price differentiation for quality may provide an incentive for producers to improve the quality of their animals. Markets are characterised by information asymmetry where buyers have a better overview of market conditions. Producers' organisations are weak and lack information about markets.

Trade on the hoof is embedded in the open access pastures. Ethnic origin of the traders is relevant. Clans may not give access to traders of other clans. This may be a source of conflicts.

From an East-African point of view, the FCDC region is the gateway between large pastoral areas in northern and eastern Kenya, Somalia, Ethiopia and South Sudan and important terminal markets in Nairobi and Mombasa or even abroad in the Middle East (see the figure in annex 14).

Most of the livestock traded in Kenya, over 80 %¹⁴, is produced within the FCDC counties.

It is kept as an asset and only traded when necessary. The off-takes from the FCDC counties have been low, at 15 %, with studies estimating off takes from pastoral herds at 6 – 14% for cattle, 1–3% for camels and 4 – 10% for sheep and goats¹⁵.

Live animal trade and marketing is a key economic activity and a critical source of incomes for large populations in FCDC counties. In addition to direct incomes for producers and traders, livestock markets support a host of businesses including input sales, hotels and restaurants, brokerage services, transport and associated services, and petty trading.

This function happens both at primary and secondary markets within FCDC counties and in terminal markets (Nairobi and Mombasa) and involves a host of livestock traders with variable capacities, livestock changing hands 2 – 3 times en route to markets, generating transactional costs – as traders affirm. While small-scale traders operate in the rural markets, larger scale traders with networks in terminal markets dominate the main secondary markets.

Following the aggregation from different markets, livestock is trekked/trucked to markets. Due to years of livestock trading, trekking and trucking, **livestock traders from FCDC counties have developed elaborate networks of trading**

routes and contacts in the sector. As a result, they dominate the livestock trade in Kenya. To address the demand for high animal quality to be supplied into the markets, traders from FCDC counties, especially North-Eastern Kenya, have links with intermediate ranches at the Kenyan Coast for fattening livestock. The process of aggregation and transportation constitutes the largest cost of livestock trading, represents up to 40% of total costs¹⁶ of moving livestock to terminal markets. The percentage of animals moving between markets is high with only about 10 – 15% of animals traded retained within FCDC counties for local consumption or breeding. The major livestock markets in the FCDC counties are listed in Annex 13.

Livestock from the FCDC counties enjoys multiple marketing channels. While importation through regional markets such as Moyale and Garissa occurs; surplus animals (that are not consumed within the FCDC) from the above markets may be exported to Somalia and Ethiopia or are moved to other regional markets within the FCDC, or southwards to terminal markets in Nairobi and Mombasa as shown in Annex 14.

The terminal markets have a regular supply from the various FCDC counties. Supply gaps in one county are filled by other FCDC counties or other ASALs counties in the country. Also, the supply of meat is complemented by neighbouring countries, especially Somalia, Ethiopia, Tanzania and Sudan. The import volume will depend on market and price differentials.

Trading risks are manifold. They include transportation risks, price misinformation, a lack of transparency, credit, high informal costs, and multiple taxations in each county, diseases and livestock theft.

14 Kenya Agribusiness and Agroindustry Alliance: Agriculture Investment Opportunities in Kenya, Livestock Production and Processing Investment Case

15 Nyariki, D.M., Makau, B.F., Ekaya, W.N. and Gathuma, J.M. (2005). Guidelines for Emergency Livestock Off-take Handbook. Arid Lands Resource Management Project (ALRMP), Office of the President; Agricultural Research Foundation (AGREF), Nairobi.

16 Aklilu, Y. (2002). An audit of the livestock marketing status in Kenya, Ethiopia and Sudan: Volume I; Pavanello, S. (2010). Livestock marketing in Kenya-Ethiopia border areas: A baseline study. Humanitarian Policy Group (HPG), Overseas Development Institute (ODI)

In order to reduce these risks, traders have established partnerships and networks. Traders may act individually or collectively to reduce the trading risks, e.g., Establishment of trading associations such as the livestock marketing association and county livestock marketing council. The price system remains inefficient, with a large number of intermediaries and high risks. The increasing coverage and access to mobile telephones has eased communication and access to market information and increased efficiency.

Despite the important role of livestock trade in household income and food security; in the FCDC counties, its organisation is still not optimised, and market infrastructure is still inadequate. At a producer level, the quality and quantity of animals supplied to the markets are inadequate, as producers are not commercially oriented and have little understanding of the market requirements. With limited organisation and inefficiency within the value chains, livestock producers bear most of the costs, receiving a lower effective price for their animals. It is estimated that producer receives 40 – 50% of the gross livestock sale value and realise only 5%¹⁷ net return on their marketing and herding investment. Also, [due to droughts, diseases and the limited genetic potential of herds, the quality and quantity of animals reaching the markets have not been good.](#)

Quality and welfare of the animals are reduced when animals are transported in poorly designed vehicles. Animal body weight may be reduced by 10 -15% during their transportation and handling due to feeding stress. The animals are also taxed at multiple points, particularly when crossing several county borders to reach Nairobi or Mombasa markets. Furthermore, traders face administrative difficulties moving livestock such as informal fees and bribes at checkpoints.

¹⁷ Aklilu, Y. (2008). Livestock marketing in Kenya and Ethiopia: a review of policies and practice. Feinstein International Centre, Tufts University, Addis Ababa

The private sector in FCDC counties is small and underdeveloped. Livestock traders, transporters and producers lack access to extension, research, financial training and marketing services, and depend on an informal system for these services. There is, however, an increased political will and investments in livestock-related infrastructure and services, as it is the main productive sector in the FCDC counties. The completion of the Moyale – Marsabit – Isiolo tarmac road that links the eastern FCDC counties to the Nairobi terminal market has eased movement of livestock to markets. However, [public investment in livestock remains low: between 2% and 4% on average¹⁸, with most of it going to recurrent costs.](#)

Interviewees mentioned that the red meat market in Nairobi may not work very efficiently and is being dominated by cartels. The same rule applies to the milk market. So, opportunities may exist to by-pass those markets with their delivery infrastructure. For camel milk from Isiolo sold in Nairobi, this is already on the way. Similar opportunities may exist for meat.

3.4.2 Meat Market

The [meat market is driven by the demand of meat traders](#) who buy animals at the terminal markets, send them for slaughtering and sell the meat in the wholesale markets where butchers, restaurants and even families buy the meat in bulk. Slaughterhouses do not buy animals and sell meat, but charge a fee for the use of their slaughter services. They may be private (e.g., Owned by animal or meat traders) or public (e.g., In the FCDC region, owned by county governments). Improving hygiene is a big challenge for the sector and requires a lot of investment.

Sector organisations and public institutions [can make significant contributions to](#)

¹⁸ Key informant interview – Kenya Markets Trust

raise transparency and improve planning, coordination and innovation, as well as in the field of vocational educational training (VET).

Although there has been an improvement since devolution, slaughter facilities in FCDC counties are few. The county governments have constructed new municipal and sub-county slaughterhouses since devolution. Most of the animals traded in the FCDC counties are destined for terminal markets. The capacity of the existing facilities is low, the processing technologies are limited, and potential of value added within FCDC counties is low. Most facilities are not mechanised. The level of hygiene and environmental respect is low. **There is a need for training and enforcement of standards and investment in waste management.** The Department of Veterinary Services in collaboration with the Kenya Bureau of Standards (KEBS) has established meat hygiene standards, but these standards are not being enforced. Each of the FCDC counties plan to set up export abattoirs in order to stimulate livestock trade, slaughter, processing and manufacturing. Good processing facilities can act as an incentive and encourage the industry to get organised, upgrade and improve. It may also reduce transport costs by delivering high-value, low-volume products and create opportunities for using by-products as inputs. Such a large investment needs to be based on sound planning and economic analysis. The slaughter facilities in the terminal markets are no better, even if they have better capacities. It is estimated that over 600,000 animals are slaughtered in over 370 slaughter facilities in the country¹⁹.

The meat market is fragmented, poorly organised and has low standards of production, hygiene and handling. The extracted value of the carcass is low, compared to the modern industry as the slaughter process is rudimentary. The meat from these facilities is sold, at the lower end through open markets

¹⁹ Kenya Markets Trust: Livestock Deep Dive Report

and butchery stalls. It suffers high spoilage due to poor hygiene and handling, and a lack of chilling facilities. These butcherries account for the majority of the meat sales in the county – up to 65%²⁰. They operate in the informal market and lack access to investment capital, chilling facilities, information and skills, and access to quality animals to meet their customer demands. Slaughter of livestock from FCDC counties is critical for supplying protein to the Kenyan population. The thriving *nyama Choma* (roasted meat) industry in Kenya, Uganda and Tanzania depends entirely on the pastoral sector for the supply of cows, goats and sheep for the slaughter²¹. Opportunities exist in adding value to the slaughter process through better hygiene and handling, chilling of meat and differentiation of carcasses based on cuts and quality. Furthermore, if the industry modernises its standards, it could offer higher extraction of value (offal, hides, blood, bones, etc.). Better links between the trading and processing functions with the production and finishing services will ensure not only a consistent supply of animals, but also a better understanding and meeting of the quality requirements of the market.

3.4.3 Milk Market

In ASAL counties, including the FCDC region, the meat market is much bigger than the milk market. The latter is more local. In the cities, milk is mainly coming from the more humid milk producing areas of Kenya. There is a growing demand for camel milk from people originating from ASAL counties. Milk markets in these regions face three major challenges: seasonal fluctuations, quality/hygiene in the whole value chain and small amounts of produced milk being traded. High temperatures and poor infrastructure are big constraints

²⁰ IDev Report

²¹ Juliana Letara, James MacGregor and Ced Hesse: (2006): Estimating the economic significance of pastoralism: The example of the nyama choma sector in Tanzania

for milk collection. The FCDC counties lack a competitive advantage in milk collection and sales, compared to dairy production oriented counties in Kenya, except in camel milk. Traded milk represents a small share of total milk production, as producers consume a large share of their production.

Milk yields of locally adapted breeds in the FCDC counties are low, compared to intensive systems in other parts of Kenya. Low productivity per animal is multifaceted, largely due to poor nutrition and inferior genetics. [Production efficiency is expected through improved nutrition and a better genetic selection of locally adaptable and better milk-producing herds.](#) Producers are also marginally market-oriented, highly dispersed and their products (milk and livestock) are seasonal and more susceptible to natural shocks and diseases. Surplus milk is usually available during the rainy season. Even with such poor quality and an inconsistent supply of milk; milk producers and traders have set up an elaborate system and network of milk collection, especially camel milk from production and delivery to markets within FCDC counties and in Nairobi (and now developing in Mombasa) to meet the needs of suburbs populated by residents of the FCDC counties such as Eastleigh in Nairobi. Good examples include the Isiolo – Nairobi, Garissa – Nairobi, and Bengali – Nairobi milk chains that deliver camel milk to Eastleigh. At local markets, fresh milk is marketed unprocessed through formal and informal channels by a multi-tiered layer of intermediaries, with the bulk of milk handled by informal non-registered individuals who trade milk daily to earn a living.

There are other constraints on the milk chain; road infrastructure and milk collection, transportation services are poor, cooling facilities are lacking. Due to high temperatures, milk collection and sales suffer from high levels of spoilage as milk traders aggregate milk from several producers. Another issue is

hygiene and the handling of milk; from the milking, disease management, herd health and productivity. [Producers have limited skills in the dairy field regarding feeding, disease control and handling of milk.](#) This contributes to their inability to compete effectively with clean and well-packaged milk products from more intensive milk chains. The transaction costs are high as traders have to establish several collection sites, from which milk will be transported to markets. Prevalent practices in the informal milk marketing sector include the use of multiple containers, poor handling en-route to market, pooling of different batches of milk or from different species and misuse of veterinary drugs, and the use of poorly cleaned milk containers that increase the public health risks of contaminated milk. Use of solar-powered milk storage and cooling facilities, on-farm value addition of milk and group marketing, will not only ease transportation problems but also result in better returns for producers.

The demand for milk, especially for camel milk, within FCDC markets and in terminal markets remains unsatisfied. While nationally, the demand for processed milk is on the rise and is expected to continue increasing at 15% per year, all the FCDC counties have a milk deficit and are dependent on processed milk from other parts of Kenya and powder milk.

[Milk is the most important consumable and marketable livestock product in the FCDC counties with an enormous demand locally.](#) Garissa receives an estimated average of 6,630 litres of unprocessed milk per day. Milk marketing is estimated to contribute to 35% of the local economy.

Like in the other markets, producer organisations have an important stake in market transparency and fairness as well as planning and coordination. This is also valid for other stakeholders within the various chains. As the markets are more local, the focus of



An Anolei woman sells camel milk in Isiolo. Photo credit: ILRI/Ida Rademaker

market coordination is on improving producer organisations. Sector organisations and public institutions can invest in training of staff working in this field.

Prices of livestock commodities such as milk and meat have remained consistently higher in most of the FCDC counties compared to the national figures. For example, meat retails at Ksh 450 – 600 per Kg in the FCDC counties, while the prices have remained at Ksh 400 per Kg in Nairobi.

3.4.4 Fodder markets

The FCDC region hosts the largest fodder market. Fodder markets are not yet well developed in the FCDC region. The increased adoption of fodder is constrained by; inadequate knowledge about its benefits, the high cost of cultivation/agronomic practices, availability of fodder seeds in the market, limited information on yields and quality of native fodder crops, poor storage facilities. Even when seeds and equipment are available, knowledge on planting and managing techniques may be insufficient.

Several fodder technologies have been developed and disseminated. Some look at fodder processing and storage; range fodder utilisation, conservation and preservation. Successful commercialisation may require investments in knowledge management, marketing through the informal grazing organisations, transportation and financial services for enabling investments. The focus should also be on appropriate technologies, e.g., Pellet manufacturing. The interventions should explore the use of mixtures of exotic and native fodder cultivars to ensure increased acceptability by both pastoralists and animals. There is also a need to promote private entrepreneurship for commercialisation.

3.4.5 Meat and Milk Processing

Meat processing consists of turning carcasses into primary and secondary cuts of meat and meat products then packaging and distributing them. Milk processing is turning fresh milk into long-life milk (pasteurised, UHT) or milk

products like yogurt and cheese. [Processing of livestock and livestock products can improve rural incomes by adding value to products.](#) It also helps create jobs and reduce waste. Sector organisations and public institutions can invest in training of staff working in this field.

The Kenya Meat Commission (KMC) was established in 1950. Its tasks are; processing, freezing, canning and storing of beef, mutton, poultry and other foods for both domestic and export markets. The KMC started to experience operational problems as a result of poor management and could not compete with private traders. Currently, the existing processing facilities include high-end facilities such as Farmer's Choice, Quality Meat Processors, Alpha Fine Food and NEEMA slaughterhouses, and low-end facilities such as Dagoretti, Kiamiko and Keekonyokie slaughterhouses. The capacities of the few slaughterhouses in the FCDC counties are low, and processing technologies are limited. Consequently, feasibility and potential for value adding facilities in FCDC counties are low.

The level of meat processing in the country is low, around 2%²². It mainly occurs outside the FCDC counties, in Nairobi and Mombasa. While most of the livestock by-products go to waste due to the limited processing, the current capacities of processing facilities are handicapped by a lack of infrastructure and an adequate market for finished products. In addition to the lack of supportive infrastructures such as roads, electricity, and water; several investment deterrents are rising from high taxes and non-conducive regulatory frameworks. Furthermore, the incentives to establish these facilities are limited as supply is variable, informal traders have a monopoly in the market, and the market is not yet sophisticated enough regarding demand.

Except for a few camel milk processors such as; Anolei and Taqwa groups in Isiolo, Naim

and Towfiq in Garissa, there is no considerable processing of milk within the FCDC counties.

3.5 Support Functions and Rules

Various actors in the livestock sector are directly or indirectly, performing specific support functions such as research, data collection, and coordination for the sector, including setting and enforcing rules at different levels. The table in Annex 15 presents all these major institutions, separating the supporting functions and formal rule setting. As the table shows, some institutions have several functions, and some of those functions are being served by different institutions. This increases the complexity of the interplay between the institutions, for all functions to be served well. It also poses many risks if communication and coordination are inefficient.

The relevant institutions are described in the sub-chapters below. They are categorised into:

- (1) Government institutions and parastatals,
- (2) Private sector actors,
- (3) Membership organisations and representative bodies, and
- (4) Multilateral bodies, donors and NGOs.

A major role of the [Government is to invest in infrastructure](#), alone or within a Public Private Partnership (PPP). The following infrastructure is relevant for the livestock sector: roads, communication, water points, marketplaces, infrastructure for meat & milk processing. The coordination of the use of rangeland and water, the groundwork consists of spatial planning of these resources, investing in research & development (R&D) to develop best practices, disseminating this information and building skills and capacities through own training centers and education or facilitating other actors to do it.

²² Kenya Markets Trust: Livestock Deep Dive Report

In the area of herd management and Marketing & Processing, laws, standards and regulations set the rules, e.g., for animal health, food safety, animal/meat classification or traceability of livestock. In terms of infrastructure, the government may enforce rules for related services, offer those services or enter in PPPs.

The main fields of support from the Private Sector are market information, coordination and some related services like input and machinery, financial, and veterinary services.

Membership organisations and representative bodies have an important role to play in markets, directly and indirectly. The more members belong to all functions of the value; the more neutral the information and coordination will be. They may also invest in skills & capacity development, extension, and R&D.

NGOs can be active in the same areas mentioned above. For market coordination, they may act as facilitators in order to strengthen the role of other market organisations and enable them to do the work.

Informal networks have the potential to come up with innovations, but may also be prejudicial to fair market conditions. They are tied to the ethnic and social structures of the country.

3.5.1 Government Institutions and parastatals

Most MoALF functions were devolved under the new constitution and are managed under the DALF since 2013. While the National Government was tasked with the agricultural policy and assisting the county governments with agricultural matters, the county governments are responsible for agricultural matters. Each county; for uniformity and national standards in agriculture, through its legislation and administrative actions, is expected to implement and act in accordance

with national policy guidelines. The devolution of the agricultural functions has provided a number of opportunities and challenges to the sector.

The main government institutions include:

- At a national level: The Ministry of Agriculture, Livestock and Fisheries (MoALF) and the State Department of Livestock;
- At a county level: The Department of Agriculture, Livestock and Fisheries (DALF).

The Ministry of Agriculture, Livestock and Fisheries (MoALF), under which there are the three State Departments of Agriculture, Livestock, and Fisheries has the overall responsibility for creating the legal framework for sustainable development of the livestock sector. Its core functions include:

- Formulating, implementing and monitoring agricultural legislation, regulations and policies
- Supporting agricultural research and promoting technology delivery
- Facilitating and representing agricultural state corporations in the government
- Developing, implementing and coordinating programmes in the agricultural sector
- Regulating and quality control of inputs, produce and products from the agricultural sector
- Collecting, maintaining and managing information on the agricultural sector

The State Department of Livestock, under which the functions in livestock are administered, has two Departments: Livestock Production and Veterinary Services (National Veterinary Services). It provides technical, extension and advisory services, and regulatory oversight in the livestock production and health. Its key activities are:

- Investing in the sustainable development of disaster-prone areas to build their resilience to droughts
- Generating, consolidating and disseminating drought information;
- Support drought contingency planning and response;
- Knowledge management with particular reference to research in dryland livelihoods, promote systems for learning and contribute to policy processes;
- Coordination across sectors and agencies at all stages of the drought cycle and both county and national level.

The Department of Agriculture, Livestock and Fisheries (DALF)²³ is the main public institution serving the sector at a county level. The devolution of the agricultural functions has provided a number of opportunities and challenges to the sector in general. Devolution presented an opportunity for counties considering livestock as a driver of the economy to invest more in it, and it resulted in an increased demand for extension services and support. However, the counties allocated minimal budget resources to the livestock sector, between 2 - 4% of their total funds to the livestock sector on average²⁴. The highest share allocation to the livestock can be found in Tana River with 15% and the minimum in Isiolo at 2% (2015/16). Garissa county allocated 8% of its budgets to the sector. Key services such as extension have suffered as a result, due to poor facilitation and to some extent low staff morale. Furthermore, the counties lacked adequate infrastructure and technical expertise for service delivery. There was a breakdown in the chain of command and information between the county

structures and the national government. The weakened links between the county and national functions had negative impacts on national and shared functions. Other challenges include slow and weak communication due to increased bureaucracy, poor coordination between the two levels of government and among county governments, lack of synergies between counties, slow legislation of county laws, human resource issues such as human resource development, shortages, welfare, and conflicting schemes of service between the county and national government.

The National Drought Management Authority (NDMA) is the national agency mandated to establish mechanisms that ensure that drought does not result in emergencies and that the impacts of climate change are sufficiently mitigated. It plays a critical role in the livestock sector; in the FCDC counties by supporting and facilitating the DALF on its key mandates. It supports emergency feeding, treatment and vaccination, development of livestock infrastructure and markets, capacity building of market actors, and undertake other emergency interventions in the sector.

The Sector Forum for Agriculture and Livestock (SFAL) was set up by the FCDC General Assembly with the aim to promote cooperation, coordination and information flow between counties and with the Ministry of Agriculture, Livestock and Fisheries. The SFAL pursues the following objectives:

- To enhance agriculture and livestock productivity in the FCDC region;
- To harmonise policies for agriculture and livestock and County agricultural/livestock sector plans (as part of CIDPs); create synergies and reduce duplication of activities;
- To coordinate infrastructure developments in the region in order to avoid duplication;
- To debate on inter-county issues related to

²³ There is slight variation in the name of the Department under which the livestock functions are managed under in the different FCDC counties. For example, it is named Department of Agriculture, Livestock and Fisheries in Wajir, Livestock and Fisheries in Lamu, Pastoral Economy in Garissa.

²⁴ Key informant interview at Kenya Markets Trust

agriculture and livestock and come up with binding agreements, recommendations or information documents to resolve them;

- To act as a forum for the exchange of information and learning; conduct joint assessments and share best practices.
- To advocate on issues related to agriculture & livestock, food security, pastoralism and drought in FCDC Counties.

While SFAL enjoys the goodwill among the livestock stakeholders within and outside the FCDC counties, including the Council of Governors, SFAL is a nascent institution, as it was recently formed.

Kenya Meat Commission (KMC): Established through an Act of Parliament, KMC was set up to operate abattoir and slaughter facilities for cattle and small-stock with the objective to value animals from ASAL counties. However, the facility has been operating below capacity, afflicted by management and financial challenges. The Government has invested in revamping the institutions, and it is currently operational. The establishment of private abattoirs has created competition for KMC, and with more stringent procurement and delays in payment, the facility is being elbowed by these new facilities.

Kenya Livestock Marketing Board/Authority: An executive order to establish the Kenya Livestock Marketing Board was formulated in July 2011 to be signed by the former President Mwai Kibaki. On the 26th October 2016, the nominated Mp Abdi-Noor Mohamed Ali submitted to the National Assembly a private Bill: *The Livestock and Livestock Products development and marketing Bill, 2016* but none of the two bills were passed. Hon. MAJ. Rt. Bashir, MP Mandera North has now drafted the Livestock and Livestock Products Marketing Promotion Bill, 2018. This Bill if passed will establish a Livestock and Livestock Products Marketing Promotion Board whose functions

will be as follows:

- Regulate the livestock and livestock products marketing promotion industry
- Collaborate with other relevant agencies to promote the trade of livestock and livestock products through trade agreements
- Advise national and county governments on matters relating to the marketing of livestock and livestock products, including apportionment of resources
- Liaise with the private sector and other agencies on matters relating to the marketing of livestock and livestock products in order to limit duplication of effort and ensure optimal use of available resources.
- Facilitate market access for all producers and stakeholders through interventions aimed at enhancing efficiency and competitiveness
- Prepare and maintain an updated national livestock marketing plan for the country and coordinate implementation of the activities identified in the plan
- Coordinate and mobilise resources for investments and promotion of marketing of livestock and livestock products in the country
- Facilitate the marketing of livestock and livestock products through the provision of market information intelligence on supply and demand locally and internationally
- In collaboration with research institutions conduct studies and research designed to promote value addition and marketing of livestock and livestock product
- Promote the adoption of standards, best practices and support training in livestock production and processing that support marketing of livestock and livestock

products.

- Facilitate the development of skills and adoption of appropriate value addition technologies before the export of livestock products from Kenya
- Promote the adoption of standards and best practices in livestock production and processing that supports marketing of livestock and livestock products
- Support local manufacturing industries by putting in place mechanisms that promote the use of livestock.
- Develop and rehabilitate livestock marketing infrastructure to facilitate trade in livestock and livestock products;
- Implement livestock insurance schemes in the country
- Support livestock and livestock products marketing organisations and co-operatives and facilitate their integration with mainstream commercial livestock and livestock products associations as a strategy to link all producers to the market
- Collate and disseminate data and information on livestock and livestock products and monitor a database for use by all stakeholders
- Advise the National and county governments on levies, fee and charges for purposes of planning and enhancing harmony and equity in the sector
- In collaboration with county governments, coordinate the promotion and improvement of livestock management systems in the country for the sustainable development of the livestock industry and

Facilitate, in liaison with county governments and communities, the establishment of a strategic business partnership

From regional development, the FCDC counties have good arguments to invest in the livestock sector for productivity increase, but also for more efficient and sustainable trading and processing. Developing slaughtering capacities contributes to maintain jobs and to add value and also taxes in the region. County governments should try to enable the sector to act more FCDC-based instead of Nairobi-based. The most important markets are in Nairobi and Mombasa, but markets will also grow in other areas of Kenya.

Government parastatals – Research, laboratories and vaccine production institutes

The National Veterinary Research Laboratories: The National Veterinary Services under the leadership of the Director of Veterinary Services operates a network of veterinary research laboratories that aims to support diagnostic and research capacities in the different regions. The main research laboratories include:

- Regional veterinary investigation laboratories under the National Veterinary Laboratory Networks including the Garissa Regional Laboratory that serves the North-eastern Kenya;
- Kenya Veterinary Vaccine Production Institute (KEVEVAPI);
- Foot and Mouth Disease/Vesicular Diseases Laboratory at Embakasi.

The Kenya Veterinary Vaccine Production Institute is tasked with producing safe, efficient and affordable veterinary vaccines through undertaking research, providing information, marketing and distribution for improvement of the livestock industry. Its core functions are to:

- Co-ordinate and take charge of all veterinary vaccines production in the country;
- Research, either alone or in collaboration with other research institutions, or

innovations of veterinary vaccines production;

- Develop and produce chemicals, media and laboratory products for use in the production of vaccines and other veterinary products;
- Market and distribute veterinary vaccines locally and abroad.

The Kenya Animal Genetic Resources Institute is engaged in the production, distribution and promotion of animal genetic resources in Kenya. The organisation has no presence in any of the FCDC counties.

In addition to the above institutions, the Government of Kenya also implements a number of donor-funded projects that directly or indirectly serve the livestock sector. Some key projects include:

- The World Bank funded Regional Pastoral Livelihoods Resilience Project responds to pastoralist vulnerability to drought by delivering key public goods to enhance their livelihoods. It is currently being implemented in all of the FCDC counties, except Lamu County.
- The Agricultural Sector Development Support Programme supports the implementation of the Agricultural Sector Development Strategy 2010–2020 (ASDS). The purpose of the programme is to increase equitable income, employment and improved food security of male and female target groups as a result of improved production and productivity in the rural smallholder farm and off-farm sectors.

Regulatory Organisations

The Kenya Dairy Board whose mandate is to regulate, develop and promote the dairy industry in Kenya. Its functions include:

- Organise, regulate and develop the

efficient production, marketing, supply and distribution of dairy produce

- To improve the quality of dairy produce
- To secure reasonable and stable prices to producers of dairy products
- To promote market research about dairy produce
- To permit the greatest possible degree of private enterprise in production, processing and sale of dairy produce
- To ensure, either by itself or in association with any government department and local authority the adoption of measures and practices designed to promote greater efficiency in the dairy industry.

The Kenya Veterinary Board has the control over the training, business practices and employment of veterinary professionals and para-professionals in Kenya. The Board regulates the provision of animal health services and inputs by registering, licensing, controlling and regulating veterinary practices, laboratories, hospitals, clinics and institutions.

3.5.2 Private Sector Actors

Considering that a number of key functions in livestock; particularly those considered as private goods and services, such as the provision of clinical services have been privatised, the private sector plays a critical role. Other than the support service providers, there are also livestock market actors and regulatory bodies that regulate professional and service providers within the livestock sector. The range of services needed to enhance the capacity of livestock producers to exploit the potential of the livestock sector that is provided by the private sector includes:

- Feed and fodder supply
- Breeding services, including artificial

insemination

- Clinical and preventive health services
- Provision of pharmaceutical supplies
- Financial and transport services
- Market information and livestock research and extension
- Other market services including insurance, output collection and marketing.

The key input service providers include; pharmaceutical companies that are engaged in the supply of animal health products, mainly veterinary drugs. The main companies are SIDAI, Medina Chemicals, Bimeda, and Norbrook. While SIDAI runs franchises in most of the FCDC counties, all the other pharmaceutical companies have no direct presence in the counties. SIDAI operates a number of shops in Isiolo, Marsabit, Garissa, Wajir that offer both clinical services and dispensing of veterinary drugs, the sale of inputs and outreach vaccination for livestock keepers. In addition to SIDAI, there are also a number of local veterinary shops (agrovets) including:

- Wajir Veterinary Centre, Al Furqan Pharmacy, Wajir Agrovets in Wajir County
- Muzamil Veterinary Centre, Pastoralists Veterinary Centre, and CAHWs Association Vet Shop in Mandera County
- Marsabit Agrovets and Mifugo shop in Marsabit County
- Glory Animal Feeds, Thalu Chemist and Oasis Agrochemicals in Isiolo County

There are also a number of informal animal inputs suppliers including community animal health workers (CAHWs), rural shops, and feed suppliers among others. The CAHWs do not, however, operate under a clear legal framework²⁵.

25 John Young, Julius Kajume and Jacob Wanyama, 2003:

Another important input provided by the private sector is the index-based livestock insurance (IBLI). This insurance product is provided by the Takaful Insurance of Africa on a commercial basis and with a government subsidy (the Kenya Livestock Insurance Project) through the same company and other insurance companies such as APA. Transporters and financial service providers such as MPESA shops are the most important actors in the sector. Transporters facilitate movement of commodities, livestock and livestock products from production areas to markets, while financial service providers ease the exchange of these commodities.

The **key livestock market actors in the FCDC counties** include:

- **Livestock producers:** engaged in the supply of livestock and livestock products to markets. However, the level of commercialisation of the producers is the main limiting factor in their level of market engagement;
- **Livestock traders, collectors, aggregators and intermediaries/brokers:** involved in the collection, aggregation, and trading of live animals. Though they have developed good networks and links they face challenges in accessing capital, market information, management of markets, and inadequate quality and quantity of animals;
- **Transporters;**
- **Slaughterhouses and export abattoirs:** provide custom slaughter facilities, value addition, quality and safety assurance, and trading in meat and meat by-products. While each of the FCDC counties has its slaughterhouse; there are a number of nationally based export slaughterhouses that serve the market actors from Northern Kenya. These are NEEMA Slaughterhouse

Animal Health Care in Kenya: The Road to Community-Based Animal Health Service Delivery, ODI Working Paper 214

- Dagoretti slaughterhouse, Quality Meat Packers, Kenya Meat Commission, Farmers Choice/Choice Meat and Alfa Fine Foods. **NEEMA Slaughterhouse is the one which livestock traders from the FCDC counties have the largest stake in and the one most utilised by them.** Actors highlighted the limited capital and skills, to undertake processing and the challenges in accessing adequate quantity and quality of livestock, from the production areas. They require access to capital, training and access to skills and technology.
- **Meat wholesalers and traders:** involved in the trading of meat and by-products. They face challenges in hygiene and the handling of meat, access to skills and technology, and lack of consumer differentiation.
- **Commercial ranchers** are involved in production and fattening of livestock destined for slaughter and/or export.
- **Financial service providers** such as M-Pesa shops.

The FCDC counties were not able to attract private sector investments due to a number of reasons, including insecurity, infrastructure and higher transaction costs, and the weak regulation of professions and services in the sector. The private sector also lacks critical data for decision making on the FCDC counties, making them skeptical of the market potential of the FCDC counties and access to financial services in the FCDC counties is limited.

3.5.3 Membership organisations and representative bodies

Nationally, livestock producers are represented through a variety of producer organisations and community groups that provide a forum for articulating and representing members' interests. They include the Kenya Livestock Marketing Council (KLMC), the Kenya Livestock

Producers Association and the Kenya Livestock Breeders Organization among others. The level of representation within the FCDC counties and effectiveness of these organisations have been limited. As a result, the majority of the livestock producers in the FCDC counties are not represented or organised.

The KLMC and its county-level County Livestock Marketing Councils (CLMCs) are important forums for market actors in the livestock sector; including traders, producers, and support service providers in the markets. However, even in these Councils, the level of representation of livestock producers is limited. It is present in 18 ASAL counties, including the FCDC counties. Its objectives at a national level are:

- To strengthen the institutional framework for the development and promotion of livestock trade
- To improve market access for livestock producers and traders
- To establish a system for providing timely, reliable and relevant livestock market information
- To influence country and regional trade policies to promote livestock trade.

At a county level, the CLMCs work in close collaboration with the Livestock Marketing Associations (LMAs) and are present in the major markets within the FCDC. They are involved in the management of livestock markets and in articulating the interests of the market actors. With support from the NDM; the CLMCs have been working on a co-management model in which the CLMCs and LMAs have taken up management of livestock markets in partnership with their respective Counties. This has increased the communities' participation of these facilities; it has also streamlined revenue collection for the counties, promoted marketing increased access to required services and contributed to more sustained markets, with

long-term benefits to communities and other stakeholders.

The **Chamber of Commerce and Industry** (CCI) is present in all FCDC counties; under the Kenya National Chamber of Commerce and Industry (KNCCI), the latter being a trade membership organisation engaged in membership development and services, trade policy research, county development, SME development, and membership partnership and networking. However, the CCI at a county level is not very active and lacks representation of the actors in the livestock sector.

On a community level, there are a number of formal and informal institutions and community groups which are directly engaged in the management of community resources. In Isiolo, Marsabit, and parts of Lamu and Garissa, there are **community conservancies**. This has been a source of conflict in some of the counties like Tana River and Isiolo. Some of these conservancies are members of the **Northern Rangelands Trust (NRT)**, which is a membership organisation that is supporting and empowering communities to develop locally-led governance structures, running peace and security programs, taking the lead in natural resource management, and managing sustainable businesses linked to conservation. Other community level structures include; the Pastoral Associations (more dominant in Wajir County), grazing committees and village committees that are involved in managing local resources and liaising with other stakeholders within their localities.

3.5.4 Multilateral bodies, donors and Non-Governmental Organisations (NGOs)

There are several NGOs engaged in emergency and development, livestock activities in the FCDC counties. They use livestock as a

strategy for alleviating poverty and promoting food security and nutrition by implementing their programs or programs funded by other institutions, such as multilateral and bilateral institutions. The programs include; providing emergency relief, improving access to extension services and inputs, supporting the DALF deliver on its key e. g. Through supporting of service provisions such as supporting disease control, investing in marketing infrastructure, building communities and market actor capacities, supporting investments in the livestock sector, resources for improved nutrition, marketing, and management of livestock.

There are several relevant programs being implemented currently in the FCDC counties (among others) that are presented below.

- The **Swiss Embassy funded and FCDC implemented Strengthening the livestock sector in ASAL counties of Kenya (LSS Project)** that is currently being implemented by SFAL is expected to enhance resilience and sustainable livelihood options of pastoralist communities, to strengthen livestock production, and to promote peace and cohesion towards an improved and sustainable socio-economic development in northern Kenya.
- The **USAID funded and ACDI/VOCA led Resilience, and Economic Growth in Arid Lands-Accelerated Growth (REGAL-AG)** aims at improving resilience by building the livestock value chain. It is implemented in four FCDC counties (Wajir, Garissa, Isiolo and Marsabit). It helps connect people to markets, expands access to quality feed, fodder, medicine and services, such as finance, insurance and veterinary services to increase their productivity. The project also supports the development of the private-sector by awarding grants to entrepreneurs with promising business ideas to boost the livestock sector and

generate local employment.

- The Kenya Markets Trust implements the Market Assistance Programs (MAP). The specific livestock component interventions are:

- To inspire end market consumer awareness of diversified livestock products, food safety and retail skills for enhanced markets.
- To facilitate livestock product processing business services in order to increase the value capture at the end of the value chain.
- To catalyse business links to improve live animal trade for reliable quality and quantity supply to the end markets
- To facilitate the adoption of sustainable rangeland management practices and land governance.
- To facilitate private sector-led livestock industry to promote and actively participate in contributing towards review, formulation and implementation of market-friendly favourable policies both at National and County levels.
- To catalyse access to quality and affordable animal health service delivery to livestock producers. To facilitate insurance companies and pastoralists to embrace commercial index-based livestock insurance for risk mitigation.

- VSF –SWISS

- Delivering humanitarian and resilience building interventions, including emergency veterinary services, promotion of livelihood diversification to improve food and nutrition security to enhance resilience to drought.
- Supporting a gradual shift from cattle

rearing to camels in Isiolo county, and providing communities with solid training in camel keeping, milk hygiene and processing.

- Supporting the development of camel milk value chain
- Developing an ICT-based system for livestock disease surveillance and reporting
- Controlling rabies in Narok and Marsabit county
- Feed the Future, ACDI/VOCA and Mercy Corps manage the Kenya Livestock Market Systems. The objectives are to improve people's resilience in the face of stresses, reduce poverty, household hunger and chronic under-nutrition through collective action, expand viable economic opportunities; strengthen formal and informal institutions, systems, and governance; and improve human capital.
- The International Livestock Research Institute (ILRI) is currently implementing the Accelerated Value Chain Development-Livestock Component (AVCD-LC) in most of the FCDC counties (Wajir, Garissa, Isiolo, Marsabit and Turkana). Researchers are also supporting the index-based livestock insurance and spatial planning in some of the FCDC counties.
- The USAID and Embassy of Switzerland funded, Kenya Resilient Arid Lands Partnership for Integrated Development (Kenya Rapid), aims at bringing together public and private institutions and communities in order to increase water and sanitation access for people, and water access for livestock, and to rebuild a healthy rangeland-management ecosystem. The project is being implemented in the following FCDC counties: Wajir, Garissa, Isiolo, Marsabit.

3.5.5 Research and training services for the livestock sector

The **Kenya Agricultural and Livestock Research Organization (KALRO)**: KALRO was created following the restructuring of the Kenya Agriculture Research Institute (KARI) as the major research institution in agriculture and livestock, with livestock as a key research area. It has a research centre in Garissa (Beef Research Institute) and Marsabit (Sheep and Goat Research Institute).

Among the universities and colleges, Nairobi, Jomo Kenyatta, Moi, Egerton, Mount Kenya, Baraton provide courses at degree, certificates and diploma levels related to agriculture, environment and are also involved in research. Also, there are a number of middle level (Technical and Vocational Education Training

(TVET) centers, including the Animal Health Industry Training Institutes (AHITI) including AHITI Kabete, AHITI Ndomba, Meat Training Institute – Athi River, AHITI Nanyuki, and Dairy Training Institute – Naivasha that offers Diploma and Certificate courses. Out of all these institutions, only the Griftu Pastoral Training College (GPTC) that was recently converted to an Animal Health Institute exists in the FCDC counties. The newly formed TVET Authority is in the process of harmonising curriculum in its designated colleges; the courses on fodder and pasture production are highly segmented.

The **International Livestock Research Institute (ILRI)** aims to reduce food insecurity and poverty in developing nations through research for better and more sustainable use of livestock. ILRI uses livestock as a development tool to secure assets and increase market participation of the poor and to improve smallholder and



4. Developing and monitoring the FCDC livestock sector

4.1 Development: challenges and opportunities

The pastoral livestock production in North-Eastern Kenya is a low-input/low-output system, particularly when compared to the Kenyan dairy production or fattening in fattening grounds for example. Lifting this system to high(er)-input/high(er)-output would reduce its dependence on natural hazards and climate change, but may increase the risks from economic fluctuations. It requires financial resources for investments and rolling capital. It has to be studied thoroughly, if a better margin is possible and new or better livelihood options can be created or if the modernisation lies in economies of scale and replacement of human resources by financial resources. In the context of high population growth and few job alternatives, the development pathway of modernisation for livestock production is very challenging and may split up the herders

into two groups. For more business-oriented herders, it may be a solution while the number of poor may not decrease or even increase. A fine-tuned balance will have to be found between the subsistence role of livestock for herders and modernisation with adapted technology to market orientation. Overall, the three major challenges of livestock production in the FCDC region are an adaptation to climate change, low input use and disease risks.

The development challenges and opportunities focus here on production. However, the demand for livestock products may greatly influence the market. National production only covers 70% of the market for beef. The growing Kenyan population in general and the growing urban population more specifically combined with the increasing wealth will lead to increased demand in general and of higher quality products. The growing pastoral community in the cities will increase the demand for camel milk, a product coming mainly from North-Eastern pastoral counties.



4.1.1 Rangeland & Water Management

The main challenge is the conservation or improvement of the pastures so that its productivity potential and biodiversity is maintained in the long term, but also in the short term in order to enable herders to reduce productivity depression during the dry season.

The collective pastures are used for free. When there are no rules to protect the investment from individuals and communities, herders tend to take on a short-term maximum advantage of this resource, hence minimising the immediate costs of grazing. Pastures around settlements may be overgrazed because herders do not go to areas farther away. Pockets better at resisting drought may be grazed during the rainy season instead of keeping them for the dry season and droughts. Establishing a scientific model able to predict fodder and pasture availability and its distribution leads to its optimal use and possibly reduces conflicts. The current schemes, the meteorological information that prospects grass availability based on rainfall in the past and the use of satellite images from the KLIP detecting the vegetation's green colour do not seem to be optimally used for prediction. The major factors are the quality of the prediction, the acceptance of the distribution mechanisms and the costs. Better governance of grass resources is probably the most relevant optimisation opportunity in rangeland management. Spatial planning should be integrated into settlements and infrastructure planning. Defining grazing periods by locations and with optimal carrying capacity can be done with herders.

The productivity of pastures may also be increased. A first measure is to reduce or even eliminate overgrazing. Other measures are improved seeds and local irrigation of areas close to sources of surface water such as dams and rivers. The potentials of irrigation

with groundwater in combination with a sylvo-pastoral approach with leguminous plants or not should be further analysed with the following questions in mind: who makes the initial investment? Who takes care of the investment and who can take advantage of the investment? Research shows that the presence of water sources does not necessarily improve vegetation health and the negative impact was associated with overgrazing/trampling around the boreholes, water pans and dams. Hence there is need to design and install water facilities in a way that increases pastures and fodder rather than decreasing. Research indicates that improved varieties of *Bracharia* grass are better resistant to drought, increase milk production by up to 40 %, improve soil fertility and reduce greenhouse emissions. No data is available on the adaptability of *Bracharia* in northern Kenya, and thus furtherance of research is required prior adoption of such varieties in the FCDC region.

In northern Kenya, areas sowed with high yielding grass species such as *Cenchrus spp*, *Sorghum spp* and *Eragrostis spp* remained under green vegetation throughout the year, but again there is need to monitor the acreage. Another resource of interest could be the extraction of salts deposits and processing and sale of the products in the region. To incentivise such investment, it has to be protected. If not, it may lead to more conflict. Pasture (and also fodder) technologies have been developed and disseminated by different actors and organisations for the arid and semi-arid regions in Kenya such as solar-powered irrigation systems for fodder production. These actors are Government departments, research organisations/institutions, Non-governmental organisations and private sector entities. Some of the technologies include natural pasture improvement, range pasture establishment; pasture seed production, fodder processing and storage; range fodder/pasture utilisation, conservation and preservation.

4.1.2 Fodder

A modernisation measure might be the increase in fodder availability to the herders. The challenge is the fodder of the right quality at the right time, in the right place. Fodder would have to be produced in medium potential areas or even in the low potential areas through large-scale investment from the private sector. In that case, the various costs will be relevant: opportunity costs (crops), transportation, stocking and handling from production to consumption. The successful, increasing practice of [supplementary feeding of animals during the dry/drought seasons demonstrates that it is possible. It may also develop fodder markets and smooth](#) the availability of livestock and livestock products over time.

The future improvement of transportation and communication has a big impact and will have to be analysed in relation to scaling up and distance. Fodder is currently more expensive than pasture for herders. However, other costs have to be taken into account: losses through dead animals during drought, food aid costs and insurances, irregular supply of market milk and meat, quality and price fluctuations. Complementing fodder to animals may also reduce investments in cold storage and reduce the costs of the value chain. Additional fodder increases both, input costs and output gains, and can therefore only be evaluated with a thorough study of both. While a chance of this change is to reduce the dependency from natural hazards, the risk is to increase dependency on market fluctuations.

The opportunities for improvement include; on-farm production and utilisation of fodder, efficient storage, processing and utilisation of crop residues, pasture improvement, appropriate water harvesting technologies, small-scale feed conservation as well as the development of fodder markets.

4.1.3 Herd Management & Off-take

Breeding improves productivity in the long term. With breeding programs based on local races; both milk and meat production and quality can be improved. Higher milk production may induce a higher demand for fodder. In the short term, productivity can also be improved with better animal health. Healthier animals are more productive and get a higher price in the market than ill animals. The constraint is that for transferable diseases; a centralised coordination and rules setting is needed. This is a challenge for the private sector, but a good development opportunity for FCDC. Vaccination programs are in general considered to be cheap and effective. Also, a vaccination program can be the entry point for extension services. Subsidised packages of veterinary and extension services can be defined and tendered to the private sector (PPP). Herd productivity can also be increased by reducing the share of old bulls in the herd and by increasing the ratio calves/cows for example.

Many herders consider their herds as insurance. Optimize off-take focuses on selling animals at the best price and saving the money. For herders, larger herds lead to economy of scale. However, the risks of bigger herds are manifold. They can lead to more conflicts and ecological problems. Bigger herds may also lead to more low-quality jobs as an employed herder and not anymore as owner. When it leads to a general decrease of jobs, this may increase jobless people in the urban centers known as the most vulnerable of the society. The current high population growth and low jobs availability in herders may lead to smaller herds.

4.2 Monitoring the development of the livestock sector

The chapters above have demonstrated that the livestock sector in the FCDC region is complex with differences between counties; interactions between key factors such as the number of animals, income, pasture management, diverging issues (subsistence versus marketing), etc.

The table below presents a selection of mostly all new indicators that are most relevant for monitoring the development of the livestock sector in the FCDC region. The counties could take the responsibility of collecting the data, while the SFAL could coordinate the monitoring process and analyse the data.

Table 3: Suggested indicators for the monitoring of the livestock sector development

	Indicator	Description	Comment
Rangeland & Water Management	Spatial planning	Pasture areas with spatial planning (%)	New
	Public scheme for grazing agreements	Number and area covered	New
	Stocking rate	Stocking as a percentage of carrying capacity (TLU/Ha), specifically for geographic locations	New
	Conflicts	Livestock production relate; date, location, severity (people insured/dead, rustling)	Data exists up to 2015 on http://www.acleddata.com/wp-content/uploads/2016/01/Kenya.xlsx
Fodder	Fodder availability on markets Land under fodder	<ul style="list-style-type: none"> - Type and quality - Origin and dest. - Volume and value - Prices - Yield per hectare 	New. Fodder production not included in crop statistics. Marketed fodder used as proxy albeit scanty for most counties
Herd Management & Off-take	Livestock inventory	<ul style="list-style-type: none"> - Species - Sex and age - Total and per household 	Requires complementing data currently being collected by DALFs. Relevant for carrying capacity and productivity monitoring.
	Animal health	Occurrence (frequency, area) of previously defined diseases (transferable and non-transferable)	New. This could be done: <ul style="list-style-type: none"> - Directly: through contracted veterinarians who would report or monitoring of diseases - Indirectly: density of veterinarians, use of drugs
	Productivity and off-take	Milk and meat production per animal by species, including seasonality	New. This could be done: <ul style="list-style-type: none"> - Directly: regular milk and meat production with a household sample - Indirect: through changes in livestock inventory, pastoral population and sales of live animal and milk.
	Herders	Socio-economic data	Not new, but its frequency should be augmented (now ten years). Could be done by KLIP, producers' organisations and ICT.
	Livestock income/household	Socio-economic data	Not new (currently with Kenya Integrated Household Budget Survey). The frequency should be enhanced.
Marketing and processing	Animal and animal products prices & volumes	Number, prices and weight, by species/product	Not new, but will have to be disaggregated. Contributes to market transparency.
	Jobs	Employment in the sector	New. Annual job survey.

	Indicator	Description	Comment
Supporting functions	Infrastructure	Km of roads, surface covered by and capacity of ICT services	
	R&D	Number of studies, involved researchers, financial resources	New
	Information	Outreach (number of beneficiaries) of defined channels and frequency of information	New
	Skills & capacity	Outreach (number of beneficiaries) of defined training and training time	New
	Related services	Outreach (number of beneficiaries) of defined services	New
Rules	Regulations, standards, laws	Number and relevance (for how many persons/households, or animals, for what value)	New
Others	Producers' Organisations	Number of organisations and number of members	Requires adaptation of the current county report on organisations (CIDPs). Could be combined with monitoring current registration of organisations (e.g., Water Resources Users Associations, WRUA).
	Individual, organisational development	Monitoring of development plan	New. With a focus on outcome/results level (Method: Outcome Mapping).

Source: Authors.



5. Conclusions and recommendations

5.1 Conclusions

The FCDC region consists of 8 neighbouring counties situated along or close to Somalia, South Sudan and Ethiopia border, in the North of Kenya. It represents 58% of total Kenyan land, 10% of the population and 31% of livestock. The FCDC, a country governments' agency created in 2015, has set up the SFAL to cooperate and coordinate on agricultural and livestock issues.

The stakes are critical as livestock accounts for almost 80% of the economic performance in the region. Overall data on the region shows that the SFAL faces great opportunities and challenges, from devolution and needs to adapt its agricultural and livestock strategies to the region in general and the counties' specific characteristics, for example, Lamu being on the overall quite different from the other counties. Some of the framework conditions are given below:

- **Arid climate:** all counties are arid, except for Lamu that has a semi-arid climate, and suffer from recurrent drought. The region is highly climate-sensitive and is experiencing decreasing rainfall and increasing variability in this climatic component.
- **Low agricultural potential:** land has mostly low potential due to soil fertility and rising salinity, except for Lamu where around 50% of its land has medium potential.
- **Low population density:** it is lower than 25 persons/km², far below the Kenyan average (78 persons/km²), except for Mandera (54 persons/km²).
- **High population growth:** the annual population growth is higher than the Kenyan average. This potentially reduces the availability of livestock as

a natural resource per person and, as a consequence, it reduces the income potential and puts more pressure on the already high poverty level and depletion of natural resources.

- **Mainly rural population:** the share of urban population is lower than the Kenyan average (27 %), except for Isiolo. Household size is also larger than in Kenya on average.
- **Very high level of poverty:** the share of the population living below the poverty line is higher (between 59 and 86 %) than in Kenya on average, 45 %, except for Lamu (32 %). Less than 50 % of the population have formal education, except for Lamu.
- **The existence of a risk of rangeland depletion:** The estimated carrying capacity is 5 ha/TLU or higher, except in Lamu where it is very low, 1.5 ha/TLU. On average in the FCDC, the data suggests that the number of grazing animals exceeds the carrying capacity. There is also a reduction in abundance of forage species preferred by pastoralists. There are however large discrepancies among the counties. The risk is extremely high in Mandera, high in Wajir and Garissa, low in Marsabit, Isiolo and Rana River and almost inexistent in Lamu.

A majority of the population, both rural and urban, keep animals. Herders who generate most of their income from livestock, are not a homogenous group. No detailed household data is available for the FCDC region. The traditional herders' main objective of livestock production is subsistence, mainly in the form of milk, meat being less relevant for home consumption. Meat is more relevant as an income source. Livestock also plays an important role in herders' risk management, particularly for the poorer

herders, who are more prone to high economic and climatic risks. **The risk management has an influence on the composition and size of herds and consequently an effect on income. Income diversification is also a risk management issue.** However, observations tend to suggest that opportunities are low: labour migration, petty trade, etc. Animals are mostly grass-fed. The level of external inputs is very low. The use of fodder is low but show engaging potentials.

The current range and water management is not adequate in guaranteeing productivity and survival of stock throughout the seasons. This is due to a number of reasons. While climate change and resultant recurrent droughts have over time eroded the quality and quantity of browse and pasture, human practices have also had a negative impact. Attempts to grow the high cost of production limits fodder amidst the high levels of poverty. With increasing formal governance institutions, the traditional rangeland management systems, such as dry and rainy season grazing areas were weakened. The land available for open grazing has decreased over time due to unplanned settlements, enclosures and water points. These settlements have also limited the age-old practice of mobility that had allowed pastoralists to make use of scarce resources. The communal land ownership tenure system gives everyone an equal right to use pastures and water. Herders traditionally move seasonally from their home bases with their herds to places with pasture and water.

The main market challenge in the FCDC region is its inefficiencies, resulting in an irregular supply of adequate quantity and quality animal to markets. This is due to a lack of availability of adequate feed and limited use of inputs. The limited commercialisation of livestock production in the FCDC to limit the numbers and timing of livestock sales. The markets also suffer from a lack of transparency and

efficiency which discourages the producers. The lack of differentiation of the demand also limits investments in higher quality meat. The main strength of FCDC counties is their ability to produce and market meat (grass raised) which is cheaper than under intensive ranching. It must also be noted that production is traditional with well-established market relationships. Furthermore, the local breeds are locally well adapted and resistant to the environment and diseases.

The FCDC region has a comparative advantage in livestock production, and livestock is highly important to the region for food, income and ecological reasons. Public investments in the sector have been low. The willingness of the FCDC, with its SFAL among others, to develop the sector and make use of the devolution is particularly relevant. Livestock policies and strategies will have to take into account the following:

- **Appropriate evolution of the balance between traditional rangeland management system and modern institutions and regulations:** mobility is critical for the locally adapted production mode, namely pastoral production. Pressures on pastoral production will require improving the rangeland management with more modern tools and approaches (spatial planning, prediction model, etc.), but with herders' participation and ownership. Local actors such as the WRUAs would need to be institutionalised and strengthened. There are also community groups managing community resources like community conservancies organised in the Northern Rangeland Trust (NRT) or grazing and village committees, but they are not sufficiently integrated into the planning and managing of the livestock sector. Many supporting organisations are present. The

development of increased fodder use will need further analysis regarding species, costs, ration formulation, markets, and land use, etc.

- **Herders' risk management strategies:** currently, the individual herders choose livestock accumulation as a risky strategy, not because of a lack of other options. However, this strategy is costly in the long-run for the herders' community as a whole. The potential consequences for the environment and the society need to be reflected in further livestock development.
- The low population density and seasonality leads to a complex demand management issue for the private sector, traders and veterinarians for example, in particular in remote counties and during the dry season. This low population density also increases infrastructure costs.
- **Market development:** there is unmet meat demand in Kenya and milk also shows prospects. Livestock traders from FCDC counties have developed an elaborate network of trading routes and contacts in the sector. As a result, they dominate the livestock trade in Kenya. However, markets are quite fragmented, with low coordination among the stakeholders, leading to inefficiencies. The constraints for up-scaling are investment capital, low level of equipment (slaughterhouses, processing), skills and organisation. The promotion and development of specific FCDC value chains would add value to the low input production mode, and the local breed. The camel milk supply chain shows that this is possible. Combined with heavier carcasses, it could lead to income increase. Setting up standards will contribute to specific quality characteristics of livestock products from the region.



- **Coordination and regulations' enforcement:** the FCDC and the SFAL in particular for the livestock sector have a strong role to play. This leadership role will have to include a clear overall livestock strategy for the region, a stronger role in the coordination of efforts, but also for data collection and analysis, supporting and facilitating the empowerment of organisations (producers, WRUA, CAHW, traders, etc.).

The main governmental institutions are the MoALF on a national level and the DALF at a county level. Besides policy making (among others regulation and control of inputs, produce and products), **MoALF deals with research and technology delivery as well as with statistics and information.** Its State Department of Livestock has the two Departments; **Livestock Production and of Veterinary Services.** Among others, it provides technical, extension and advisory services. DALFs manage most of the functions that were devolved from the MoALF under the new constitution. This development remains a challenge. While the county governments do consider livestock a driver of their local economy, they allocate minimal resources to the sector on average.

5.2 Recommendations

The recommendations are formulated with the aim to enhance resilience and sustainable livelihood options of the pastoralist communities, in the FCDC region and to promote peace and cohesion. They are presented below for:

- The SFAL/FCDC platform and the relevant county governments;
- The Embassy of Switzerland and other donors;
- The local actors;
- The central Government.

5.2.1 For SFAL/FCDC and county governments

1. **Strengthen spatial planning** and integrate the planning of grazing and water resources with settlements and infrastructure planning. A holistic planning approach can better balance and mitigate diverging interests than the current fragmented, planning process. FCDC could establish a Sector Forum for Spatial Planning, equivalent to SFAL. This platform would coordinate with the concerned departments on county and national level. The objective would be first to develop regional master plans for land use, which can then be fine-tuned and implemented on a county level by the concerned departments. Development objectives have to be defined for the planning process. The definition of development objectives and the breakdown and implementation through spatial planning should be participatory.
2. **Improve infrastructure** in the following areas, with increased participation from the private sector:
 - Better roads allow faster and cheaper transport of inputs and outputs. Services may also be quicker. New businesses may become possible. Planning and implementation by the national and county governments.
 - Better communication/ICT can be used to improve the coordination of the value chain and to allow some activities to be faster and cheaper. New businesses and business models may become possible. This should be planned with the private sector and implemented by latter.
 - Upgraded **public marketplaces** for live animals allow for more transparent and efficient marketing. This includes options for additional activities like

fodder market, extension and veterinary services and medical services. It should be planned and implemented by the county governments in close collaboration with the private sector. The county governments keep an observatory role and may implement rules, e. g. Official/neutral taxation, animal carcass evaluation or declaration of paid prices.

- Improved public slaughterhouses and processing facilities as service providers to the meat sector: planned and implemented by the county governments as a public enterprise, in close collaboration with the private sector. The enterprise competes on the market but can set priorities in areas of public interest.
- Establishment or upgrading of open markets into export processing zones/ areas.

3. Enhance coordination: Aim for a strong meat sector that integrates trading & processing with production creates jobs and adds value. Jobs and value addition do not only come from live animal trading, but also from slaughtering, meat trading and from processing. Also, aim for a strong camel milk sector. A sector animator and coordinator job could be created. The person would work with all stakeholder groups, bridging between the public and private sectors in the value chains. The function could be assimilated to a Key Account Management or with horizontally cross-cutting tasks in a matrix organisation. The facilitation of the bottom-up creation of organisations of different stakeholder groups would be an important initial step. This person could then take over important tasks of coordination, producing and disseminating information, even do some

research, selling inputs and services like extension or credits or buying outputs or assisting in marketing. Close collaboration with an extension would be important.

Improving links between the trading & processing with the producers and feedlots would ensure a consistent supply of animals, a better understanding and meeting of the quality requirements of the markets. The coordination may also stimulate the discussions on the motivation factors for improving quality production and traceability implementation for some livestock products.

Create an innovation fund that assists the development of new ideas in these two sectors. The fund can act on different moments of an innovation:

- Analyses publications mandated by the fund to create evidence for business options and adaptive change
- Support the feasibility of an idea: write a business plan with the support of specialists
- Support creative workshops to bring different actors of a value chain together
- Support prototyping
- Support the moment or go to the market
- Support generic promotion for FCDC meat based on its comparative advantage, low input, etc.

4. Promote research on specific topics for the area:

- **In-depth analysis of pastoral, traders and other households:** Develop a typology taking into account herd size, composition, ownership and decision making, activities of the different

household members, aspects specific to gender and ethnic groups. It can be used for two types of interventions: those focusing on the poorest and most vulnerable and those focusing on the scale. Two examples: (1) An intervention for 5 % of the families who have lost all their animals and have moved to an urban zone may consist of giving them some poultry to improve food security. (2) Herders may benefit from an improvement of a marketplace, but isolated and low-income families keep selling through informal bush markets with lower prices, increasing inequalities.

- **A system to estimate and monitor the stocking rate based on the carrying capacity of pastures:** it will serve as a basis for negotiations and agreements. A more sophisticated version of the system could predict the evolution of different types of pastures depending on activities. Activities include those leading to degradation like overgrazing as well as those recovering the surfaces. This will be discussed below.
- **Best practices in the management of open access pastures:** recommendations for individual herders, communities and government bodies. The emphasis should be on management changes rather than on new investments. In a nutshell: how to do things in a new way rather than how to do new things, incremental innovation rather than radical innovation.
- **New practices in the management of open access pastures:** to be further explored and scaled-up. Examples of research issues are; new and more productive or more drought resistant

grass varieties, new ecosystems with leguminous trees may be within the broader concept of agro-forestry and drip-irrigation.

- New and best practices in fodder production: recommendation on the production and costs calculations to increase awareness of the economic aspects of production and marketing. What are key cost factors and how do they vary? What are the changes following the road improvement? What are the scale-up potentials, where are the areas of potential and what could be the maximum production? Which plant species and growing zones are best suited in the FCDC region? How is more seed of fodder crops acquired?
- Best practices in herd management: recommendations for individual herders, communities, private sector and government bodies. This includes breeding, animal health and hygiene, grazing/feeding and watering, milking and pre-processing, animal taxation, carcass quality evaluation and home slaughtering.
- New practices in herd management to be further explored and scaled-up.
- Newmarket options relevant to the livestock sector: this is a typical public task for stimulating the innovation systems' environment. A specific question refers to fattening in the FCDC region and conditions for viability: transport the animal to the fodder, in medium and high potential areas or the fodder to the animal. What are key cost factors and what are their perspectives in the future (transport, more crop-production and manure have a value as fertiliser)?

- Estimations of return on investment for the public sector to create evidence and guidance: what the investments required to enable increased and regular production? How can food aid be reduced? How much can additional taxes be raised?
 - Analysis of meat and milk market similar to the present analysis: The focus is not the production, but the trading, processing and consumption;
 - More in-depth value chain analysis for selected products, for example, cattle and camel milk;
 - Identify knowledge gaps and propose training and adaptation in the education system. This requires a definition of skills' profiles along the value chain.
5. Improve market information: the main task of **informing markets** is the dissemination of **unprocessed data about quantities, qualities and prices to facilitate decision making**. However, this data may be processed. Statistics/research and extension have a specific stake in processing as well as disseminating it. The government could produce neutral market information or commission them. FCDC could create a public monitoring and communication system for quantities, qualities and prices of marketed livestock. Monitoring the quantities may inform rangeland management. Including producers' organisations in monitoring may stimulate their emergence.
6. Establish **extension and veterinary services** and increase the **availability of quality drugs**. This can be realised through public service or the support of private services. A success model for agricultural extension is to work with communities and not individual herders and to go through

the animal health officials. The main role of extensionists/veterinarians would be; "Train the Trainers (TTT)" or "Training of Trainers (ToT)" and the role of the community workers "Primus inter paris." The community workers should be formally or otherwise in herders' organisations. The community workers could have many functions: channel services or take them over, even sell them. The fields of activity can be in the domain of classical extension/veterinary, or beyond (buy/sell or channel inputs, outputs or services like finances, data, e.g., on animals for the government or market actors...):

- The extension should not be limited to assist herders only but should take the value chain into account. It is then required to have different types of expertise in extension teams. The extension can become active at different moments:
 - Intermediate between research and practice by breaking down scientific results to the reality of people and feeding back research needs to research.
 - Facilitate the implementation of a grazing scheme at the community level,
 - Process and disseminate (flyers, training, radio) best practices on herd management including breeding, animal health and hygiene, grazing/feeding and watering, milking and milk hygiene, taxation of animals, carcass quality evaluation, home slaughtering.
 - Advice individual herders, herders' communities or herders' organisations.

- Promote, facilitate and advice herders' organisations before, during and after their creation: what are the objectives and services to be provided? What is the role of the members and the leaders? How to plan? How to implement accountability and why?
- Promote and facilitate the coordination and the cooperation between actors and their organisations in the value chain. Facilitate innovation for doing a thing in a new way and for doing new things.
- Veterinary services may take responsibility for some extension activities:
 - Execution of public vaccination programs. The programs can be free, subsidised, voluntary or obligatory.
 - Publically offered or mandated sanitary evaluation and neutral carcass quality evaluation of animals in public marketplaces.
 - encourage the private veterinary actors and service providers and individual owners

The issue of education has to be more widely explored. This starts by defining which are the necessary skills for a strong sector and if they are acquired at the level of professional education or further training. FCDC should analyse the knowledge gaps impeding a strengthened meat sector. It should also facilitate the establishment of the necessary continuing education and vocational educational training in collaboration with the education sector. The human resources for processing of meat, especially cutting and packaging should be developed.

One of the major risks of the FCDC counties development approach is the increase of the current aid dependence. The latter is prevalent in the ASAL counties, mainly when the government attempts to deliver interventions such as inputs and livestock trading and processing directly. It is recommended that counties facilitate the use of existing resources by building new relationships and extending services to underserved populations through a market-oriented approach.

7. **Related services:** Facilitate the access to financial and insurance services such as the livestock insurance schemes.
8. **Propose and enforce new regulations:**
 - Animal movement to control diseases,
 - Vaccination program to reduce the level of diseases,
 - Veterinary drugs regulation to reduce the presence of low-quality products on the market (coordination with regulations on a national level should be found),
 - If feasible, FCDC could implement a traceability system with a certain level of obligation. Publicly traded animals would need an ear tag.
 - Hygiene in the meat value chain: independent control of meat quality in the slaughterhouse (synergies with the data collection for statistics of slaughtered animals). This can be implemented in the public slaughterhouses.
 - FCDC/county governments could supply an external veterinarian or declared obligatory in private slaughterhouses. FCDC lobbies for similar regulations on a national level.
 - Hygiene in milk value chain: FCDC/

county governments offer a monthly control at collection points (synergies with the data collection for statistics of milk sold to milk industry).

- Rangeland bills
- Fodder /Feeds and seeds certification and standards

9. Standards: FCDC should create a **live animal quality evaluation scheme** and implement it through its public markets. An independent evaluation is offered for each animal (see point 6). In connection with the regulation of an independent meat control (point 8), valuation a carcass quality could also be implemented. It would enable the internal quality control of the independent live animal carcass quality evaluation. Market actors can take up this evaluation scheme and base price negotiation on it. As a minimum (compare point 8), FCDC defines standards for traceability. For that level of traceability, the standard is just proposed to the private sector but can be taken up or not.

10. As a cross-cutting topic for coordination, extension, and perhaps for research and information: improve the handling and processing and support the development of markets for offals, hides/skins and other animal parts.

11. Monitor the implementation of interventions, training for the local staff in defining result chains, set key indicators and build up a realistic & efficient measurement system is recommended

5.2.2 For donors and international NGO's

12. ILRI: Research best practices in pasture management in other parts of the world, e.g., Mongolia, based on schemes for participative management of public resources ("managing

the commons").

13. Private sector: Investment in commercial fodder farming, processing, reserves and transportation enterprises

14. Invest more in research, information and consultation to avoid risks of distorting or dysfunctional investments such as 1) livestock vaccination and treatment subsidies that discourage private sector entry into animal health service provision, 2) unplanned water resource or settlements. Given the lack of sufficient information on the sector, there is the risk of poor investment decisions and advocacy.

5.2.3 For national and local actors

15. Improve livestock productivity through better use of inputs, extension, feeding and breeding in order to improve the quality and quantity of animals traded and marketed. Also, invest more in better management of the existing breeds and grazing resources - feeds and pastures, as the future of improving productivity is more about improving productivity per animal, rather than increasing herd sizes.

16. Adopt and use appropriate, cost-effective animal husbandry methods that will reduce the burden of diseases and pests. Currently, producers invest more in curative services, which though important are less effective than investments in preventive services such as regular herd health management.

17. Organise themselves to manage scarce resources better and generate some degree of aggregation, to make it easier to manage herds and access key inputs (e.g., veterinary supplies, fodder and insurance), trading and transport intermediaries, and develop a voice for the industry.

18. Invest in finishing services, where livestock is transferred to better quality grazing land, to be finished – provided with higher quality feeding to add weight and condition in preparation for slaughter. This will ensure that animals supplied to markets are of adequate quantity and quality throughout the year.

5.2.4 For the Central Government

19. Provide policy, legal and institutional framework for more efficient service delivery in the livestock sector and attainment of the sector's objectives. One example is the Kenya Livestock Marketing Board/Authority that could greatly contribute to more transparent and efficient livestock markets.
20. Enhance research, extension services and data for decision-making that will improve the uptake of technology and help producers and market actors to improve their production and marketing. Investment in research on suitable forage species in the region and their management are key issues.
21. Pasture research and monitoring: it is more efficient when this is done on a national level and will service all the relevant counties, not only FCDC.



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