REPUBLIC OF KENYA
MINISTRY OF DEVOLUTION AND PLANNING

THE PROJECT
FOR
ENHANCING COMMUNITY RESILIENCE AGAINST DROUGHT IN NORTHERN KENYA

FINAL REPORT

VOLUME III: ANNEX REPORT (2/2)

DECEMBER 2015

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

NIPPON KOEI CO., LTD.

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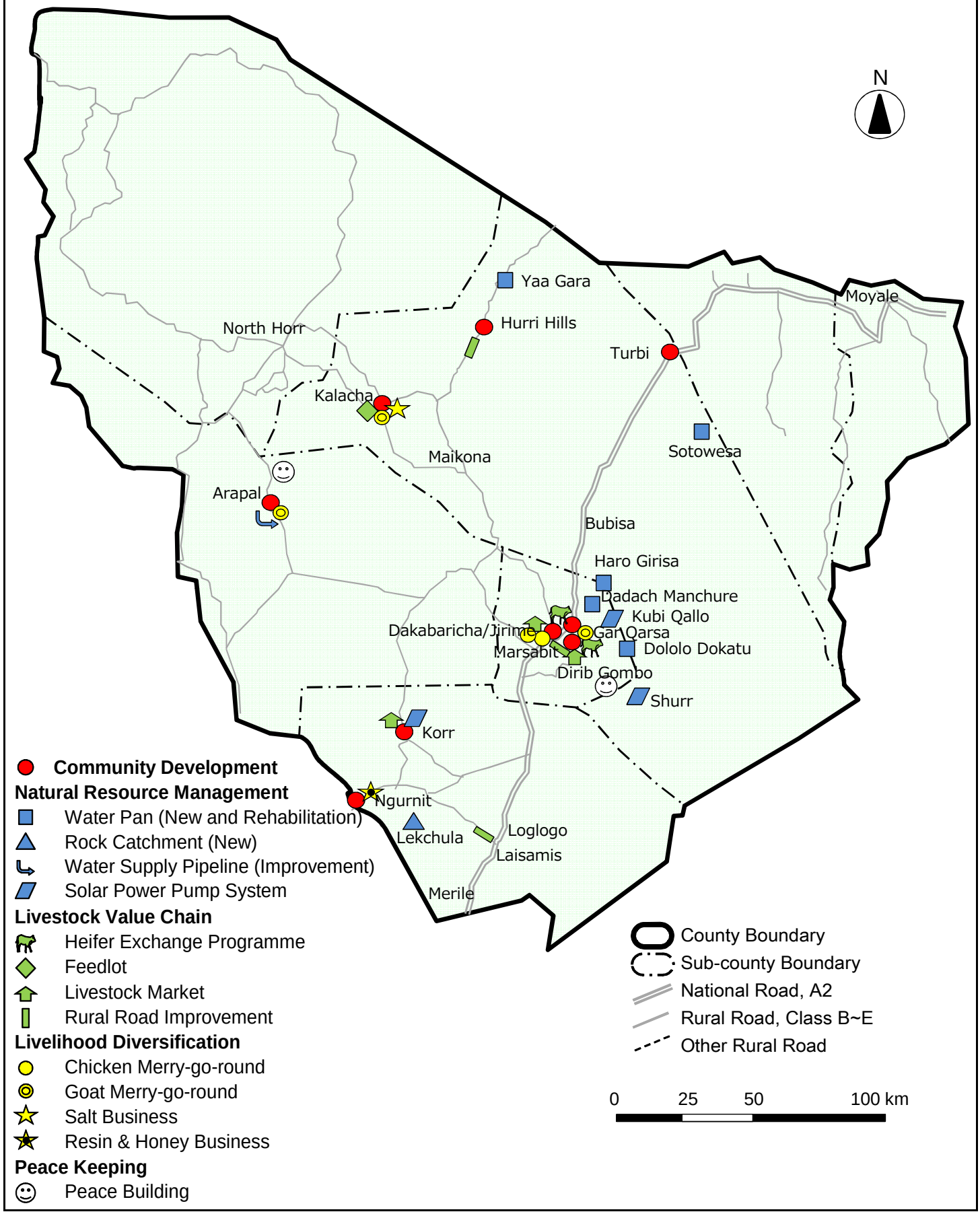
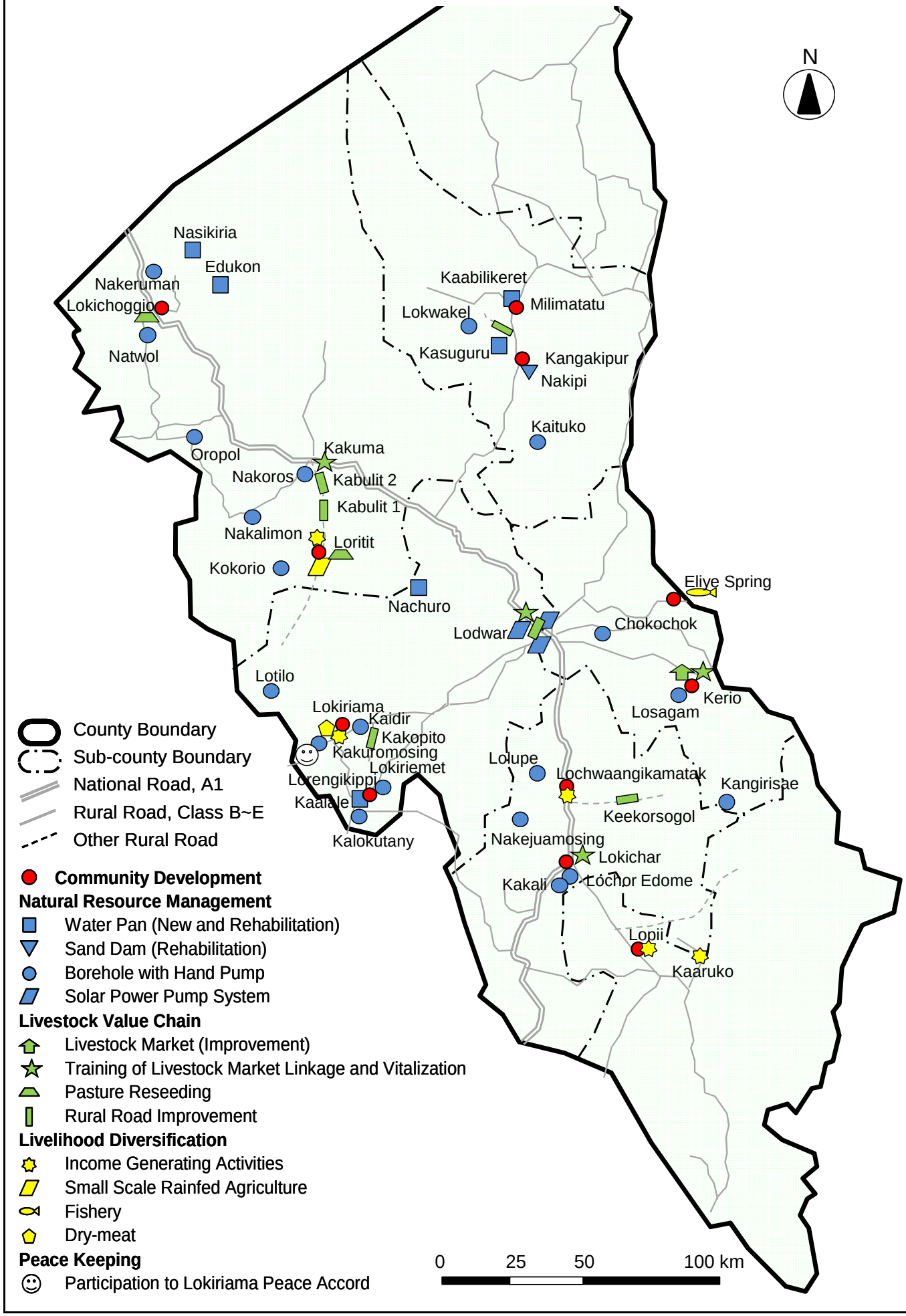
List of Volumes

Location Map

JICA-ECoRAD Sub-project Map (Marsabit County)



JICA-ECoRAD Sub-project Map (Turkana County)



List of Abbreviation

A/C, D/C	:	Alternative Current, Direct Current
ADF	:	African Development Fund
ACTED	:	Agency for Technical Cooperation and Development
ADESO	:	Africa Development Solution
AfDB	:	African Development Bank
ALRMP	:	Arid Lands Resource Management Project
AMCEN	:	African Ministerial Conference on the Environment
Apad	:	Agency for Pastoralists Development
ASAL	:	Arid and Semi-Arid Lands
A.S.L	:	Above Sea Level
BH	:	Borehole
CAP	:	Community Action Plan
CARE	:	Cooperative for Assistance and Relief Everywhere (NGO)
CBPP	:	Contagious Bovine Pleuro-Pneumonia
C&D	:	the Institute for Cooperation and Development
CDC	:	Community Development Committee
CDF	:	Constituency Development Fund
CDW	:	Cold Dressed Weight
CIDP	:	County Integrated Development Plan
CIFA	:	Community Initiative Facilitation & assistance (NGO)
CITES	:	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMDRR	:	Community Managed Disaster Risk Reduction
COBRA	:	Community Based Resilience Analysis
CP	:	Crude Protein
CSG	:	Community Steering Group
DAO	:	District Agricultural Officer
DC	:	Development Committee
DEO	:	District Education Officer
DEM	:	Digital Elevation Model
DFID	:	Department for International Development
DFRD	:	District Focus for Rural Development
DHMT	:	District Health Management Team
DLCI	:	Dry Land and Capacity Building Initiative

DLPO	:	District Livestock Production Officer
DLMC	:	District Livestock Marketing Council
DMC	:	Drought Management Committee
DRR	:	Disaster Risk Reduction
DRRAP	:	Drought Risk Reduction Action Plan
DSG	:	District Steering Group
DVO	:	District Veterinary Officer
EC	:	Electric Conductivity
ECHO	:	Humanitarian Aid Department of the European Commission
ECoRAD	:	The Project for Enhancing Community Resilience against Drought in Northern Kenya
EDRP	:	Emergency Drought Recovery Project
EIA	:	Environmental Impact Assessment
EMC	:	Environmental Management Committee
EU	:	European Union
EWS	:	Early Warning System
FAO	:	Food and Agriculture Organization of the United Nations
FEWS NET	:	Famine Early Warning System Network
FHI, Fhi, fhi	:	Food for the Hungry International (NGO)
GA	:	Grazing Area
GARA	:	Gum and Resins Association
GDP	:	Gross Domestic Product
GIMMS	:	Global Inventory Monitoring and Modeling Studies group
GIS	:	Geographic Information System
GIZ	:	Deutsche Gesellschaft für Internationale Zusammenarbeit
GOK, GoK	:	Government of Kenya
HFA	:	Hyogo Framework for Action
HH	:	Household
IBLI	:	Index Based Livestock Insurance
IBRD	:	International Bank for Reconstruction and Development
ICPAC	:	International Climate Prediction and Appliction Centre
ICT	:	Information Communication Technology
IGA	:	Income Generating Activity
IGAD	:	Inter-Governmental Authority on Development
ILRI	:	International Livestock Research Institute

IOM	:	International Organization for Migration
ISDR	:	International Strategy for Disaster Reduction
ITK	:	Indigenous Technical Knowledge
JICA	:	Japan International Cooperation Agency
KARI	:	Kenya Agricultural Research Institute
KEFRI	:	Kenya Forest Research Center
KES, Ksh	:	Kenya Shilling
KMC	:	Kenyan Meat Council
KNBS	:	Kenya National Bureau of Statistics
KPLC	:	Kenya Power and Lighting Company Ltd.
KRRA	:	Kenya Rural Road Authority
LINKS	:	Livestock Information Network Knowledge System
LMA	:	Livestock Market Association
LMD	:	Livestock Marketing Division
LOWASCO	:	Lodwar Water and Sanitation Company Ltd.
LRA	:	Long Rain Assessment
MDG	:	Millennium Development Goal
MDoNK	:	Ministry of State for the Development of Northern Kenya and other Arid Lands
MIS	:	Management Information System
MMC	:	Market Management Committee
MoLD	:	Ministry of Livestock Development
MoSSP	:	Ministry of State for Special Programmes
MOU	:	Memorandum of Understanding
MWI	:	Ministry of Water and Irrigation
NACONEK	:	National Commission on Nomadic Education in Kenya
NASA	:	National Aeronautical and Space Administration
NEMA	:	National Environment Management Authority
NDCF	:	National Drought Contingency Fund
NDMA	:	National Drought Management Authority
NEP	:	North Eastern Province
NEPAD	:	New Partnership for Africa’s Development
NGO	:	Non-Governmental Organization
NIB	:	National Irrigation Board
NOAA	:	National Oceanic and Atmospheric Administration
NRM	:	Natural Resource Management

NSWB	:	Northern Water Service Board
OCHA	:	Office for the Coordination of Humanitarian Affairs
O&M	:	Operation and Maintenance
PAG	:	Pastoralist Assistance Group
PFS	:	Pastoralist Field School
PISP	:	Pastoralist Integrated Support Program (NGO)
PR	:	Progress Report
PRA	:	Participatory Rural Appraisal
PRIDP	:	Rural Pastoralist Integrated Development Project
REGAL-IR	:	Resilience and Economic Growth in Arid Lands – Improving Resilience
REGLAP	:	Regional Learning and Advocacy Programme
RPLRP	:	Regional Pastoral Livelihoods Resilience Project
RVWSB	:	Rift Valley Water Service Board
SIDA	:	Swedish International Development Cooperation Agency
SME	:	Small and Medium-sized Enterprise
SRA	:	Short Rain Assessment
SRTM	:	Shuttle Radar Topography Mission
SSD	:	Caritas Moroto
STUCCO	:	Society of Turkana County Contractors
TDS	:	Total Dissolved Solid
TGDP Map	:	Turkana Groundwater Development Potential Map
TOR	:	Terms of Reference
TWADO	:	Turkana Women Advocacy Development Organization
TWP	:	Turkana Water Project
UN	:	United Nations
UNDP	:	United Nations Development Programme
UNESCO		United Nations Educational, Scientific and Cultural Organizaiton
UNHCR	:	United Nations High Commissioner for Refugees
UNICEF	:	United Nations Children's Fund
UNISDR	:	United Nations International Strategy for Disaster Reduction
USAID	:	United States Agency for International Development
VICOBA	:	Village Community Banking
WASH	:	Water, Sanitation and Hygiene
WB	:	World Bank
WDMA	:	Water Development Assessment and Mapping

WDF	:	Women Development Fund
WESCOORD	:	Water and Environmental Sanitation Coordination
WFP	:	World Food Program
WRA	:	Water Resource Assessment
WRMA	:	Water Resource Management Authority
WSAM	:	Water Source Assessment and Mapping
WUA	:	Water Users Association
YEDF	:	Youth Enterprise Development Fund
YF	:	Youth Fund

Measurement Units

Length

mm = millimeter(s)
cm = centimeter(s) (cm = 10 mm)
m = meter(s) (m = 100 cm)
km = kilometer(s) (km = 1,000 m)

Extent

cm^2 = square centimeter(s) (1.0 cm × 1.0 cm)
m^2 = square meter(s) (1.0 m × 1.0 m)
km^2 = square-kilometer(s) (1.0 km × 1.0 km)
ha = hectare(s) (10,000 m^2)
Acre = 0.4047 hectare(s) (4,047 m2)

Volume

cm^3 = cubic centimeter(s) (1.0 cm × 1.0 cm × 1.0 cm, or 1.0 ml)
m^3 = cubic meter(s) (1.0 m × 1.0 m × 1.0 m or 1.0 kl)
L = liter (1,000 cm^3)
MCM = million cubic meter(s)

Weight

g = gram(s)
kg = kilogram(s) (1,000 grams)
ton(s) = metric ton(s) (1,000 kg)

Time

sec = second(s)
min = minute(s)
hr = hour(s)

Others

ppm = parts per million
° = degree
°C = degrees Celsius
% = percent
mS = millisiemens

Currency

US$ = United State dollar(s)
JPY = Japanese yen(s)
Ksh. = Kenyan shilling(s)

ANNEX F

SUB PROJECT
- LIVESTOCK VALUE CHAIN

FINAL REPORT

THE PROJECT FOR ENHANCING COMMUNITY RESILIENCE AGAINST DROUGHT IN NORTHERN KENYA

ANNEX F SUB PROJECTS – LIVESTOCK VALUE CHAIN IMPROVEMENT

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CHAPTER F1. CONDITIONS AND CONSTRAINTS OF LIVESTOCK VALUE CHAIN IN NORTHERN KENYA

A. Conditions of Livestock Value Chain in Marsabit

F1.1 **General** conditions in Marsabit

The Government of Kenya (GoK) has taken some encouraging initiatives to facilitate and promote livestock trade by establishing accelerated economic growth policy frameworks and setting up of bilateral or multilateral programs focusing specifically on livestock development in pastoral areas. The policy documents acknowledge the critical role livestock marketing can play in improving the livelihoods of pastoralists and agro-pastoralists.

Considering the size of the population that depends on livestock production in Marsabit County, improvement of the livestock marketing value chain and livestock productivity is critical to the reduction of poverty and continuing towards more market orientation. This paper examined the livestock production system and marketing value chain.

(1) Points to be Examined in the Livestock Sector in Marsabit

The points to be clarified are;-

- To examine pastoralism and livestock marketing value chain and identify some of the factors contributing to poor livestock productivity and sales.
- To provide statistics on the type of animals sold, sources and destination and analyze cost and returns.
- To compare prices of livestock breeds from Marsabit County and those from North Eastern province.
- To put forward suggestions and recommendations for intervention by the project.

(2) Pastoralism and Livestock Value Chain

In Marsabit County, it is estimated that 80% of the population are either pastoralist or agro-pastoralist and the rest are farmers, traders and workers on salaried employment. The economy of Marsabit County is based on livestock production with an estimated livestock population of; 140,000 cattle, 84,000 camels and 550,000 sheep, and 65,000 goats (DLPO annual report 2011). The detailed numbers are shown in the following table.

Table AF1.1.1 Livestock Population in 2011

District	Cattle	Camel	Goat	Sheep	Donkey	Poultry	Bee-hive	Milk(L)
North-Horr	18,690	27,624	224,651	239,903	3,150	600	-	
Maikona	12,000	16,848	124,895	219,075	1,575	750	120	
Total	30,690	44,472	349,546	458,978	4,725	1,350	120	108,388
Loiyangalani	18,170	21,380	74,273	80,004	5,880	1,500	205	
Laisamis	27,200,	17,848	91,781	95,950	4,725	2,000	180	
Total	45,370,	39,228	166,054	175,954	10,605	3,500	435	89,514
Central	28,440	120	21,400	8,068	1,870	8,000	300	
Gadamoji	35,500	180	13,000	7,000	1,700	8,400	255	
Total	63,940	300	34,400	15,060	3,570	16,400	555	67,942
GRAND TOTAL	**140,000**	**84,000**	**550,000**	**650,000**	**18,900**	**21,250**	**1,100**	**265,844**

Source: DLPO, annual report 2011

F1.2 Pastoralism and Livestock Value Chain

F1.2.1 Traditional and Present Livestock Exchange System / Markets

(1) Traditional Livestock Exchange and Loan System

The traditional livestock exchange is slowly reducing with time, amongst the pastoral communities of Marsabit as their economy shifts towards integration into the national economy. The need for cash is ever increasing owing to school fees, modern drugs for both humans and animals, and the changing eating habits towards grains rather than milk alone and the influence of educated children. However the practice still exists as pastoralism is a high risk venture and hence the need arises for an insurance against losses through raids, drought and disease. Sharing animals has important social functions in creating social bonds through wealth re-distribution which in turn establishes an obligation on the receiver for shared defence against raiders and shared labour.

Amongst the Gabra and Rendille there are two forms of loans; *maal* and *kalaksime.* These loans are normally given to a clan member or members of a relative genealogical proximity. However the enticement to lend depends on the human and animal ratio of the household. The maal form of loan applies only to camels and is usually given during sorios (customary sacrifices). The receiver has no right over female offspring's and must brand all the heifers with the givers brand but entitled to all male calves. This form of loan may last for generations creating multiple owners in a herd and the receiver of maal camel has no right of selling or disposing any of the females. The *kalaksime* form of loan is usually an adult female camel which has just given birth and given to a poor household with short supply of milk. The loan duration is only for the lactation period.

The Borans loan lactating cows to household with short supply of milk, but the receiver has no right over any of the offspring's and must give back upon demand. This form of loan is called "*dabare"*.

(2) Trends of Pastoralists in Livestock Markets

Livestock is the most important sector in Northern Kenya, and a lot of effort has been put into this sector to vitalize livestock economic activities by various agencies. Pastoralists keep camels, cattle and shoats

(sheep and goat). It is widely recognized that the purpose of keeping animals by a pastoralist is basically to increase population of animals for milk, dowry and to carry out traditional ceremonies. However these tendencies are getting more influenced by a wave of commercialization and their change of lifestyle.

1) Purpose of Sales of Animals

In order to assess present situation of pastoralist society a District Profile Survey was conducted on a subcontract basis by the Project from May to July 2012, including questionnaire survey. In the questionnaire the purpose of selling livestock in the past one year was raised, i.e. actual usage of earnings from livestock sales. The results indicated that pastoralists sold livestock for cash to buy food as their first priority (85%), to buy a phone as second (13%) and to buy livestock for restocking was only 1%. The details are shown in the following table.

Table AF1.2.1 Purposes of Cash Obtained by Selling Livestock

	Buy food	Buy livestock	Buy phone	Education	Medicine	Gift	Others
Frequency	164	2	26	3	0	0	1
Rate (%)	85	1	13	2	0	0	1
Ranking	1	4	2	3	4		5

Source: JICA Project Team

In the same District profile survey, one of the questions was; how do you intend to use Ksh.50,000 if given suddenly? The results indicated that the first priority is to buy food (28%) in the same position with the earlier question. But in this case the second and third priorities were education (23%) and to buy livestock (20%) respectively.

Table AF1.2.2 Willingness to Allocate When They Had 50,000 shillings

	Buy food	Buy livestock	Buy phone	Education	Medicine	Gift	Others
Total Allocate (Ksh.1,000)	3,417	2,423	409	2,751	1,274	436	1,310
Rate (%)	28	20	3	23	11	4	11
Ranking	1	3	6	2	4	5	4

Source: JICA Project Team

Although questions on education and purchase of livestock scored the second and third in priority ratings, after food, it clearly indicated pastoralists have a strong interest to restock and educate their children. Therefore if an opportunity arises as illustrated above they would set aside cash for education and restock after meeting their food needs. The desire to restock cannot be actualized due to lack of funds, and available breeding stock in the markets in Marsabit.

An earlier research was conducted by a Japanese anthropological study team on livestock marketing in Suguta Marmar of Samburu County, where the livestock market has been well developed. Survey in Suguta Marmar shows the same trend as described above, but the only difference is that breeding stock was available in the market at Suguta Marmar and pastoralists had the opportunity to sell bulls or bucks and buy them.

The team reported that bulls and bucks were sold in order to raise money to purchase breeding stock, 208 bulls, 149 bucks, 60 cows and 15 does were sold in a market day. The main purpose of selling animals is to procure more breeding stock for multiplication (40%), the second priority is to procure food (18%) and thirdly to raise cash for business investment (14%).

Both surveys indicated that pastoralists are always eager to restock if the opportunity arises. These findings are a confirmation that pastoralists in Marsabit County will sell bulls and other stock to raise

cash to purchase breeding stock given an opportunity. The findings also confirmed that heifers are the most preferred stock in any restocking venture by pastoralists. The practice of curling extra bulls, castrates and old cows and replacing with heifers is scientifically sound and should be encouraged. A major constraint is the unavailability of heifers in Marsabit County as described in the previous section. An intervention by the project in introducing heifers in the markets would stimulate trading activities and reduce the number of marketable and unproductive stock held by pastoralists.

F1.2.2 Livestock Value Chain Analysis

The flow of traded animals from producers to end users, information and benefits throughout the chain is demonstrated. Most of the information was gathered through interviews with key actors and service providers at various livestock markets in Marsabit County, Isiolo and Nairobi. A review of secondary information was also gathered, the problem was unavailability of accurate and reliable data.

F1.2.3 Links in the Value Chain

(1) Sales by Producers

Most pastoralist sell livestock when there is an immediate need for cash to purchase food, pay school fees, fines etc. Where and when to sell depends on the urgency for cash and the presence of a buyer. In the pastoral areas of Marsabit small traders called *Duda nyate* travel from *manyatta* (temporary settlement) to *manyatta* to buy animals which they resell in nearby towns or Marsabit town. Sometimes they wait for animals at watering points or offer goods like sugar, tobacco etc on credit and when the credit accumulates they demand payments in terms of animals. Every settlement or trading centre is a marketing site, especially for small stock which is sold to shop keepers, *Duda nyates* or local butchers for immediate slaughter. Occasionally bigger traders with enough capital visit small trading centres and stay on until they purchase the number they require. However, pastoralist may sell their animals in bigger markets i.e. Marsabit or Merrille if the distance from the *manyattas* allows.

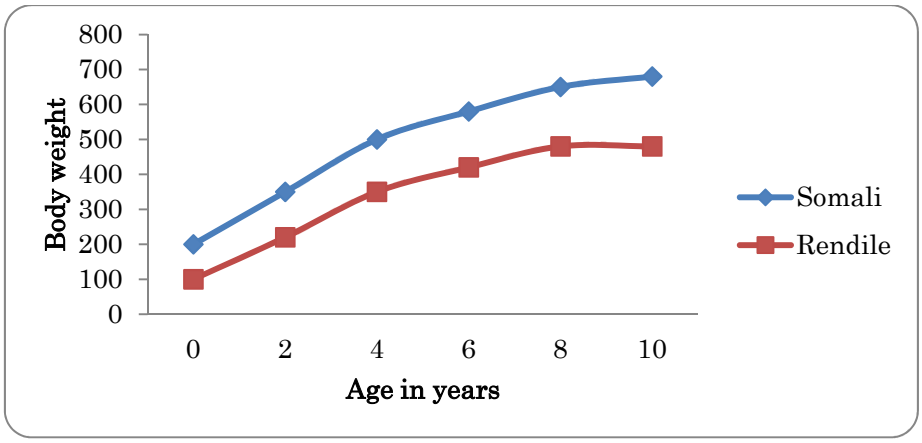
(2) Selection of Stock for Sale by Producers

The category within a species of animals to be sold is determined by the amount of cash required for a specific need. For subsistence needs of the household; an immature male within the small stock may be selected for sale, for school fees the selection may be within the cattle herd or castrates among the small stock. However, from the discussion with the pastoralists the order of sales is; young males, infertile females, deformed females in particular those without teats, castrates oraged stock, breeding males and finally productive females and heifers, under an extreme unmanageable state of affairs. The pastoralists of Marsabit hardly ever sell heifers that is why they are not available in any market in the County.

(3) Competitiveness of These Breeds

After examining all the breeds kept by the three major communities, it is clear the productivity of these breeds is inherently low; for example a Rendille camel takes 5 to 6 years to reach a marketable weight of between 350 and 500 kg, while the Somali camel takes between 2 and 4 years (figure beow). The same applies to cattle and the small ruminants. It can therefore be argued that the competitiveness of such animals in the market place with the Somali breeds from North Eastern province and Isiolo County is questionable. Breeders commend the specific merits of drought and disease tolerance of such breeds, nonetheless such merits can be combined with productivity. Such intervention has been carried out in the past by the Ministry of Livestock Development (MoLD) and NGO's with significant improvement in the target areas. The trend should be encouraged.

Competing in the market necessitates improving productivity, which is directly related to growth rates and reproductive efficiency, this means if a breed performs better in a relatively shorter time under the same range conditions it is worth considering.

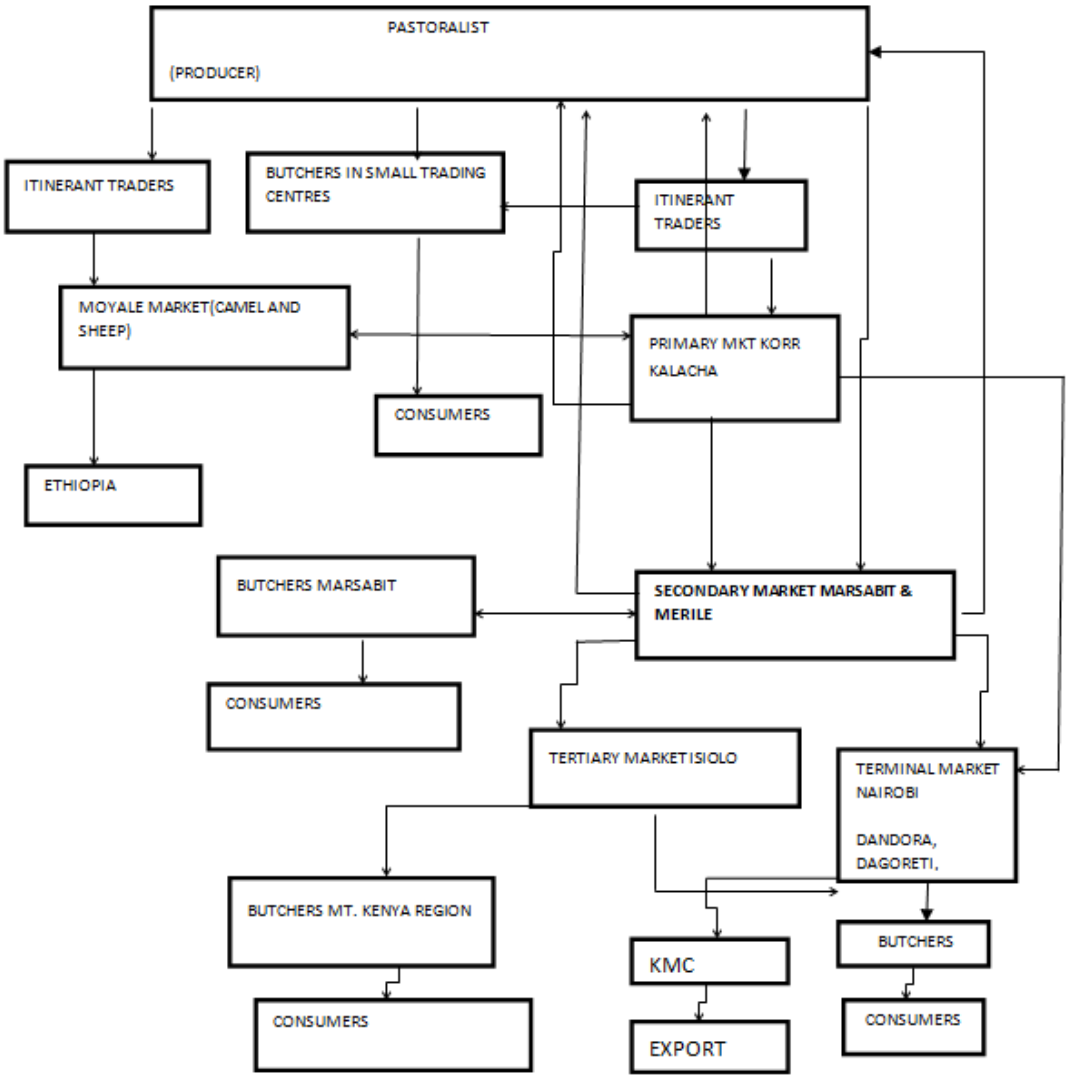


Source: Health 1990

Figure AF1.2.1 Growth Rates for Somali and Rendille Camels

F1.2.4 Livestock Marketing Channels

The livestock marketing channels are; local slaughter, restocking, Marsabit-Isiolo-Nairobi, live animal export, unofficial animal export, unofficial animal import and meat export .



Source: JICA Project Team

Figure AF1.2.2 Market Channels for Livestock

(1) Local Slaughter Channel

Slaughtering of animals is carried out at the manyattas for food, ceremonies and offerings. Slaughtering for commercial purposes occurs in all trading centres in the county, the number slaughtered depend on the resident population.

Table AF1.2.3 Marsabit Town Slaughter Data in 2012

ANIMAL SPECIES	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	**TOTAL**
CATTLE	113	111	114	105	100	109	110	103	**865**
SHEEP	122	129	134	126	124	106	93	100	**1051**
GOATS	117	146	166	145	143	115	165	116	**1113**

Source: JICA Project Team

(2) Restocking Channel.

The ministry of livestock development and various donors, through NGOs, carried out restocking in 2012 in Marsabit County as indicated below.

Table AF1.2.4 Restocking in Marsabit County (2012).

	BENEFICIARY DISTRICT	SHOATS	CATTLE	CAMELS	DONKEYS	POULTRY	PERFOR-MANCE	MORTALITY
PISP	North Horr	7,950	0	0	0	0	Good	
PACIDA	Marsabit North	4,390	0	2,375	0	0	All good so far	
SOS	Marsabit Central	1,610	0	2	0	40	All alive so far	
CIFA	Larger Marsabit	0	50	0	218	160	Good	All poultry died
MOLD	Marsabit North	620	0	7	0	0	Good	
MOLD	Marsabit Central							
MOLD	North Horr	333	0	0	0	0	good	
MOLD	Marsabit South	667	0	0	0	0	good	

Source: JICA Project Team

(3) Marsabit-Isiolo-Nairobi Channel

This is the main chain channel for trading livestock from the County and it begins from the producers as described above to primary or secondary and then to the terminal markets.

1) Primary Markets

Studied primary markets in the project are: Turbi, Kalacha, and Korr. These livestock markets have not operated effectively owing to seasonal movements of livestock and other factors specific to a market.

a) Turbi Livestock Market

The Turbi livestock market was constructed by Food for the Hungry International (FHI) in 2009, the structure has holding pens, loading rump and a toilet for traders. It is located near Turbi trading centre on the main high way from Moyale to Nairobi. After the construction of the market, FHI formed and trained livestock market management committee (MMC) to run and maintain the market. They also defined market days and brought livestock traders from Marsabit for several markets. Nonetheless, it was not effective.

From discussions with the MMC, it was clear that, some sort of cartel existed amongst the resident traders, for they offered higher prices than the traders from Marsabit, deliberately to discourage them from buying. For this reason the Marsabit traders stopped coming after several visits. The other reasons given were; water scarcity and poverty of the inhabitants induced by the 2007 raids, in which the inhabitants of Turbi lost all their animals. It was obvious the MMC was not keen to re-open the market, since they insisted on capacity building for both traders and pastoralist before anything is done. On the other hand they confirmed to have Ksh.90,000 in the committees bank account, raised from loading animals alone. Charges per truck is Ksh.1,000 therefore this means, more than 90 trucks loaded animals at the sales yard, if MMC members allowance and other expenses which were not recorded are included. Animals loaded were mainly small stock and cattle. It can therefore be argued that a lot of livestock trading is going on outside the market; however any intervention to operationalise this market needs a closer examination to find out the underlying problems.

b) Kalacha Livestock Market

The market structure was constructed in 2007 by FHI; it has holding pens, a loading rump and a toilet for traders. It is located near Kalacha trading centre and about 4 km from livestock watering point. FHI formed and trained the MMC and also took them on a learning tour to Merrille market. However this market has operated at a very low level (see next table).

Table AF1.2.5 Livestock Sales at Kalacha Market

DATE/ MONTH/ YEAR	LIVESTOCK SPECIES	NO. SOLD	MIN. PRICE (KSH.)	MAX. PRICE (KSH.)
21/ 4/ 2011	Small stock	58	300	4,000
28/ 5/ 2011	Small stock	168	900	4,800
16/ 6/ 2011	Small stock	178	1,000	5,000
	Camels	60	20,000	45,000
28/ 6/ 2011	Small stock	120	1,000	5,000
18/11/ 2011	Small stock	102	1,000	4,000
16/ 1/ 2012	Small stock	121	1,600	5,500
18/ 1/ 2012	Small stock	151	1,800	6,000
15/ 2/ 2012	Small stock	111	2,000	5,800
22/ 2/ 2012	Small stock	56	2,300	6,000
31/ 7/ 2012	Camels	2	30,000	30,000
1/ 8/ 2012	Camels	3	30,000	

Source: MMC Kalacha

It appears a lot of small ruminants were sold outside the market; for example the County council record showed 420 sheep and goats were sold in Kalacha during the month of may 2012,while, MMC record gave a nil return.

From the discussion with the MMC, FHI (Food for Hungry International) and Kalacha EMC, it appears a number of factors contribute to the poor performance of the market as discussed here.

- Kalacha is a dry season grazing zone, but many pastoralists tend to graze their animals even during the wet season thereby depleting grazing quickly. This behaviour prompted the area chief and EMC to restrict grazing 20 km^2 around the water sources, effective from the next rainy season.
- Many pastoralists prefer to sell on a watering day rather than driving one or two animals from the manyatta to the market on a market day, and if the watering day does not coincide with the market day he sells at the watering point.
- Resident traders tend to compete with traders from outside to discourage them from coming.

- Some producers avoid paying the County council tax therefore sell at the *manyatta* to mobile traders.
- Trucks to transport animals are not readily available in Kalacha, a trader may be compelled to trek his animals on foot to Marsabit.

Kalacha market is located in the heart of Gabra land with a large catchment area and therefore has potential for improvement. It requires some investment for improving the facility and capacity building of MMC, EMC and the community.

c) Korr Livestock Market

The market was constructed by FHI in 2009; it has holding pens, a loading rump and a toilet for traders. Saturday is a market day for Korr people. At the time of the visit there were 582 sheep and goats in the market and all traders were local. Pastoralist lamented that big traders from Marsabit were not present but all the shoats were bought. There was a problem between the MMC and County council officials over revenue collection and the MMC was dissolved. A new MMC is yet to be formed and therefore it was not possible to get market data. The information below was collected by the project staff

Table AF1.2.6 Korr Livestock Market Data (2011)

	TOTAL NO OFFERED	F/CAST	CAST	O/DOES/EWES	LOWEST PRICE	HIGHEST PRICE
GOATS	365	99	152	61	2,800	5,500
SHEEP	217	15	181	21	2,300	4,500

Source: MMC Korr

2) Secondary Markets

Secondary markets are Moyale, Marsabit and Merille while Isiolo acts as tertiary and terminal market. Livestock purchased by traders from the primary markets are re-sold in these markets.

a) Marsabit Livestock Market

Marsabit is the oldest market in the County and it used to be a buying centre for the Livestock marketing division (LMD), established by the MoLD in 1972 at Badasa. After LMD ceased operation, the market was relocated to Jirime near the town centre in 1993 and later rehabilitated by FHI. It has holding pens, loading rump, and toilet for traders, a weigh bridge and a two roomed pre-fab house for the watchman.

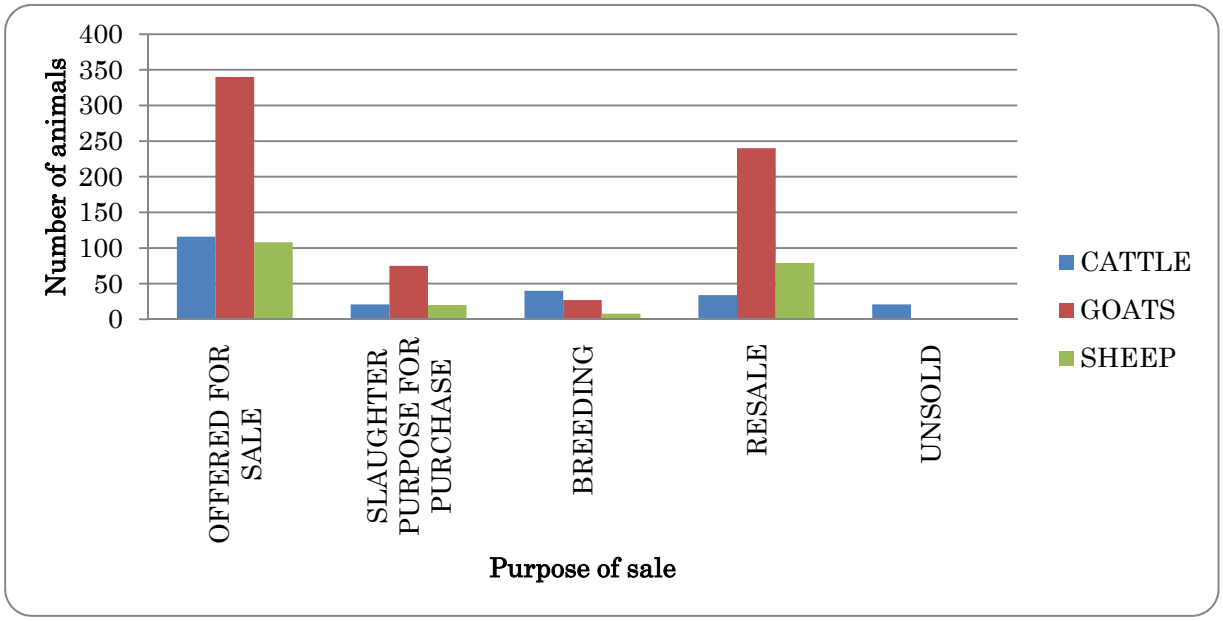
The operation at the market starts at 6 a.m. in the morning, when butchers demand animals for slaughter and since the market is located close to the slaughter house. Traders avail animals in time so that the butchers can select and purchase animals for immediate slaughter, and thus eliminate the cost of herding and housing the livestock over night. This strategy employed by butchers excludes pastoralist / producers, and small traders from the interior who arrive at 9 a.m. by which time the market has already shifted to the stadium in the middle of the town.

The market operates on a daily basis and there is no market day. The activities at the market are controlled by brokers, who negotiate between the buyer and the seller and, any attempt by anyone to by-pass them is resisted and leads to confusion. The brokers charge a service fee for any successful transaction at the rate of 100 shillings for cattle and 50 shilling for small ruminants.

There are a number of traders based in Marsabit who buy and resell within the market, they specialize in small ruminant's trade. These traders purchase from producers, small traders from primary markets and other mobile traders and resell to butchers, farmers, agro-pastoralists, others who buy for social functions and traders who transport animals to terminal markets. These traders work in close collaboration with brokers and actually control the market price, so as to make a huge profit margin thereby frustrating sellers.

From discussions with traders, brokers and District livestock marketing council (DLMC), it emerged that the MMC trained by FHI neglected their duties and livestock loaders took over some of the functions of the market i.e. loading. The other problem is trading in the stadium after the early morning sales, and this is due to failure by the County council to take action using their by-laws. Other issues raised are lack of facilities such as a food kiosk, a shed and water for both livestock and people.

The problems raised are not insurmountable and they can be solved through creation and training of a MMC, resident traders and assisting brokers to turn into traders in collaboration with other stake holders.



Source: JICA Project Team

Figure AF1.2.3 Marsabit Market Data

b) Merille Livestock Market

This market is located on the Marsabit -Isiolo highway and after the road was paved from Isiolo to Merille it became vibrant. The catchment covers Laisamis, Korr, Kargi and parts of Kulal area. This market acts as a primary and secondary market for Korr. Most of the animals sold in this market are transported to either Isiolo or Nairobi for re-sale.

F1.3 Supporting Services

F1.3.1 Veterinary Services

Veterinary services remain a major issue of concern as resource allocation to the department is small. There is only one veterinary officer per district and it has become extremely difficult for them to provide services efficiently.

Table AF1.3.1 Common Livestock Diseases in Marsabit District

LIVESTOCK SPECIES	COMMON DISEASES	CONTROL
GOATS/ SHEEP	CCPP (contagious caprine pleuro pneumonia)	Vaccination, Quarantine and use of Antibiotics
	ORF	,,
	LSD -(Lumpy Skin Disease)	,,
	Pox	,,
	Heart water	Ecto-parasite control with Acaricides and Anti-biotics
	Worms (endo parasites)	Routine deworming
	FMD (foot and mouth disease)	vaccination
	Enterotoxaemia	vaccination
	Mange	antibiotoc
CAMEL	HS (hemorrhagic septicemia)	Vaccination and Antibiotic (pen strep)
	Trypanosomiasis	Ecto-parasite control with Acaricides and triquin vials
	Mange	Antibiotics
	Abscess	Antibiotics
	Mastitis	Antibiotics
	ORF	Vaccination
CATTLE	Anaplasmosis	Antibiotic
	CBPP	Vaccination
	FMD	Vaccination
	Anthrax	Vaccination
	Black Qurater	Vaccination
	Helminthes	Deworming/ anti-helminthes
	Strangle	antibiotics
POULTRY	Coccidiosis	coccidiostat
	Helminthes	Ascarex (anti-helminthes)

Source; DVO, Marsabit central.

According to the District veterinary officer (DVO) there was no major outbreak of notifiable diseases and therefore no quarantine was imposed on the County in the last few years.

F1.3.2 Kenya Livestock Marketing Council

This is non-profit making organization created mainly to lobby and advocate on behalf of pastoralists on policy issues related to livestock and livestock products. They are advocating for the removal of the burdensome veterinary regulation.

F1.4 Marketing Efficiency

Given the current pastoral mode of production, where animals are grazed throughout the year on natural pasture without supplementation, it is almost impossible to fatten animals to a level required by the consumers in the terminal markets. Paradoxically, pastoralists reduce sales during rainy seasons and immediately after the rains, when animals are in good body condition and could fetch better price. The problem is compounded by the dispersal of animals over the range during this period and therefore far-off from the markets and unwillingness of pastoralists to dispose of animals at a prime age. However

a small number of educated pastoralists are exploiting the situation and shifting towards market orientation.

Table AF1.3.2 Estimated Cost of Production of a Four Year Goat in Kalacha Area

Items	2009	2010	2011	2012	Total
(a) Number of Goats (Nos.)					
Number Of Goats (Jan.)	200	163	144	86	593
Births	25	48	28	50	151
No. Of Animal Sold	41	33	50	7	131
Animal Slaughtered	6	8	5	8	27
Deaths	15	26	31	0	72
Number Of Goats (Dec.)	163	144	86	121	514
(b) Expenditure (Ksh.)					
- Water fee	0	30,000	120,000	0	150,000
- Herding fee (cash)	48,000	36,000	36,000	48,000	168,000
- Herding fee (food etc)	20,000	40,000	46,000	55,000	161,000
- Drugs	2,000	3,500	15,000	14,000	34,500
- Social Cost	20,000	30,000	15,000	5,000	70,000
- Ceremonies	8,000	15,000	13,000	8,000	44,000
Total Expenditure	98,000	154,500	245,000	130,000	627,500
(c) Livestock Sale (Ksh.)	80,000	84,000	75,000	108,000	347,000
(d) Losses by deaths (Ksh.)	45,000	78,000	93,000	0	216,000
Production cost (Ksh./goat)	**3,023**				

Note: 3,023 = (627,500 + 216,000) / (121 + 131 + 27)

Source: JICA Project Team

A case study from Gabra land is illustrated in the table above to measure marketing performance using data from traders and a herder in Kalacha. The production cost has been estimated using data from a pastoralist who sold a four year old goat to an itinerant trader in August 2012.

The above is an attempt to estimate the cost of production of an individual pastoralist in times of drought. Many writers assume the cost of production for pastoralists is insignificant.

F1.4.1 Marketing Cost, Margins and Returns

The data used for calculating marketing cost and margins for various traders was obtained through interviews and the cost of production is as indicated above. An example of the transaction series is illustrated below.

Table AF1.4.1 Marketing Cost and Margins

ITEMS	PASTORALIST	ITINERANT TRADER	LARGE SCALE TRADER	LARGER SCALE TRADER
POINT OF SALE	KALACHA	KALACHA	MARSABIT	NAIROBI
COST OF PRODUCTION (herding, watering, protection)	3,023	0	0	0
PURCHASE PRICE IN Ksh.		3,500	4,500	5,500
BROKERS FEE IN Ksh.	0	0	50	100
C.COUNCIL CESS IN Ksh.	0	25	25	25
TREKKING COST	0	50	0	0
MARKET CESS IN Ksh.	0	0	20	20
TRANSPORT IN Ksh.	0	70	185	185
PERSONAL EXPENSE	0	155	155	155
POLICE	0	0	25	25
MOVEMENT PERMIT	0	0	10	10
SUB TOTAL IN Ksh.	***3,023***	***3,800***	***4,970***	***6,020***
SELLING PRICE IN Ksh.	***3,500***	***4,500***	***5,500***	***6,500***
PROFIT IN Ksh.	***477***	***700***	***530***	***480***

Source: JICA Project Team

F1.4.2 Marketing Performance

The performance of the marketing system may be evaluated by examining the level of benefit (profit) obtained by the various actors in the value chain. It is clear from the above table that the itinerant trader had the biggest profit margin while the pastoralist got the smallest. Profit margins may create incentives for performance and that's why itinerant traders do not wait for animals in the market but move from water points to manyattas in such of animals to buy.

F1.5 Constraints and Proposed Intervention in Livestock Value Chain

F1.5.1 Constraints and Approaches

Based on the study results and observations, the following constraints were identified in livestock value chain in Marsabit and Turkana Counties.

- Since improvement of livestock market value chain and revitalization of livestock market are focal issues in Northern Kenya, there were many interventions which were implemented by the Government, and donors. However, such attempts did not provide good success in the region. Even though new livestock market facilities were constructed at many communities, they still did not sell their livestock except when they needed cash urgently for specific reasons, such as buying food, education fee, etc. This is because possession of livestock is prestigious in a pastoralist society. It is indeed necessary to develop a new approach in which pastoralists want to sell their own livestock voluntarily in their local market. Otherwise all the efforts, such as construction of new market facilities and market training to pastoralists, would be in vain.
- Since migration is a suitable coping mechanism for pastoralists in Northern Kenya, it seems they tend to rely on it and overlook the significant effect of cultivation of fodder in their livestock activities. In particular, in consideration that nowadays pastoralist family members have started residing at one place permanently and only herders migrate seasonally with animals, fodder cultivation near the village can support them a lot, in particular for dairy shoats and young animals which stay in the village throughout the year.

There are only a few places where fodder can be cultivated in the field, and cultivation in such areas should thus be recognised as a strong tool for combating drought.

Based on the above mentioned considerations, the approach for livestock value chain was formulated as described in the following sections.

F1.5.2 Heifer Exchange Scheme

This is a proposed marketing intervention to stimulate sales by pastoralists by selling the large number of marketable animals held by them. The strategy involves availing good quality breeding stock heifers / young females, and male animals as per the demand of the local communities in the market. These are normally hard to get. The Project will focus on superior breeds in terms of milk, meat production and high growth rates than the local breeds. The breeds identified are Somali camels, Galla goats, Boran cattle and Black head Persian sheep.

The three main pastoralists' communities inhabiting Marsabit County are highly dependent on dairy products for survival, this means a house hold`s food security is measured by the number of lactating animals possessed. During rainy seasons, pastoralists who are purely nomadic depend entirely on dairy products for their daily food needs, although this eating habit is slowly changing due to a continuous supply of relief food.

Heifers are valued, as future producer of milk and off-spring and also for dowry, for all the three pastoral communities in Marsabit. For Borana three heifers, Rendille five camel heifers and Gabra one camel heifer must be paid as dowry during marriage.

These pastoral communities in Marsabit do not sell heifers under normal circumstance; any heifer on sale must either be deformed or not good for breeding therefore not valued, unlike the Somalis in Isiolo, Garrissa, Wajir and Mandera Counties who are more commercially oriented. The demand for heifers in Marsabit County is very high and therefore, an important entry point to spur livestock marketing activities, since pastoralists are ready to sell their male stock and buy them. To most pastoralists a heifer is an excellent investment and an opportunity to enlarge herd size. The prolonged blanket supply of relief food to pastoralists reduces their need for cash, thus reduced sales of livestock, as there are no banking facilities in the County except in Marsabit and Moyale towns.

The other advantage in the heifer exchange scheme is the opportunity to increase livestock productivity. The Somali camels and Galla goats are superior breeds than the local breeds in terms of milk and meat production. They also mature earlier than the local breeds and have a higher growth rate. This means improved productivity and less time to market for the producer.

GABRA /BORANA GOATS (mature castrates)

Rendille Samburu Goats (mature castrates)

Note: The above goats from different communities living in Marsabit County are of almost the same age but different breeds. The average prices for the Gabra / Boran was Ksh.6, 000 while the Rendille was Ksh.4, 500.

Source: JICA Project Team

Figure AF.1.5.1 Photos for Goats

Heifers have higher survival rates in times of drought and more resistance to diseases as revealed by the project survey in Dirib area (Table below).

Table AF1.5.1 Survival Rates for Heifers in Dirib Area.

Animal Species	Percentage Heifer/Young Female Survival Rates	Remarks
Cattle	86.0%	Most of the heifers were pregnant
Camel	75.0%	Beginners in camel keeping
Goats	81.9%	Loss to drought was small
Sheep	65.6%	

Source: JICA Project Team

Although there is need to carry out a wider investigation on herd composition amongst all the communities in Marsabit; a survey by the project at Turbi water point indicated high percentage of marketable camels within the livestock population (Table below).

TableAF1.5.2 Marketable Livestock in a Herd at Turbi Watering Point.

Livestock Species	Percentage Available For Sale	Remarks
Cattle	6.9%	Almost all are either heifer or in calf hence cannot be sold.
Camel	45.5%	There is good number of castrates that can be sold in the two herds counted.
Goats	18%	Not many castrates and old animals in almost all herds counted.
Sheep	19.6%	Not many castrates and old animals to be sold in almost all herds counted.

Source: JICA Project Team

The details for feedlot should be referred to Chapter F2.

F1.5.3 Feedlot in an Existing Agro-Forest

A Feedlot can be defined as a livestock holding area where emaciated animals are held briefly for the purpose of fattening for the market. During the 2010 - 2011 drought the inhabitants of Kalacha town were able to save many of their small stock and pack camels by feeding them with fodder from Kalacha Goda irrigation scheme (Kalacha irrigation is an agro-forest). They have been practicing it on a small scale with limited skills. The concept of a feedlot was derived from this experience. If the scheme is expanded and a feedlot introduced, it could enormously increase resilience to drought in the area.

When properly designed and managed, a feedlot in an agro-forest setup intervention can decrease the instability associated with environmental deterioration and increase land productivity. A feedlot can help by meeting part of those needs, especially fuel-wood and fodder for livestock, thus increasing resilience to drought. The following are the available or possible fodder materials in this scheme.

(1) Indigenous Multipurpose Trees

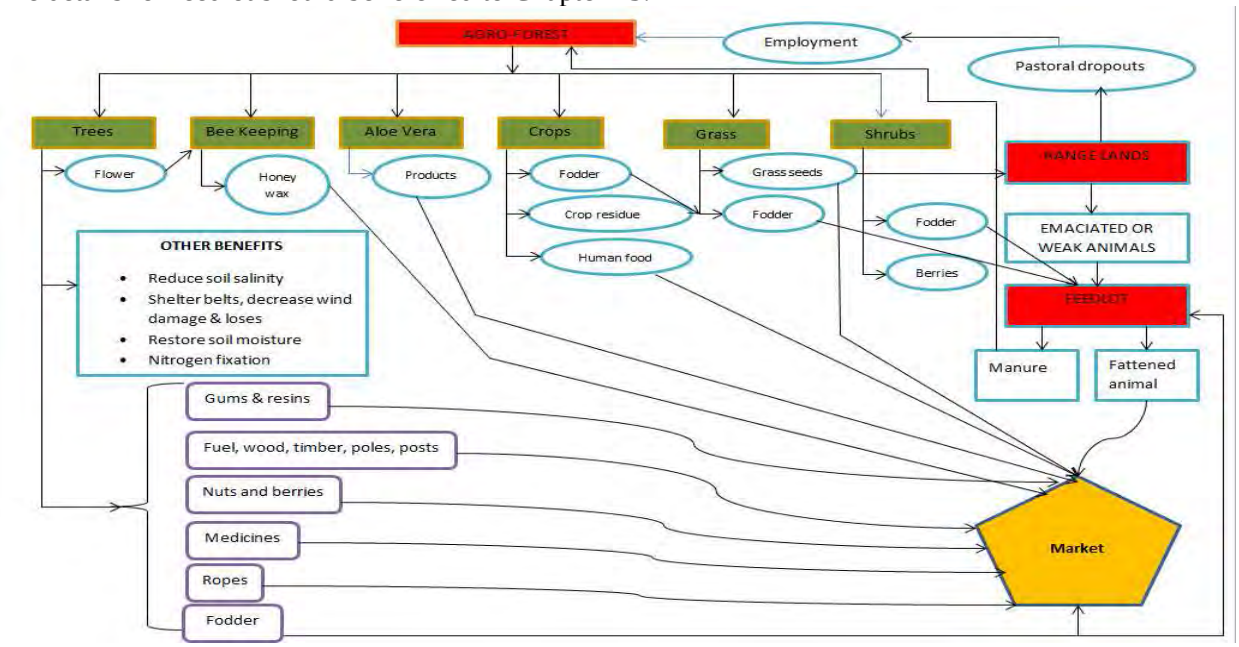
Some indigenous multipurpose trees with comprehensive knowledge base generated by agro-forest interest;-

- *Acacia melamsii*
- *A. Nilotica*
- *A. Senegal*

- *A.tortilis*
- *A.albida*
- *A. seyal.*
- *Khaya sensgalensis*
- *Balanites aegyptiana*
- *Vilellaria paradoxa*
- *Ziziphus mauritania*

Source; Leakey& Newton (1994)

The details for feedlot should be referred to Chapter F3.



Source: JICA Project Team

Figure AF1.5.2 Feedlot in an Existing Agro-Forest

F1.6 Approach of Pilot Project for Livestock Sector in Marsabit

The following approaches were considered for the Project;

- Heifer exchange scheme as explained in this section.
- Feedlot in an existing agro-forest. A small agro-forest of about 22 ha exists in Kalacha irrigation scheme which could be expanded to 55 ha as per KARI's recommendation.
- Livestock market infrastructure improvement in Korr, Kalacha and Marsabit.
- Introduction of auctioning system in the markets.
- Introduce and train in the use of a weighing band in all the markets. A weighing band is a tape measure with corresponding marks to weight when placed around the chest of an animal; it gives a more accurate weight estimate. This will encourage the shift to weight based sales. However a draw back in the use of weighing band; it is breed specific due to different chest circumference of various animal breeds. In spite of this a formula could be worked out to produce a weighing band for the local breeds.

- Encourage stratification through training of small scale farmers on Mount Marsabit to fatten animals on a small scale to the standard required in the high end markets.
- Assist semi-settled pastoralists in the formation of livestock marketing groups which could turn into cooperatives in future.
- Establish a revolving fund that could be used by traders as a loan facility. This could trigger competition in the primary markets resulting in improved income to pastoralists
- Capacity building for pastoralists in areas of marketing and production; change to a more market driven mode of production

B. Conditions of Livestock Value Chain in Turkana

F1.7 Outline of Livestock Distribution in Turkana

The conditions for continued pastoralism in Turkana have gone through a number of changes. Yet pastoralists in the region have adopted and dealt with such changes and have increased the number of their animals to sustain their livelihood. Since the number of animals has been an indication of one's social status, exchanging animals at the market has been kept to an absolute minimum.

However, since a market economy has become a way of life in Turkana, this has changed the lifestyle there and exchanging animals has now become a common practice, exchanging animals for food, daily goods, decorative goods such as beads and bangles, medical supplies, etc. In recent years, the need for cash has also been increasing due to education and medical needs of their children. Under such social-economic changes, pastoralists have exchanged their animals for other goods even though the exchange condition was not favourable to them.

"In order to improve the trading activities of pastoralists at livestock markets, the government drew up a plan to establish the livestock sale yards where it became possible to obtain cash in exchange for animals, instead of the goods to goods traditional barter exchange method."
The first phase was launched in 1997, which created seven sale yards in Lodwar (Turkana Central), Lorugum (Loima), Lokichar (Turkana South), Kalemngorok (Turkana South), Lokori (Turkana East), Kaaling (Turkana North), Kakuma (Turkana West) within the current Turkana county.

The operation of these sale yards had a series of trials and errors at first. Later, the Livestock Marketing Association (hereinafter referred to as "LMA") was established in the year 2000, organized by local traders, in order to realize a smoother operation and management. Furthermore, the District Livestock Marketing Council (hereinafter referred to as "DLMC", the current Turkana County Livestock Marketing Council) was created in 2004 for the purpose of strengthening LMA, which began its operation with government assistance. The LMA is to be managed under the umbrella of the Kenya Livestock Marketing Council (hereinafter referred to as "KLMC") as well as the Turkana DLMC.

Currently the LMA has six groups in Loima district, six in Turkana Central district, four in Turkana South district, two in Turkana East district, five in Turkana North district and six in Turkana West district. Each of their sale yards is managed and operated by LMA organized by local traders. The number of LMA members differs according to the size and the scale of trade of the sale yard. Five of twenty nine sale yards have been quite active and the members of those five yards are increasing. The LMA in Lodwar was launched with fifty members, and this has been increased every year. Currently, two hundred and seventy four (as of July 2013) traders are registered.

F1.7.1 Functions of DLMC and LMA

The main activities of the DLMC and the LMA (local traders) are sale yard operation management and information provision, activating and facilitating the distribution network that connects pastoralists with external markets. Their functions are as stated below.

1) Functions of DLMC

- To advocate for the interests and rights of the members on livestock matters in collaboration with other stakeholders.
- To promote livestock and livestock products marketing locally, nationally and internationally and in particular in pastoral areas.
- To develop local and national marketing institutions (LMAs) in Turkana County.
- To enhance marketing information, dissemination and communication to producers and traders.
- To lobby for policy changes that favour appropriate livestock development.
- To build capacities for livestock marketing associations (LMAs) to sustainably manage livestock related infrastructure and undertake community based and asset based control measures.

2) Functions of LMA

- Managing revenue collection.
- Welfare matters for registered members' e.g. paying hospital bill when a member is sick.
- To ensure that livestock are sold in the markets and not outside.
- Rehabilitation of sale yard facilities
- Writing proposals to NGOs and donors to support them in livestock marketing issues.
- Disseminating market information to livestock traders and producers.
- To ensure that the livestock sold at the market are not stolen from the producers/pastoralists.

F1.7.2 Operation of Sale Yard

The main income sources of LMA that manage and operate sale yards are their membership fees and the sale yard utilization fees paid by animal sellers who sell their animals. LMA members pay Ksh.200 for members registration and Ksh.200 as annual membership fee. The sale yard fees collected from major sale yards during the year 2012 was shown on Table AF1.7.1 as revenue record.

The 2012 gross revenue of Lodwar LMA was Ksh.541,920, the sum of sale yard fees (Ksh.487,120) and annual membership fees of Ksh.54,800 (274 members times Ksh.200). Their main expenditure was in labour costs, Ksh.144,000 (Revenue clerk Ksh.5,000/month, Security guard Ksh.4,000/month, Casual labourer Ksh.3,000/month), utility bills (water and electricity), sale yard facility repair, etc.

In the case of Lokichar, the revenue was Ksh.190,920, the sum of the sale yard fees (Ksh.179,920) and annual member fees of Ksh.11,000 (55 members times Ksh.200). When labour costs, of the same amount as that of the Lodwar, are deducted, the net was only Ksh.46,920. It was presumed, therefore, that it is difficult to cover the utility bills and any facility repair costs.

The revenue from sale yard fees is larger in Kakuma, as the number of larger animals traded at the yard is greater than Lodwar. The number of members for Kakuma LMA is at least two hundred.

Table AF1.7.1 Total Number of Animals Sold and Revenue in Main Market in 2012

Sale yard	Livestock	Fee (Kshs./head)	Number of Sold Animal	Revenue (Kshs.)
Lodwar	Shorts	20	475,402	441,420
	Camel	100	19,376	19,000
	Donkey	100	22,807	22,400
	Cattle	100	4,480	4,300
	Total			**487,120**
Lokichar	Shorts	20	160,967	150,420
	Camel	100	20,495	20,100
	Donkey	100	9,627	9,400
	Cattle	100	100	0
	Total			**179,920**
Kakuma	Shorts	20	338,241	314,740
	Camel	100	97,356	95,900
	Donkey	100	28,374	27,900
	Cattle	100	105,020	103,400
	Total			**541,940**
Source: Turkana county Livestock Marketing Association				

It was noted that the number of livestock traded through the sale yards was still small.
In order to operate a sale yard independently, a LMA requires certain size of revenue generated by livestock trade in the market. To stimulate livestock trade in a market, producers (pastoralists) should have a clear strategy in consideration of demand and requirement of traders, when and which animal they need.

F1.7.3 Purchase and Sale of Animals

Generally speaking, animals are traded through mutual agreement in Turkana, regardless of whether this takes place in or out of the sale yard. In most cases, the price of animals is determined by their live body weight. Nevertheless, animals are not weighed. The buyer's profit depends on his own judgement. This is where profit or loss occurs. Therefore, a large scale trader, for instance, makes an effort to create his profit by trading goats in flocks and seeking the appropriate buyers for what the yard can offer that day, depending on what buyers seem to be paying attention to the most, such as animals' body weight, etc.

The agreed transaction is usually settled between the seller and the buyer, and only the two would know the agreed price. However, any sales done in sale yards are mostly dealt with by LMA members, so the final prices are known by the public. Table AF1.7.2 shows the monthly average trade price in 2012 of classified animals. When only prices of goat and sheep, are compared, the price is basically determined by the balance of demand, yet the highest price is realised in the Kakuma sale yard where meat is supplied to refugee camps.

Table AF1.7.2 Monthly Average Trade Price (Shilling per Head)

Market	Livestock	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lodwar	Shorts	4,503	4,226	4,198	4,250	3,681	2,793	2,971	3,361	4,243	3,674	4,892	4,158
	Camel	25,667	28,750	26,850	23,000	30,350	21,750	38,000	40,400	35,769	44,200	27,111	28,385
	Donkey	9,071	9,111	9,778	9,250	16,505	14,600	10,167	17,273	18,000	17,875	14,800	11,273
	Cattle	—	—	—	—	26,500	18,250	33,500	25,400	25,625	30,250	21,100	18,889
Lokichar	Shorts	2,784	3,255	3,044	2,942	2,987	2,718	2,387	2,863	2,397	3,374	2,747	3,135
	Camel	26,929	30,222	24,364	32,272	29,166	27,792	31,750	24,143	28,292	28,850	32,833	35,000
	Donkey	17,167	23,333	20,800	21,600	16,000	23,000	20,200	16,500	—	23,500	16,750	18,500
	Cattle												
Kakuma	Shorts	4,626	5,009	4,719	4,568	4,766	N.D	4,357	4,574	N.D	N.D	N.D	N.D
	Camel	34,390	39,184	31,583	37,056	39,466	N.D	45,400	25,500	N.D	N.D	N.D	N.D
	Donkey	—	11,453	12,452	13,068	12,968	N.D	13,076	13,289	N.D	N.D	N.D	N.D
	Cattle	30,946	23,063	27,333	27,391	32,087	N.D	24,776	24,763	N.D	N.D	N.D	N.D
Lokichoggio	Shorts	4,152	4,296	3,335	4,361	3,641	4,546	4,508	4,368	3,425	4,201	N.D	N.D
	Camel	27,757	28,393	38,158	27,479	28,019	24,545	33,904	34,000	33,403	32,840	N.D	N.D
	Donkey	10,115	12,085	10,798	9,629	10,221	10,500	15,000	15,000	9,500	15,000	N.D	N.D
	Cattle	26,354	27,073	23,330	25,120	27,821	29,648	32,722	32,459	33,403	31,759	N.D	N.D

Source: LMAs

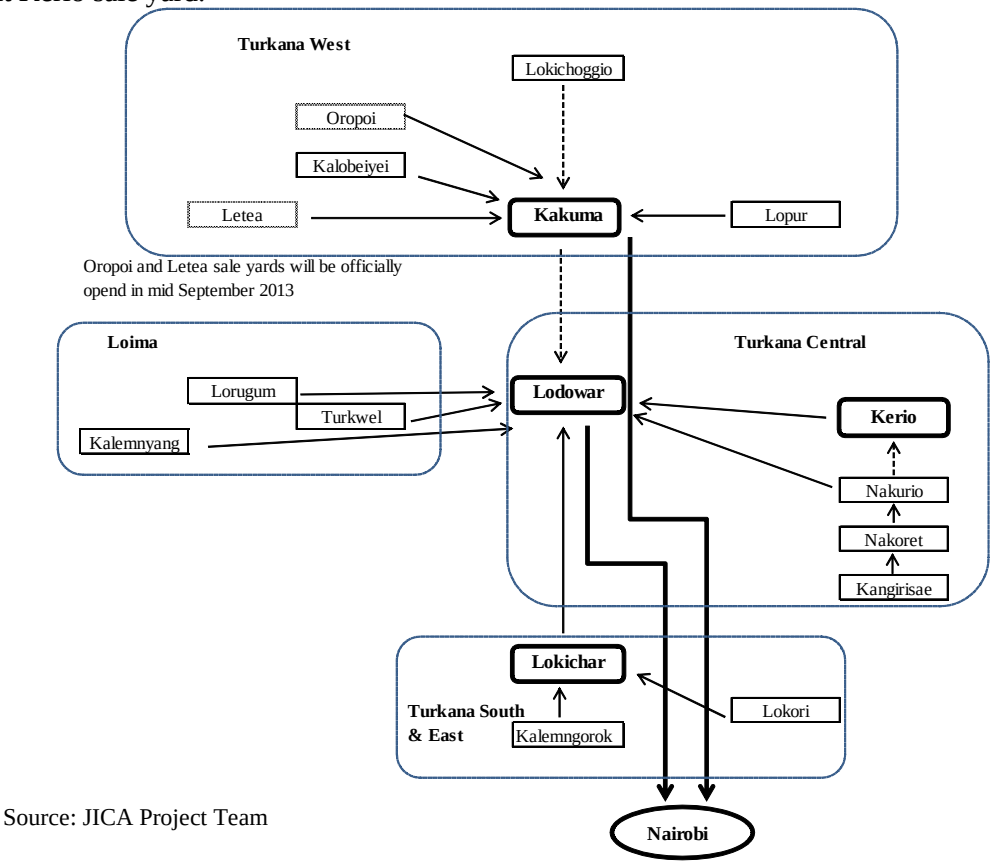
In general the balance of supply and demand in Turkana is that the sale price rises during the holidays of Ramadan and Christmas when consumption rises. The supply increases in December and January when there is more need for cash for school preparation. There is also an increased supply for any year where drought occurs but the price is reportedly low. However, as far as the record of sales in each sale yard is concerned, the influence of supply and demand within the area does not appear clearly in numbers.

Animals gather around grazing areas near to the sale yard during wet season, and they move to the mountain zones in the dry season. It was noted that some sale yards sometimes experience lower supply because of such seasonal herd movements. Yet, their grazing pattern is not significant enough to effect transactions in sale yards, according to the data. In the Project, an interview survey was conducted, and it was found that what influenced the number and price of trade was the number purchased by traders from outside the county who transport the livestock to Nairobi.

F1.8 Animal Distribution System

There are twenty nine sale yards in Turkana county, among which five sale yards operate very actively and ten yards are operating regularly. The remaining fourteen sale yards are not yet operational, due lack of facilities, old or damaged facilities, lack of management skills and/or because of security problems.

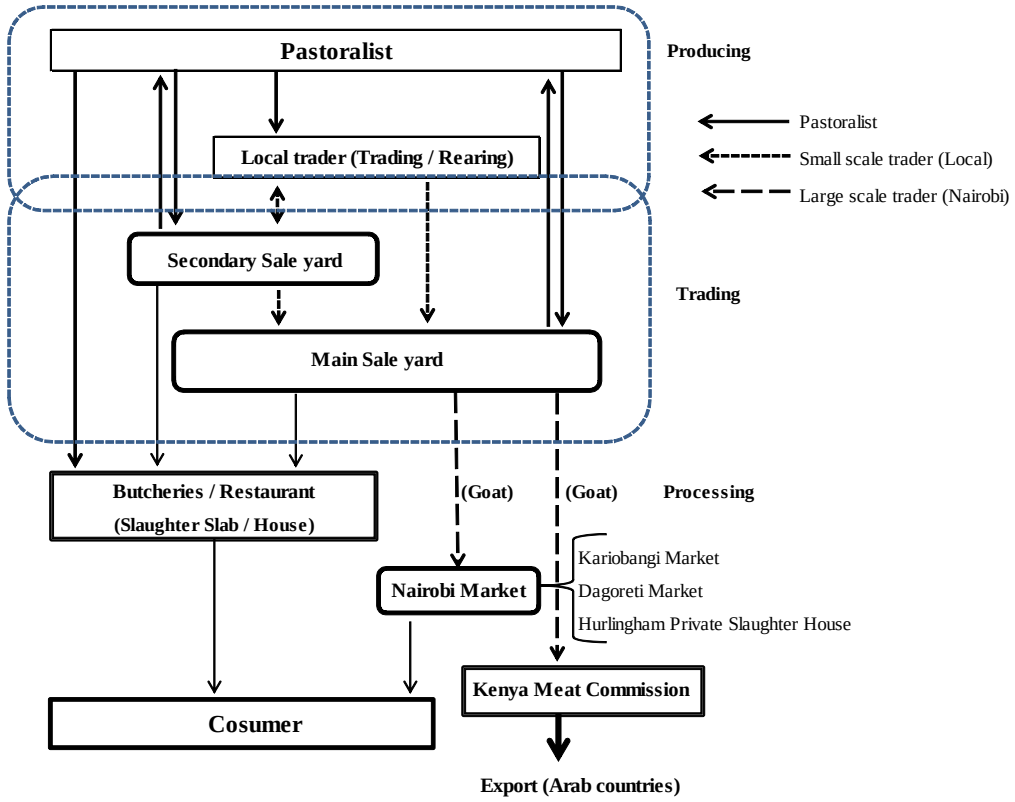
As shown in the figures below, among the five actively operating sale yards, four are referred to as main sale yards, namely Lodwar, Kakuma, Lokichar, and Kerio. Other sale yards function as secondary sale yards which have links with main sale yards. The dotted lines shown on the figure, one from Lokichoggio sale yard to Kakuma sale yard and another from Kakuma to Lodwar, indicate the animal flow after being collected in each area. Nakurio sale yard and Kerio sale yard have both set up a weekly market day on Saturday and Tuesday respectively. Many animals that were traded at Nakurio sale yard on Saturday are sold at Lodwar sale yard. Some animals are transported to Lodwar sale yard after being sold at Kerio sale yard.



Source: JICA Project Team

Figure AF1.7.1 Linkage between Main Markets and Secondary Markets

The market supply chain (from producers to consumers) is shown in the next figure.



Markets routes and channels of livestock

Source: JICA Project Team

Figure AF1.7.2 Market Routes and Channels of Livestock

According to information from livestock market stakeholders, more than 80% of goats traded at sale yards are for meat, around 10% are sold to pastoralists for breeding. When the market price does not reach an agreeable amount the animals may be returned home and fattened to be sold at a later date. Animal distribution in Turkana functions partly because most of the traders who buy animals from producers are local people who gather and trade on a small scale and with a small budget.

F1.9 Current State and Analysis in Major Towns in Turkana

F1.9.1 Lodwar Market

(1) Current state of the sale yard

Lodwar sale yard has the largest volume of trade in the county. Most of the traded animals are goats and sheep (see Table AF1.9.1). In the central area, since there is not so much graminaceous grazing land that is suitable for cattle, the common animals are goat, sheep, and camel. The sale yard is equipped with basic facilities necessary for animal trade. According to an interview survey by the Project, approximately 60% of traded animals are consumed around Lodwar town, 40% are purchased by traders from and carried back to Nairobi. However, the ratio to Nairobi has increased to 60% since April 2012, which reduced local consumption to 40%.

At a meeting held in mid- July with traders from Nairobi (five traders from Nairobi and fourteen local traders attended), it was reported that five traders from Nairobi worked with local traders as a team and four such teams exist. It was also confirmed that a lorry with 250 to 300 goats makes two trips every week, which means 2,000 to 2,400 goats are transported to Nairobi monthly. An interview survey of September 2012 done by the Project found out that the number of teams has increased by two to six.

The transport load was about the same, a lorry with 300 goats makes two to three trips every week. This means that approximately 3,000 goats per month were transported to Nairobi. According to a trader from Nairobi, goats from Turkana during this period are desirable since they are fat. They are relatively small in size but are very popular in the Nairobi market, due to their high quality of meat and taste. Some also mentioned that one of the reasons for its popularity is that Turkana goats are grazed in a natural environment eating only tree leaves and grass. The peak for sales to Nairobi is between August and December. During the off season i.e. January and March, a lorry with 250 to 300 goats may make only one trip in a month.

Table AF1.9.1 Total Number of Sold Animal per Month in Major Sale Yards in 2012, 2013

		2012												2013					
Sale yard	Livestock	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Lodwar	Shorts	1,243	1,127	1,037	4,140	1,290	1,343	1,733	1,356	2,616	2,430	2,076	1,680	1,703	1,582	1,873	2,012	2,002	3,134
	Camel	19	13	37	12	12	11	7	20	19	20	9	11	15	7	14	5	6	6
	Donkey	14	31	45	13	23	15	11	13	11	11	14	23	20	13	34	39	30	15
	Cattle	0	0	0	0	4	2	0	6	8	7	6	10	7	5	0	5	1	7
Lokichar	Shorts	622	1,088	1,582	490	380	353	421	559	505	540	521	460	377	322	322			
	Camel	13	13	28	21	9	23	14	20	30	10	10	10	15	15	5			
	Donkey	3	7	8	31	5	7	9	2	0	4	7	11	10	5	8			
	Cattle	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Kakuma	Shorts	1,703	930	1,040	1,277	1,505	1,538	1,801	1,749	1,702	1,913	245	334	402	546	427			
	Camel	105	76	158	71	75	77	75	96	71	103	41	11	36	82	58			
	Donkey		32	42	44	32	34	13	19	20	29	8	6	18	36	6			
	Cattle	83	115	72	115	58	105	123	114	93	91	46	19	132	139	48			
Kerio	Shorts											840	641	1,007	1,204	1,021	1,408	928	1,004
	Camel											15	11	15	9	8	11	9	9
	Donkey											17	10	19	7	14	17	19	13
	Cattle											13	11	14	9	10	10	17	11
Lokichoggio	Shorts	566	711	468	509	532	914	715	669	583	660								
	Camel	82	65	49	62	67	26	21	51	84	47								
	Donkey	57	47	53	35	34	33	47	99	60	99								
	Cattle	127	122	149	121	114	61	97	109	113	86								
Kalobeiyei	Shorts	486	239	260	302	270	234	166											
	Camel	55	35	51	52	45	26	30											
	Donkey	43	41	38	31	33	20	28											
	Cattle	72	58	65	59	43	37	39											
	Source : Livestock Marketing Association																		

It is only goats that are transported to Nairobi with a low rate of loss during transportation. As for sheep, there are many accidents that can happen during transportation. In addition Turkana sheep are not competitive enough against those raised in the North-eastern area which has a lower price. Therefore, only goats are competitive in Nairobi.

(2) Demands in Lodwar

The consumption within the Lodwar municipality is estimated based on the number of animals slaughtered. These numbers were obtained by interviewing the managers of five slaughter slabs/houses. It is assumed that more or less than 100 goats and sheep were slaughtered in one day, whereas approximately one cattle and one camel were slaughtered in every other day.

Table AF1.9.2 is data drawn up based on the monthly report in the District Veterinary Office. The number of cattle and camel does not contradict with the general assumption. However, the number of small animals such as goats and sheep is between eighteen and thirty (an average number of twenty three animals), which is only between a fifth and a third of the assumed number. It could be explained that the number shown on the report is the actual number of carcasses inspected by veterinary officers. Therefore those animals that were slaughtered while inspectors were elsewhere were not considered.

Based on the number of animals slaughtered during site visits to slaughter slab/house and the number on the report, the meat consumption in Lodwar municipality is that one cattle and camel is slaughtered every other day (fifteen heads per month), while fifty to eighty (1,500 to 2,400 head per month) shoats are slaughtered every day.

Table AF1.9.2 Slaughter Figures in Lodwar in 2012

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Average head /month
Goat	577	376	422	382	431	400	572	475	400	380	400	434	5,249	437
Sheep	299	264	238	252	301	184	320	325	204	140	241	230	2,998	250
Shorts	876	640	660	634	732	584	892	800	604	520	641	664	8,247	687
Cattle	16	26	24	30	32	28	19	21	22	14	28	27	287	24
Camel	4	4	1	0	10	16	8	22	10	6	2	7	90	8
	Source: District Veterinanary office, Turkana Central, Lodwar													

Table AF1.9.3 shows the monthly total offered and sold at three sale yards. Especially regarding the number of shoats traded in Lodwar, the total sold (demand) is far less than the total offered (supply). This may be because the prices offered by buyers are too low to settle the trade, but also that the supply has outstripped the demand. In either case, developing a market that fully takes advantage of the potential that Turkana can offer should be urgently considered.

Table AF1.9.3 Total Number of Livestock Transaction per Month in Main Livestock Market in 2012, 2013

			2012												2013					
Sale yard	Livestock		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Lodwar	Shorts	Offered	5,726	6,056	6,519	5,057	8,258	7,142	8,398	9,450	9,804	7,197	5,220	6,619	4,913	4,532	6,832	4,756	6,260	7,418
		Sold	1,243	1,127	1,037	4,140	1,290	1,343	1,733	1,356	2,616	2,430	2,076	1,680	1,703	1,582	1,873	2,012	2,002	3,134
	Camel	Offered	19	13	37	12	12	11	11	20	19	20	9	11	15	7	14	5	6	6
		Sold	19	13	37	12	12	11	7	20	19	20	9	11	15	7	14	5	6	6
	Donkey	Offered	14	31	45	13	23	15	15	13	11	11	14	23	20	13	34	39	30	15
		Sold	14	31	45	13	23	15	11	13	11	11	14	23	20	13	34	39	30	15
	Cattle	Offered	0	0	0	0	4	2	7	6	8	7	6	10	7	5	0	5	1	7
		Sold	0	0	0	0	4	2	0	6	8	7	6	10	7	5	0	5	1	7
Lokichar	Shorts	Offered	1,028	1,555	2,166	875	829	421	935	1163	1,139	1,287	1,108	1,109	1,020	1,036	927			
		Sold	622	1,088	1,582	490	380	353	421	559	505	540	521	460	377	322	322			
	Camel	Offered	21	18	43	23	11	28	26	38	30	17	12	15	21	23	10			
		Sold	13	13	28	21	9	23	14	20	30	10	10	10	15	15	5			
	Donkey	Offered	5	12	12	31	7	7	13	3	0	6	11	17	15	8	13			
		Sold	3	7	8	31	5	7	9	2	0	4	7	11	10	5	8			
	Cattle	Offered	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
		Sold	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
Kerio	Shorts	Offered											1,218	1,063	1,366	1,554	1,387	1,761	1,252	1,369
		Sold											840	641	1,007	1,204	1,021	1,408	928	1,004
	Camel	Offered											17	13	18	11	10	13	15	12
		Sold											15	11	15	9	8	11	9	9
	Donkey	Offered											20	15	24	8	17	19	28	16
		Sold											17	10	19	7	14	17	19	13
	Cattle	Offered											17	17	19	11	12	11	23	17
		Sold											13	11	14	9	10	10	17	11
	Source : Livestock Marketing Association																			

(3) Demands in Metropolitan Areas

It is difficult to make an assumption on the meat demand in metropolitan areas; however, according to an estimate by the Kenya Livestock Sector Study 2006, the goat meat supply has constantly been more than the demand for eleven years from 2004 to 2014.

However, for the goats from Turkana area, the price and quality of meat are competitive in the Nairobi, the distance, bad road conditions and security related problems notwithstanding.

For those goats transported to Nairobi, the city has two markets, such as animal marketing for consumption in Nairobi and a market in Kenya Meat Commission (KMC) for export. Young goats of 5 to 10 kg carcass weight are for export to Arab countries. Orders from KMC reaches DLMC via KLMC, and DLMC provides the information to pastoralists through LMA.

F1.9.2. Kakuma Market

(1) Current state of sale yard

Kakuma sale yard was also established in 1997. After the establishment, AMREF constructed a LMA office and guard room, and International Organization for Migration (IOM) constructed camel sheds and a veterinary drug store. GOK conducted animal marketing training for LMA officials. USADF/TUPADO repaired the animal holding pens and facilitated waterworks and toilets. The construction of an abattoir began with a fund of UNDP and National Drought Management Authority (NDMA). These works are currently 60% complete. However the size of the abattoir is relatively small

in comparison with the number of livestock traded in Kakuma. In addition, an important water piping system for slaughter houses was not planned for

Apart from Kakuma many other sale yards have received such assistance and their facilities have been improved. On the other hand however, many veterinary drug stores face difficulties in managing their operations autonomously. Many sale yards have problems of facility repair and expansion, while none has succeeded in establishing a financial management system that is able to cover such expenses with the aforementioned revenue.

As far as Table AF1.9.1 indicates, sale yards of Kakuma, Lokichoggio, and Kalobeiyei deal with a larger number of large animals such as cattle, camel, and donkey than other sale yards. This is because there is relatively more rainfall in the western regions and there are graminaceous rich grazing lands available in this mountain zone, suitable for cattle.

It was noticed that the number of shoats traded has rapidly decreased since November 2012. According to LMA officials, there were several reasons, such as:

a) Animals lost body weight during dry season and were not suitable for sale,

b) External traders did not come to purchase animals due to the bad condition of animals during dry season, and,

c) Many pastoralists moved to other pasture rich areas and did not come to the sale yard.

However the Project established that there is another reason for this decrease. This is the fact that in Kakuma, at least forty shoats are consumed in refugee camps daily, and that is why the numbers indicated on Table AF1.9.1 are incomprehensible. It is likely that such shoats are sold from secondary sale yards around Kakuma directly to the butcheries in refugee camps, without dealing with the Kakuma sale yard. Otherwise it should be considered as a recording error.

(2) Area consumption

There are three large refugee camps in Kakuma, and it was reported that those camps share from 75 to 80% of the total area consumption. Five slaughter slabs in those camps slaughter from forty to fifty shoats, eight cattle, and two or three camels daily. Consumption at Kakuma municipality, which is the central area of Turkana West district, is restricted to ten to fifteen shoats per day, two cattle per day and two to three camels per day. Based on the data obtained through interviews, the monthly meat consumption of Kakuma is estimated to be 1,500 to 2,000 heads of shoats, 300 heads of cattle, 120 to 180 heads of camels. Compared to the number shown on Table AF1.9.1 and the number of traded animals at sale yards, many livestock are traded outside of sale yard. The sale yard fee per large animal is Ksh.100, rather large; so many traders do business outside of the yard to avoid paying the fees. Therefore, it difficult for the sale yard to develop independently without the efficient collection of such fees.

As for Lokichoggio, eleven to twelve heads of Shoats and one head of cattle are slaughtered every day and camels are slaughtered about once a month. Cattle, goat, and sheep will eventually reach to consumers, via butchers, restaurants, and hotels. Since the meat market in Lokichoggio is small, excess animals traded are transported to the sale yard in Kakuma.

F1.9.3 Lokichar Market

(1) Current state of sale yard

The launch of the sale yard in Lokichar was in 2002. It is very well facilitated, receiving assistance from USADF and DLMC. Construction of a well has recently been completed, making it possible to own a water source to provide sufficient water to livestock there. However, as Table AF1.9.1 indicates, the number of animals traded has basically stagnated. However it was observed that the sales of shoats in February and March 2012 were increased rapidly as in Table AF1.9.1. According to LMA officials, this rapid increase was due to Nairobi traders who purchased in this period. As demonstrated in this case, attracting external traders is the only way to increase the amount of trade in sale yards. When Nairobi

market is considered to be a potential market, Lokichar has an advantage in its position, being situated further south than Lodwar. However, unlike Lodwar, Lokichar LMA members have not had close contact with traders in Nairobi. Although Lokichar LMA wishes to own a lorry to improve distribution means, they have not developed a business plan. For Lokichar, which only has an internal market, it is highly recommended to first establish networks between LMAs, then expand the market.

(2) Local consumption

The livestock demand in Lokichar, as the centre of Turkana South district, is about 20 shoats a day. In addition, the demands from the boring sites for Tallow Oil have been increasing with a consumption of 15 shoats a day. However, the municipal consumption and that of Tullow Oil together makes thirty five a day, which adds up to 1,000 a month. Comparing the estimated number consumed and the number sold and bought, the number sold is only about a third to a half of the total. Many sales are therefore transacted outside of the sale yard in Lokichar as well.

F1.9.4 Kerio Market

(1) Current state of sale yard

Kerio sale yard was also launched in 2002. In the sale yard, there is only an office, constructed by government funds, and a fence as supported by VSF-Belgium assistance. The number of LMA members is increasing gradually, and a total of 50 members are currently registered. The management of Kerio yard differs from the others. The yard opens only on Tuesdays, each week. The number of transactions made at Kerio sale yard is shown in Table AF1.9.1. The transaction data of Kerio sale yard is available only from November 2012, but the numbers seem quite steady for both shoats and large animals. During the market day, participants are not limited to local traders but many buyers come from outside, such as Lodwar, Lokichar, and Kalakol.

On market days, there are many stalls other than the sale yard, selling food, fish, clothes, daily goods, decorative goods, luxury grocery items, mats made of doum palm leaves etc. A big commodity market is held at the same time as the Kerio livestock market. This is not a very unusual scene elsewhere, but in Turkana, it is seen only in Kerio and Nakurio centres. Since this type of market operation is profitable for both pastoralist and local trader, those markets are developing constantly without any external support. This sample case is a good indication of how livestock development and vitalization can be realised.

(2) Local Consumption

The average number of animal head that was slaughtered in a month on Kerio market days was approximately 15 to 30 shoats, 1 cow, 1 or 2 camels, and 2 or 3 donkeys. Even if animals that were slaughtered on non market days are included for the count, the additional number would be insignificant. Judging from the opinions of Kerio town officials, meat consumption in the town would not increase within a short period.

(3) Others

The Project identified that facility expansion or improvements are required for further development of Kerio sale yard, such as holding pens to deal with many animals and loading ramps to ease loading on to lorries.

F1.10 Constraints and Approach of Pilot Project for Livestock Sector in Turkana

(1) Inadequate road access to livestock market and high transport costs

High and constantly increasing transport cost significantly affect market performance and efficiency. For example the only good road in Turkana is that between Lodwar and Lokichoggio. Other roads in the district are generally poor and often impassable when it rains. Poor roads have the impact of increasing costs when transporting livestock throughout the district. According to interviews, stock destined for

distant terminal markets take up to three days on the road due to poor road conditions and transit requirements. poor road infrastructure also impedes the control of livestock diseases and cattle rustling.

Livestock transporters often avoid using poor roads due to high cost of vehicle maintenance. Where transport is available, it is often too expensive for traders to utilize. Traders from outside the county tend to avoid many livestock markets , especially those in the interior, due, to poor road infrastructure and the high costs associated with transporting stock to Nairobi and other markets. Currently there are no incentives to attract traders into the interior.

As explained in the previous sections, to develop and vitalise livestock market activities in Turkana County, involvement of Nairobi traders is strongly required, and improvement of road access is one of the crucial factors.

(2) Lack of specific market days for almost all of the active markets

In livestock markets in Turkana county, generally there are no specific market days in each market, except Kerio and Nakurio, and the traders and producers transact business every day in the markets.

Such way of operation has an advantage for producers who want to sell their animals at their convenient time. However this is not convenient for traders, especially those from far, such as Nairobi traders. These are forced to stay for many days to gather enough numbers for transport. Thus presently Nairobi traders have to get local partners who collect animals at the markets everyday for Nairobi traders. This kind of Nairobi-local traders team system increases transaction costs, then depresses Nairobi traders' profit and producers' selling prices leading to minimal or no benefit for both parties.

It is highly recommended to set a specific market day for each market, taking into consideration the market day schedule of adjacent markets so as to avoid an overlap.

A specific market day is an arrangement that brings producers (livestock owners and farmers), livestock traders, and business services providers (from host centre and neighbouring centres) together in a trade arrangement. This market is established within areas with wider catchments, close proximity to producer levels where individual producers can walk in, sell their animals, and buy food and other input supplies conveniently and at competitive prices. The convenience and ease of trade has made it possible for small producers, women and youth to effectively participate in the market activities and actually trade.

(3) Lack of dissemination of market information to livestock traders and pastoralists

A lack of market information and early warning of climatic adversity has been cited in many occasions as a significant impediment to market performance and efficiency. In less favoured lands, poor communication and marketing infrastructure can create enormous information disparities among buyers and sellers in the same location that can easily persist over the course of several hours and can contribute to low producer prices. Most producer price risk arises due to local market institutions and poor information flow that often leaves pastoral sellers at significant disadvantage compared to the trader. Ironically, poor market information can, on infrequent occasions result in livestock prices being higher in Turkana than in a terminal market such as Nairobi, especially if the Nairobi livestock markets are flooded with livestock.

In many occasions, market information is by word of mouth from those who have recently sold livestock. Whilst many pastoralists have a reasonable idea of livestock prices in local, secondary and primary markets, most of them have no knowledge of terminal market prices and will almost accept whatever prices they are given.

Access and utilization of livestock market information for whole value chain is very low within the County-based traders. Only the traders coming from outside the County seem to understand the functioning of the whole livestock market value chain.

As a physical intervention, an introduction of a telecommunication system to remote areas, e.g. installation of booster antenna for mobile phone network, could facilitate exchange of market information.

(4) Inadequate institutional capacity building of LMAs

Lack of institutional capacity is often blamed for the poor management of livestock sale yards and for the demise of livestock markets particularly after donors have discontinued their support. In some cases sale yard committees and pastoral associations are nonexistent. In attempts to redress this weakness stakeholders have supported the establishment and capacity building of LMAs and District Livestock Marketing Council.

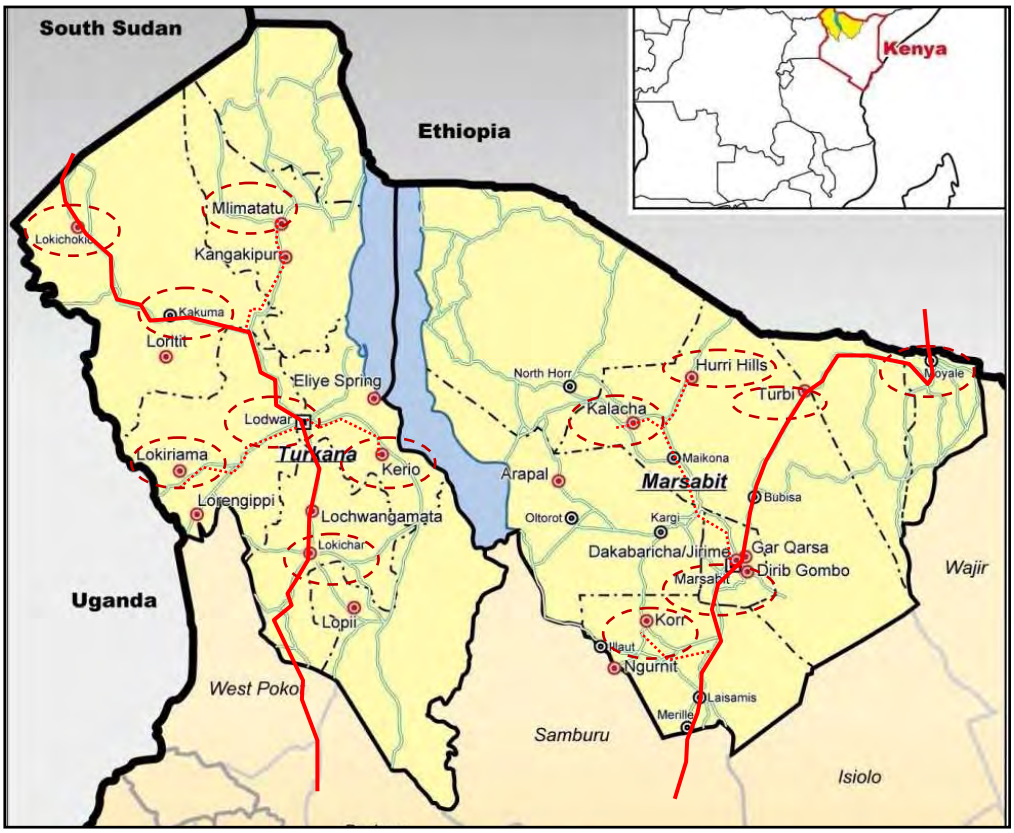
(5) Insecurity

Insecurity is also noted to significantly impede livestock production and marketing. Livestock have long been subjected to raids from other ethnic groups, and other clans within ethnic groups. The threat of raids poses big risks to livestock traders. Insecurity is the major constraint to developing Ugandan markets, including the high potential of Moroto market. Insecurity is particularly acute in south and eastern Turkana Districts, where pastoralists contend with frequent strikes and cross-border cattle rustling from neighbouring tribes and countries. Though the GOK has ensured the home guards back up security the situation remains unstable. Because of insecurity, transporters have defined several no-go zones.

F1.11 Livestock Market Conditions and Potential in Marsabit and Turkana

The project team studied the livestock market conditions in Marsabit and Turkana in terms of: (1) livestock migratory movement, (2) identification of ethnic groups, (3) road access, and (4) security situation.

The following drawing indicates the relations between major towns for livestock activities and major roads.



Source: JICA Project Team

Figure AF1.11.1 Livestock Markets and Main Access Route

Table AF1.11.1 Livestock Market Conditions and Potentials in Marsabit

Town	Livestock Potential	Condition about Livestock Trade	Location / Access to Town
Marsabit County			
Marsabit Town / Jirime	Very high	- Currently, this is the centre of the livestock trade in Marsabit County. From this town, several trucks depart to send the livestock to the capital area. However, the traffic to the capital is not so active due to the current road condition in A2 national highway road. - All of the ethnic groups have their business in this town. - Marsabit market has livestock constantly; however, it seems that there are more animals in the wet season due to the pastoralist's migration pattern.	It is quite good location for livestock trading due to its location along the A2 national highway. When the pavement construction of this A2 road is completed, Marsabit's livestock market is expected to have a drastic improvement.
Moyale	High	- This town is currently a big trading point around Kenya/Ethiopia border. The animals going to Ethiopia pass through this town, in particular, camels which are highly demanded by the Ethiopian people.. - Moyale is a town of Borana. - In the dry season, a lot of Borana's and Gabra's livestock migrate and graze around the Moyale area. - Ethnic conflicts (Borana/Gabra) sometimes occurred around this town in the past, and had always influenced the trading activities.	It is a good place for livestock trading due to its location that is near the international border and along the A2 national highway to Nairobi. When the pavement construction of the A2 road is completed, the livestock market will have an improvement.
Turbi	High	- Currently, this town has a livestock market, but not so active. It is strongly expected to be another trade centre to Ethiopia. - This is a town of Gabra. - In the dry season, a lot of Borana's and Gabra's livestock migrate and graze near this town. - Ethnic conflicts (Borana/Gabra) sometimes occurred around this town in the past, and had always influenced the trading activities.	- Ditto -
Korr	High, but takes time	- Currently, this town has a good seasonal centre of livestock trade (in the wet season only). However, further development is not expected unless the road access to/from the A2 road is improved. - This is Rendille's town. - In the wet season, there are so many livestock around this area. But most of the livestock migrate to the southern area in the dry season.	Currently, its bad accessibility is the only obstacle for livestock development. Because there are lots of animals during the wet season, the road access is too muddy. There is also no road improvement plan, so the development of the market will take time.
Ilaut	High	- Currently, this town has a good livestock centre for Rendille and Samburu's livestock. - Although there is a rustic market facility, many people, not only for the livestock but also for other commodities gather for trade/business. - This is Samburu's/Rendille's town. - This is located in the dry season grazing area, but even in the wet season, livestock comes from other area looking for a good price for the trade. Thus, there are always livestock around this area from Rendille and Samburu area.	Currently, bad accessibility is the only major obstacle for their further development.

Kalacha	High but takes time	- There is a good potential for the livestock trade, in particular, for the Gabra people. - In the dry season, many of the livestock, mainly from Gabra, gather at a spring in this town. However, there is no active livestock market currently in this town. - Due to the current bad accessibility, market development is not expected unless the road is improved. - This is Gabra's town.	Although there is a high potential for the livestock market, in particular for the Gabra in the dry season, there are no currently any active livestock activities. There is no road improvement plan, so the development of the market will take time.
Hurri Hill	High but takes time	- This has good potential for livestock trade, in particular, for the Borana and the Gabra people. - In the wet season, a lot of the livestock of Borana and Gabra gather in this area. - Due to the current bad accessibility, market development is not expected unless the road is improved.	- Ditto -

Source: JICA Project Team

Table AF1.11.2 Livestock Market Conditions and Potentials in Turkana

Town	Livestock potential	Condition about Livestock Trade	Location / Access to town
Turkana County			
Lodwar	Very high	- Currently, this town is the centre of the livestock trade in Turkana county. There are several trucks from the capital during the high trade season. However, the traffic to the capital is not so much developed due to the current road condition on the national highway. - Throughout the year, the livestock gather at this market every day.	It is the best place for livestock trading due to its location. When pavement construction is completed (presently the plan is being formulated), Lodwar livestock market will have a drastic improvement.
Lokichar	High	- Currently, this town is one of the major trading points in Turkana South. - However, the development of livestock is stagnated due to the road access..	It is a good place for livestock trading due to its location, i.e., near the county border to the south. When the road pavement improvement is completed, the livestock market will also have an improvement.
Kakuma	High	- Currently, this town is the livestock centre around Loima area. - Due to the big consumption area in Kakuma, the demand of livestock is constantly high. - However, presently, there is no active trade with the external traders.	It is a good place for livestock trading due to its location and the large number of consumers in Kakuma Town. When the pavement improvement is completed, the livestock market is also expected to be improved.
Kerio	High	- Currently, this town is one of the prominent livestock centres around the south side of the Turkana Lake area. It is highly expected to be developed due to the market facility improvement by the project to accelerate the trade with external traders. - Although the markets in Turkana operate every day, Tuesday is the market day in Kerio market, which attracts many merchants that sell many kinds of commodities.	Currently, the access to the main road is not so bad even in the rainy season. When the connections and relations with external traders are established, significant increase of trade will be expected in this market.

Lokichoggio	High but takes time	- There is a good potential for livestock trade, in particular, with the South Sudan people. - However, due to the current security situation, market development is not expected unless such conflict is alleviated to some extent.	Although currently, there is a high potential for livestock market, it is not so much active in this town. Peace building activities are highly required.
Milimatatu	Medium but takes time	- There is a good potential for livestock trade, in particular, for the animals from Northern Turkana's sub-county area. - This town is located in a seasonal migratory route between the Turkana lake area and the rich dry season grazing area in Northern Turkana and Kibish area. - Due to the current bad accessibility, market development is not expected.	Although currently, there is a high potential for livestock market, there is no active livestock market in this town. There is also no road improvement plan, so the development of the market will take time.
Lokiriama	Medium but takes time	- There is a good potential for livestock trade, in particular, with the Uganda people. - In the dry season, a large number of livestock migrates to this area that results to a high potential of supply. - However, due to the current security situation, the market development is not expected unless such conflict is alleviated to some extent.	Although currently, there is a high potential for livestock market, there is a not so much active livestock market in this town. Peace building activities are highly required.

Source: JICA Project Team

CHAPTER F2. SUB-PROJECT OF HEIFER EXCHANGE PROGRAMME

F2.1 Outline of the Sub-project

F2.1.1 Outline of Activities

General outline of the sub-project is summarized in the following table.

Table AF2.1.1 Sub-project Profile

Item	Contents	
1. Objectives	- To stimulate sales by pastoralists to sell the large number of marketable animals held by them. - To improve herd composition by (1) reduction of aged animals, and (2) increase percentage of females, the heifer and the lactated, so as to increase productivities in a herd and resistance against drought in terms of survival. - To avail good quality breeding stock heifers / young females, and male animals as per the demand of the local communities, in the market place as a product which is normally difficult to get	
2. Number of Beneficiaries	Approximately, 750 persons (Direct beneficiaries only: Pastoralists who bought the heifers & young female animals at the markets)	
3. Implementation Organization	JICA ECoRAD Project, water users' association and environmental management committee	
4. Project Contents		
1) Project Outline	1) Providing young livestock, such as heifer, male young goat, etc. 2) Strengthening of livestock market committee 3) Strengthening of local livestock traders 4) Establishment of operation and maintenance system and regulations through training program	
2) Facility / Activity	*Facilities/Activities*	*Implementer*
	1) Market facilities to be rehabilitated	1) Contractor
	2) Organization and strengthening of the committee	2) NGO/Project team
	3) Procurement and delivery of livestock	3) Project team
	4) Monitoring	4) NGO/Project Team
3) Organization for O&M	Livestock market committee	
4) Construction Period		

Source: JICA Project Team

The improvement of livestock market value chain and revitalization of livestock markets are focal issues in Northern Kenya. However, since possession of livestock is prestigious in a pastoral society, they do not sell their livestock unless they need cash immediately for specific reasons, such as buying food, education fee, etc. Pastoralists hope to keep livestock in their herds as long as they can. However, such an attitude may lead to the following disadvantages in terms of livestock market revitalization:

- Old castrated animals kept by pastoralists decrease in market value year by year
- The old animals do not have strong resilience against drought and are the first ones to be lost in drought
- While the castrated animals consume water and fodder in fields, they contribute nothing to animal reproduction. Thus, if the number of the old castrated animals is dominant in herds in Northern

Kenya, the county's overall livestock productivity will be depressed; water and fodder will be consumed with no relation to the prosperity of offspring.

Thus the Project tried to find a way to facilitate pastoralists to sell their castrated animals at peak value in the market. Finally, the Project innovatively formulated the "heifer exchange program" through which the Project provided heifers to pastoralists at the regular market price of Marsabit to motivate pastoralists to sell their castrated animals to obtain funds for buying heifers.

It is noted that, in the sub-project, the word "heifer" indicates not only cattle but also young female goat, sheep, and camel, which pastoralists are keen to possess at hand..

(1) Objectives

a) Overall target in the programme

- To stimulate sales by pastoralists to sell the large number of marketable animals held by them.
- To improve productivity of herds by means of improvement of herd compositions from a condition with lots of castrated animals to a better one with more heifer and young female shoats which can provide offsprings in herds.
- To decrease mortality rate of livestock by means of improvement of herd compositions with young heifer and young female animals which are generally understood to be drought resistant.
- To improve breed by means of introduction of new ones, such as galla goats, in Marsabit.

b) Objectives in this sub-project

Due to limitation of time and resources, the above mentioned overall targets could not be fully achieved in the project period. Thus the Project set its objectives within the limitation of the Project life in mind as follows.

(i) To verify the assumption which was considered in the programme. That is, to confirm the actual pastoralists' attitude and whether they will sell their livestock to obtain cash for heifers / young female animals and buy those animals when they are actually available in their local market.

(ii) To check and verify whether such system could be controlled and managed by the community themselves.

If (i) and (ii) could be proved to be true, this programme could be operated sustainably when a donor provides an initial fund for purchase heifer/young female animals only once. It could be a strong tool for improving drought resilience. And if, unfortunately sustainable operation by community was difficult to be achieved, it could be implemented as an alternative restocking programme of livestock after a drought emergency period because this program can provide a bigger number of animals using a smaller investment than a normal restocking program needs. This can restructure herds composition in Northern Kenya more resilient to drought.

It is noted that a restocking programme is an emergency activity which is so effective in an emergency period or the early stage of recovering period after drought. However due to the amount of funds required, it had not be implemented for several years in the area. In such a case, this heifer programme could be a followup activity following a restocking programme in order to improve drought resilience gradually but surely with much less funds.

(2) Procedure

"Heifer Exchange Program" is designed to vitalise the livestock market trading in Marsabit through the following procedures.

Procedure:

(1) The Project buys the heifers at another area, then brings and offers to sell them to pastoralist in a local livestock market at normal prices.

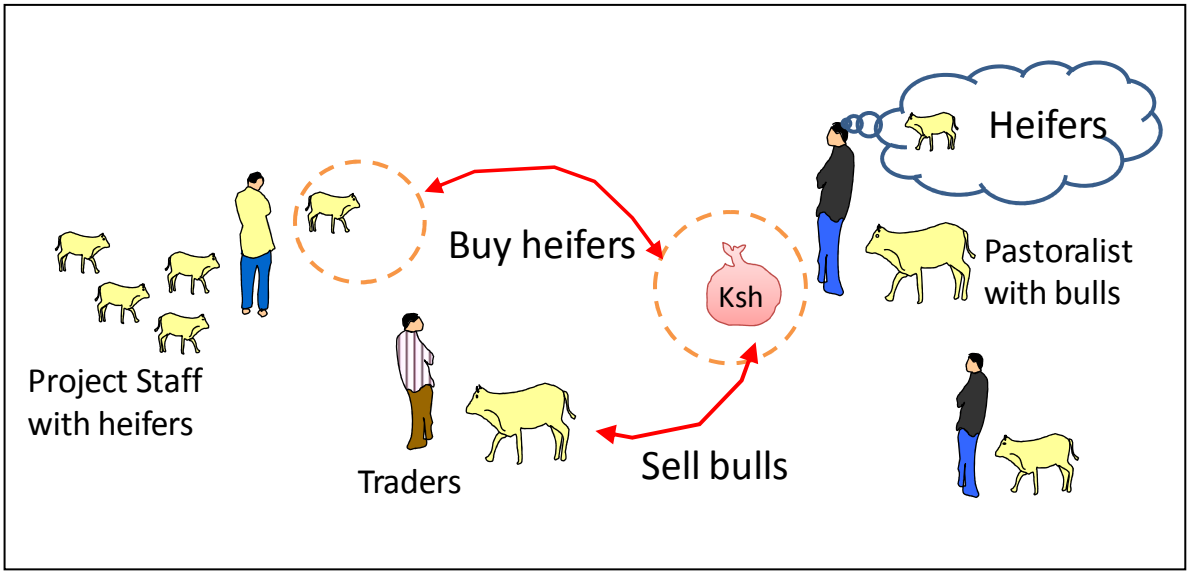
(2) The pastoralists who wanted to buy the heifers bring their livestock, old castrated ones possibly, and sell them in a local livestock market to obtain cash for the heifers/young female animals.

(3) The pastoralists who sell their livestock buy the heifers/young female animals from the project.

(4) Thus number of animals sold in a local market will be increased, in addition to the animals which are sold for obtaining cash for their basic expenses, e.g., food and school fees.

(5) The market will have more livestock traded and be vitalised.

(6) Then the Project uses the revenue from selling of young heifers in a local market to buy new heifers for the next batch as a revolving fund. If successful, the project can provide funds for an initial investment only once.



Source: JICA Project Team

Figure AF2.1.1 Schematic Image of Heifer Exchange Program

Since January 2013, the Project provided heifers, as shown below, in Dirib Gombo Livestock Market.

F2.1.2 Monitoring Work

(1) Monitoring system

The monitoring activities had been carried out by ECoRAD project staff and an NGO based in Marsabit who were contracted by the project to do the same until December 2014. The number of visits is indicated in the table below.

Table AF2.1.2 Number of Site Visits

Activities	Number of visits per month		
	Dirib G.	Jirime	Korr
Community meeting (committees)	2	2	1
Market monitoring	4	8	1
Follow up clients (traders)	4	4	-
Follow up Galla goats performance	2	2	-

Source: JICA Project Team

(2) Monitoring indicators

i. Percentage of sales of finished stock or unproductive stock for the purpose of buying breeding stock or young stock.

ii. Number of people seeking breeding stock or young stock in the market

iii. Volume of livestock sales when young stock/breeding stock are available

iv. Market behavior when breeding stock is available in terms of sales.

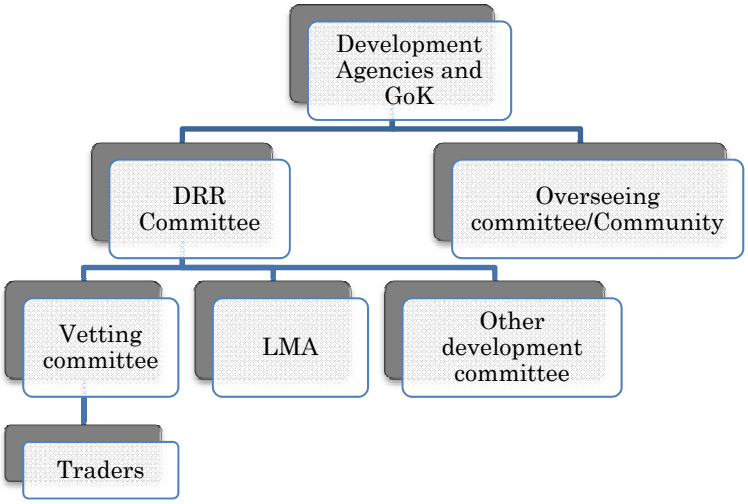
(3) Monitoring activities

It involved collecting market information on all market days, these included the number of animals offered for sale, number sold, class of animals offered for sale, livestock prices, average live weight, demand for breeding stock-heifers and young males, number of people visiting the market and purpose of visit etc.

The information was then analysed and the traders was advised accordingly. The monitoring also included traders' performance in carrying out business in livestock trade, mainly traders who were trained and financed by the project. This also involved follow up of project clients to ensure that they utilized the loans for the purpose intended. The project staff also monitored the performance of galla goats sold to pastoralists and agro-pastoralists. The whole monitoring exercise was geared towards achieving the objectives stated above. Monitoring data are shown in the following sections.

F2.1.3 Organizations

(DRR committee, overseeing committee, vetting committee, livestock market association)



Source: JICA Project Team

Figure AF2.1.2 Dirib Community Organization Structure

(1) Disaster Risk Reduction Committee

All development agencies including the Government of Kenya (GOK) were required to examine the development community action plan (CAP) prepared by DRR committee before engaging in any development activity. The DRR committee had been trained by the project on how to prepare CAPs that identified DRR strategies. Strategies were specific and bridged the gap between the desired state and the existing situation. The DRR committee supervised all other development committees in their Location including water committees, education committees, livestock market association and loan vetting committees etc. The DRR committee provided leadership in planning, organization and co-ordination of all activities of the various committees.

In the livestock value chain sector, they supervised the livestock market association (LMA) and the loan vetting committee and also managed the interest free loan provided by the project. The DRR committee was registered as a Community based organization (CBO) with the Ministry of sports, culture and arts and had opened an account with Equity Bank Marsabit where the clients deposited all loan repayments. They intended to operate the account for processing loans under the supervision of the District/Sub-county livestock production officer (DLPO). The vetting committee forwarded to them all loan recommendations for approval and financing. The DRR committee was also responsible for loan recovery in case of any default in consultation with the overseeing committee.

Source: JICA Project Team

Figure AF2.1.3 Public Baraza Dirib Gombo

(2) Overseeing Committee

Overseeing committee members comprise village elders and the local administration whose main responsibility was to check any excesses of the DRR committee and take any remedial action in consultation with the project and the DLPO (District Livestock Production Officer). It was also to receive from the community any complaints by the members of the public from the various committees and take the necessary action.

(3) Vetting Committee

The loan vetting committee members were persons chosen by the community for the purpose of receiving a loan application and processing it. Their main responsibility was to check on all the information provided in the application forms and confirm that it was true to the best of their knowledge before recommending the loans for approval to the DRR committee. They were also responsible for checking the existence of collateral named in the application forms; that is number of livestock owned.

Actual Selection Procedure of Traders

A public meeting was held at Dirib under the chairmanship of the local administrator in the presence of DRR committee and vetting committee where the project staff explained the purpose of the loan and condition attached to it. Then interested traders were requested to apply to the vetting committee using an application form designed for loan application (see Attachment F2-1). The loan applicants were interviewed by the vetting committee and their loan applications were processed, out of twenty applicants, seven were selected and forwarded to the DRR committee for approval and on ward transmission to the project office.

(4) Livestock Market Association

The livestock market association (LMA) was a registered group with the Ministry of sports, culture and arts. After formation of LMA, the members were trained for three days. The training session is shown below.

The LMA's main responsibility was to manage the market activities which included the following;-

a. Creates awareness and inform pastoralists on the availability of breeding stock in the market and links them to livestock buyers in the market place.
b. Collaboration with the County government to ensure market infrastructure is in good condition and accessible.
c. Promote market days and provide dispute resolutions and ensuring sustainable vibrant market.
d. Advocate to the Government on issues of livestock security, livestock diseases control and management.
e. Facilitates access of market information to pastoralists.
f. Collect market fees.
g. Keep proper records.

(5) Dirib Gombo Livestock Market Revenue Collection and Utilization

The committee members made schedules of operation weekly whereby certain number of committee members were on duty every Saturday during the market day and were paid lunch allowance from the market revenue.

The revenue charges are as follows:

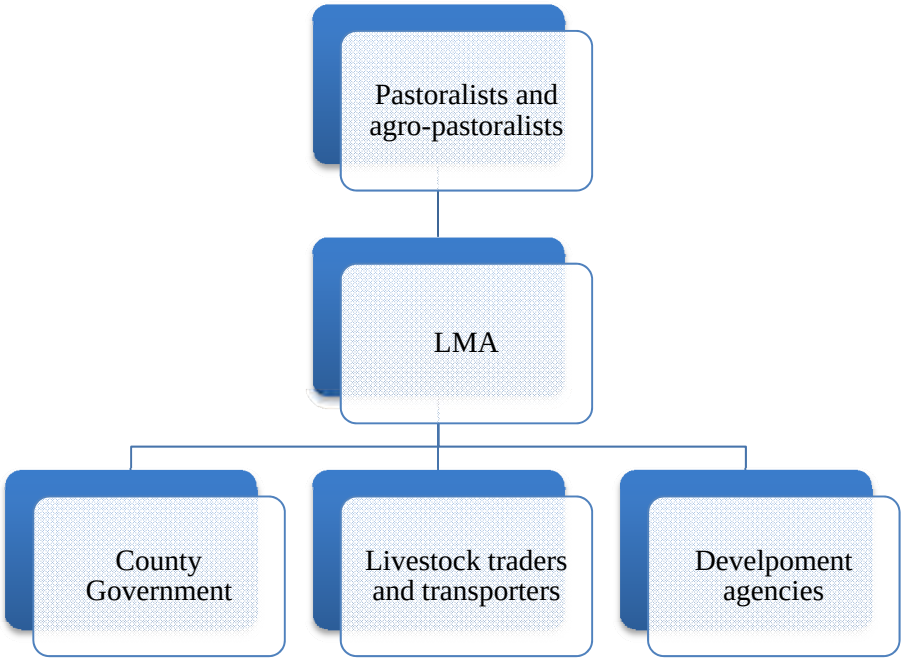
- Small stock (goats and sheep) = Kshs50 per head
- Big stock (camel, cattle and donkey) = Kshs100 per head

Revenue use

- Committee allowance (amount differs depending on the number of animal sold that day)
- Market structure repairs and maintenance
- Watch man salaries

The revenue collected was fully utilized by the LMA and balances were saved in their bank account. However Marsabit county government had recently passed a resolution in the county assembly that all LMAs in the county markets were allowed to collect market revenues and shared the revenue at

the ratio of 30:70, in which the county government was given the highest share. The Dirib LMA, Vetting & Overseeing committees were jointly appealing to the county assembly for consideration so as to be given a higher share of the revenue as the county government had never contributed anything to the construction and running of the market.



Source: JICA Project Team

Figure AF2.1.4 Livestock Market Association Structure

2.1.4 Plan of Operation for the Supply of Heifer / Young Male

At the beginning the project, as a trial, supplied sixty (60) female Galla goats through tender where a trader supplied the goats at a cost of Ksh.8,400 per goat. This cost included the cost of transportation from Isiolo and vaccination. Then it became difficult to sell the goats at cost price as pastoralists wanted to pay no more than Ksh.6,000 and therefore not sustainable.

At the time there were a number of NGO'S buying heifers for restocking purposes and the prices of heifers for all species increased due to high demand in areas where heifers were easily available in the market like Isiolo County and North Eastern province. It therefore became necessary to device a different strategy to supply the heifers and young males/females to Marsabit. Then the project devised a system of loaning the LMA and traders under close supervision to buy and supply the heifers and young males to the market and another group of traders to buy slaughter stock from pastoralists for resell in Isiolo.

F2.2 Livestock Market Sales and Activities

F2.2.1 Livestock Sales Records in Each Market

Livestock movement in Dirib Gombo market, Jirime Market and Korr Market were recorded in the period between January 2014 and December 2014. Since, most of transaction were small stock (sheep and goat), number of small stock were mainly collected in the monitoring.

(1) Dirib Market

Data)

During the reporting period (January 2013 to December 2014) the volume of livestock traded was not so active, as shown in the table below. The total numbers of small stock offered for sale was 7,633 goats

and sheep; the number sold was 5,094. The table below also shows the average prices and live weight for small stock. Further details are provided under observation of the market trends.

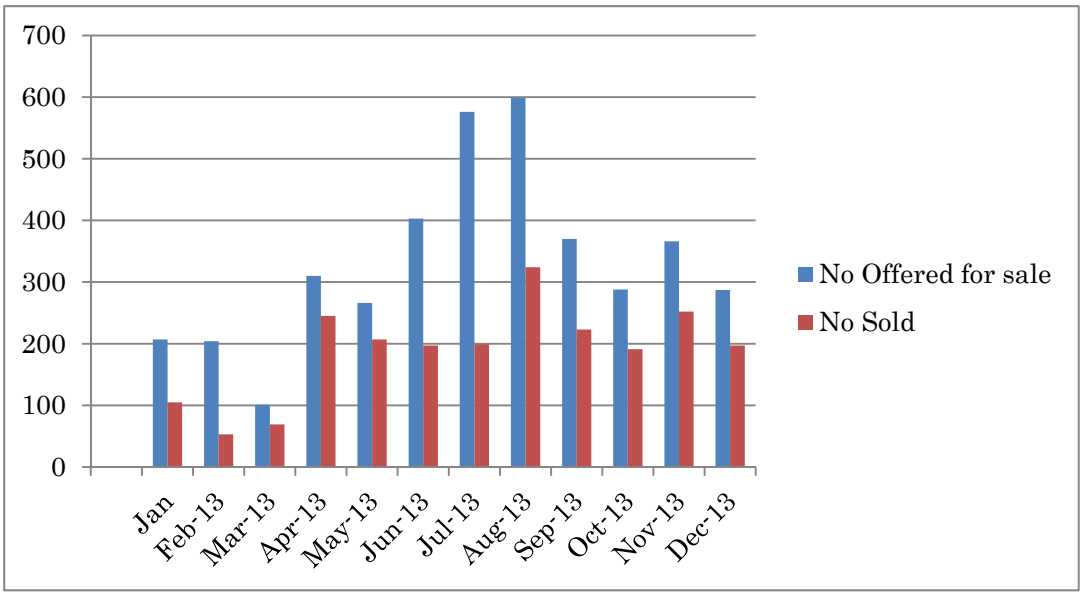
Table AF2.2.1 Dirib Market; Volume of Trade-Small Stock

MONTHS	SMALL STOCKS					
	NO.OFFERED	NO. SOLD	AVERAGE LOWEST WEIGHT	AVERAGE HIGHEST WEIGHT	AVERAGE LOWEST PRICE	AVERAGE HIGHEST PRICE
Jan-13	207	105	35	47	2,500	7,600
Feb-13	204	53	19	59	3,000	7,400
Mar-13	101	69	25	47	2,700	6,200
Apr-13	310	245	21	49	2,200	6,800
May-13	266	207	17	46	1,800	7,700
Jun-13	403	197	15	48	1,800	8,000
Jul-13	576	199	12	40	1,800	8,000
Aug-13	599	324	28	65	2,400	8,000
Sep-13	370	223	32	49	3,486	6,171
Oct-13	288	191	27	49	2,888	6,000
Nov-13	366	252	27	50	2,925	6,363
Dec-13	287	197	29	44	3,186	5,714
Jan-14	635	409	26	42	2,700	5,150
Feb-14	363	249	30	35	3,300	4,438
Mar-14	372	275	38	51	4,080	5,680
Apr-14	458	398	27	50	2,775	5,619
May-14	568	518	30	49	3,130	5,330
Jun-14	272	226	36	48	3,813	5,100
Jul-14	211	154	30	48	2,933	5,350
Aug-14	281	219	28	49	2,950	5,600
Sep-14	167	133	26.	44	3,175	5,350
Oct-14	100	78	26	44	3,075	5,438
Nov-14	120	95	31	48	3,240	6,060
Dec-14	109	78	30	48	3,288	5,625
Total	**7633**	**5094**	**27**	**48**	**2,881**	**6,195**
Source: JICA Project Team			AVERAGE WTS		AVERAGE PRICE	

Observation)

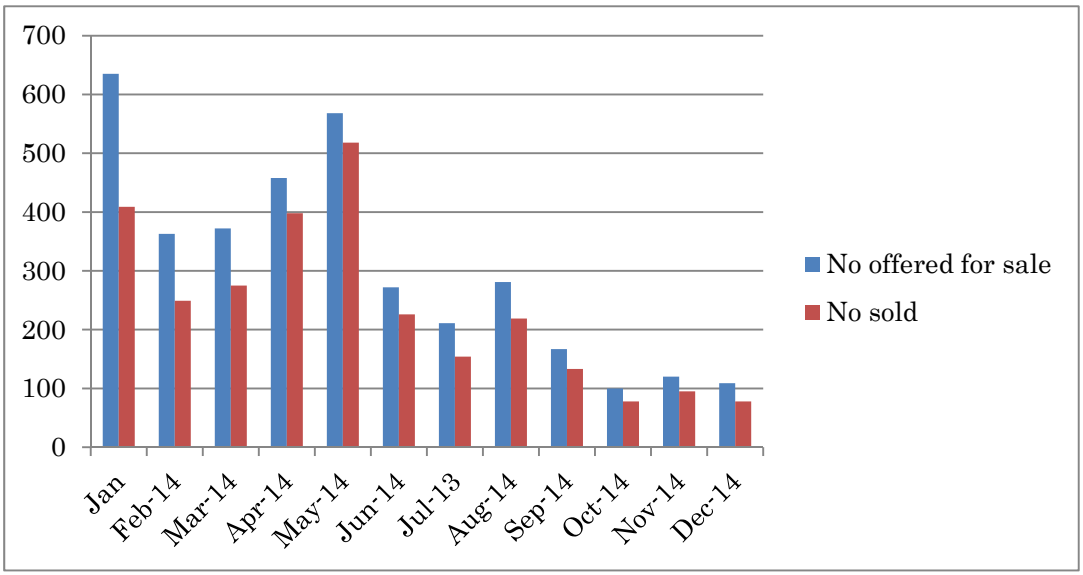
In terms of total number of small stock sold in the Dirib Gombo market, it drastically dropped since June 2014. There are several reasons for such low activities.

- In 2014, there was not enough water in the long rainy season (March-May 2014) and short (October-November 2014) in Marsabit. Therefore most of the livestock did not return to the Dirib Gombo area in the rainy seasons.
- Due to some challenges for organization of Dirib Gombo livestock market association, the heifer programme was inactive since August 2014. Only 60 donkeys were brought in these 6 months. Due to such low supply of heifer livestock, community people were not encouraged to sell their livestock more than what they need for food or others minimum expenses for their life.



Source: JICA Project Team

Figure AF2 2.1 Small ck in Dirib Market in 2013



Source: JICA Project Team

Figure AF2.2.2 Small Stock in Dirib Market in 2014

(2) Jirime Market

The Jirime LMA, despite being trained in livestock market management and registered with Ministry of Gender, Children and Social Development has not yet been authorized to collect revenue at the market. The County Government is still in the process of setting up legal requirements for livestock market operation. However the Jirime LMA members observe the market days (Mondays and Thursdays) but are faced with competition from other traders who trade livestock in the stadium on daily basis. A one-day workshop was held by the project with all stakeholders to solve the impasse.

Although it produced resolutions to bar sales of livestock in the stadium, the County Council insisted that they can only act after the County Government passes a resolution to that effect in the County Assembly. On the other hand the County representative for Karare wanted the re-opening of Ulan

market before the stadium is closed for livestock sales. Unless the County government takes the necessary legal action to stop sales of livestock in the stadium and elsewhere in Marsabit town, Jirime market may not operate optimally.

However the project team actively raised the issue in several County forums including the stakeholder sensitization forum for Marsabit town held on 16th august 2014. All the participants concurred with the views of the project team. It was agreed the Town Administrator to initiate the necessary action in removing all livestock from the town centre. There is hope the County Government will take action soon. However no action had been taken by the time of writing this report.

Data)

The tables below show the data on the volume of livestock traded, average prices and average live weights for small stock.

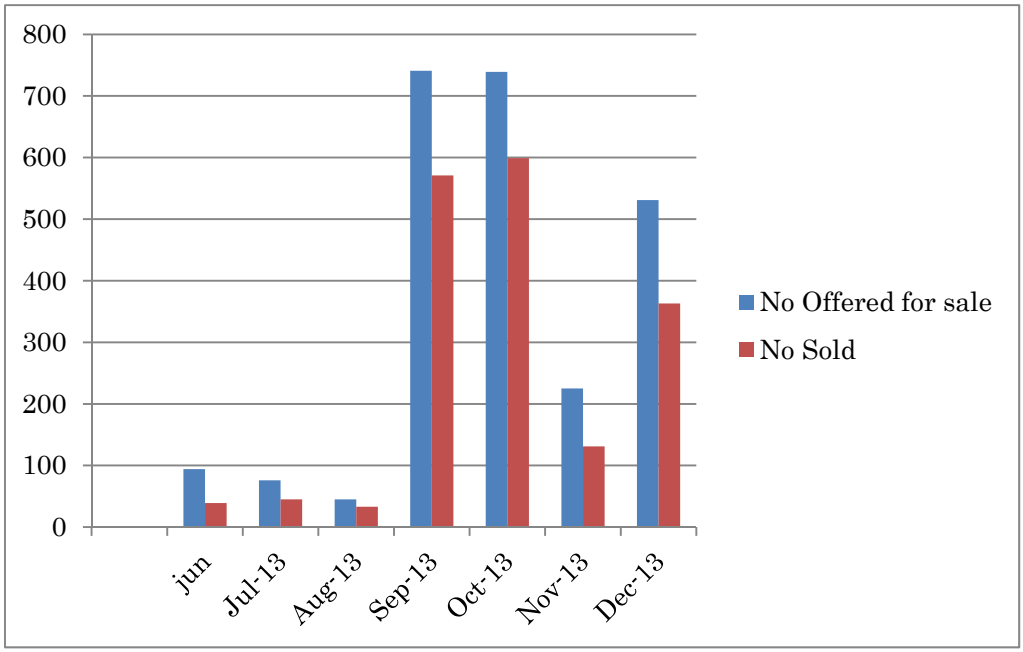
Table AF2.2.2 Jirime Market; Volume of Trade-Small Stock

MONTHS	NO.OFFERED	NO. SOLD	AVERAGE LOWEST WEIGHT	AVERAGE HIGHEST WEIGHT	AVERAGE LOWEST WEIGHT	AVERAGE HIGHEST PRICE
Jun-13	94	39	23	43	1600	4700
Jul-13	76	45	22	42	1600	3800
Aus-13	45	33	25	38	2100	4200
Ssep-13	741	571	29	42	3138	5503
Oct-13	739	599	29	40	3139	4983
Nov-13	225	131	31	40	3407	8300
Dec-13	531	363	29	40	3206	6578
Jan-14	956	611	26	35	2953	4406
Feb-14	625	365	28	41	3078	4556
Mar-14	590	475	34	48	5106	5294
Apr-14	570	488	33	49	3350	7056
May-14	810	737	28	50	2872	6778
Jun-14	1054	930	29	47	3814	5986
Jul-14	491	419	24	46	2094	5211
Aug-14	558	462	29	51	3031	6047
Sep-14	587	460	28	48	3222	5778
Oct-14	488	396	29	47	3178	5828
Nov-14	510	384	27	46	2988	5694
Dec-14	611	520	25	48	2644	5828
	10301	**8028**	**28**	**44**	**2975**	**5607**
			AVERAGE WEIGHT		**AVERAGE PRICE**	

Source: JICA Project Team

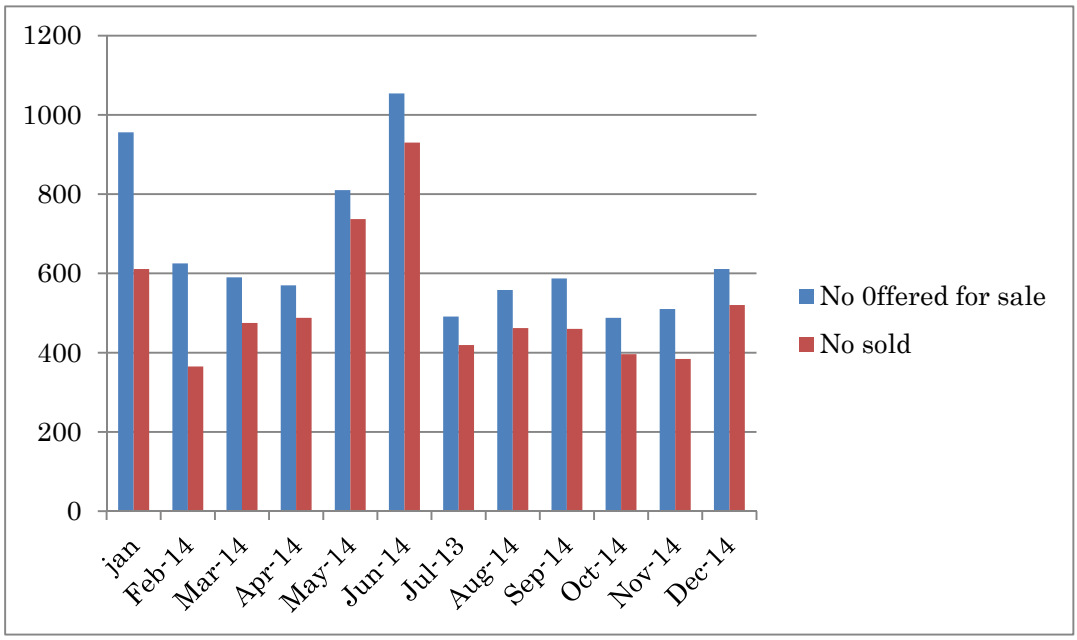
Observation)

Jirme market is a secondary market and most of the small stocks sold in this market come from Marsabit North Sub-county and Marsabit South Sub-county. Due to the efforts of livestock market council and livestock market association, a lot of animals were diverted from the stadium (illegal old market place) to the Jirime market for trading. Thus it should be noted the volume indicated in the figure below does not reflect the total numbers of stock sold in whole of Marsabit town. It was observed that due to the continuous operation of the heifer program, the number of livestock traded did not reduce significantly.



Source: JICA Project Team

Figure AF2.2.3 Small Stock in Jirime Market in 2013



Source: JICA Project Team

Figure AF2.2.4 Small Stock in Jirime Market in 2014

Data)

Data collected by the Project for Cattle transaction in Jirime livestock market was summarized in the following table.

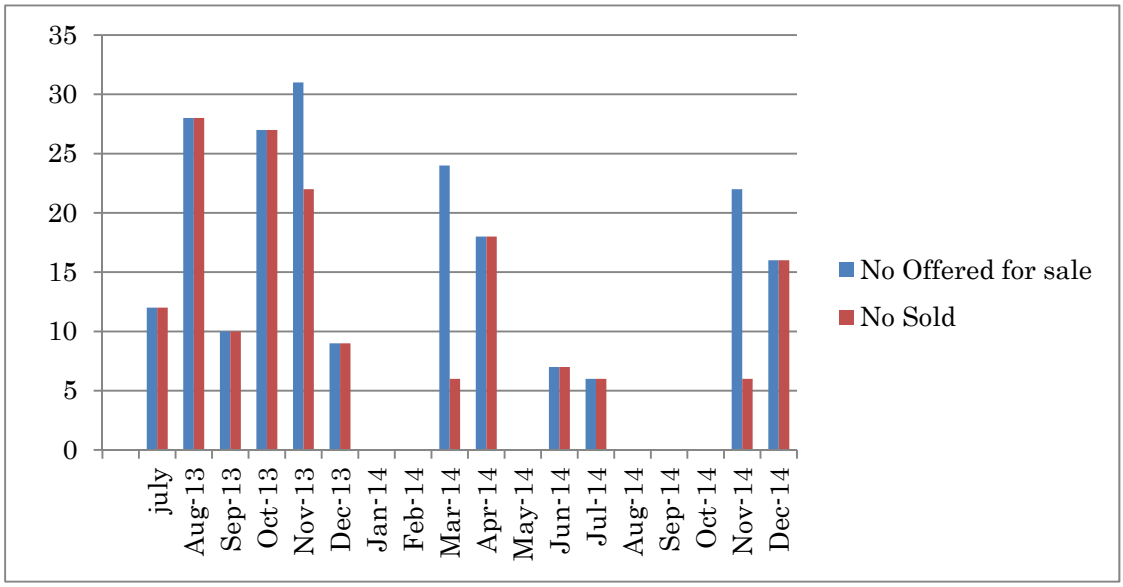
Table AF2.2.3 Jirime Market; Volume Trade- Cattle

MONTHS	NO.OFFERED	NO. SOLD	AVERAGE AGE IN YEARS	LOWEST PRICE	HIGHEST PRICE
Jul-13	12	12	2.5	23,000	25,500
Aug-13	28	28	3	23,083	27,750
Sep-13	10	10	3	25,750	27,500
Oct-13	27	27	3	25,125	26,650
Nov-13	31	22	2	22,333	30,667
Dec-13	9	9	2	24,403	28,272
Jan-14					
Feb-14					
Mar-14	24	6	2.5	19,500	23,250
Apr-14	18	18	3	24,375	29,500
May-14					
Jun-14	7	7	2.5	18,000	21,500
Jul-14	6	6	3	20,000	23,000
Nov-14	22	6	3	26,333	26,333
Dec-14	16	16	2.5	24,833	27,000
	167	**167**	**2.7**	**23,061**	**26,410**

Source: JICA Project Team

Observation)

One hundred and sixty seven (167) cattle heifers were brought by project funded traders to Jirime market and sold. The Jirime traders are more experienced traders than their counterparts in Dirib as they continued to supply heifers, albeit small in number, even after repaying their loans in full. Forty eight (48%) percent of the buyers' source of income were the sales of small stocks and the rest from other sources.



Source: JICA Project Team

Figure AF2.2.5 Cattle Heifer Sales (under heifer programme) in Jirime

(3) Korr Market

Data)

The Korr LMA has been trained in livestock market management and is registered with Ministry of Gender, Children and Social Development but has not yet been authorized to collect revenue at the market. However they ensure trading activities at the market run smoothly. The market day is once a week (Saturday) and data on volume of trade, average prices of livestock and live weights for small stock are provided in the table below. Only small stocks are traded in this market.

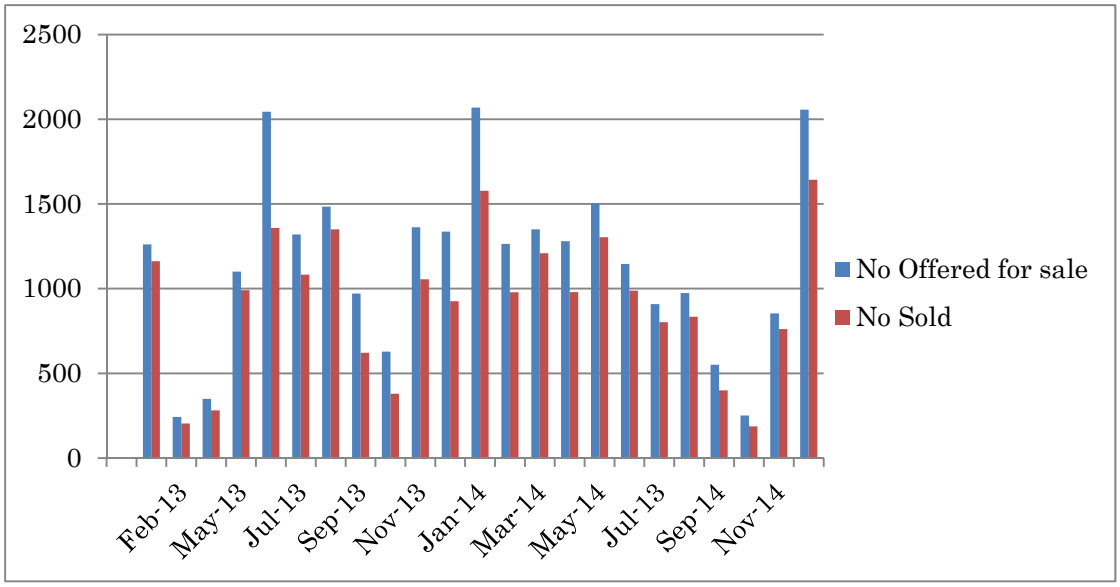
Table AF2.2.4 Korr Market; Volume of Trade-Small Stock

MONTHS	NO.OFFERED	NO. SOLD	AVERAGE LOWEST WEIGHT	AVERAGE HIGHEST WEIGHT	AVERAGE LOWEST WEIGHT	AVERAGE HIGHEST PRICE
Jan-13	1,261	1,162	15	49	1,500	6,500
Feb-13	243	204	23	50	1,300	5,300
Mar-13						
Apr-13	350	282	25	60	2,500	6,300
May-13	1,101	991	29	59	2,300	5,900
Jun-13	2,044	1,358	29	60	2,300	6,060
Jul-13	1,320	1,085	28	57	2,775	6,500
Aug-13	1,484	1,350	27	56	2,700	6,540
Sep-13	971	622	26	53	1,886	5,200
Oct-13	628	380	26	52	1,713	4,900
Nov-13	1,362	1,055	23	50	1,325	4,900
Dec-13	1,337	926	23	49	1,763	5,425
Jan-14	2,069	1,578	24	52	1,638	4,988
Feb-14	1,264	979	24	55	1,925	5,200
Mar-14	1,350	1,209	29	54	2,800	5,300
Apr-14	1,280	980	30	60	3,000	5,000
May-14	1,504	1,304	25	52	2,500	5,400
Jun-14	1,146	988	27	50	2,575	5,400
Jul-14	909	802	25	50	2,350	5,275
Aug-14	974	834	22.2	43	2,170	4,690
Sep-14	551	400	24.25	45	2,412	5,037
Oct-14	251	187	24.5	41	2,487	4,575
Nov-14	854	761	23.3	53	2,455	5,870
Dec-14	2,057	1,643	24.5	49	2,206	5,387
	26,310	**21,080**	**25**	**52**	**2,199**	**5,462**
Source: JICA Project Team			AVERAGE WEIGHT		AVERAGE PRICE	

Observation)

Korr has a market day every Saturday and the supply of small stock which is the main animal species traded in the market depends highly on the livestock movements which is dictated by fodder availability.

As shown in the figure below, in September and October 2014, a big drop of the sales was observed. This is mainly due to scarcity of pasture around Korr area due to less rainfall in the short rainy season. After rainfall in November 2014, number of the livestock traded improved significantly.



Source: JICA Project Team

Figure AF2.2.6 Small Stock Sales in Korr

F2.2.2 Trading Activities in Heifer Exchange Scheme

Challenges that affected the flow of heifers to the market are as follows;

- Tribal clashes between different ethnic groups which took a long time to be resolved
- Traders cited high overhead costs, well above that one of slaughter stock since it takes a long time to look for good heifers and purchasing the number required.
- Traders argue the exercise is taxing with a small reward and risky.
- Losses due to diseases and wild life is high (actually the traders stopped the supply of camel heifers when three heifers was killed by lions and they incurred a loss of Kshs.165,000)
- Pastoralists find the prices of heifers high as compared with the slaughter stock they intend to exchange with.
- Some pastoralists have not yet recognized the value of the breeds being sold as heifers in the market.
- Restocking by NGOs pushed the prices of heifers high in the areas where heifers are readily available in the market.
- There hasn't been any significant price increase for slaughter stock over this period. (actually the average price of slaughter stock in 2014 is lower than that in 2013)
- Dirib project-funded traders are inexperienced in livestock trade and continue to make avoidable mistakes which resulted in losses i.e. giving animals on credit without written document.
- The communities in Dirib area are mainly agro-pastoralists and it seems they have not yet recovered fully from the last drought.

(1) Dirib Market: Supply of Heifers and Young Males by Traders

From January 2013 to December 2014 a total of 141heads of cattle, 401 Galla goats, 50 camel and 88 donkey heifers, were traded under the heifer exchange program in Dirib market as shown in the tables below.

Table AF2.2.5 Volume of Trade- Cattle Heifers

Months	No. Offered	No. Sold	Average Age in Years	Lowest Price	Highest Price
May-13	18	18	2	19,000	34,000
Jun-13	9	9	3	23,000	24,500
Jul-13	24	24	2.5	23,000	28,000
Aug-13	27	20	3	24,000	
Sep-13	7	7	3	25,000	47,000
Oct-13	18	18	3	24,067	25,667
Apr-14	34	21	3	22,500	27,750
May-14	13	13	3	18,500	23,500
Jun-14	11	11	2.5	19,000	24,000
	141	**141**	**2.8**	**22,007**	**29,302**

Source: JICA Project Team

Table AF2.2.6 Volume of Trade - Camel Heifers

Months	No. Offered	No. Sold	Average Age in Years	Lowest Price	Highest Price	Remarks
Jul-13	9	9	2.5-7	47,000	53,000	
Aug-13	13	13	2.5-3	50,000	55,000	
Sep-13	28	3	2 .5 - 3			Exchanged with camel bull, castrate and a cull respectively.
dOct-13	25	10	2 .5 - 3	53,000	57,000	
Nov-13	15	0	2 .5 - 3			
Dec-13	12	0				3 of the heifers were killed by lions.*
Jan-14	12	3				3 exchanged for 8 goats and 8 sheep respectively.
Feb-14	9	9		55,000	55,000	
	50	**47***		**51,250**	**55,000**	

Source: JICA Project Team

Source: JICA Project Team

Figure AF2.2.7Camel Heifers in Dirib Market

Table AF.2.2.7 Volume of Trade- Goats young females

Month	Species	No. Offered	No. Sold	Lowest Price	Highest Price
10/1/2013	Galla goats	60	60	5,000	8,000
16/2/2013	Galla goats	32	32	4,000	6,700
23/3/2013	shoats	129	129	2,500	5,000
6/4/2014	shoats	54	54	4,000	6,500
7/6/2014	shoats	53	53	3,500	6,000
19/7/2014	shoats	25	25	4,500	5,000
9/8/2014	shoats	48	48	3,000	5,000
		401	**401**	**3,786**	**6,029**

Source: JICA Project Team

Table AF2.2.8 Volume of Trade- Traders Donkey

LIVESTOCK OFFERED, SOLD, PRICE IN KSHS AND WEIGHT IN KGS						
MONTHS	NO.OFFERED	NO. SOLD	AVERAGE AGE IN YEARS	LOWEST PRICE	HIGHEST PRICE	REMARKS
May-14	8	8	3	16,000	19,000	Bought by the community
Jun-14	20	20	3	17,000	17,000	Bought by NGO (Sauti Moja)
Sep-14	20	20	3	15,000	17,000	
Nov-14	20	20	2.5	16,000	18,000	
Dec-14	20	20	3	14,000	17,000	
	88	**88**	**2.9**	**15,600**	**17,600**	

Source: JICA Project Team

(2) Jirime Market: Supply of heifers and young males by traders

From July 2013 to December 2014 a total of 167 heads of cattle were traded under the heifer exchange program in Jirime market as shown in the table below.

Table AF2.2.9 Heifer and Young Animal under Heifer Program in Jirime

MONTHS	NO.OFFERED	NO. SOLD	AVERAGE AGE IN YEARS	LOWEST PRICE	HIGHEST PRICE
Jul-13	12	12	2.5	23,000	25,500
Aug-13	28	28	3	23,083	27,750
Sep-13	10	10	3	25,750	27,500
Oct-13	27	27	3	25,125	26,650
Nov-13	31	22	2	22,333	30,667
Dec-13	(9)	9	2	24,403	28,272
Jan-14					
Feb-14					
Mar-14	24	6	2.5	19,500	23,250
Apr-14	(18)	18	3	24,375	29,500
May-14					
Jun-14	7	7	2.5	18,000	21,500
Jul-14	6	6	3	20,000	23,000
Nov-14	22	6	3	26,333	26,333
Dec-14	(16)	16	2.5	24,833	27,000
	167	**167**	**2.7**	**23,061**	**26,410**

Source: JICA Project Team

F2.2.3 Training Activities

(1) Three Days Brainstorming Workshop in Dirib Market

The project carried out a three day brain storming workshop for the Dirib community, with more than forty members of the community; including the local administrators attended the meeting. During the workshop the community action plan was updated as shown below and the current loan provided by the project under the heifer exchanged program was discussed exhaustively amongst other development issues. The participants were not satisfied with the current system and proposed a new system as described below under observation.

Source: JICA Project Team

Figure A2.2.8 Brainstorming Workshop at Dirib

The organization structures put in place are for governance of the resources the project provided for the common good of all. However common resource management has to face difficult task of devising rules that limit amount and how it is used. It became clear during the workshop for the DRR committee held at

Dirib that the current system must be changed to an adaptive governance which has four main rules as follows;-

- A system of dealing with conflicts must be put in place and members registered as owners.
- Enhanced rule of compliance
- All infrastructure must be provided
- Encourage adoption and change- address errors and cope with new developments.

During the workshop it was pointed out the system the project put in place presents another instance of the working out of the tragedy of the commons. The tragedy of the commons is a dilemma arising from the situation in which multiple individuals acting independently and rationally consulting their own self interest will ultimately deplete a shared limited resource.

The participants were referring to the funds provided by the project for the heifer exchange program. Many of the participants argued that once the project ends the committee and the traders will share the funds without members of the community knowing or they may argue that they are also members of the community and claim ownership and there will be no one to act on behalf of the community. It was therefore concluded that a membership drive be initiated urgently where a registration fee of two hundred Kenya shillings will be charged for membership and Kenya shillings fifty for monthly subscription. It was agreed that the current committee should act promptly to recover all outstanding loans by the the end of August 2014.

However at the time of writing this report the exercise had not been finalised. It was also agreed that as soon as the registration of members reaches one hundred an election should be called to elect new committee members. The participants also proposed for a system to be put in place whereby the current funds would be divided into three portions. One portion is to be used for purchase of heifers for resale in Dirib market. The second portion should be used for the purchase of slaughter stock from the market. The third portion may be used for the purpose of loaning disadvantaged members of the community in terms of heifers whereby they can buy heifers on loan. They also proposed an interest of 2-3% be charged on all loans. As soon as new officials are elected new rules and regulation should be put in place to govern the resources.

A follow up meeting held on 29th August postponed the election of officials to 13th September 2014 and all traders were informed to surrender their loans by that time.

The project team concurs with the sentiments of the community and found out the following flaws in the current system;-

- The current DRR committee members are reluctant to accept the new system.
- It seems they are not actively following up the traders for loan repayment.
- It seems they want to maintain the status quo.
- One trader after taking goats to Isiolo has not returned for a period of more than one month.
- Some of the traders are using money to purchase heifers for other NGO’s
- Some of the traders are not providing records of their trading activities.

(2) LMA Collection and Utilization of Revenue

The committee members made schedules of weekly operations whereby a certain number of committee members were on duty every Saturday during the market day and were paid lunch allowance from the market revenue. However they found this arrangement of paying committee members to be expensive and the lack of records and therefore decided to employ a revenue clerk. He would also be responsible of keeping records for the DRR committee including loan application, disbursement, repayment and trader’s performance records.

a) The revenue charges were as follows:

- Small stock (goats and sheep) = Kshs50 per head
- Big stock (camel, cattle and donkey) = Kshs100 per head
- Loading of animals = Kshs500 per truck

b) Revenue use

- Committee allowance (amount differs depending on the number of animals sold that day)
- Market structure repairs and maintenance
- Caretaker salaries
- Revenue clerk salary
- Office stationeries
- Office table and chairs

The revenue collected was fully utilized by the LMA as balances were saved in their bank account. Although the Marsabit county government had recently passed a resolution in the county assembly that all LMAs in the county markets were allowed to collect market revenues and share the revenue at the ratio of 30: 70 the county government getting the highest share, the resolution has not yet been enforced.

(3) VICOBA Training of Traders and LMAs and EMC

The project engaged CARE-KENYA, Marsabit to train all the LMAs mentioned above and EMC Kalacha on the design they developed on Community Savings and Loans as they were carrying out training to a number of groups in Marsabit County. The objective was to make the various organizations more cohesive in their activities and develop loan repayment culture to ensure none defaulting on the loans taken. Proper use of the funds provided by the project could help in reducing poverty at household level through economic empowerment of the Communities the project was engaged with. This could be made possible through financial inclusion that targets those that were not reached by the formal financial institutions through group savings and loans project.

Table AF2.2.10 Training Sessions

Location	Date	No. Participant
Kalacha	23-25/6/14	26
Dirib	28/6/14	11
Korr	6/7/14	18
Jirime	13/7/14	20

Source: JICA Project Team

The training went on as expected on 23thJune, 28thJune, 6th July, and 13th July 2014as stipulated above.

The details, such as programme, training contents should be referred to in Attachment F2-2.

(4) Training of Dirib Gombo Drought Risk Reduction Committee

A follow up training program was under taken on 26th June 2014 on the module shown in the table below.

***Table AF2.2.11* Livestock Production and Project Objectives**

Session Title	Purpose of the Session
Livestock Production	• Discuss livestock production goals • Different types Breeds of livestock in Northern Kenya • Productivity of different breeds • Where they are found

	• Benefits of keeping early maturing breeds • Need of reducing unproductive animals in the herd
Project Objective	• The need to reduce unproductive animals and increase productive ones so as to increase resilience to drought and productivity. • Increase the number of high productive breeds e.g. Galla goats, Somali camels, Black head Persian sheep and Boran cattle • A vibrant livestock market in Dirib.
Livestock Movement	• Discuss requirement when moving animals from one place to another e.g. no objection and movement permits
Disease Control	• Discuss how a healthy animals look • Discuss the need to trade only in healthy animals • Discuss vaccinations
Security	• Discuss the need of security issues seriously and avoid areas that are prone to banditry.
Livestock Trading	• Weight estimation using weighing band

Source: JICA Project Team

The goal of these sessions was to help traders manage their money effectively. Table below presents the modules learning sessions and their purposes.

Table AF2.2.12 **Financial Management**

Session Title	Purpose of the Session
SECTION 1: BUDGETING	
1. Introduction to budgeting	• Discuss goals for the future • Create a budget as a large group • Compare the money management behaviours of two budgeters
2. Living within your means	• Distinguish between wants and needs • Identify the early fluctuation of income, expenses, savings and credit. • Create a personal seasonality calendar
3. Putting it all together	• Distinguish between a personal budget and a business budget • Create a budget to distinguish between personal and business expenses • Role-play budgeting advice
SECTION 2: SAVINGS	
4. Plan to save	• Discuss and define savings goals • Analyze a story to identify short-term and long-term goals • Create a savings plan and calculate required weekly savings.
5. Saving on a fixed budget	• Define the term “savings goal” • Analyze Monica’s saving goals using a story • Select personal saving goals
6. Compare ways to save	• Identify the savings options available to them • Compare methods of savings and match them savings goals
SECTION 3: BANK SERVICES	
7. Compare and contrast products and services	• Discuss common myths about banks • Compare and contrast different bank products • Match bank products with personal needs
8. Choosing an account	• Understand that bank products meet different needs • Practice asking questions and fill out bank forms
9. Using Automatic Teller (ATM) Machine, optional.	• Describe the functions of ATMs • Practice using an ATM • Identify the risks associated with ATMs
10. Introducing Mobile banking- optional	• Understand Mobile phone Banking • Identify the advantages and disadvantages of mobile phone banking
SECTION 4: DEBT MANAGEMENT	
11. Can I take on a loan?	• Distinguish between own money and other people’s money • Define the term “loan” • Identify questions to ask when borrowing money
12. Good loans vs.	• Compare using savings and loans for expanding a business

Source: JICA Project Team

F2.2.4 Baseline Survey at Communities for Livestock Sector

(1) General

After the planning period the project team created an atmosphere of recognition, mutual understanding and trust between the project, local administration, District Government Departments, NGOs and the communities in the pilot areas during the launch and the DSG meeting that followed. The DSG is a forum where representatives of the Government Ministries, NGOs and the project exchanged ideas and sought solutions to problems and implementation of the activities are coordinated. All the project activities were initiated after a lively dialogue with all the above mentioned partners in the DSG. After the approval of the DSG, an environmental impact assessment (EIA) was carried out and a license to commence activities was obtained.

The activities for the improvement of livestock value chain commenced by carrying out a baseline survey. The objectives were as follows:-

- To gather data so as to determine gross margin commensurate with the possible production level and as allowed by the pastoralists resource base.
- Assessment of herd composition so as to determine the number of marketable animals available amongst the various livestock species.
- Discussion with the pastoralists and agro-pastoralists for problem diagnosis and determination of necessary interventions in the livestock value chain.
- To assess pastoralists' resource base and constraints to ensure that the recommended interventions are within the pastoralists socio-economic set up hence implementable.
- To set a benchmark to be used for evaluating and monitoring the progress and rate of success of the project.

(2) Areas Surveyed

The areas surveyed included the entire catchment zones of Dirib and Jirime in Marsabit Central, Korr in Marsabit South and Kalacha in Marsabit North.

(3) Launching

Launching was done in a meeting of broader representation of the community together with the local administration (area Chief) so as to make a clear "mission statement" to avoid fears and high expectations and also recruit enumerators who were then to be trained.

(4) Methods

The method employed was through interviews of pastoralists and agro-pastoralists by trained enumerators, and where possible, physical counting of animals was carried out. The enumerators were supervised by project staff to ensure accuracy of data. Given that some pastoralists are sensitive to providing some information; this was obtained while dialoguing with the respondent or by observation rather than asking directly.

(5) Data Analysis and Synthesis for Dirib Gombo Area

a) General information

Gadamoji Division has two locations Jaldesa and Dirib Gombo with a total of 1657 households. The project survey team found out only four households out of ten own cattle and eight out of ten own goats and four out of ten own sheep on average. This means only 40% of the households own cattle and 80% own goats and 40% own sheep. Most of the camel populations are concentrated in Qubi Bagasa area of Dirib Gombo Location. This area has 210 households and 50% own camels. This means 105 households own camels. There are only 14 households who own camels in the rest

of the Division, therefore total number of camel owners in the whole Division is 119 households. Only 44% of the households own donkeys and 37% of the households own poultry.

b) Average Number of Livestock Owned per Household

Based on the survey, condition of livestock for individual was established. An average number of livestock owned per household in Dirib Gombo are summarized below:

- Average number of cattle owned per household - 7
- Average number of goats owned per household - 17
- Average number of sheep owned per household - 5
- Average number of camel owned per household - 3
- Average number of donkeys owned per household - 1
- Average number of poultry owned per household - 6

c) Number of Households owning livestock

Number of households owning livestock are approximately the followings in Dirib Gombo area:

Number of households who own cattle	663
Number of households who own goats	1,326
Number of households who own sheep	663
Number of households who own camel	119
Number of households who own donkeys	729
Number of households who own poultry	613

d) Livestock Population Estimate for Gadamoji Division

For estimating the livestock population in Gadamoji division, the following formula was employed in the Project.

"Average number of livestock owned" x "No of households" = "population estimate"

Cattle population estimate;	7x663	=	**4,641**
Goat's population estimate;	8x1326	=	10,608
Sheep population estimate;	2x663	=	1,326
Camel population estimate;	3x119	=	357
Donkey's population estimate;	1x 729	=	729
Poultry population estimate;	6x613	=	3,678

A total number of 57 households were interviewed in Dirib, Boruharo and Jaldesa Gombo area for a period of four days. The people interviewed, generally cooperated with the enumerators and the project staff. Most of the areas are inhabited by agro-pastoralists who lost a large number of their animals to 2010/2011 drought and therefore the herd sizes are small. A small number of the population started keeping camels in the last decade.

When this survey's estimate is compared with DLPO'S estimate for 2009, it shows a significant loss of cattle, sheep, donkeys and poultry during the drought. However during the same period the number of camels doubled and there was a slight decrease in the population of goats. The increase in the number of camels was mainly due to restocking as agro-pastoralists sell cattle, goats, and sheep to buy camels. The high reduction in the number of poultry may be due to sales during the drought period as there was little else to sell for food and other needs. According to some of the respondents,

there was apprehension created by the media in 2010 over bird flu and many people slaughtered or sold their poultry, some even stopped keeping poultry altogether.

On the other hand, the population estimate by the DLPO Marsabit Central for Gadamoji Division for 2009 are as follows;

- Cattle 35,500
- Goats 13,000
- Sheep 7,000
- Camel 180
- Donkeys 1,700
- Poultry 8,400

e) Average Distance to Livestock Market

The average distance to the market was calculated to range from 15 to 40kms.

f) Main Livestock Buyers

The main livestock buyers mentioned by most respondents are the livestock traders and butchers in Marsabit town.

g) Number of Animal that are Unable to Walk in the Last One Year

There were no such cases as they had received adequate rain in the last two seasons.

h) Demand for Use of Scales or Weighting Band for Livestock Marketing

72 percent of the respondents preferred the use of scales in livestock marketing.

Detailed data in Dirib Gombo and other areas should be referred to in tables BF2.2.1 and BF2.2.2.

F2.3 Results and Analysis

F2.3.1 Purchase by Pastoralists

As mentioned in the table above, the following number of young animals were provided under this heifer exchange programme and sold fully at fair prices except 3 camels that died accidentally.

Table AF2.3.1 Total Young Animals (heifers) Offered under the Programme

	Species and place	No. Offered	No. Sold	Lowest Price	Highest Price
1	Shoats in Digib Gombo market	401	401	3,786	6,029
2	Cattle in Digib Gombo market	141	141	22,007	29,302
3	Camel in Digib Gombo market	50	47*	51,250	55,000
4	Donky in Digib Gombo market	88	88	15,600	17,600
5	Cattle in Jirime market	167	167	23,061	26,410

*) 50-47 = 3; 3 camels were attached and killed by lions

Source: JICA Project Team

Thus it was confirmed that pastoralists in Northern Kenya intend to buy heifer or young female or sometimes male, animals by their own funds if somebody offers an opportunity for purchase.

F2.3.2 Source of Income for Purchase of Heifers and Young Stock

Since pastoralists do not have savings in the bank they usually sell their livestock, especially old castrated animals, in case they need cash for various expenses. In the heifer exchange programme, such a method of obtaining cash was expected for buying heifers. They have nowadays have other ways of earning cash, e.g. casual labour pay, remittance from family members, etc.. Thus in order to verify this, a series of interview surveys was made in every market by the project staff.

The results of the interviews indicated that source of income for purchase of cattle heifers from sales of finished livestock was 53.8%, 95% for camel, and 79.4% for shoats. Thus it was concluded that if the programme offered to sell young female animals in local livestock market, most of pastoralists tend to sell their old, possibly castrated animals, for obtaining cash to purchase young animals.

The details are shown in the tables below.

Table AF2.3.2 Source of Cash Used for buying heifer in Dirib Gombo (Cattle)

DATE	SOURCE OF INCOME FOR PURCHASE OF HEIFERS					
	SPECIES	Sold No.	**Cash by selling old livestock on the same day**	**Cash by selling old livestock earlier**	Salary	Others
MAY 2013	Cattle	18	66%	17%	17%	0%
JUNE 2013	Cattle	9	56%	11%	13%	20%
JULY 2013	Cattle	24	21%	8%	17 %	54%
AUGUST-SEP7th 2013	Cattle	34	12 %	24%	9 %	55%
AVERAGE %	Cattle		**38.8%**	**15.0%**	13.8%	32.2%
			53.8%		13.8%	32.2%

Source: JICA Project Team

Table AF2.3.3 Source of Cash Used for buying heifer in Dirib Gombo (Camel)

DATE	SOURCE OF INCOME FOR PURCHASE OF CAMEL HEIFERS					
	SPECIES	Sold No.	**Cash by selling castrated livestock on the same day**	**Cash by selling castrated livestock earlier**	Salary	Others
JULY 2013	Camels	9	55 %	45 %	0 %	0%
AUG 2013	Camels	13	62%	28 %	10%	0 %
AVERAGE %	Camels		**58.5%**	**36.5%**	5%	0%
			95.0%		5%	0%

Source: JICA Project Team

Table AF2.3.4 Source of Cash Used for buying heifer in Dirib Gombo (shoats)

DATE	SOURCE OF INCOME FOR PURCHASE OF HEIFERS				
	SPECIES	Sold No.	**Cash by selling castrated livestock on the same day**	**Cash by selling castrated livestock earlier**	Salary/ Others
Mar 2013	Goats	26	38 %	35%	27%
Apr 2013	Goats	51	35%	45 %	20%
Jul2013	Goats	20	55%	30%	15 %
AVERAGE %	Goats		**42.9%**	**36.5%**	20.6%
			79.4%		20.6%

Source: JICA Project Team

A High rate for camel at 95% can be explained from the point of view of its high price in comparison with the other animals. The pastoralists cannot afford to buy camels with only the fund saved from casual labour salary or remitted money from their families, but had to sell their livestock in the market.

F2.3.3 Increase of Livestock Transaction in a market

(1) Purpose of Sales of Animals in Market before/after the Project Implementation

a) Conditions before the Project

In order to assess livestock sales tendency, the District Profile Survey was conducted by the Project from May to July 2012, including questionnaire survey. In the questionnaire the purpose of selling livestock in the past one year was raised, i.e. actual usage of earnings from livestock sales. The results indicated that pastoralists sold livestock for cash to buy food as their first priority (85%), to buy a phone as second (13%) and to buy livestock for restocking was only 1% (see in table below). It means pastoralists in Marsabit were not used to sell their animals for restocking purpose before the Project started.

Table AF2.3.5 Usage of Sales Benefit of Livestock (before project)

	Buy food	**Buy livestock**	Buy phone	Education	Medicine	Gift	Others
Frequency	164	**2**	26	3	0	0	1
Rate (%)	85	**1%**	13	2	0	0	1
Ranking	1	**4**	2	3	-	-	5

Source: JICA Project Team

b) Conditions after the Project

In the previous section, it was confirmed that pastoralists in Marsabit were not used to sell their animals for restocking purpose before the Project started. Thus if they start to sell their animals for heifer or young animal under the programme, it can be said that such actions are purely due to the influence of the heifer programme.

(2) Increased Livestock Transaction in a Market after the Project Implementation

In Section F2.3.2, it was confirmed that a large number of the pastoralists exchanged their old animals with heifers under the heifer exchange programme. In this context, the number of old animal which were sold by pastoralists due to the influence of the heifer programme were estimated in the following table.

Table AF2.3.6 Total Number of Heifers and Old Shoats Exchanged

	Total number of heifers sold	% of exchanged heifers	Number of exchanged heifers	Average sold unit price of heifer [Ksh]	Conversion rate to old shoats*	equivalent to shoats
Camel	50	95.00	47.50	51,477	10.57	502
Cattle	141	53.80	75.86	25,688	5.28	400
Shorts	401	79.38	318.31	4,728	0.97	309
						1,212

Source: JICA Project Team

*: Conversion rate = "heifer's price" / "Selling price of an old shoat"
"Selling price of an old shoat" is assumed at Ksh 4,868 based on survey data.

It was estimated that around 1,212 old animals were sold and converted to heifers/young animals in this sub-project, through Dirib Gombo livestock market.

A trend of changing pastoralists' action could be observed in the following table as well. The table below shows numbers and percentages of visitors by their purpose of visiting the Dirib market.

Table AF2.3.7 Number of Visitor of the Dirib Market

MONTH		APR	MAY	JUN	JUL	AUG	Total	Average
		No. %	No. %	No. %	No. %	No. %	No.	No. %
PURPOSES OF MARKET VISIT DIRIB GOMBO MARKET	**BUYING YOUNG LIVESTOCK**	**57 18%**	**50 18%**	**50 17%**	**57 28%**	**61 19%**	**275**	**55 20.0%**
	BUYING ADULT LIVESTOCK	0 0%	0 0%	70 24%	37 18%	98 30%	205	41 14.4%
	SELLING YUONG LIVESTOCK	36 11%	17 6%	26 9%	16 8%	35 11%	130	26 9.0%
	SELLING ADULT LIVESTOCK	45 14%	67 25%	79 27%	64 31%	68 21%	323	64.6 23.6%
	OBSERVERS	168 52%	123 45%	42 14%	20 10%	29 9%	382	76.4 26.0%
	SELLING OTHER ITEMS	15 5%	14 5%	25 9%	12 6%	32 10%	98	19.6 7.0%
	TOTAL NO. OF PEOPLE	321	271	292	206	323	1,413	282.6

Source: JICA Project Team

This table shows that about 20 % of the total visitors came to the Dirib market for the sake of buying young animals.

F2.3.4 Analysis on Mortality Rates for Different Age Groups of Animals in a Prolonged Drought

It is widely understood that young female animals are the last ones to die during a drought spell, while an old castrated animal is not strong against drought.

Therefore, in order to confirm this belief and to prove that the heifer programme can improve not only productivity but also survival rate of livestock in drought period, an interview survey was carried out.

(1) Objective

- To gather data on mortality rates for different age groups of all the domestic species in drought situation.
- To gather information on the composition of herds after a prolonged drought
- To determine specifically heifer survival rates

(2) Areas surveyed and Method used.

The areas surveyed included the entire catchment zones of Dirib and Jirime in Marsabit Central, Korr in Marsabit South and Kalacha in Marsabit North.

The method employed was through interviews of pastoralists and agro-pastoralists by trained project staff. The interviews were carried out over a period of four months and pastoralists interviewed were selected randomly. A total number of 88 pastoralists and agro-pastoralists were interviewed.

(3) Data Analysed

The order of death in a prolonged drought is shown in the table below. The ranking shows that heifers and young steers are the last to die in a drought situation.

Table AF2.3.8 Order of Death

CALVES, KIDS & LAMB	1
PREGNANT COW, CAMEL, DOES, EWES	2
LACTATING COW, CAMEL, DOES, EWES	3
YEARLING & IMMATURE	4
OLD BULLS, BUCK, RAM	**5**
DRY COW,CAMEL, DOES, EWES	**7**
YOUNG BULL, BUCKLING, RAM	7
OLD STEERS, OLD CASTRATE	8
YOUNG STEERS & CASTRATE	9
HEIFER, DOELING & EWES	**9**

NUMBER 1=FIRST TO DIE, NUMBER 9= LAST TO DIE

Source: JICA Project Team

The table below shows that more than a half of animals that survived in the last drought were young female animals, in particular for camel and goat. It seems that such data supports the tendency of mortality

Table AF2.3.9 Percentage of Heifer Survival

Percentage Survival				
	Camel	Cattle	Goats	Sheep
(a) NO. BEFORE THE DROUGHT	*1,032*	*1,597*	*4,819*	*3,483*
(b) NO. AFTER THE DROUGHT	*858*	*596*	*3,460*	*2,347*
(c) NO. OF HEIFERS/1ST&2ND CALVERS AFTER THE DROUGHT	*626*	*464*	*2,635*	*1,636*
PERCENTAGE OF HEIFER IN SURVIVAL ANIMAL = (c/b)	***73%***	***54%***	***76%***	***47%***

Source: JICA Project Team

F2.3.5 Reproduction Performance of the Offspring Sold by the Project

The project team monitored the performance after 1 year of the initial sixty Galla goats sold in February 2013, by the project in Dirib market to pastoralists and agro-pastoralists. The table below shows the performance of only 47 goats which could be traced the rest migrated to other areas. The findings show that kid management amongst the agro-pastoralists is extremely poor with high mortality rates. This is due to flea infestation and over milking the dames.

Table AF2.3.10 Galla Goats Performance

No.	Name pf the Owner	Region /Place	No. Bought	No. of Adult Died	No. Given Birth	No Offspring Died	No. Pregnant.	Current No.
1	OWNER A	MAJENGO	1	0	0	0	1	1
2	OWNER B	JIRIME	1	0	1	0	1	2
3	OWNER C	MAJENGO	2	0	2	0	2	4
4	OWNER D	GAR QARSA	10	0	7	3	10	14
5	OWNER E	KUBI BAGASA	4	1	1	0	2	4
6	OWNER F	DIRIB	1	1	1	1	0	0
7	OWNER G	GORO RUKHESA	1	1	1	0	1	1
8	OWNER H	DIRIB	1	0	1	0	1	2
9	OWNER I	KUBI BAGASA	1	0	1	0	1	2
10	OWNER J	KARA	1	0	1	0	1	2
11	OWNER K	KARA	1	0	1	0	1	2
12	OWNER L	MANYATTA JILLO	3	0	1	1	2	3
13	OWNER M	KORR	1	0	1	0	1	2
14	OWNER N	KORR	1	0	1	0	1	2
15	OWNER O	KORR	1	0	1	0	1	2
16	OWNER P	KORR	1	0	1	1	1	1
17	OWNER Q	KORR	1	0	1	0	1	2
18	OWNER R	KORR	1	0	1	0	0	2
19	OWNER S	KARA	2	0	2	2	2	2
20	OWNER T	KARA	1	0	1	2	0	0
21	OWNER U	DIRIB	2	0	1	1	1	2
22	OWNER V	GAR QARSA	2	0	2	1	2	3
23	OWNER W	DIRIB	1	0	1	0	1	2
24	OWNER X	KORR	1	0	1	0	1	2
25	OWNER Y	KORR	5	0	2	1	2	6
26	OWNER Z	GAR QARSA	2	0	1	0	2	3
			47	3	26	9	27	61

Source: JICA Project Team

The table below shows the situation of the reproduction rate of the Galla goats.

Table AF2.3.11 Galla Goats Situation Analysis

No. of adult bought	**47**
No. of adult died	3
No. of adult given birth / total kids	26
No. of offspring died	9
No. of adult now pregnant	27
Total no. of goats now	**61**
Percentage adult death	6%
No. of adult given birth / total kids	**55%**
No. of offspring died	35%
No. of adult now pregnant	57%

Source: JICA Project Team

It was observed the reproduction rate was around 55%, and this number was considered reasonable or a little lower than the project's expectation.

F2.3.6 Operation Issue at Dirib Gombo

The organization structures put in place were for the governance of the resources the project provided for the common good of all. However common resource management had to face difficult task of devising rules that limited amount and how it was used. It became clear during the meeting for the Disaster Risk Reduction (DRR) committee held at Dirib Gombo village that the current system had to be changed to an adaptive governance which had four main rules as follows;-

- A system of dealing with conflicts had been put in place and members registered as owners.
- Enhanced rule of compliance
- Encourage adaption and change
- Address errors and cope with new developments.

During the meeting it was pointed the system the project put in place presents another instance of the working out of the tragedy of the commons.

The participants were referring to the funds provided by the project for the heifer exchange program. Many of the participants argued that once the project ends the committee and the traders would share the funds without members of the community knowing or they may argue that they were also members of the community and claimed ownership and there would be no one to act on behalf of the community. It was therefore concluded that a membership drive be initiated urgently where a registration fee of two hundred shillings will be charged for membership and Kenya shillings fifty for monthly subscription. It was agreed that the current committee should act promptly to recover all outstanding loans by the end of January 2015.

Then, on the course of transferring system, it was found that that some members of DMC and LMA misappropriated funds of the programme. So change of management system was required urgently.

After the brainstorming workshop they decided to introduce membership system. They agreed that one hundred and forty six (146) members registered after paying two hundred (Ksh.200) registration fee and all members had paid fifty shillings (Ksh.50) for December 2014 and January 2015. Then new DRR committee officials were elected among the registered members. Since the registration of new members monthly meeting was being held at the market by the members and the committee to discuss issues pertaining to the management of the market including loan recovery and disbursement. The proposed system to be put in place would be divided into three portions.

One portion should be used for purchase of heifer resale in Dirib market. The second portion should be used for the purchase of slaughter stock from the market. The third portion may be used for the purpose of loaning disadvantaged members of the community in terms of heifers whereby they could buy heifers on loan was put on hold, until loan recovery is finalized. They also proposed and introduced an interest of 5% to be charged on all loans. A decision was made during that meeting to disburse three hundred thousand (Kshs.300,000) in total to six members at the rate of fifty thousand shillings (Kshs.50,000) per member to purchase Galla goats which was still in high demand. All qualified applicants were required to pay 5% of the money up front.

This system seems to be well operated so far, but it is unclear if it will be sustainable or not after the project team has left. It is too early to judge its applicability and sustainability. However it is highly recommended that fund management by community should be carefully introduced, otherwise it could be a source of conflict among the community members.

F2.4 Conclusion

As mentioned before there were 2 objectives for this sub-project, such as:

(i) To verify the assumption that was considered in the programme. In other words, to confirm actual pastoralists' attitude whether they will sell their livestock to obtain cash for heifers and buy those animals when they are actually available in their local market.

(ii) To check and verify whether such system could be controlled and managed by community people by themselves.

Through the experiences in the Project, it was certain that objective (i) was confirmed and effectively functioned in the programme scheme.

Despite successes achieved in building the heifer program, there have been some significant challenges. One key constraints discovered early on was the DRR committee and livestock committee could not control traders once the funds were given. Thus, unfortunately for objective (ii), its sustainable operation by community, could not be confirmed, and it seems to be a big challenge to establish a sound sustainable operational system in community for the heifer programme.

However the heifer exchange programme could be implemented as an alternative livestock restocking programme after drought emergency period because this program can provide much more numbers of animals with a relatively smaller investment than restocking program needs, and can restructure herd composition in Northern Kenya more resilient to drought.

CHAPTER F3. SUB-PROJECT OF FEEDLOT

F3.1 Outline of the Sub-project

F3.1.1 Outline of Activities

Table AF3.1.1 Sub-project Profile

Item	Contents	
1. Objectives	- To provide example and guidance on proper use of fodder and maintenance not only in the proposed feedlot but also in the existing agro-forest. - To provide opportunities to the larger population of pastoralists who do not have plots in the existing agro-forest of saving or fattening their animals during times of stress. - To add value to marketable animals during dry seasons and drought. - To provide opportunity for breed improvement from the purchase of off-springs of the Galla goats multiplication herd in the feedlot.	
2. Number of Beneficiaries	Approximately, 720 persons (Direct benefit: Pastoralists who live in the community.)	
3. Implementation Organization	JICA ECoRAD Project, water users' association and environmental management committee	
4. Project Contents		
1) Project Outline	1) Construction of feedlot facility 2) Strengthening of the environmental management committee for operating feedlot 3) Establishment of operation and maintenance system and regulations through training program	
2) Facility / Activity	*Facilities/Activities*	*Implementator*
	1) Feedlot facility 2) Organization and strengthening of the committee 3) Procurement Galla goats 4) Monitoring	1) Contractor 2) NGO/Project team 3) The committee/Traders 4) NGO/Project Team
3) Organization for O&M	environmental management committee (EMC)	
4) Construction Period	5 months	

Source: JICA Project Team

(1) Objectives

The objectives of the pilot feedlot at Kalacha are as follows:

- To provide an example and guidance on the proper use of fodder and maintenance not only in the proposed feedlot but also in the existing agro-forest.
- To provide opportunities to the larger population of pastoralists who do not have plots in the existing agro-forest of saving or fattening their animals during times of stress.
- To add value to marketable animals during dry seasons and drought.
- To provide opportunity for breed improvement from the purchase of off-springs of the Galla goats multiplication herd in the feedlot.

(2) Background

Climatic factors such as rainfall, soil type and temperature determine to a large extent the ecological potential of an area and the productive capacity for primary biomass. In Marsabit County the climatic conditions vary considerably between the mountain areas and the lowlands with great difference in biomass production and the resulting carrying capacity for livestock keeping. Rainfall as the most important climatic factor affecting biomass production varies considerably in intensity, duration and season even within the lowland regions. Thus forage availability is limited to the rainy seasons and the immediate post-rain periods. During these limited periods animal body condition improves considerably and after the rains, forage quality deteriorates very fast and becomes unsuitable as ruminant feed, thereby leading to loss of body condition of animals. In these scenario is not possible to produce good quality animals for the high end market throughout the year.

There are only two ways of solving this problem of "seasonal production of good quality animals"

a) Stratification.

Stratification in livestock production is a process or an arrangement where production activities are stratified depending on the availability of feeds.

b) Feedlot.

Feedlot can be defined as a livestock holding place where emaciated animals are held briefly for the purpose of fattening for the market

F3.1.2 Feedlot at Kalacha

Kalacha is located at the edge of Chalbi desert and receives a median annual rainfall 150 – 250 mm. The vegetation type can be described as dwarf shrub and annual grassland with scattered Acacia Tortilis trees. One side of Kalacha which borders Chalbi desert is barren land and some areas are extremely rocky. It has many high yielding wells and springs and water availability exceeds forage availability during the dry seasons. Due to low annual rainfall forage availability is limited to the rainy season and the immediate post-rains periods. The quality of forage also deteriorates very fast as a ruminant feed. During dry seasons, animals walk long distances for grazing towards north western slopes of Hurri hills where there is no permanent source of water. As the dry season prolongs animals continue losing body condition and therefore fetch poor price in the market. For these reasons Kalacha offers an ideal place for the development of a feedlot.

(1) Justification of a Feedlot at Kalacha

During 2010 - 2011 droughts the inhabitants of Kalacha town were able to save many of their small stock and pack camels by feeding them with fodder from Kalacha Goda irrigation scheme (Kalacha irrigation is an agro-forest). They have been practicing it on a small scale with little skills. The concept of feedlot was derived from such experience. If the scheme is expanded and a feedlot introduced, it could enormously increase resilience to drought in the area.

When properly designed and managed, a feedlot in an agro-forest setup intervention can decrease the instability associated with environmental deterioration and increase land productivity. A feedlot can help here by producing parts of those needs, especially fuel-wood and fodder for livestock, thus increasing resilience to drought.

(2) Nutritive Values of Fodder

The average chemical composition of tree foliage or pods, the measure most frequently used in assessment of feed values, cannot realistically be related to a tree's value to animal nutrition. Nutritive value is a function of palatability, intake and digestibility. However pastoralist posses a lot of indigenous technical knowledge on palatability and intake of various plant species found in their areas including its value as animal feed.

The average crude protein (CP) values for all browse species for east Africa is 13.3% (Le Houeronm, 1980). This is much higher than an average yearly value for pasture (9%). Generally trees have high CP levels which are maintained during the period when alternative feed sources have low CP values (Le Houeron, 1980). Thus it is recommended to cultivate in the feedlot and use as forage.

(a) Nutritive Values and Animal Performance

Forage availability varies with season for a given soil and vegetation types and conditions. Marsabit County has two dry seasons one hot and one cool, each year and the rainfall is erratic and spatial whereby the low lands receive much lower rainfall than the mountain areas. Such differences affect energy intake and use. Therefore one can generalize by stating that at the start of the dry season conditions are uniformly good for food intake; there is usually an adequate crop of standing hay and intake of nutrients is not depressed by lack of drinking water or by high parasitic challenge. Thereafter there is increasing desiccations of the vegetation and drying up of watering pans as the dry period progresses. Thus there is a steady decline in the quality and quantity of herbage on offer-CP content for grass sward fall to 3 - 4% or even 2% (Atta-Krah, 1989) while minimum CP requirement for ruminant maintenance is 9% and 15% for production and growth. However livestock are able to meet their CP requirement for maintenance through consumption of browse. Browse alone, cannot ensure the maintenance for cattle; browse can ensure maintenance for sheep but does not provide for production; with goats and camels maintenance and production may be provided on a pure browse diet. This explains why only goats and camels can survive on depleted rangelands in arid and semi-arid areas of Marsabit where often browse constitutes the only feed available.

(b) Available Fodder

The followings are the available or possible fodder materials in this scheme.

- Acacia melamsii
- A. Nilotica
- A. Senegal
- A.tortilis
- A.albida
- A. seyal.
- Khaya sensgalensis
- Balanites aegyptiana
- Vilellaria paradoxa
- Ziziphus mauritania

Source; Leakey& Newton (1994)

F3.2 Feedlot Construction

The feedlot under construction is located on a 5.6 ha of land owned by the Kalacha community in the custody of Environment Management Committee (EMC). The plot was fenced by DFID for the purpose of fodder production and has not been utilized due to lack of water. A shallow well dug did not yield enough water. However the project team decided to supply water from the main artesian spring 1.2 km away for the purpose of irrigation. The water will be drawn through 75 mm pipe and it will be exclusively used for the irrigation of the feedlot plot. This means water will be available on daily basis twenty four hours a day.

The General layout of the feedlot, drawings of feedlot facilities are shown in Figure BF3.2.1.

F3.3 Operation Plan of the Feedlot

(1) Capacity of the Feedlot

The feedlot is a pilot project and therefore has a capacity of holding only eighty goats/sheep at any one time and ten Galla goats for multiplication purposes throughout the year.

(2) Operation of the Feedlot

After extensive consultation with the community, it was agreed that the EMC Kalacha will be operating the feedlot and raise funds for the purchase of Galla goats for multiplication purposes. The EMC will be reporting to the community on all the progress and any short comings that arise. The EMC has twenty six members who will be working at the feedlot on alternate days, so as to reduce operating cost until when they are able to raise enough revenue.

(3) Revenue

It is extremely difficult to project revenue currently. However revenue can be raised from sale of milk and off-spring of Galla goats and fattening of emaciated animals. The amount of revenue to be raised will largely depend on prevailing climatic conditions and the speed of fodder and fodder trees establishment. It will also depend on the prevailing livestock market prices.

(4) Training

The Environmental management Committee (EMC) will be trained on the following subjects;-

- The purpose of the feedlot.
- Management of the feedlot.
- Management of resources including accountability measures.
- Fodder and fodder trees management including establishment and harvesting.
- Book keeping/Record keeping.
- Animal health requirements.
- Livestock breeding (Galla goat's multiplication).
- Types of livestock breeds that can be kept in their area.
- Irrigation water management
- Their responsibilities towards the community.
- Revenue collection and use.

(5) Galla Goat Multiplication

A small section of the feedlot will be preserved for the purpose of Galla goat multiplication permanently. The revenue raised from the sale of milk and the off-springs may be used for operation of the feedlot during good seasons when there are no animals in the feedlot. The feedlot is expected to operate during times of stress, either drought or prolonged dry periods. The number of goats for breeding will be maintained at ten throughout, as all the off-springs (males and females) will be sold immediately after weaning. The two main objectives of the Galla goat multiplication are;-

- To raise revenue for the maintenance of the feedlot during good seasons.
- To avail good breeding Galla goats to pastoralists at an affordable price.

(6) Fodder Establishment

The establishment of fodder will commence as soon as the contractor hands over and water is flowing to the feedlot plot. Apart from the variety of grasses existing in the agro-forest, new high yielding fodder will be introduced i.e. Napier grass, Sudan grass and also some local fodder trees.

F3.4 Activities

F3.4.1. Land sub-division

In this activity several parcels of land were subdivided for EMC members from 8 acres of feedlot land. Twenty members present during that day of training were awarded plots of 30m by 30m to plant grass and fodder trees. The plots were subdivided such that each plot had access to water supply or at least a minimal distance from pipeline.

Lottery method was applied to award plots where members were given opportunity to pick plot numbers randomly. The plots were to be managed by EMC members while the feedlot itself will be collectively managed.

Source: JICA Project Team

Figure AF3.4.1 Land Subdivision in Progress

F3.4.2 Planting of Fodder

The EMC members who were allocated land planted fodder trees and grasses in the plots. There are however plots that were not planted due to water problem caused by distance from pipeline. The grass species planted include; ***chloris gayana, erogrostis superba*** and ***cenchrus ciliaris***. These species were selected based on the biomass production, seed production (especially ***erogrotis superba***) and palatability as well as nutritive content.

Besides the grasses, fodder trees such as *leucaena* were planted in feedlot. There are three types of tubers that normally fed to livestock during drought and long dry season. They include; ***thumbegia guekeana*** (local name *Rupis*), ***Melia volkensiii*** (local name *Balanbala*) and the third species is known locally as *Chame* a form of creepers. These tubers grow in the wild and are dug out and fed to livestock during such times. According to the pastoralist they are very nutritious and animals fed on it are known to survive severe drought. However no one has ever tried to grow it. It's therefore an opportunity for the project to propagate the tubers in the feedlot as a trial which can then be replicated elsewhere. KARI which is a research institute based in Marsabit advocate for its propagation as a livestock feed. Tubers have also been tried although its yet to sprout. This was envisioned to supplement the fodder and grasses.

Source: JICA Project Team

Figure AF3.4.2 Planting Tubers in Kalacha Feedlot

F3.4.3 Training of EMC Members

The EMC members were trained on feedlot management for three days as shown in the table below.

Table AF3.4.1 Feedlot Training Contents for EMC Members in Kalacha

TRAINING CONTENTS	DESCRIPTION
Introduction to feedlot	The participants were introduced to feedlot training by the facilitators. The purpose of training was to enlighten the EMC on what feedlot entails and how to properly manage the feedlot for sustainability.
Feeds and feeding	The participants were taught on difference between feeds and feeding, different types of animal feeds, ways and period of feeding animals. The facilitators emphasized the essence of feeding is to meet the nutritional requirement based on feed content.
Land subdivision	The participants were taken to the feed lot site where land sub divisions were practically demonstrated. The land was divided into 20 plots each assigned to individual members. Each EMC member was awarded 45 m by 45m piece to plant grass and fodder trees. The land around the feedlot was reserved to ensure that the animals get ample pasture area. Caring for feedlot was individual responsibility.
Irrigation and water management	The facilitator pushed the topic to next training because of time since it required much demonstration in feedlot.
Fodder production	The participants were briefly taught on different types of fodder. The facilitator did not want to focus much on fodder since it was to be covered in next training in full.
Grass plantation in feedlot	The participant was asked to name different grass species they know. Grass plantation was to be covered in next training in full.
Pasture classification	The facilitator taught the participants on different classes of pastures. He categorized the pasture as natural or cultivated pasture. The participants were requested to name natural pasture and where they are commonly found. The facilitator named cultivated classes. Factors influencing nutritive value of a pasture Stage of growth, Types of pasture, Climate and Soil type .
Pasture utilization	The participants were taught on different ways of utilizing pastures when they are plenty in nature. The facilitator explained how hay and silages are made. The participants were taught on characteristic of good silage and how to reduce losses during making.

TRAINING CONTENTS	DESCRIPTION
General feedlot management	The facilitator taught on how land should be prepared well to ensure water reaches every field. He also taught on soil drainage and weed control. The participants were taught on best field practices such crop rotation, use of clean seeds.

Source: JICA Project Team

F3.4.4 Feedlot Management

A lot of effort was put in training EMC by the project; the objective was to improve feedlot resources management. However, infighting over sharing profits from the sale of the first batch of goats and hay disrupted the management. As those who were active demanded most of the profits, this led to splitting of the EMC into three groups. The poorest group was left to manage the feedlot consisting of thirteen members. Most of these members had not been active before and therefore were inexperienced in the day to day operation of the feedlot.

As a result of this there was delay in propagation of fodder, disruption of the watering regime and theft of water upstream by other people puncturing the pipes. To solve the impasse the project team, the Ward Development Officer and the area chief held a meeting with the stake holders and local elders. During this meeting, harmonized feedlot management protocols that define rules and sanctions were developed. Notable elements of these protocols were:

- That the feedlot land is community land and does not belong to EMC.
- Three elders were appointed to check on the use and management of the feedlot by the current users.
- The community allowed the EMC, right of use for only three months, after which if there is no improvement, it will be allocated to other users.
- The Kalacha community appreciated the development of the feedlot and promised not to allow it to fall into disuse due to mismanagement.
- Purchase of a new herd of goats for fattening must commence immediately and the pipes unblocked.
- If the profit margin is small then the number of members should be reduced further to three or four per fattening season.
- The community has the right to allocate the right of use of the feedlot to non- EMC members.

During this meeting the EMC argued that this protocol left out measures to address water supply problems, one of the key factors leading to the un-sustainability of the feedlot. They argued that they expended a lot of energy and time in unblocking the pipes. In response the project team agreed to flush the pipes and put in place a smaller- sized filter to solve the problem permanently.

F3.4.5 Fattening Activity

(1) General

Goats are primarily foragers and browsers by nature and therefore browse as high as possible off the ground. When forage is poor, production factors such as weight gain are equally poor. Goats cannot be successfully be feed-lotted in the same manner as cattle and sheep because they are not very efficient in converting high energy feeds to body weight gains and the likely cost benefit ratio is such that it would be seldom profitable. That is; feeding goats with grain products often results in grain induced illnesses such as bloat, enterotoxaemia and ruminal acidosis and thereby becoming ill or dying, resulting in economic loss.

From a genetic point of view, the heritability for weight gain in goats is somehow lower than other domestic animals. The ability of goats to efficiently convert forage material to meat is important because most breeds of goats have not been selected for efficiency for conversion of forage into meat as have cattle. However there are always exceptions. Emaciated goats that are in poor body condition due to

poor nutrition or parasite load could be put through a form of feed-lotting which can be called "conditioning."

(2) Objective

The seasonal production of good marketable goats is one of the several factors that negatively impacts on the current pastoral production system where animals are grazed on natural grass throughout the year and therefore totally dependent on rainfall. Under such a system of livestock production it is difficult to produce what the market demands- "fat" goats, throughout the year. During the dry season, animals lose body weight very fast, hence the value of livestock depreciates. In a drought situation the number of animals offered for sale in the markets increase dramatically and more camels are seen in the market.

This is an indicator that pastoralists are forced to sell animals they perceive to be more resilient to drought. The livestock offered are emaciated grades which attract low prices and therefore adversely affect pastoralists' income. Consequently pastoralists' purchasing power is eroded, which may be compounded by increasing food prices and demand for school fees. The purpose of the feedlot is therefore to bridge the gap during such periods in the marketing chain and avail good marketable animals in the market. It is also a demonstration to pastoralists and a learning process that has a great benefit to them.

(3) Conditioning Goats

Pastoralists are experienced livestock keepers and know the principle of compensatory growth and weight gain. Any animal that is nutritionally deprived and has a low weight to frame ratio can make very rapid and efficient weight gain in a short period of time. The conditioning of goats/sheep at Kalacha feedlot will be carried out by the environment management committee (EMC), which is responsible for the management of the feedlot, by either buying underweight and emaciated goats at a cheap price and fattening them at the feedlot and sell at any time the market provides a profitable price level or possibly provide the opportunity to any pastoralists who are interested at a cost.

The demand for goat meat changes at different times of the year and is often based on religious ceremonies and cultural festivals in Kenya. The price obtained for a goat is seasonal and dependent mostly on supply and demand throughout the year. The price is depressed during January and February due to high supply of goats as most pastoralists sell goats to pay for school fees. The highest prices for goats occur when demand is greatest during Christmas, Easter holidays and Eid al-Fitr celebrations. The conditioning of goats at Kalacha however may not coincide with the periods when the prices is at its highest as the goats can only be held for a short period of time in the feedlot.

Source: JICA Project Team

Figure AF3.4.3 Women Cut and Carry Fodder to Feed Weak Goats at Home in Kalacha

F3.5 Results and Analysis

F3.5.1 Results of Trial at Kalacha Feedlot Conditioning

(1) First Trial at Kalacha Feedlot Conditioning

1) Selection and Purchase of Goats for Conditioning

The EMC Kalacha was advised and trained on the type of goats to be selected for purchase and to be fattened. The goats were selected on phenotypic traits – large body frame with low body weights but healthy. At the beginning the EMC bought fifteen (15) goats and one (1) sheep at a total cost of Kenya shillings thirty eight thousand one hundred (38,100). The prices ranged between Kshs.1,200 to 2,800 per goat. Two weeks later, three goats and one sheep were purchased at a total cost of Kshs.8,800. All the funds for the purchase of the animals were raised by individual members of the EMC without any contribution from the project.

2) Feeding of the Goats and Sheep

All the sheep and goats bought were de-wormed and taken to the feedlot where they were provided with Chalbi salt and water ad-libitum and fed with cut fodder from the feedlot plot. All the sheep and goats were numbered and their initial body weight recorded on arrival. Thereafter the animals' body weight was recorded on a weekly basis.

Source: JICA Project Team

Figure AF3.5.1 Feeding Goats in the Feedlot Kalacha

3) Results

The goats and sheep at the feedlot made a very rapid and efficient weight gain in a very short time. Such weight and growth for animals that has been nutritionally deprived is normally referred to as compensatory gains.

Results of 1st trial which was implemented for 6 weeks are as shown below. It is remarkable that average selling price for 20 shoats after fattening was more than 30% higher than the initial investment.

The detailed data of the First trial is shown in Table BF3.5.1.

Table AF3.5.1 Results of the 1st Trial

Total Weight Gain for 20 Shoats in 6 Weeks	62.2kg
Average Weight Gain in 6 Weeks	3.1kg
Average Buying Price	Ksh. 2,345
Average Selling Price	Ksh.3,070 (31% up)
Average Profit per Stock	Ksh. 725
Total Profit for 20 Shoats	**Ksh.14,500**

Source: JICA Project Team

(2) Second trial at Kalacha Feedlot Conditioning

Results of the second trial just after 3 weeks is remarkable enough to prove effectiveness of feedlot in body conditions. Those shoats gained 6.1 kg in average only within 3 weeks. The body appearance also improved conspicuously. However the selling prices were not very profitable due to a prevailing low price trend in the livestock market at the time.

The detailed data of the second trial is given in Table BF3.5.2.

Table AF3.5.2 Results of the 2nd Trial

Total Weight Gain for 20 Shoats in 3 Weeks	122.0 kg
Average Weight Gain in 1st Week	2.0 kg
Average Weight Gain in 2nd Week	2.3 kg
Average Weight Gain in 3rd Week	1.8 kg
Average Weight Gain for 3 Weeks	6.1 kg
Average buying price	Ksh 2,565
Average Selling Price	Ksh 2,775 (8%)
Average Profit per Stock	Ksh 210
Total Profit for 20 Shoats	**Ksh 4,200**

Source: JICA Project Team

F3.5.2 Results of Fodder Production

The production of fodder had been slow due to disruption of water supply at first stage, but the situation later improved and progressed well.

During the project implementation, the following points were observed in terms of growth of fodder in the feedlot.

- Two species of grasses planted (cenchrus ciliaris and erogrostis superba) were found to do well in the feedlot. The third species (chloris gayana) was not as adaptive as the others mentioned above and it took time to pick up in the feedlot. Growth of the grass in the plots however was found to be irregular where water supply was inadequate.
- Nappier grass had in particular sprouted well in the plots when water was enough.


Source: JICA Project Team

Figure AF3.5.2 Fodder Production at Feedlot

F.3.6 Observations

F3.6.1 Water Supply to the Feedlot

The supply of water to the feedlot was from an artesian well, situated 1.3 km away. In the pipeline blockages were encountered several times. The roots of palm trees that grow near the well, were the major cause of blockages, disrupting continuous water supply. (See Figure AF3.6.1). It took a lot of time and investigations to realize that the roots were the cause of the blockages.

After identifying the problem, a filter was installed on the pipeline but the problem still persisted. At first, the size of the sieve in the filter was big, which was unsuccessful and was replaced with a smaller one after flushing the pipeline. Although the EMC members were trained in pipe connection, they could not manage due to the length of the pipeline and numerous blockages. It should be noted that some factors that limit a pastoral community to manage such simple technology include poverty, illiteracy and often the high cost of maintenance. The continuous disruption of the water supply had been the main setback to the feedlot. However the last measures put in place could solve the problem permanently.


Source: JICA Project Team

Figure AB3.6.1 Plants Roots in the Pipeline

F3.6.2 Signboard Erected at the Feedlot Site by an NGO

A signboard was once erected at the site of the feedlot by an NGO, alleging contributions in the development of the fodder plot of the feedlot by themselves. But this board was removed by some community members opposed to the NGO. This matter was later discussed and amicably sorted out after

a meeting held in Marsabit between the Project Team, and NGOs who tried to erect it. It was agreed that they remove the signboard from the feedlot site as their contribution was only training in fodder production. However they would continue to support the EMC or any other users of the feedlot in training and tours to other areas where such activity is taking place and an agreement was signed between all parties involved.

F3.7 Conclusion, and Lessons Learned

Environmental degradation in pastoral areas has long been viewed as arising from the common property nature of land tenure in such areas. Kalacha being a pastoral area, land degradation is evident 10 to 15 km, around the settlement with very little regeneration of vegetation occuring during the rainy season. The feedlot was therefore to meet demands for fodder not only during the low season when natural pasture was depleted, but throughout the year. The owners of the dairy goats crossed at the settlement in Kalacha normally purchased hay for their goats. These goats were kept at Kalacha settlement throughout the year for milk production.

The two trials conducted for fattening goats and sheep, proved the viability of the feedlot in the Project. The feedlot offered an opportunity to pastoralists to save weak goats during dry season and bridged the gap, however small, in all seasons, for production of good quality small stock. This was not possible under the traditional production system where the use of natural pasture is the norm.

Thus other development actors including the Ministry of Agriculture and Livestock Development recommended such activities be adopted in other areas as a way of meeting fodder requirement during low season for animals during low rainfall.

The following were lessons learnt after construction of the feedlot:

- Weight gains for emaciated goats and sheep was rapid at the feedlot so long as the animals were healthy,
- It was observed that there is a high demand for hay at Kalacha settlement for dairy goats crosses,
- The land immediately bordering Chalbi desert had the potential for growing some types of fodder grasses and trees which were very nutritious for quick animal recovery.
- The grasses tested and found suitable were nappier grass, *eragrostic superb, cenchrus ciliaris,* boma Rhodes (chloris *Guyana*) while the type of trees that were found to be suitable incude *lucerna leucocephallas, grevillea robusta , melia volkesii and senna siamea.* However tubers like, *moringa stenopetalla* locally known as *Rupis* did not do well after several trials.
- A large number of small stock lost body condition very fast immediately at the beginning of the dry seasons. On several occasions EMC members had collected abandoned goats that were unable to walk during the dry season and after conditioning them at the feedlot only to find the owners reclaiming them back.
- In the Project, technical effectiveness was confirmed, but organizational and institutional challenges emerged and remained to be solved. As the project was closing down, it was highly recommended that the Ministry of Agriculture and Livestock Development should take a leading role in these activities. This would ensure a sustained process is maintained to realise a greater potential in up-scaling fodder production and good management practices.

CHAPTER F4. SUB-PROJECT OF NEW CONSTRUCTION / IMPROVEMENT OF LIVESTOCK MARKET FACILITIES

F4.1 Outline of the Sub-project

General outline of the sub-project is summarized in the following table.

Table AF4.1.1 Sub-project Profile

Item	Contents	
1. Objectives	- To energize local market activity in order to facilitate easy access to the pastoralists in primary or secondary livestock market - To provide new livestock market facilities at Dirib Gombo	
2. Number of Beneficiaries	Approximately, 26,000 persons/year, (persons who related to 13,000 headsannually in Korr, Dirib Gombo and Jirime markets)	
3. Implementation Organization	JICA ECoRAD Project, and livestock management association	
4. Project Contents		
1) Project Outline	1) New Construction of livestock market facility 2) Rehabilitate and upgrade livestock market facilities 3) Establishment of operation and maintenance system and regulations through training program	
2) Facility / Activity	*Facilities/Activities*	*Implementator*
	1) Dirib Gombo livestock market 2) Korr and Jirime livestock markets 3) Monitoring	1) Contractor 2) Contractor 3) NGO/Project Team
3) Organization for O&M	Livestock market committee	
4) Construction Period	3 months	

Source: JICA Project Team

F4.2 Project Facilities

In this sub-project, the Project concentrated on construction works only. The results of monitoring and observations of functions on each specific facility are described in Chapter F2.

(1) Dirib Gombo Livestock Market (new)

(2) Korr Livestock Market (improvement)

(3) Jirime Livestock Market (improvement)

The design of market facilities and road rehabilitation works for improvement of access to the markets are shown in Figures BF4.2.1 – BF4.2.5.

F4.2.1 Dirib Livestock Market

The new Dirib Gombo livestock market is located in the middle of Dirib Gombo village. Access to the market is quite good and transportation of animals by truck is easy.

It comprises of:

- Holding pens,
- Auctioning area,
- Livestock loading ramp,

- An office for revenue collection,
- A shade for traders, toilet facility, -
- Guard house,
- Water tank and perimeter fence.

The construction of a new livestock market was commenced early February 2013, and completed in September 2013.



Source: JICA Project Team

Figure AF4.2.1 Photo: Current Market Activities and Dirib Gombo Livestock Market Facility

General drawings in Figures BF4.2.2 – Figure BF4.2.4 show main features of these facilities in a visual form.

F4.2.2 Jirime Market up-grading

In Jirime the project only upgraded an existing livestock market structure. The up-grading works commenced early February 2013.

The works included:

- Construction of a shade for livestock traders,
- An office for revenue collection, and
- Provision of a water tank.

The work was completed in November 2013.

General drawings in Figure BF4.2.5 show main features of these facilities in a visual form.


Source: JICA Project Team

Figure AF4.2.2 Photo: Current Market Activities and Shade House in Jirime Livestock Market

F4.2.3 Korr Market up-grading

Korr is also an existing market and only upgrading work was under taken.

The project only upgraded an existing livestock market structure in Korr. The up-grading works commenced early February 2013.

The works included:

- Construction of a shade for livestock traders,
- An office for revenue collection, and
- Provision of a water tank.

The work was completed in November 2013.

General drawings in Figure BF4.2.5 show the main features of these facilities in visual form.



Source: JICA Project Team

Figure AF4.2.3 Photo: Current Market Activities and Shade House in Korr Livestock Market

F4.3 Improvement of Market Functions

In the Project, condition of Market Management Committees (MMCs) and activities were assessed and based on the outcomes the project team initiated several activities for the improvement of market functions. These included the formation of Market Management Committees/Livestock Market Associations (MMCs/LMAs), creation of market days where none existed, livestock auctioning, and price setting using the weighing band.

After consultations and several meetings between livestock traders, brokers, butchers, County officials and the community, MMCs for Dirib, Korr and Jirime markets were created.

(1) Dirib Gombo Livestock Market

Dirib livestock market was the new market under construction by the project. The MMC was formed with the help and supervision of the project team as soon as the construction of the market commenced. Members of the MMC included pastoralists and agro-pastoralists from all the catchment areas of the market. It has been registered with the Ministry of Gender, Culture and Social services. Negotiation with the County Government on revenue collection and sharing was done.

However the MMC needed training for members to understand their roles and obligations. Apart from guidance and instructions by the project team they have not yet received any formal training which includes record keeping, market management, market information, livestock marketing promotion, business planning, cost benefit analysis, market research and livestock auctioning among others.

i) Opening of Dirib market

The market started operation on Saturday 12th January 2013, using thorn bushes to make enclosures for the animals. The market management committee (MMC) agreed to designate, Saturday as a market day after consultations with the community within the catchment area. The contractor for the construction of the sales yard was already on site and it was agreed that livestock sales be done on every market day even as construction was on-going.

ii) Use of weighing band

The project purchased a weighing band and after testing it on various livestock breeds, it was found to be close to the actual live weight for animals above twenty kilograms and therefore reliable as a tool for weight estimation and pricing in the livestock market. The project has already demonstrated to livestock traders and pastoralists its reliability.

(2) Jirime Market

Jirime market had not been operated for a long time apart from early morning sales to butchers as it was located near the slaughter house. Animals were sold in the stadium in Marsabit town on a daily basis. However several meetings between traders, the County Government and the project team were held to streamline its operations.

It was agreed that as soon as the improvement of the market structure was complete the traders and pastoralists would be advised to move all their trading activities to Jirime market. It was also agreed that Mondays and Thursdays would be designated as market days. A market management committee was formed and registered with the Ministry of Social Services. After the completion of the facility, since there were some difficulties in relocating, market activities were resumed at Jirime market.

(3) Korr Market

Korr market has operated effectively with Saturdays being a market day. A market management committee had been formed and trained by PACIDA. However there was need for further training for members to fully understand their roles and obligations. Negotiations with the County Government on co-management and sharing of revenues had been made. The training on MMC of Korr was not done by the Project because another donor supported it.

F4.4 Results and Observations

- All the construction works had been completed without significant problems or delay of completion period. The facilities that are fully functional at the end of the Project.
- According to the livestock market association members at Jerome and Korr, the operation hours of livestock market were extended up to afternoon due to provision of the shade houses.
- Other detailed information on market trends after improvement, other impacts at Korr, Jirime and Dirib Gombo markets should be referred to Chapter F2.

CHAPTER F5. SUB-PROJECT OF RURAL ROAD IMPROVEMENT FOR LIVESTOCK VALUE CHAIN

F5.1 Outline of the Sub-project

General outline of the sub-project is summarized in the following table.

Table AF5.1.1 Sub-project Profile

Item	Contents	
1. Objectives	- Energize local market activity by means of facilitating easy access to the pastoralists in primary or secondary livestock market - Reduce transportation time and cost of livestock and its products as well as common user items to pastoralist' communities	
2. Number of Beneficiaries	Uncountable (All users who pass through the facilities)	
3. Implementation Organization	JICA ECoRAD Project, and livestock management association	
4. Project Contents		
1) Project Outline	1) New construction of concrete pavement 2) Rehabilitation and upgrading of road with gravel pavement and drifts	
2) Facility / Activity	*Facilities/Activities*	*Implementator*
	1) Improvement of rural road conditions to Hurri Hills area	1) Contractor
	2) Improvement of rural road conditions to Ngurunit area	2) Contractor
	3) Improvement of access to Dirib Gombo Livestock Market	3) Contractor
	4) Monitoring	4) NGO/Project Team
3) Organization for O&M	Livestock market committee	
4) Construction Period	3 months	

Source: JICA Project Team

F5.2 Project Facilities

In this sub-project, the Project concentrated on construction works only.

Rural roads were improved around the following three areas:

i) Dirib Gombo

ii) Ngurunit

iii) Hurri Hills .

(1) Dirib Gombo

Observation and Planning)

The work site was located between Marsabit town and Dirib Gombo community. Since this road was relatively well maintained by the county government, it nevertheless became slippery on muddy surface during the rainy season and it was unsuitable for large livestock trucks according to the Dirib Gombo villagers.

Thus pavement improvement was required at the most severely damaged portion near Dirib Gombo livestock market for a distance of 2.6km from Marsabit town, as shown in Figure BF5.2.1 and Figure BF5.2.2. Due to limitation of funds, gravel pavement was selected as the method of improvement.

In addition to the road pavement works, a concrete culvert at the entrance of the Dirib Gombo livestock market for facilitating easy access of livestock truck. The ideal diameter of the concrete culvert was set at 0.60m, considering the slope of the area and the existing road side ditch. In consideration of the width of a truck, the pipe culvert width was set at 7.0m. Precast concrete pipes were used for this facility for ease of construction.

Detailed features of the structure should be referred to in Figure BF.5.2.3.

Facilities constructed entailed:

- Pipe culvert work at entrance of the Dirib Gombo livestock market
- Improvement of gravel pavement between Marsabit town and Dirib Gombo village (2.6km)

Source: JICA Project Team

Figure AF5.2.1 Pipe Culvert at Dirib Gombo Market

(2) Ngurunit

Observation and Planning)

The construction sites of the two drifts were located at a local road, approximately 3 km away from Logologo town towards Korr/Ngurunit area as shown in Figure BF5.2.4. This road was identified as a main access road from highway A2, which connects Nairobi to Marsabit via Isiolo, to Korr and Ngurunit areas for human travel and all other transport needs.

At this area, several *laggas*, i.e. seasonal rivers, were crossing the road. Thus it was observed that cars could not pass through the section for a few days after heavy rains and the state of the road had deteriorated and was unstable during the rainy season. To improve this condition, two drifts were planned to be constructed at the laggas.

The drifts which were constructed by the Project were planned to provide a smooth and stable traffic access for those who travel to Ngurunit during rainy seasons. This was particularly for trucks with livestock and those with other commodities for Korr and Ngurunit markets and beyond. With the drifts constructed it was expected that the time when vehicles cannot pass through due to river flow would be reduced from a few days to only a few hours.


Drift-1 on a road to Korr/Ngurunit (under construction) Drift-2 on a road to Korrr/Ngurunit (completed)

Source: JICA Project Team

Figure AF5.2.2 Photo: Tow Drifts at Loglogo – Korr/Ngurnit Road

Foundation of the drift structures was prepared by neatly pre-packed boulders, then ordinary reinforced concrete pavement was cast. At the edges of the drifts, iron poles were provided to define the limits of the road to road users when there is water flowing across.

Facilities constructed entailed:

- Concrete drift No.1 between Logologo and Korr/Ngurunit crossing lagga (31.0m in total length, 4.0 m wide)
- Concrete drift No.2 between Loglogo and Korr/Ngurunit crossing lagga (43.4m in total length, 4.0 m wide)

Detailed features of the structure should be referred to in Figure BF5.2.5.

(3) Hurri Hills areas

Observation and Planning)

The construction site of road improvement work at Hurri Hill was located at a local road, approximately 20 km away from Hurri Hill community towards Kalacha and Marsabit towns (see Figure BF5.2.6). This road was identified as a major access road between Marsabit town area (Marsabit Central sub-county's area) and Kalacha areas (Marsabit North sub-county's and North Horr sub-county's areas).

This site has steep slopes climbing up to Hurri Hill area, and it was confirmed by the Project that this road became so slippery and muddy during the rains that even a 4 wheel drive vehicle could not climb it. It could thus not be utilised for transportation during the rainy season. To improve it, improvement of the road pavement was planned to be done in this area..

The project selected the steepest portion of the slope, approximately 400m long, to be improved with a concrete pavement. A Foundation was neatly prepared with pre-packed boulders and thereafter a reinforced concrete pavement cast.

Facilities constructed entailed:

- Concrete surface pavement constructed at a steep section between Kalacha and Hurri Hills village (400m long)

Concrete paved road to Hurri Hills (up-left: under construction, up-right: after completion, down: overall view)

Source: JICA Project Team

Figure AF5.2.3 Photo: Concrete Pavement on a Road near Hurri Hills

Detailed features of the structure should be referred to in Figure BF5.2.7.

F5.3 Results and Observations.

Major findings through the monitoring observation of the improved facilities are summarised below:

- All the construction works had been completed without any significant delays or defects.. However at the site at Hurri Hills, there were a few difficulties regarding availability of sand and water for the construction works. Hauling of water from afar to the construction site affected the construction schedule and led to a slight cost variation.
- In terms of the construction schedule, all the construction works were fortunately accommodated and completed within the dry season. However it was observed that during the dry season in another area sudden heavy rain fell unexpectedly and destroyed some facilities under construction.
  Thus when an agency plans to execute a project in Northern Kenya, the construction schedule should factor in some buffer time to take care of any unforeseen climate change. Some contingency budget for force majeure should also be factored to take care of such unforeseeable challenges.
- According to the community members interviewed, after completion of the concrete pavement at Hurri Hills area, this made a significant contribution to the state of local transport.
- Regarding two drifts on the road between Logologo and Korr/Ngurunit, those facilities have functioned well to date. As per the Project's objective influence by water runoff in the laggas was minimised, and road access between Korr and Ngurunit areas to the main road has improved significantly as confirmed by the county officer at Laisamis.
- Impacts of facilities constructed for Dirib Gombo livestock market should be referred to in Chapter F2.

CHAPTER F6. SUB-PROJECT FOR CONSTRUCTION, UPGRADING AND IMPROVEMENT OF LIVESTOCK MARKET FACILITIES IN TURKANA

F6.1 Outline of the Sub-project

F6.1.1 General Outline of the Sub-project

This is summarized in the following table**.**

Table AF6.1.1 Project Profile

Item	Contents	
1. Objectives	1) To provide new additional livestock market infrastructure thereby enhancing livestock marketing activities 2) Reduce transportation time and cost of livestock and its products as well as living necessities to pastoralists' communities 3) Stimulation of livestock market by construction of marketing stalls within Kerio business centre	
2. Number of Beneficiaries	Uncountable (All users who pass through the facilities)	
3. Implementation Organization	JICA/ ECoRAD Project	
4. Project Contents		
1) Project Outline	1) Construction of additional livestock market infrastructure 2) Improvement of access road to communities 3) Strengthening of LMA through capacity building of operation and maintenance of livestock market infrastructure 4) Establishment of management of revenue collected and quality reporting. 5) New construction of marketing stalls	
2) Facility / Activity	*Facilities/Activities*	*Implementer*
	1) Construction of Livestock market infrastructure 2) Construction of drifts 3) Strengthening of Livestock marketing Association 4) Monitoring	1) Contractor 2) Contractor 3) CDLP, CLMO, Project Team 4) Project Team & CDLP
3) Organization for O&M	Livestock Marketing Association, Community development committee	
4) Activity Period	3 months	

Source: JICA Project Team

(1) Major works at Kerio Market Improvement

The following table shows the different works and total areas done at Kerio Livestock Market.

Table AF6.1.2 Major Works and Total Area Measurements at Kerio Livestock Market Improvement

Facility	Total Area Measurements (in meters)
Market perimeter fence	100 m × 80 m
New additional office and conference block	10.7 m × 8.7 m
Bargaining yard for buyers and sellers	11 m × 12 m
Donkeys Holding Pen	12 m × 11 m
Loading and off-loading rump	10.5 m × 3 m
Toilets	2.5 m × 1.5 m
Cattle holding pen	12 m × 11 m
Camel holding pen	12 m × 11 m
Entrance/ passage	44 m × 2.5 m
Loading holding pen	11.5 m × 6.9 m
Sold goats & Sheep holding pen	11.5 m × 9 m
Shade for buyers and sellers	11 m × 3.5 m
Bargaining yard holding pen	9 m × 7 m
Holding pens for Sheep and Goats	19.1 m × 11.5 m
Marketing Stalls	28.1 m × 3.5 m
Main-gate	4 m
Animal Shades	28.1 m × 3.5 m
Local Government Livestock Marketing Officer Block	3.28 m × 2.47 m

Source: JICA Project Team

(2) Rural road improvement works

The proposed sites were selected from a long list prepared by Kenya Rural Road Authority (KeRRA) under the Turkana County's Ministry of Public Works. The sites proposed by KeRRA were evaluated from a viewpoint of necessity to facilitate easy access to the pastoralists in primary or secondary livestock markets, improve the local market activity in rural area, community members' views, cost estimates and locality.

The rural road improvement works under the project in Turkana County are listed below and their locations are shown in Figure BF6.1.1.

Table AF6.1.3 List of Rural Road Improvement Sub-project

Sub-county	Improvement Works	Road
Turkana North	Construction of Milimatatu Drift	Milimatatu- Nakitoekakumon Road
Turkana West	Construction of Kabulit Drift No.1	Kakuma Letea- Road
Turkana West	Construction of Kabulit Drift No,2	Kakuma Letea Road
Loima	Construction of Kakopito Drift No.1	Namoruputh-Korobosome Road
Turkana South	Construction of Keekorsogol Drift	Karoge-Nakalei Road
Turkana Central	Construction of Culvert at Lodwar Livestock Market	From A1 Road to Lodwar Livestock Market

Source: JICA Project Team

F6.1.2 Study for Improvement of Kerio Market

(1) History of Market and Related Activities in Kerio

1) History of Kerio Livestock Market

Before the establishment of the livestock market, the pastoralists were trekking their livestock for sale to Lodwar Livestock Market which is approximately 60 km away. VSF-Belgium sensitized

Kerio pastoralists to start a Kerio Livestock Marketing association and in August 2002 the LMA was registered with 12 members. The first Kerio Livestock market was established in June, 2002 with every Tuesday as a market day. It was located near Katapakin River at Kerio centre. During the initial stages of the market only pastoralists from nearby places were trekking their livestock to Kerio centre.

Most livestock for the market were brought from Ngimuriae, Nadoto and Kerio centres during the first two weeks but after 1 month livestock from far places like Nakurio, Nakoret, Kangirisae also started flocking into the Kerio livestock market on the specified market days. The perimeter fence of the first livestock market in Kerio was made of local thorns and the area Chief and LMA members sensitized the community to make the local fence. The average number of shoats (sheep and goats) brought to the first livestock market during the specific market days was 60-80 and most were sold on that particular market day and approximately 5-10 shoats returned back to await for another market day. The average big stock (donkeys, camels, cattle) brought to market was ranging from 10-12 in number for a particular livestock market day. The levy collected by LMA per goat or sheep was Kshs.20 and levy for the municipal council was not being collected at the beginning of the livestock market until early 2003 when it was initiated and the levy to the municipal council was Kshs.20 per goat or sheep. VSF-Belgium trained 5 LMA officials on livestock marketing skills and some basics on common livestock diseases management.

In 2007 VSF-Belgium constructed Kerio livestock sale yard with the following infrastructure facilities: perimeter fence/gate, one permanent house with two rooms and a structure for shelter without walls. This second Kerio sale yard was constructed 1 km North West of Kerio centre. The community constructed some temporary marketing stalls near the sale yard during the year 2007. The marketing stalls were specifically for selling tea, chapati and mandazi but the marketing stalls only lasted for 4 months due to business community and individuals preferring to carry out their transactions at Kerio business centre.

2) History of Business Premises/Marketing Stalls

When the first livestock market with local thorns perimeter fence was started in Kerio there were no constructed business premises or marketing stalls near it but what used to happen is that the agro-pastoralists from Ngimuriae village (around 5 kms South East of Kerio) were selling cowpeas, sorghum, charcoal, mats and fish near the first livestock market yard. Business individuals/community had no temporary stalls/shelter for selling their commodities but were just selling their items under hot sun while just spreading their commodities on the ground. The rest of business transactions were done at the few Kiosks and shops at Kerio business centre.

(2) Constraints of Kerio Livestock Market (Hardware Component) observed as follows:

According to discussion with Kerio LMA, and observation by experts, the Project team identified the following constraints in Kerio market

- Livestock business hours of selling and buying transactions was limited
- There were no external livestock traders that came to the market
- Weakened/exhausted livestock because of long hours in the sun
- Big stock trampling on small stock and sometimes causing injury to each other
- The perimeter fence in place then was not able to hold big and small stock at the same time in one place
- There was no water at the livestock market premises

(3) Points to be Improved

In Kerio livestock market, the followings are planned in the Project to solve the constraints mentioned above.

Table AF6.1.4 List of Improvement in Kerio Market

Hardware	Purpose for Construction
Expansion of the current perimeter fence	Expansion of the perimeter fence will create more space for additional livestock marketing infrastructure and therefore enable each livestock species to be caged in their own holding pens within the larger perimeter fence.
Construction of holding pen for cattle, holding pen for camels and holding pens for donkeys and Construction of separate holding pens for sheep/goats.	By Constructing several holding pens for the different species of livestock will reduce big stock trampling on small stock and minimize injury, this will make the work of buyers and sellers easier (e.g. a buyer will be going directly to the right holding pen for a particular species of livestock) .
Construction of permanent office block with four rooms(1 meeting room and 3 rooms for offices),	This will facilitate the LMA officials and other members having regular meetings and also be able to hold workshops. The officials will have offices for their functions and a place to store safely their reports and revenue.
Construction of bargaining yard.	This will be adjacent to the buyers and sellers shade and this yard is where shoats offered for sale will be paraded and the buyers will be able to have clear view of what they want to buy.
Construction of shades for buyers and sellers.	By constructing shade for buyers and sellers this will increase hours of pastoralists and livestock traders doing business hence enhance livestock marketing.
Construction of shade for small stock.	By constructing shade for shoats this will reduce the adverse effects of high temperatures to the shoats hence reduce bad effects to their body condition.
Construction of loading and off-loading rump, construction of latrines.	By constructing loading and off-loading rump, this will encourage external livestock traders to use the facility because it will be easier to load livestock in trucks and there will be no time wasting
Construction of loading pen.	This will be a waiting area before livestock are taken to the loading rump.
Construct two gates (entrance and exit gates).	This will facilitate tracking of livestock offered and sold in a particular market day and also for security purposes of the livestock market assets.
Construction of waiting area for livestock.	These will be a resting area before each livestock species will be directed to its holding pen.
Construction of entrance and passage between the holding pens	This is an area where buyers and sellers pass while doing their business transactions at the bargaining yard and also access area to holding pens within the livestock market.
Construction of Marketing stalls	This will stimulate/enhance livestock marketing by pastoralist and livestock traders engaging with the business community/individuals and also from Lodwar.
Putting up a water tank at the Livestock Market	Putting up a water tank at Kerio Livestock market Yard and the LMA organizes how to fill water in it will encourage livestock transactions to be done for a longer time. At the moment livestock business starts at 6.00 am to around 11.00 am during the market days but if water tank is put up and the LMA organizes how they can get water to fill in the tank, the time spent at the livestock market will increase from 11.00 am to early afternoon(3.00 pm).

Source: JICA Project Team

F6.2 Activities of the Sub-project

F6.2.1 Activities of Kerio Livestock Market Improvement

Agreement was reached regarding facility design with the County Director of Livestock Production and executives of the County Livestock Marketing Organization (CLMO) and Kerio Livestock Marketing Association (LMA). At present, the planned construction site for the market place is under deliberation with Kerio LMA executives, business groups, and the assistant chief.

Activities Schedule	2014	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Planning & Implementation (EcoRAD)													
1.Design for Pilot Project (PP)													
1-1.Selection of PP site													
1-2.Design for sale yard and consensus among EcoRAD and LMA (MOU)													
2.Sale yard construction													
Implementation (CBOs, Pastoralist)													
1.Promotion of livestock trade (e.g. exploit new markets)													
2.Operation of sale yard and market													
3.Record keeping (Market day)													
4.Report to CLMO on the transaction record													
Monitoring (EcoRAD)													
1.Observation & Recordkeeping													
2.Tecnical assistance													
3.Analysis and Evaluation													
4.Report preparation													

Source: JICA Project Team

Figure AF6.2.1 Work Schedule for Kerio Sale Yard Improvement

(1) Mobilization/Discussion with the Livestock Market Committee

1) Confirmation/Discussion on What Kind of Additional Livestock Marketing Infrastructure Required in Kerio.

On 27th January 2014 the Project team visited Kerio and the purpose of the visit was sharing drawings and sketch of the Kerio sale yard to be constructed. These were discussed with the Kerio LMA officials. The LMA had requested for a watchman's shelter to also be included in the drawing but the Project team advised the LMA to do this shelter by themselves. The LMA officials requested the Project Team to update them when the construction works will commence.

2) Formulating Training Contents/Program for Strengthening of the LMA in the Management of Livestock Marketing Infrastructure and Other Related Activities

After several visits, discussions and observations with the related stakeholders and the Project Team below are some of the possible trainings for strengthening the LMA:

- Training on proper revenue record keeping techniques
- Sensitization on roles and responsibilities of LMA officials and other members and training on ideal ways and techniques of maintenance and repair of livestock infrastructure
- Training on how to organize an effective meeting
- Training on some basics on importance of income generating activities IGAs/Business skills
- Exposure Visit/Educational tour for LMA officials and some members

(2) Design Works of the Facilities at Kerio Market Improvement

The Project Team designed the required facilities. Issues to be considered for the design are:

- Market perimeter fence area should be expanded

- Holding pens for big and small stock (3 holding pens for big stock and 4 holding pens for shoats)
- New additional office should be added
- Two toilets to be constructed
- Shade for livestock should be put for shoats only
- Shade for buyers and sellers to be constructed
- Loading and off-loading rump to be constructed

Figures BF6.2.1 – BF6.2.4 are design drawings of the facilities of Kerio livestock market in the Sub-project.

(3) Establishment of Effective Relationship between Contractor, Kerio Community and Setting out of Kerio Livestock Market Facilities

For effective relationship between the contractor and Kerio community it was necessary to involve one of the LMA members in the supervision of construction works to improve the quality of the works. There was also setting out of the construction works by the foremen of the contractor and the Project Team.

(a) Introduction of the Contractor to the Kerio Community

The Project Team introduced the contractor to the community on 30th of June, 2014 and the purpose was for the community to familiarize themselves with the contractor/person who is going to carry out the renovation and construction works at Kerio LMA sale yard. This is to ensure that the construction materials of the contractor are secured by the community by discouraging stealing construction materials by casual workers.

Present during the familiarization were the following persons: Livestock Marketing Information officer Kerio LMA and secretary to CDC, Chair person of Kerio LMA sale yard), County government Livestock Production Officer, Turkana Central Sub-county, Chairman County Livestock Marketing Organization – and Kerio community members.

Source: JICA Project Team

Figure AF6.2.2 Community Members and Local Leaders Meeting

(b) Setting out of Kerio Livestock Market Facilities

On 31st of July, 2014 setting out of the construction works was done in the presence of Kerio CDC officials, the LMA officials and some members of Kerio Community. The foremen of the contractor and the Project team led the process of setting out the constructions works of the livestock market.

(c) Involvement of One LMA Member in the Supervision of the Construction Works at the Kerio Livestock Market Improvement

i) Identification of the LMA Member for Supervision of the Kerio Livestock Market Construction Works

A brief meeting was convened to deliberate and identify the person to oversee the works of construction and renovation of the sale yard. The members present who included the assistant chief Kerio sub location, chair person Kerio LMA sale yard and vice chair person Kerio LMA sale yard agreed unanimously that Kerio Sale Yard Marketing Officer be the one to oversee the assignment due to commence in the improvement of the Kerio sale yard for two(2) months.

The persons present in the brief meeting agreed to appoint Kerio Sale yard Marketing Officer as the responsible person who will temporarily supervise the construction works at Kerio Livestock Market. The reasons for preference for the appointed person included the following: Kerio Sale Yard Marketing Officer is an active member of the Kerio LMA sale yard, he resides in Kerio centre and his village is adjacent to the sale yard and he is trusted to deliver accurate information as he is also the current livestock marketing information officer in the Kerio LMA sale yard.

ii) Tasks for LMA Member during Supervision of Construction Works

The identified LMA member was tasked with the following duties:

- Daily progress report writing of the ongoing construction works.
- Being in attendance during construction works i.e. from 8.00 am to 5.00 pm of every working day at the construction site.
- Checking the quality of the construction materials brought to site by the contractor.
- Arrangement and invitation for periodical supervision visits by the Project Engineering Team.

Office building

Loading Lump

Holding Pen

Gate House of the Market

Source: JICA Project Team

Figure AF6.2.3 Construction of Livestock Market Facilities

(4) Installation of Telecommunication Infrastructure (Safaricom Network) at Kerio Town

(a) Background on Poor Telecommunication and Its Challenges

In Turkana County Safaricom, the Mobile telephone operator, is expanding their networks mostly in major towns like Kainuk, Lokichar, Lodwar, Kakuma, Lokichoggio and Kalokol. Orange mobile network's only coverage is within Lodwar Town while Zain/Celtel Mobile Network is limited to major towns of Lodwar, Kakuma and Lokichoggio. Kerio town and its surrounding has been without any mobile network coverage for a very long time. Kerio community members currently search for the Safaricom mobile network by going to a specific area within Kerio centre where limited coverage is and it is mostly in the morning when it is calm and not windy.

Livestock marketing trade is booming at Kerio between the livestock traders in Kerio and its surroundings and also with livestock traders from Lodwar and this has been because of having a specific Livestock market day at Kerio. The challenge Kerio LMA and other Livestock traders are facing is that they cannot be updated with information on the current Livestock prices at Lodwar and other main markets in Turkana County and even that of Nairobi. The other challenge with the Kerio LMA and its members are facing is how to save money from their livestock trade because there are no banking/saving services at Kerio Town and neighbouring centres. But with the completion and launching of the Safaricom Mobile Network base station, saving/banking services will be initiated through M-PESA services.

(b) Project Intervention

The project team tried to contact the people in charge of Safaricom Mobile Network at Nairobi Headquarters to explore the possible ways of putting up a booster at Kerio and what would be the community contributions and also what the ECoRAD Project could support if the input required is minimal. However it was not possible for the project team to consult with people in charge at Safaricom Nairobi. Thus the Project team shared this brilliant idea with Kerio local leaders. Through Kerio Leaders' initiative community members agreed to send their Member of the County Assembly(MCA) to Nairobi to confirm the possibility of putting up a booster at Kerio. On his return from Nairobi the MCA informed the community that Safaricom Mobile Network surveyors would come to Kerio and do a Survey by themselves for the installation of the Safaricom booster. The community was not required to contribute any money. Thereafter, there was a positive feedback that Kerio area qualified for installation of a Safaricom Mobile Network booster.

F6.2.2 Road Improvement for Livestock Market Access

In Turkana County, most roads are unpaved except national A1 highway, poor and often impassable when it rains, especially crossing many laggas. Therefore, road improvement was required in order to develop and vitalise livestock market activities. At the Lodwar Livestock Market Yard, a poor access from the national highway A1 into the market yard badly affected the transportation of traders, because the approach cross the lagga that was muddy or easily inundated especially after rainfall during the wet seasons. Therefore provision of a culvert at the entrance of the market yard was requested by the Lodwar Livestock Market Committee.

The contractors commenced works in June after the long rains in 2014. The progress of the works especially at Kabulit and Keekorsogol were badly affected due to unforeseen particular localized rainfall out of the rainy season in July and August, 2014. Partly completed works such as hardcore packing after excavation and concrete placed just before rainfall were then washed away, damaged and/or buried under mud by the flash floods. The work process of the rural road improvement under the project are summarized as below

(1) Milimatatu Drift

- 24th Apr, 2014 Contract for the works was signed.
- 31st May, 2014 Joint survey

- 17th Jun. 2014 Contractor and the project staff conducted setting out at site
- 20th Jun. 2014 Contractor mobilized equipment
- 20th Jun. 2014 Contractor commenced excavation
- 24th Jun. 2014 Contractor commenced hardcore packing
- 10th Jul, 2014 Contractor commenced concrete blinding
- 14th Jul, 2014 Contractor commenced reinforcement
- 23rd Jul, 2014 Contractor commenced placing concrete
- End of Jul 2014 The contract works were substantially completed, except stone pitching and back-filling
- Mid of Aug, 2014 The contract works were completed

(2) Kabulit Drift No.1

- 23rd Apr. 2014 Contract for the works was signed.
- 29th May, 2014 Joint survey
- Beg. of Jun, 2014 Construction of diversion
- 20th Jun. 2014 Contractor and the project staff conducted setting out at site
- 20th Jun. 2014 Contractor commenced excavation
- 24th Jun. 2014 Contractor commenced hardcore packing
- 5th Jul, 2014 Contractor commenced concrete blinding
- 7th Jul, 2014 Contractor commenced reinforcement
- 11th Jul, 2014 Contractor commenced placing concrete
- 11th Jul, 2014 The works were badly affected by unforeseen rainfall and flush flood.
- 28th Jul, 2014 Contractor resumed placing concrete
- End of Jul 2014 The contract works were substantially completed, except stone pitching and back-filling
- Mid of Aug, 2014 The contract works were completed

(3) Kabulit Drift No.2

- 26th Apr, 2014 Contract for the works was signed.
- 29th May, 2014 Joint survey
- 29th Jun. 2014 Contractor and the project staff conducted setting out at site
- 4th Jul, 2014 Contractor commenced excavation
- 10th Jul, 2014 Contractor commenced hardcore packing
- 15th Jul, 2014 Contractor commenced blinding concrete
- 19th Jul, 2014 Contractor commenced reinforcement
- 20th Jull, 2014 Contractor commenced placing concrete

- End Jul, 2014 The contract works were substantially completed, except stone pitching and back-filling
- Mid of Aug, 2014 The contract works were completed

(4) Keekorsogol Drift

- 1st May, 2014 Contract for the works was signed.
- 14th Jun, 2014 Joint survey
- 19th Jun. 2014 Contractor and the project staff conducted setting out at site
- 22th Jul, 2014 Contractor mobilized equipment
- August 2014 Contractor commenced excavation and hardcore packing. The works were badly affected by unforeseen rainfall and flush flood on 6th August 2014.
- 30th Aug, 2014 Contractor commenced blinding concrete
- 8th Sep, 2014 Contractor commenced reinforcement
- 11th Sep, 2014 Contractor commenced placing concrete
- 21st Sep, 2014 Contractor commenced stone rip rap and backfilling
- Mid of Oct, 2014 The contract works were completed

(5) Kakopito Drift

- 25th Apr. 2014 Contract for the works was signed.
- 2nd Jun, 2014 Joint survey
- 6th Jul, 2014 Contractor mobilized equipment
- 6th Jun, 2014 Contractor and the project staff conducted setting out at site
- 6th Jul, 2014 Contractor commenced excavation
- 19th Aug, 2014 Contractor commenced hardcore packing
- 23rd Aug, 2014 Contractor commenced blinding concrete
- 1st Sep, 2014 Contractor commenced reinforcement
- 4th Sep, 2014 Contractor commenced placing concrete
- 6th Sep, 2014 Contractor commenced stone rip rap and backfilling
- Mid of Sep, 2014 The contract works were completed

(6) Culvert at Lodwar Livestock Market

- 24th Apr, 2014 Contract for the works was signed.
- 3rd Sep, 2014 Contractor and project staff conducted setting out at site
- 4th Sep, 2014 Contractor commenced excavation
- 6th Sep, 2014 Contractor commenced relocating water service pipes
- 6th Sep, 2014 Contractor commenced reinforcement
- 7th Sep, 2014 Contractor commenced blinding concrete

- 7th Sep, 2014 Contractor commenced placing concrete
- 23rd Sep, 2014 Contractor commenced gabion works
- 27th Sep, 2014 Contractor commenced embankment /murram metalling
- Mid of Sep, 2014 The contract works were substantially completed

		
Milimatatu Drift	Kabulit Drift No.1	Kakopito Drift

Source: JICA Project Team

Figure AF6.2.4 Construction Photos of Rural Road Improvement(under construction)

		
Milimatatu Drift	Kabulit Drift No.1	Kabulit Drift No. 2
		
Lodwar Livestock Market Culvert	Kakopito Drift	

Source: JICA Project Team

Figure AF6.2.5 Construction Photos of Rural Road Improvement (Completed)

F6.3 Results and Observations

F6.3.1 Kerio Market

(1) Quality of Work with LMA Supervisor

The LMA supervisor was assigned to supervise the construction works on a daily basis and update the Project Team on their Progress. During the setting out of construction works at the site, the LMA was in the forefront of informing the Project team of some bad quality of the building blocks and the need for the contractor to replace the bad blocks because he had previous experience whereby the old office block for Kerio sale yard was build poorly since there was no involvement of LMA personnel or community members. He was very keen in checking the type of metal the livestock holding pens are made of, he confirmed that the metals are strong and of good quality and such type is good for making holding pens for big livestock like cattle, donkeys and camels.

(2) Ongoing Preparations by Kerio Community to Use the Safaricom Mobile Network Services

Currently the booster has been installed and completed. However operation had not started as of the date of the report compilation. Kerio community are preparing to use the services of the mobile network. The Project Team confirmed with one local leader (Nakurio Sub-Location Assistant Chief) that there were four prominent business persons at Kerio Town preparing to open M-PESA shops immediately the network was launched. The local leader also reported that people had started to purchase mobile phones in anticipation of the launching of the Mobile Network.

F6.3.2 Road Improvement Works

(1) Unforeseen rainfall

Construction works of some drifts were affected by unforeseen rainfall and subsequent flush flood during the dry season in July and August, 2014. Though it was understood that no or minimal rainfall were observed during these months in normal years, it rained heavily in the northern and western hilly areas of the county on 10th July, 2014, and the north, central and south-eastern area of the County on 25th August 2014. This affected the various on-going construction works, especially Kabulit No.1, No.2 and Keekorsogol drifts under this sub-project. Though the data on rainfall and river runoff discharge at these areas was not available, the rainfall was observed to be about 30 mm on 10th July and about 10 mm on 25th August in Lodwar Town, which meant the hilly areas had more.

The flood affects of the works are summarized below.

Table AF6.3.1 Damages to On-going Drift Construction by Unforeseen Rainfall and Flush Flood

Name of Drift	Date of Rainfall	The Works Affected
Kabulit No.1	10th July, 2014	1) The concrete placed just before flood was washed away 2) The excavated area where hardcore packing and/or reinforcement bar arrangement were completed, was buried under mud and debris brought by flush flood. 3) The construction works had been stopped for more than a week
Kabulit No.2	10th July, 2014	1) The constructed area was buried under mud and debris brought by flush flood.
Keekorsogol	25th August, 2014	1) The already excavated area was buried under mud and debris brought by flush flood. 2) The construction works had been stopped for 2 days.

Source: JICA Project Team

The damage caused by the flood was classified under force majeure that was beyond the responsibilities of the contractors in these cases. Therefore the additional works to clean and compensate the loss was considered, because the technical specifications of the contract had not envisaged the rainy days and flood in the construction period during a dry season. Due to the

foregoing, protection works against floods and dewatering costs had not been included in the bill of quantities.

(2) Completion of the works

All the six structures of the rural road improvement have been completed. Since the short rains season in October-December 2014 did not receive much rainfall in the whole of Turkana County, there were no serious defects or trouble in terms of the drifts and the culvert.

CHAPTER F7. SUB-PROJECT FOR LIVESTOCK MARKET LINKAGE AND VITALIZATION

F7.1 Outline of the Sub-project

The outline of the sub-project is summarized in the following table.

Table AF7.1.1 Project Profile (Training of Livestock Market Linkage and Vitalization)

Item	Contents	
1. Objectives	1) Improvement of access to livestock market information 2) Capacity development of LMA officials who are responsible for managing livestock markets data. 3) Capacity development of LMA officials on collection and documentation of correct information and revenue collection as a monitoring indicator.	
2. Number of Beneficiaries	Lodwar, Lokichar, Kerio and Kakuma LMA officials and members, Livestock traders and pastoralists from the main livestock markets and other secondary markets within the County.	
3. Implementation Organization	JICA/ ECoRAD Project	
4. Project Contents		
1) Project Outline	1) Formulation of the training plan on collection and documentation of correct information and revenue collection. 2) Executing the training plan. 3) Record keeping of the number of livestock offered and sold and also their prices in terms of different categories of grades. 4) Transmitting Market information 5) Promotion of Livestock trade	
2) Facility / Activity	*Facilities/Activities*	*Implementer*
	1) Formulation of the training plan on the improvement of livestock marketing information systems. 2) Execution of the training plan 3) Monitoring on record keeping, revenue collection, transmitting market information and expansion of business	1) CLMO, CDLP and Project Team 2) CLMO, CDLP and Project Team 3) CLMO, CDLP and Project Team
3) Organization for O&M	Kerio, Lokichar, Lodwar and Kakuma Livestock Marketing Associations and Kerio and Lokichar Community development committees.	
4) Activity Period	10 months	

Source: JICA Project Team

For improving capacity of Livestock Marketing Associations (LMAs) Committee Officers, core management training was done for LMAs committee officials.

(1) Objectives of the Training:

Improvement of access to livestock market information.

Capacity development of LMA officials who are responsible for managing livestock markets data

Capacity development of LMA officials on collection and documentation of correct information and revenue collection as a monitoring indicator.

(2) Contents of the Training:

(a) LMA objectives and core values

(b) Role of CLMO

(c) Role of County Director of Livestock Production (CDLP)

(d) Role of LMA committee

- Who and how to do market linkages
- Where to get market for livestock products (e.g. hide and skin, etc.)
- How to popularize the LMA market (e.g. Announce market day, etc.)
- How to collect accurate livestock market information (The number of animals offered and sold livestock prices, etc.)
- Uses of LMA collected revenue (Financial management)

(e) Reporting model (Refer to attached Annex)

(f) Users of LMA reports (Importance of market information); Pastoralists (Producers), Traders, County government, National Drought Management Authority (Drought mitigation) and Donors

(g) Dissemination of market information

Teaching methodologies used during training included: brainstorming, question and answer, group discussions, practicals and a bit of lecture.

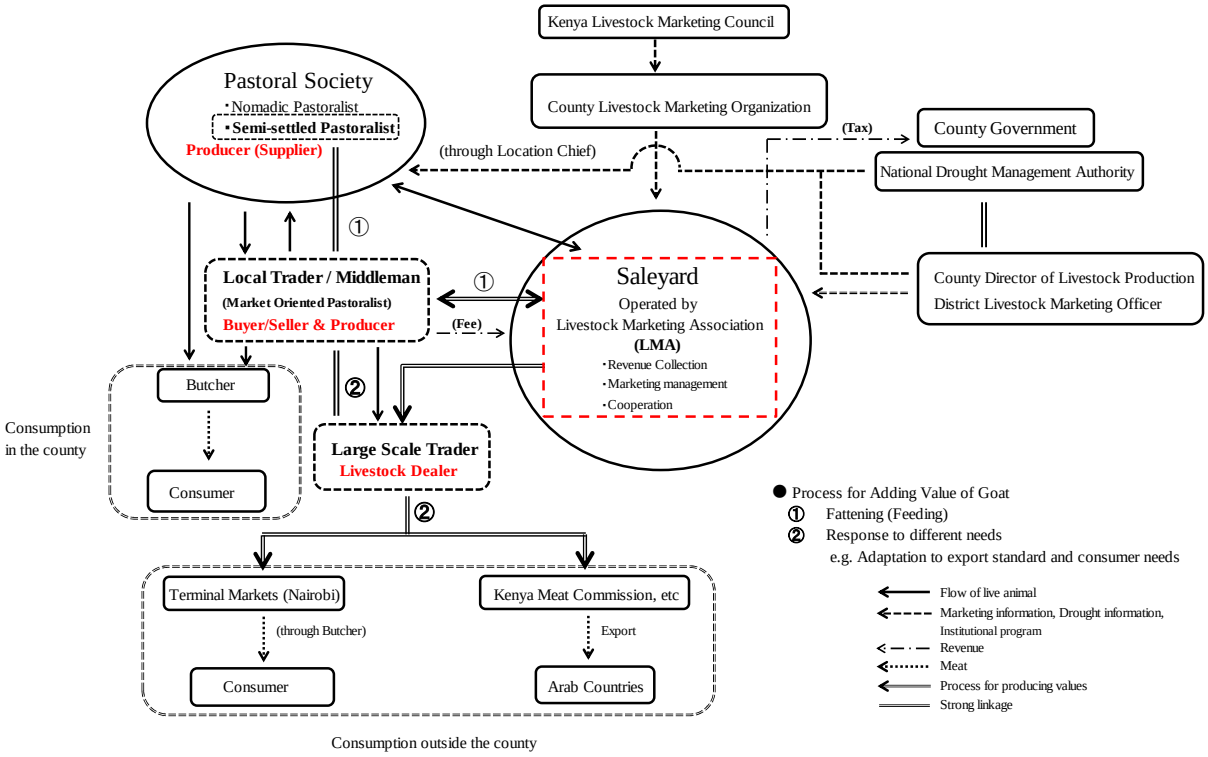
Facilitators of the core management training for LMAs officials were: Project Coordinator (CLMO), Turkana Central Sub-County Government Livestock Production Officer and Livestock Project Team.

F7.2 Baseline Survey on Livestock Marketing Condition

F7.2.1 Background

Turkana has been one of the most popular goat production centres among a great number of consumers in Nairobi. The Survey of the distribution of livestock has analyzed the data from a series of interviews, carried out for officials and members of the Livestock Marketing Association (hereinafter referred to as "LMA"), and the records of the livestock trading as well as consumption trends within four main market areas. The focus of analysis for this survey has been the supply chain, which runs from local traders to the market in Nairobi, via being handled at sale yards and followed by the handling of large scale traders.

Based on the survey study, the issues with the highest priority are to produce enough livestock that meets with the various needs required by the huge market in Nairobi, offer enough livestock as a stable supply, while making the livestock distribution in Turkana more active and lively. This is explained more in detail as follows.



Source: JICA Project Team

Figure AF7.2.1 Schematic Layout of Livestock Marketing Stakeholders

- The issues in regard to the livestock distribution in Turkana are specified as shown in Figure A7.2.1, 1) Production and 2) Distribution. As both of these processes add value to the goat market they are important for promoting commerce in this area. For instance in regard to 2), it is understood that the consumers seek for goats of a compatible quality and carcass weight for export and a well fattened goat with a good dressing percentage is something that the butchers want.

On the pastoralist side, to meet with such needs, is specified in 1), stating that accurate information of their needs should be collected while a system to provide a stable goat supply to satisfy such consumer needs should be established. It is necessary to produce goats that meet these requirements. However, it is common practice that many pastoralists sell goats in order to make a living without understanding the importance and need of commercialization.

- In Kenya, meat consumption drops, even in Nairobi, in January when the new school year begins. Families become tight in spending since they must pay tuition fees. On the other hand, meat consumption goes up during the Ramadan Holiday (Eid Al-Fitr) or Christmas. It is necessary for pastoralists to be well informed and aware of these consumer trends. In order to understand the trends of the Nairobi market, the coordination between pastoralists and market personnel should be realized and a system to share the necessary information should be established.

- There is also a need to establish necessary facilities for the Kerio sale yard, in order to improve shipping and selling as a core market.

The current ongoing pilot projects were all designed based on the above mentioned analysis. These projects are 1) the improvement of sale yard facilities, 2) the improvement of the access road to the sale yards, 3) trainings to improve the various skills of sale yard operation members, 4) Early Offtake targeting pastoralists, and 5) the establishment of pasture through reseeding.

On the other hand, mixed opinions seem to be held in the pastoral society: the subsistence pastoral economy that focuses on making a living (animal trade without markets) and the commercialized pastoral economy (animal trade through markets). The majority assert that both aspects should

complement each other. It is assumed that pastoralists wish to establish the stability of a commercialized pastoral economy to realize a strong survival base and the stability of the subsistence pastoral economy, in order to reduce the risks in pastoral society, brought about by drought and while their life style is changing nowadays. There should have been some sort of mechanism that livestock distribution contributed to make their living resilient against drought to some extent. Nevertheless, such mechanisms were not well understood.

It will remain necessary to continue t monitoring and provision of appropriate assistance to on-going pilot projects and to make plans focusing on assisting local traders, who connect pastoralists and markets, and large scale traders, who connect local markets and those outside the county. At the same time, thorough consideration and attention should be paid to improving pastoralists' resilience power to ensure their existence.

This baseline survey was conducted for the purpose of understanding the actual situation of the pastoralists (producers) and local traders, who are both key actors in the livestock value chain.

F7.2.2 Outline of Household Survey

The survey was done in regard to the subsistence pastoral economy of the semi-settled pastoralists, who reside in the suburbs of the centre of the Sub-Location, and the commercialized pastoral economy (Commercial off take)

(1) Purpose

The purpose is to examine the validity of the suggested risk management against drought. A series of research studies will be carried out to establish the level of awareness of the pastoralist household towards commercializing their pastoralism, which is to gain sales revenue and pool consumer goods, cash and/or durable livestock for drought resistant animals by selling their animals when the prices are high. In order to choose the optimal timing for selling, a large number of animals should be kept ready during more stable times.

(2) Methodology

The Project established the Community Development Committee (hereinafter referred to as "CDC"). CDC has been extending the Early Warning System (hereinafter referred to as "EWS") among semi-settled pastoralists who reside in the suburbs of the centre. As one of the components of EWS, the purpose of which is to reduce the drought risk and to recover their livelihoods after being affected by drought, it includes the Early Off-take (hereinafter referred to as "EOT") of the livestock. Among eleven Sub-locations that the Project targets, a questionnaire and survey was carried out in three Sub-locations that have shown a strong interests in EOT: Kerio, Lokiriama and Lorengkippi.

As samples of target households, CDC selected pastoralist households around the centre of the Sub-location, who have shown an interest towards EOT. After ten settlements had been selected from the Kerio sub-location, two to six households were selected from each of these settlements, making thirty-six target households in total. Six settlements from the Lokiriama sub-location and five settlements from the Lorengkippi sub-location were also selected. As five households were selected from those settlements, the totals of thirty and twenty-five target households were selected from each sub-location. The grand total of sample households from three Sub-locations was ninety-one.

Among three Sub-locations, it is only in Kerio where there is a permanent sale yard (one of the main livestock markets in Turkana). Although there is no permanent market in the other two Sub-locations, there is a simple livestock trading post in Lokiriama Centre, where local traders gather around. Livestock traders from Uganda also come to this post.

The interviews were conducted by visiting each target pastoralist, in order for everyone to gain a thorough understanding of the purpose of the interview and the meaning of each question. The accuracy of the information was maintained by having the interviews conducted by the Project staff.

F7.2.3 Outcome of Household Survey

(A) Distribution of the Target Pastoralists (Semi-settled Pastoralist)

(1) Gender

As TableAF7.2.1 shows, a total of ninety-one pastoralists, fifty-two male (57%) and thirty-nine female (43%) were interviewed. The male and female number and percentage from each of the three Sub-locations was: nineteen male (53%) and seventeen female (47%), among a total of thirty-six from Kerio; nine male (30%) and twenty-one female (70%), among a total of thirty from Lokiriama and twenty-four male (96%) and one female (4%), among a total of twenty-five from Lorengkippi.

Table AF7.2.1 Gender of Respondents

Site	Male	Female	Total
Kerio	19	17	36
Lokiriama	9	21	30
Lorengkippi	24	1	25
Total	52 (57%)	39 (43%)	91

Source: JICA Project Team

(2) Age

The age distribution is almost even from 20's to 50's as shown on TableAF7.2.2: eleven (12%) in their 20's, twenty-eight (31%) in their 30's, twenty-eight (31%) in their 40's, twenty-three (25%) in their 50's and one without an answer (1%).

Table AF7.2.2 Age of Respondents

Site	under 20 yrs	20-29 yrs	30-39 yrs	40-49yrs	over 50 yrs	Non-response
Kerio	0	8	13	10	5	0
Lokiriama	0	2	10	8	9	1
Lorengkippi	0	1	5	10	9	0
Total	0	11 (12%)	28 (31%)	28 (31%)	23 (25%)	1 (1%)

Source: JICA Project Team

(3) Number of Household Members

Again, it is as Table AF7.2.3 shows. The number of households with five or less members was eight (9%), those with between six and ten members was forty (44%), between eleven and fifteen was twenty-seven (30%), between sixteen and twenty was ten (11%), more than twenty-one households had four members (4%) and two gave no answer (2%). Many of these households had one head of the household (male) and more than two wives and children.

Table AF7.2.3 Household Size of Respondents (Number of persons per HH)

Site	1 - 5	6 - 10	11 - 15	16 - 20	over 21	Non-respondse
Kerio	6	14	9	4	2	1
Lokiriama	2	15	7	4	1	1
Lorengkippi	0	11	11	2	1	0
Total	8 (9%)	40 (44%)	27 (30%)	10 (11%)	4 (4%)	2 (2%)

Source: JICA Project Team

(4) Size of Livestock Herd (Tropical Livestock Unit (TLU) : Camel＝1, Cattle＝0.7, Goat・Sheep ＝0.1)

As Table AF7.2.4 shows, among the ninety-one households, seven (8%) were smaller than 1 TLU and thirty-three (36%) were between 1.1 and 5 TLU. Nearly half (44%) were equal to or smaller than 5 TLU, which are vulnerable against drought risks. The number the middle scale households, between 5.1 and 10 TLU, was twenty-two (24%). The total number of large scale households shared 31%: fourteen (15%) between 10.1 and 15 TLU, five (5%) between 15.1 and 20 TLU and ten (11%) larger than 20 TLU. When sorted by community, the average grazing scale was 6.2 TLU (0.5-40.8 TLU) in Kerio, 8.5 TLU (0.5-46.8TLU) in Lokiriama and 17.5 TLU (2.1-62.5 TLU) in Lorengkippi. The reason for the relatively large scale of herd size in Lorengkippi is because of the large number of large animals. Situated at the foot of an escarpment, Lorengkippi enjoys affluent rain, which creates abundant vegetation, making it possible to graze, especially for cattle. On the other hand, Lorengkippi is near the border with Uganda as well as another nomad territory, a highly risky location for livestock raiding.

Table AF7.2.4 Herd Size of Respondents (TLU per HH)

Site	below 1	1.1 - 5	5.1 - 10	10.1 - 15	15.1 - 20	over 20.1	Range	Average
Kerio	3	19	9	2	1	2	0.5 - 40.8	6.2
Lokiriama	4	8	8	7	1	2	0.5 - 46.8	8.5
Lorengkippi	0	6	5	5	3	6	2.1 - 62.5	17.5
Total	7 (8%)	33 (36%)	22 (24%)	14 (15%)	5 (5%)	10 (11%)		

Source: JICA Project Team

(5) Location of Residence (distance from the Centre)

This survey selected semi-settled pastoralist households who have shown an interest toward commercializing pastoralism and who reside in the suburbs of the Centre, so the number of households located within 1km from the Centre was sixty-six which is more than 70% of the total. This is also shown on Table AF7.2.5. All of the target households in Lokiriama and Lorengkippi were located within 1km from the Centre. In Kerio, where there is a sale yard in the Centre, pastoralist households may be situated in a relatively wider area: five are (14%) located between 3 and 5km from the Centre and twenty (56%) are farther than 5km away from the Centre.

Table AF7.2.5 Residence Site of Respondents (m)

Site	1 - 1,000	1,001 - 3,000	3,001 - 5,000	over 5,001
Kerio	11	0	5	20
Lokiriama	30	0	0	0
Lorengkippi	25	0	0	0
Total	66 (72%)	0	5 (6%)	20 (22%)

Source: JICA Project Team

(B) Livestock Marketing Behaviour

(1) Selling Method

The selling method of livestock depends on whether or not there is a sale yard. In Kerio, where there is a permanent sale yard, twenty-three (64%) households sell their livestock through local traders as well as the sale yard, and only twelve (33%) sell only at the sale yard. During the last fiscal year, all of the households, with the exception of one (3%), which did not sell any livestock that year, had at least one direct trade at the sale yard. In Lokiriama, where there is a simple livestock trading post, two households (7%) sell their livestock only through local traders and six households (20%) only through the simple trading post. This means that the rest of the target households, twenty-one of them (70%), are using both methods to sell their livestock, except the one (3%) household without a selling record. Of the pastoralist households in Lorengkippi, where even a simple trading post is not available, twenty-four (96%)

households sell their animals to local traders. Only one household in this area uses a livestock trading post away from the area along with local traders. This means that all of the target households in Lorengkippi sell their livestock to local traders. The numbers average of all target households in these three Sub-locations show that 29% use only local traders and 20% trade only through the simple trading post or the sale yards. In other words, approximately half of those target farmers in three areas are selling their animals through both local traders and the sale yard (Table AF7.2.6).

Table AF7.2.6 Selling Method

Site	Local Trader	Saleyard	Both	No sales	Market
Kerio	0	12 (33%)	23 (64%)	1 (3%)	Kerio sale yard
Lokiriama	2 (7%)	6 (20%)	21 (70%)	1 (3%)	Lokiriama centre (temporary sale yard) or Moroto(Uganda)
Lorengkippi	24 (96%)	0	1 (4%)	0	Lorengkippi centre (no saleyard), Lobei, Pokot or Moroto
Total	26 (29%)	18 (20%)	45 (49%)	2 (2%)	

Source: JICA Project Team

Regarding questions about whether target pastoralists practice trade in cash or credit, Table AF7.2.7 shows that eighty-seven (98%) households answered cash and two (2%) answered practicing both. It is a common practice to trade in cash at the sale yard, but the result indicates it is also the major style that those pastoralists settle their trade at time of purchase by using cash with local traders. This trend means that the livestock animal has become viewed as a commercial asset and indicates that the practice of economical trade has become more common.

Table AF7.2.7 Payment Method

Site	Cash	Credit	Both
Kerio	35	0	0
Lokiriama	28	0	1
Lorengkippi	24	0	1
Total	87 (98%)	0	2 (2%)

Source: JICA Project Team

(2) Livestock Transport Method

As most of the target households reside in the suburbs of the Centre and many livestock trades are practiced at the Centre, 78% of those households walk their animals to wherever they are required to sell them. This is the case for all of the target households in Lokiriama and Lorengkippi. Pastoralists in Lokiriama walk all day long to the Moroto market in Uganda, regardless of the long distance. In Kerio, where target households reside far from each other, more than half (56%) use motorbike to transport their livestock to the sale yard. If the animals are either goat or sheep, it is possible to have two to three of these animals sitting in between the driver and the passenger (Table AF7.2.8).

Table AF7.2.8 Livestock Transport Method

Site	Trekking	Motorbike	Trucing
Kerio	16	20	0
Lokiriama	29	0	0
Lorengkippi	25	0	0
Total	70 (78%)	20 (22%)	0

Source: JICA Project Team

(3) Shipping Method

Asked about the method of shipping their livestock, 38% answered the ‘personal shipping,’ 53% answered the ‘group shipping’ and 9% answered ‘both.’ This result indicates that more than 60% of them ship their livestock cooperatively. For the next question ‘cooperate with who,’ as Table AF7.2.9 shows, 35% said with ‘friends,’ 28% said with ‘relatives’ and 17% said with ‘family members’.

Table AF7.2.9 Shipping Method

Site	Personal shipping	Group shipping	Both personal and group	Person with Group Shipping (multiple answer)				
				Neighbour	Friend	Relative	Herder	Family member
Kerio	16	19	1	2	11	10	5	7
Lokiriama	8	14	2	0	0	0	1	0
Lorengkippi	5	8	4	0	5	3	1	1
Total	29 (38%)	41 (53%)	7 (9%)	2 (4%)	16 (35%)	13 (28%)	7 (15%)	8 (17%)

Source: JICA Project Team

(4) Interests toward EOT (Commercial sales)

In regard to their interests toward EOT, 98% of the target households were highly interested in EOT, where 2% (two households) were not at the moment since they had neither the related information nor livestock for sale. As for those who answered being interested, their reasons were to increase their cash income (57%), to improve their living standards (19%), to cope with hard times during drought (9%), to reinforce/bolster their business (8%) and to sell their livestock at a higher price (7%) (Table AF7.2.10).

Table AF7.2.10 Interests toward Early Off-take

Site	Yes	No	Reason for Yes (multiple answer)					Reason for No	
			To improve income	To improve living standard	Fetch a higher price	Cope with disaster	Enhance business	Lack of information	Nothing to sale
Kerio	36	0	21	5	6	6	4	0	0
Lokiriama	28	2	12	10	0	0	0	1	1
Lorengkippi	25	0	18	2	0	2	3	0	0
Total	89 (98%)	2 (2%)	51 (57%)	17 (19%)	6 (7%)	8 (9%)	7 (8%)	1	1

Source: JICA Project Team

(5) Actual Condition of Subsistence Pastoral Economy

This section dealt with questions about the maintaining and practicing of pastoralism as their occupation: the number of livestock consumed for sales, slaughtering, exchanging and giving as a gift or a bride price. Questions were also included about the types of animals and their sex. However, the number of the samples was very limited and the survey term was short, so the accuracy of the quantitative data are not satisfactory and the issues of generation gaps as well as the uncertainty of some numbers still requires further efforts to achieve confirmation/certainty. Consequently, table below gives a summary only about the number of households that gave answers regarding consuming their animals during social occasions (consuming livestock as a survival strategy). The answers relating to the purposes and reasons for the use of the animals were given without any set forms, so some answers were collected for the summary.

- Sales

As Table AF7.2.11 shows, seventy-eight (86%) out of ninety-one household sell their animals as a subsistence strategy. Regarding sales reasons, 38% were for food, 32% for education, 11% for medical treatment, 9% for better living standard, 5% for business investment, 4% for restocking and 1% destocking. It is assumed that those answers were approximately their main reasons, so it is quite obvious that almost all of them sell their animals to buy food as a fundamental need for living, even though only 38% answered 'food.'

Table AF7.2.11 Annual Sustenance Offtake (Sale)

Site	Number of respondents	Reason for Sale (multiple answer)						
		Food	School fee	Medical fee	Better living	Business	Restocking	Destocking
Kerio	30/36HH (83%)	26	19	5	4	5	4	1
Lokiriama	23/30HH (77%)	15	12	5	4	2	1	0
Lorengkippi	25/25HH (100%)	17	18	6	6	1	2	0
Total	78/91HH (86%)	58 (38%)	49 (32%)	16 (11%)	14 (9%)	8 (5%)	7 (4%)	1 (1%)

Source: JICA Project Team

- Slaughtering

Table AF7.2.12 shows that fifty-seven (63%) out of ninety-one households slaughter their animals. 75% of them said it was for obtaining animal protein, followed by 16% for rituals, 7% for mutual-aid, and 2% for meat sales. It is reasonable to understand from this result that almost all of the target households slaughter their animals for their survival.

Table AF7.2.12 Annual Sustenance Offtake (Slaughtering)

Site	Number of respondents	Reason for Slaughter (multiple answer)			
		Food (protein)	Ritual	Mutual aid	Meat sale
Kerio	20/36HH (56%)	16	7	2	1
Lokiriama	18/30HH (60%)	17	4	1	0
Lorengkippi	19/25HH (76%)	18	0	2	0
Total	57/91HH (63%)	51 (75%)	11 (16%)	5 (7%)	1 (2%)

Source: JICA Project Team

- Exchanging

Table AF7.2.13 shows that thirty-five (39%) out of ninety-one households exchange their animals. Some of main reasons for this are: 65% for improving the animal type ratio of their herds, 32% for increasing the ratio of animals for reproduction and 3% for obtaining favourite coloured animals. 97% of animal exchanges are assumed for the purpose of proper herd management, such as to maintain a favourable herd species composition as well as the male-female ratio.

Table AF7.2.13 Annual Sustenance Offtake (Exchanging)

Site	Number of respondents	Reason for Exchange (multiple answer)		
		Species	Breeding	Favorite color
Kerio	15/36HH (42%)	9	6	0
Lokiriama	10/30HH (33%)	7	2	0
Lorengkippi	10/25HH (40%)	6	3	1
Total	35/91HH (39%)	22 (65%)	11 (32%)	1 (3%)

Source: JICA Project Team

- Bride Price

Thirty-four (37%) out of ninety-one households, as Table AF7.2.14 shows, gave away their livestock for bride price. The result shows 37%; nevertheless, it is a common practice to present some animals as bride price to the family of the bride.

Table AF7.2.14 Annual Sustenance Offtake (Bride Price)

Site	Number of respondents
Kerio	10/36HH (28%)
Lokiriama	13/30HH (43%)
Lorengkippi	11/25HH (44%)
Total	34/91HH (37%)

Source: JICA Project Team

- Gift

Table AF7.2.15 shows that thirty-one (34%) out of ninety-one households give away their livestock as a gift, mainly for friendship (57%) and for food assistance (39%). 4% donate them to the church, 96% of them give their animals to friends and relatives to establish or maintain a favourable social relationship.

Table AF7.2.15 Annual Sustenance Offtake (Gift)

Site	Number of respondents	Reason for Gift (multiple answer)		
		Friendship	Food assistance	Donate to church
Kerio	8/36HH (22%)	4	3	0
Lokiriama	13/30HH (43%)	8	3	1
Lorengkippi	10/25HH (40%)	4	5	0
Total	31/91HH (34%)	16 (57%)	11 (39%)	1 (4%)

Source: JICA Project Team

- Loss and gain of livestock (birth, purchase)

As Table AF7.2.16 shows, seventy-nine (87%) out of ninety-one households experienced the loss of livestock. Reasons varied: 39% for drought, 31% for disease, 27% for raiding and 3% for harm by wild animals. The target pastoralists are well aware of the possibility of a great loss in the numbers of their livestock by drought, disease and raiding.

Regarding the natural increase by birth, the average of 88% households had animals giving birth during last year. The lowest percentage was found in Kerio (83%), where it was 90% in Lokiriama. The highest percentage was 92% in Lorengkippi. This result may be due to the vegetation within the respective areas, as this means that animals have enough feed. The number of pastoralist households, that were actually trying to improve the herd species composition as well as the male-female ratio through purchasing livestock, was 23%.

Table AF7.2.16 Annual Growth and Losses of Livestock

Sale yard	**Losses** Number of respondents	Cause of losses (multiple answer)				**Birth**	**Purchase**
		Diseases	Theft (raid)	Drought	Predators	Number of respondents	
Kerio	30/36HH (83%)	9	3	26	0	30 (83%)	6 (17%)
Lokiriama	28/30HH (93%)	18	16	14	1	27 (90%)	10 (33%)
Lorengkippi	21/25HH (84%)	11	14	8	2	23 (92%)	5 (20%)
Total	79/91HH (87%)	38 (31%)	33 (27%)	48 (39%)	3 (3%)	80 (88%)	21 (23%)

Source: JICA Project Team

(6) Market Price Fluctuation

Asked whether or not being aware of the fact that the market price of the livestock at the sale yard rises at certain times (seasonal fluctuation of the price), 92% answered “they know” and 8% answered “they didn’t know.” 71% of those pastoralist households who answered “they know” answered that the animal price is high during the rainy season: April, May, June and July (Table AF7.2.17, and Table AF7.2.18). The market value of livestock depends on the body weight, so the body weight goes up during the rainy season, their price also goes up and the demand of large scale traders also increases. Generally speaking, the present situation and understanding of those pastoralists matched.

Table AF7.2.17 Awareness of Good Price Season

Site	Yes	No
Kerio	36	0
Lokiriama	24	6
Lorengkippi	24	1
Total	84 (92%)	7 (8%)

Source: JICA Project Team

Table AF7.2.18 Good Price Season

Site	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Kerio	2	2	7	13	28	12	12	6	0	0	5	9
Lokiriama	2	2	4	16	17	15	4	1	0	0	0	5
Lorengkippi	0	0	0	6	8	14	12	12	0	1	2	6
Total	4	4	11	35	53	41	28	19	0	1	7	20
Percentage (%)	2	2	5	16	24	18	13	9	0	0	3	9

Source: JICA Project Team

(7) Bank Account Holding Status

There is a bank only in Lodwar, the county capital of Turkana, so it is physically difficult for residents in the countryside to hold a bank account. For this survey, only eight (9%) of target households answered that 'they hold a bank account' where eighty-three (91%) answered 'they don't hold a bank account.' In Kerio, five (14%) had an account and thirty-one (86%) did not. In Lokiriama, two (7%) had an account and twenty-eight (93%) did not. As for Lorengkippi, only one (4%) had an account and twenty-four (96%) did not (Table AF7.2.19).

Table AF7.2.19 Bank Account Holding Status

Site	Yes	No
Kerio	5	31
Lokiriama	2	28
Lorengkippi	1	24
Total	8 (9%)	83 (91%)

Source: JICA Project Team

Asked where and how they keep cash, 75% of the households who did not have a bank account answered they keep cash in a metal box at home. 15% of them answered they do not have enough cash to keep, while 10% said they exchange such cash with goods or animals. Since those pastoralists sell their animals according to their needs, they are not in the habit of keeping cash for a long period of time (Table AF7.2.20).

Table AF7.2.20 Temporary Saving Method

Site	Metal box in the home	No money to save	Exchange for commodities
Kerio	28	1	2
Lokiriama	16	9	3
Lorengkippi	21	3	4
Total	65 (75%)	13 (15%)	9 (10%)

Source: JICA Project Team

(8) Summary and Consideration

- Although the number of the samples was very limited, out of ninety-one respondents, almost half of them, 44% (forty households), had small-scale herd size that is smaller than 5TLU. It can be assumed that it is difficult enough to make a living out of such small herds, under severe enough circumstances that always threatens the loss of animals such as by frequently occurring droughts, infectious diseases and raiding. Due to the small-scale herd size and a subsistence strategy that prioritizes the subsistence pastoral economy (social exchange of animals), it is not so easy for the semi-settled pastoralist households, who reside the suburb of the Centre, to shift to commercial pastoralism.

- The main reason, for pastoralists residing in the suburb of the Centre, to sell their livestock is to obtain cash for reasons to cover food expenses, education costs, medical costs and so on. The number of households that invest cash for business purposes or deposit cash into bank accounts as a financial resource to be kept for in times of drought is still very limited.

The ETO has promoted the concept of saving by actively selling castrated animals when the price is high at more quiet time, in order to make a recovery from the drought damages. Despite the effort being put in for a number of years, the concept has not been well understood even by the semi-settled pastoralists who are intent on developing commercial pastoralism.

- The survey result clearly indicates that the most important thing for target pastoralists is to maintain their social relationship with relatives and friends through animal exchange and consumption in order to sustain their livings. This network would possibly be commercial as well as practical EOT trainings when it is integrated with the network among local traders as well as LMA.

- The survey suggests that traditional pastoralism, the combination of natural environment and animal husbandry is deeply rooted in the life of pastoralists, even within the changing life styles influenced by globalization and climate change. Under these circumstances, it seems rather difficult for a foreign concept to be introduced. Therefore, it is necessary for the Project to take enough time to evaluate the pilot projects through ongoing trial and error.

F7.2.4 Outline of Livestock Trading Survey

(1) Purpose

The hypothesis that sustainable operation of sale yards will contribute to the improvement of drought resilience for pastoralists should be examined through a survey. In general, some resilient roles that sale yards play against drought are: 1) trade livestock for money: save money, a relatively stable asset by exchanging livestock in normal year, 2) control the type, sex and age of livestock: in order to make herds composition well resilient against drought and 3) exchange information and establish a social network: preventing animal diseases, sharing livestock market information inside and outside an individuals own area, and realizing mutual aid among LMA members.

The questionnaire and survey was conducted for local traders who participate in the main livestock market, in order to understand the actual situation of sale yards and local traders in regard to commercialization of pastoralism. This survey also considered the roles played by the sale yard in terms of improvement of the resilience against drought.

(2) Methodology

The survey conducted a direct interview with local traders at four main sale yards in Turkana, Kakuma, Lodwar, Kerio and Lokichar. In general, local traders who trade livestock at the sale yards receive their profit through selling and buying of livestock. For this survey, local traders who came to the sale yard for selling livestock at the time of survey are called sellers, and likewise, local traders who came to the sale yards for buying at the time of survey are called buyers. And the survey focused on two different perspectives of sellers and buyer. The total number of sellers and buyers were eighty-four and eighty-two respectively, having the total of one-hundred and sixty-six. The number of sellers (eighty-four) at these four markets shared 60% of one-hundred and forty, the average users who wished to sell at four markets at the time of survey. On the other hand, the number of buyers (eighty-two) was 31% of two-hundred and sixty-five (the total of four sale yards), the average users, who wished to buy.

F7.2.5 Outcome of Livestock Trading Survey

(A) Seller (Local trader)

(1) Distribution of the Sellers

1) Gender

As Table AF7.2.21 shows, eighty-three (99%) were male and one (1%) was female.

Table AF7.2.21 Gender of Respondents

Saleyard	Male	Female	Total	Average participation number of seller
Kakuma	24	0	24 (80%)	30
Kerio	20	0	20 (50%)	40
Lodwar	19	1	20 (40%)	50
Lokichar	20	0	20 (100%)	20
Total	83 (99%)	1 (1%)	84 (60%)	140

Source: JICA Project Team

2) Age

As Table AF7.2.22 shows, one respondent (1%) were younger than twenty years of age, and the largest group, forty-four (52%), were in their 20's, twenty-four (21%) were in their 30's, ten (12%) in their 40's, three (4%) in his/her 50's. Two (2%) respondent did not give his/her age.

Table AF7.2.22 Age of Respondents

Saleyard	under 20 yrs.	20-29 yrs.	30-39 yrs.	40-49 yrs.	over 50 yrs.	Nonresponse
Kakuma	1	12	8	1	1	1
Kerio	0	11	5	2	1	1
Lodwar	0	11	5	4	0	0
Lokichar	0	10	6	3	1	0
Total	1 (1%)	44 (52%)	24 (29%)	10 (12%)	3 (4%)	2 (2%)

Source: JICA Project Team

3) Occupation

Eighty (95%) respondents were both pastoralists and traders. Only four (5%) answered that they were full-time pastoralists, and no one was a full-time trader. This clearly shows that the majority of local traders are making a living through both pastoralism and livestock trading. In other words, the majority of local traders are pastoralists who are receptive to commercial practices (Table AF7.2.23).

Table AF7.2.23 Occupation of Respondents

Saleyard	Herder	Trader	Herder/Trader
Kakuma	0	0	24
Kerio	3	0	17
Lodwar	1	0	19
Lokichar	0	0	20
Total	4 (5%)	0	80 (95%)

Source: JICA Project Team

4) Location of Residence (distance from the Centre)

As Table AF7.2.24 shows, Six (7%) respondents, local traders, lived within 1km from the sale yard, while twenty-three (27%) lived within a distance of between 1 and 3km and nineteen (23%) lived within a distance of between 3 and 5km. The largest number of respondents lived more than 5km away from the sale yard. It should be noted that 90% of local traders who came to the Kerio sale yard in order to sell lived more than 5km away from the sale yard.

Table AF7.2.24 Residence Site of Respondents (m)

Saleyard	0-1,000	1,001-3,000	3,001-5,000	over 5,000
Kakuma	4	11	7	2
Kerio	1	0	1	18
Lodwar	0	1	9	10
Lokichar	1	11	2	6
Total	6 (7%)	23 (27%)	19 (23%)	36 (43%)

Source: JICA Project Team

5) Number of Years Practicing as Livestock Trader

As Table AF7.2.25 shows, 38% of livestock traders had less than three years of experience, where 33% had between four and eight years, 9% had between nine and thirteen years and 20% had more than fourteen years of experience.

Table AF7.2.25 Career in Livestock Trading of Respondents (started year)

Saleyard	before 2000	2001 - 2005	2006 - 2010	2011 - 2014
Kakuma	4	4	5	11
Kerio	3	2	7	6
Lodwar	3	1	9	7
Lokichar	7	0	6	7
Total	17 (20%)	7 (9%)	27 (33%)	31 (38%)

Source: JICA Project Team

6) LMA Membership

- Membership and admission year

As Table AF7.2.26 shows, twenty-seven (32%) were LMA members, and fifty-seven (68%) were non-members. Among the members, 41% of members were in their 20's, 37% were in their 30's and 22% were in their 40's. Five members (19%) joined LMA before the year 2000, three (11%) joined between 2001 and 2005, seven (26%) joined between 2006 and 2010 and eight (30%) joined between 2011 and 2014. Four respondents (14%) were not yet registered.

Table AF7.2.26 Membership and Admission Year

			Admission Year in LMA				
Saleyard	Yes	No	before 2000	2001 - 2005	2006 - 2010	2011 - 2014	Not registered
Kakuma	10	14	2	0	3	5	0
Kerio	6	14	0	2	0	1	3
Lodwar	6	14	3	0	1	2	0
Lokichar	5	15	0	1	3	0	1
Total	27 (32%)	57 (68%)	5 (19%)	3 (11%)	7 (26%)	8 (30%)	4 (14%)

Source: JICA Project Team

- Profit for LMA members

A question for twenty-seven members about the profit through LMA membership such as dividends, six (22%) answered 'yes, there is' and nineteen (70%) answered 'no, there is not,' Two (7%) did not answer. Many of respondents, who answered 'yes,' said that they receive an allowance at the Annual General Meeting (AGM) held once a year (Table AF7.2.27).

Table AF7.2.27 Profit for LMA Members (multiple answer)

Saleyard	Yes	No	Nonresponse	Reason for yes	
				Allowance for AGM *1	Pay school fee
Kakuma	1	9	0	1	0
Kerio	3	3	0	2	0
Lodwar	1	4	1	1	1
Lokichar	1	3	1	1	0
Total	6 (22%)	19 (70%)	2 (7%)	5	1

Source: JICA Project Team *1 AGM = Annual General Meeting

- Merit of LMA members

In regard to the merits of holding a LMA membership, the largest percentage of respondents (18%) pointed out access to the livestock market information, 11% said loan availability, 8% said social welfare (loans available for education and medical expenses), 3% said the mutual-aid. It is possible also for non-members to sell and buy livestock at a sale yard, a large percentage of members (61%) answered about the merits of membership in order to use the sale yard facilities: 37% said the convenience of sale yard facilities, 13% said about the officially recognized trade at sale yards and 11% said about the safety of the sale yard. It is presumed that members have not been aware of the merits other than profit for members (Table AF7.2.28).

Table AF7.2.28 Profit of LMA Members (multiple answer)

Saleyard	Access market info	Social welfare	Loan	Mutual aid	Security	Authorized place	Facility	Easy to transaction
Kakuma	0	2	1	1	4	0	5	0
Kerio	3	1	1	0	0	0	0	3
Lodwar	4	0	1	0	0	0	1	4
Lokichar	0	0	1	0	0	5	0	1
Total	7 (18%)	3 (8%)	4 (11%)	1 (3%)	4 (11%)	5 (13%)	6 (16%)	8 (21%)

Source: JICA Project Team

(2) Livestock Trading (seller)

1) Livestock collection community

The communities that local traders buy livestock from are 95% within their residential areas, where 4% obtain from their family members and 1% buy from the other Sub-locations (Table AF7.2.29).

Table AF7.2.29 Livestock Collection Community

Saleyard	Residence area	Different sub-location	Family animals
Kakuma	23	1	0
Kerio	17	0	3
Lodwar	20	0	0
Lokichar	20	0	0
Total	80 (95%)	1 (1%)	3 (4%)

Source: JICA Project Team

2) Livestock Collection Data

Most of the traders (76%) collect livestock the day before the sales take place at the sale yard, 14% collect two to three days prior and 10% on the day of sale yard trade. And 96% collect livestock in the evening and 4% prefer to do so in the morning (Table AF7.2.30).

Table AF7.2.30 Livestock Collection Date

Saleyard	Morning	Evening	A day prior to selling day	2,3 days prior to selling day	On the day
Kakuma	0	23	10	1	0
Kerio	2	10	15	2	2
Lodwar	0	16	5	0	0
Lokichar	1	14	2	3	2
Total	3 (4%)	63 (96%)	32 (76%)	6 (14%)	4 (10%)

Source: JICA Project Team

3) Relationship with Contact Pastoralists (producers)

As Table AF7.2.31 shows, the largest number of traders (40%) was dealing with friends, followed by relatives (37%), local traders (21%) and family members (2%).

Table AF7.2.31 Relationship with Contact Pastoralist (multiple answer)

Saleyard	Friend	Relatives	Fellow	Family
Kakuma	13	12	12	1
Kerio	16	15	5	1
Lodwar	18	16	9	0
Lokichar	17	17	8	1
Total	64 (40%)	60 (37%)	34 (21%)	3 (2%)

Source: JICA Project Team

4) Sales Purpose-*

As Table AF7.2.32 shows, the purpose for local traders to sell their livestock was 100% for cash gain. Most of them (48%) said that they buy food and daily necessities using the gained cash. Other uses for the gained cash were to buy more livestock (to enlarge the herd and to improve the herd species composition as well as the male-female ratio) (27%), education and medical treatment expenditures (18%), saving (3%), purchase of ornamental beads (2%), business investment (2%) and purchase of veterinary drugs (1%).

Table AF7.2.32 Sales Purpose

Saleyard	Cash income	Destocking	Detailed Purpose (multiple answer)								
			Food stuff	Commodities	School fee	Medical fee	Purchase beads	Restocking	Vet. Drugs	Savings	Business
Kakuma	24	0	22	13	8	7	5	15	1	1	1
Kerio	20	0	19	5	4	2	0	17	0	1	4
Lodwar	20	0	18	2	6	4	0	15	0	4	0
Lokichar	20	0	19	7	5	6	0	11	2	0	0
Total	84 (100%)	0 (0%)	78 (36%)	27 (12%)	23 (11%)	19 (7%)	5 (2%)	58 (27%)	3 (1%)	6 (3%)	5 (2%)

Source: JICA Project Team

5) Sales Method (sale yard or barter trading)

As Table AF7.2.33 shows, local traders were asked which trading style has more merit; the market trading system based on cash payments made through the sale yard or the barter trading system that was practiced sometimes ago. 67% of local traders answered the 'market trading' system and 24% answered the "barter trading" system. 9% answered 'no difference'.

Table AF7.2.33 Sales Method (better trading between sale yard and barter trading)

Saleyard	Saleyard trading	Barter trading	Similar	Reason for Saleyard				Reason for Barter
				Cash immediately	No waste time	Convenient	Profitable	Profitable
Kakuma	4	16	4	2	2	0	0	16
Kerio	15	1	2	14	3	2	0	1
Lodwar	18	1	1	14	4	0	0	1
Lokichar	18	2	0	15	1	0	1	2
Total	55 (67%)	20 (24%)	7 (9%)	45 (78%)	10 (17%)	2 (3%)	1 (2%)	20 (100%)

Source: JICA Project Team

6) Merits of Market Trading and Barter Trading of Livestock

As Table AF7.2.33 shows, among the local traders who answered market trading has more merit, 78% said that they can gain cash right away, followed by 17% who said there is no waste of time, 3% said it is convenient and 2% said it is profitable. From these comments, it is understood that the livestock trade at the market does not waste time and offers cash fast. Reviewing the situation of the livestock market, it means that cash is relatively easily gained by bringing castrated goats to the market.

All of the local traders (100%), who said the barter trading has merit, asserted that the barter trading offers higher earning rate.

7) Relationship with Large Scale Traders

As Table AF7.2.34 shows, 60% of the respondents answered 'coordinate with large scale traders' to the question regarding their relationship with large scale traders who transport livestock to outside markets (especially the Nairobi market) and 40% answered 'not coordinated.' A large number of target local traders (56%) deal with groups in which the core persons involved are large scale traders: 31% deal with Nairobi traders, 8% with Boran people, Maasai people (2%) and refugees (Somali people) 2%. There are many Boran and Somali people among the Nairobi local traders and the large scale traders. The transportation to markets outside of the area has been largely done by other ethnic people not the Turkana .

Table AF7.2.34 Relationship with Large Scale Traders

Saleyard	Yes	No	Related Large Scale Trader (multiple answer)				
			Trader's Group	Nairobi trader	Masaai	Boran	Refugee
Kakuma	11	13	4	3	1	2	0
Kerio	13	7	8	3	0	0	1
Lodwar	15	5	13	2	0	0	0
Lokichar	11	9	2	7	0	2	0
Total	50 (60%)	34 (40%)	27 (56%)	15 (31%)	1 (2%)	4 (8%)	1 (2%)

Source: JICA Project Team

8) Network of Selling and Buying Livestock

Regarding the question of what kind of people are involved in selling and buying livestock, the percentage of local traders that answered 'friends' was 31%, 'relatives' 28%, 'local trader friends' 26%, 'pastoralist' 9%, 'refugees' 2%, 'County Livestock Marketing Organization' 2%, 'LMA' 1% and 'Location chief' 1% (Table AF7.2.35).

Table AF7.2.35 Network of Livestock Trading

Saleyard	Livestock traders	DLMC	LMAs	Govt. (Chief)	Friend	Relatives	Pastoralist	Refugee
Kakuma	15	0	1	2	17	15	5	4
Kerio	11	1	2	0	14	15	11	0
Lodwar	14	3	0	0	19	16	4	0
Lokichar	17	0	0	0	19	17	0	0
Total	57 (26%)	4 (2%)	3 (1%)	2 (1%)	69 (31%)	63 (28%)	19 (9%)	4 (2%)

Source: JICA Project Team

9) Payment Method

89% of livestock trade is settled by cash at the time of buying and selling. Only 1% practices credit trading and 10% said they settle only a few trades by credit so they use both cash and credit settlement (Table AF7.2.36).

Table AF7.2.36 Payment Method

Saleyard	Cash	Credit	Cash/Credit
Kakuma	19	1	4
Kerio	20	0	0
Lodwar	19	0	1
Lokichar	17	0	3
Total	75 (89%)	1 (1%)	8 (10%)

Source: JICA Project Team

10) Profitability of Livestock Trading

Livestock traders answered to the question 'is it profitable?' 100% answered 'yes.' As for the reason, 96% said the profit is realized, 1% it is sometimes profitable and 3% did not offer an answer. Local traders (sellers), who make their living through pastoralism and livestock trading, gain profits by selling livestock. The animals that they could not sell, they adopt into their herds, so it is assumed that they do not make any loss. The number of local traders, who buy motorbikes and/or run a multi-task business, has been increasing, but their trade still remains within the county and their business has not expanded to outside the county to make them large scale traders yet (Table AF7.2.37).

Table AF7.2.37 Profitability of Livestock Trading

Saleyard	Yes	No	Reason for Yes	
			Realized Profit	Sometime
Kakuma	24	0	22	0
Kerio	19	0	19	0
Lodwar	20	0	20	0
Lokichar	20	0	19	1
Total	83 (100%)	0 (0%)	80 (96%)	1 (1%)

Source: JICA Project Team

11) Frequency of Participation to Sale yard

As Table AF7.2.38 shows, in Kakuma, Lodwar and Lokichar, the sale yards open every day, so the majority, 48%, said they participate seven days a week (every day), followed by 16% for three days, 13% for two days, 8% for four days, 8% for six days, 4% for one day and 3% for five days. As for Kerio, the sale yard opens once a week, and 90% said they participate every week, 5% for twice and 5% once a month.

Table AF7.2.38 Frequency of Participation to Sale yard

Saleyard	One day	Two days	3 days	4 days	5 days	6 days	7 days	Once a week	Twice a month	Once a month
Kakuma (Daily)	0	1	3	3	1	1	15			
Kerio (Weekly)								18	1	1
Lodwar (Daily)	2	4	1	1	1	3	7			
Lokichar (Daily)	1	3	6	1		1	8			
Total	3 (4%)	8 (13%)	10 (16%)	5 (8%)	2 (3%)	5 (8%)	30 (48%)	18 (90%)	1 (5%)	1 (5%)

Source: JICA Project Team

12) Possession of Bank Accounts

To the question regarding their bank accounts, 27% said they have an account while 73% said they do not have an account. However, it is necessary to have a loan from the bank in order to run their business and to expand it. Although livestock traders should have a bank account(s), there is no bank in their county, except in Lodwar, so it is not easy to do so.

Although there is an upper limit, there is a mobile-phone based money transfer and micro-financing service system called M-Pesa. Among local traders without bank accounts, half of them (51%) said that they have M-Pesa accounts. At the same time, all of the local traders who have a bank account(s) in Lodwar and Lokichar said that they also have M-Pesa accounts (Table AF7.2.39).

Table AF7.2.39 Possession of Bank Accounts

Saleyard	Yes	No	M-pesa Account Holder		KCB	Equity	Cooperative	KWFT
			Answered No	Answered Yes				
Kakuma	4	20	8	0	1	2	1	0
Kerio	3	17	8	0	1	2	0	0
Lodwar	9	10	6	9	1	6	2	0
Lokichar	6	14	9	6	0	5	0	1
Total	22 (27%)	61 (73%)	31 (51%)	15 (68%)	3	15	3	1

Source: JICA Project Team

(B) Buyer (Local trader)

(1) Distribution of Buyer

1) Gender

As Table AF7.2.40 shows, seventy-six (93%) were male and six (7%) were female.

Table AF7.2.40 Gender of Respondents

Sale yards	Male	Female	Total	Average participation number of buyer
Kakuma	18	4	22 (49%)	45
Kerio	19	1	20 (33%)	60
Lodwar	20	0	20 (20%)	100
Lokichar	19	1	20 (33%)	60
Total	76 (93%)	6 (7%)	82 (31%)	265

Source: JICA Project Team

2) Age

The ages of respondents are shown on Table AF7.2.41. The large group, forty-five (55%) were in their 20's, twenty-seven (33%) were in their 30's, eight (10%) were in their 40's and three (2%) were in their 50'.

Table AF7.2.41 Age of Respondents (year)

Sale yards	under 20	20-29	30-39	40-49	over 50
Kakuma	0	12	7	2	1
Kerio	0	10	9	1	0
Lodwar	0	13	5	2	0
Lokichar	0	10	6	3	1
Total	0	45 (55%)	27 (33%)	8 (10%)	2 (2%)

Source: JICA Project Team

3) Occupation

As Table AF7.2.42 shows, all of the eighty-two respondents were both pastoralists and livestock traders. There was none who did only one of the two. This result indicates the fact that a large number of local traders (buyers) are also pastoralists and livestock traders (sellers).

Table AF7.2.42 Occupation of Respondents

Sale yards	Harder	Trader	Harder/Trader
Kakuma	0	0	22
Kerio	0	0	20
Lodwar	0	0	20
Lokichar	0	0	20
Total	0	0	82 (100%)

Source: JICA Project Team

4) Location of Residence (distance from the Centre)

Fifteen local trader respondents (18%), lived within 1km from the sale yard, while thirty-one (38%) lived within a distance of between 1 and 3km, eleven (14%) within a distance of between 3 and 5km and twenty-four (30%) lived farther than 5km from the sale yard. Among the local traders, who came to the Kerio sale yard as sellers, 58% lived more than 5km away from there. This was also the case for the Lodwar sale yard. The majority (55%) of local traders travelled more than 5km distance to reach the sale yard (Table AF7.2.43).

Table AF7.2.43 Residence Site of Respondents (m)

Sale yards	0-1,000	1,001-3,000	3,001-5,000	over 5,000
Kakuma	6	13	2	1
Kerio	4	2	2	11
Lodwar	1	3	5	11
Lokichar	4	13	2	1
Total	15 (18%)	31 (38%)	11 (14%)	24 (30%)

Source: JICA Project Team

5) LMA Membership

- Membership and admission year

As Table AF7.2.44 shows, forty-two (51%) were LMA members, and forty (49%) were non-members. Among the members, 47% of the members were in their 20's, 38% were in their 30's, 10% were in their 40's and 5% were in their 50's. Four members (9%) joined LMA before the year 2000, eight (19%) joined between 2001 and 2005, eighteen (43%) joined between 2006 and 2010 and ten (24%) joined between 2011 and 2014. Two of the respondents (5%) were not registered yet.

Table AF7.2.44 Membership of Admission Year

			Admission year in LMA				
Sale yard	Member	Non member	before 2000	2001-2005	2006-2010	2011-2014	not registered
Kakuma	17	5	2	4	10	1	0
Kerio	10	10	1	2	2	5	0
Lodwar	9	11	0	1	3	4	1
Lokichar	6	14	1	1	3	0	1
Total	42 (51%)	40 (49%)	4 (9%)	8 (19%)	18 (43%)	10 (24%)	2 (5%)

Source: JICA Project Team

- Profit for LMA members

Regarding the question for forty-two members about the profit such as dividend, twenty-two (52%) answered 'yes, there is' and eighteen (43%) answered 'no, there is not,' Two (5%) did not answer. Many of respondents, who answered 'yes,' said that they receive an allowance at the Annual General Meeting (AGM) held once a year (Table AF7.2.45).

Table AF7.2.45 Profit for LMA Members

			Reason for Yes	
Sale yard	Yes	No	Small benefit *1	Nonresponse
Kakuma	14	3	11	3
Kerio	3	7	2	1
Lodwar	4	4	3	1
Lokichar	1	4	0	1
Total	22 (55%)	18 (45%)	16 (73%)	6 (27%)

*1 Small benefit means allowance at the Annual General Meeting

Source: JICA Project Team

- Merit of LMA members

The answers in regard to the merits of holding a LMA membership are shown on Table AF7.2.46. The largest percentage of respondents (42%) pointed out the access to the livestock market information, 20% said social welfare (loans available for education and medical expenses), 16% said loan availability, 14% said the mutual-aid and 2% each said skill development, animal disease prevention, business support and creating employment.

Table AF7.2.46 Merit of LMA Members (multiple answer)

Sale yard	Access market info.	Social welfare	Loan	Capacity building	Mutual cooperation	Veterinary Dept.	Business assistance	Create employment
Kakuma	5	10	4	1	6	1	0	0
Kerio	6	0	1	0	1	0	1	1
Lodwar	6	0	1	0	0	0	0	0
Lokichar	4	0	2	0	0	0	0	0
Total	21 (42%)	10 (20%)	8 (16%)	1 (2%)	7 (14%)	1 (2%)	1 (2%)	1 (2%)

Source: JICA Project Team

(2) Livestock Trading (buyer)

1) Purpose of Buying

As Table AF7.2.47 shows, the majority of respondents (94%) said that they buy livestock for selling and that is their principle reason for buying. The reason ‘slaughter’ was 5% and the reason ‘reproduction’ was 1%. The most popular second reason for buying was ‘herd maintenance’ (47%), followed by ‘reproduction’ (37%), ‘slaughter’ (8%), ‘fattening’ (7%) and ‘selling’ (1%). As for the third reason, 40% answered ‘reproduction,’ followed by ‘fattening’ (37%), ‘slaughter’ (12%), ‘herd maintenance’ (9%), ‘selling’ (1%) and ‘exchanging’ (1%).

Table AF7.2.47 Purpose of Buying

	1st Priority			2nd Priority					3rd Priority					
Sale yard	Sale	Slaughter	Rearing	Rearing	Restocking	Slaughter	Fattening	Sale	Rearing	Slaughter	Restocking	Fattening	Sale	Exchange
Kakuma	22	0	0	8	7	5	2	0	7	6	3	2	0	0
Kerio	18	1	1	3	11	1	2	1	6	1	2	6	1	0
Lodwar	19	1	0	0	18	0	0	0	0	1	0	13	0	1
Lokichar	18	2	0	17	0	0	1	0	13	0	1	4	0	0
Total	77 (94%)	4 (5%)	1 (1%)	28 (37%)	36 (47%)	6 (8%)	5 (7%)	1 (1%)	26 (40%)	8 (12%)	6 (9%)	25 (37%)	1 (1%)	1 (1%)

Source: JICA Project Team

2) Sales Contacts

The sales contacts are shown on Table AF7.2.48. The most prioritized contact was the ‘butcher’ (73%), and ‘large scale traders’ (24%) followed by ‘refugees’ (2%). The second most popular contact was ‘large scale traders’ (43%), followed by ‘pastoralist’ (37%), the ‘butcher’ (18%), ‘refugees’ (1%) and the ‘oil company’ (1%). As for the third contact, 50% answered the ‘pastoralists,’ ‘large scale traders’ (38%), the ‘butcher’ (11%) and ‘NGOs’ (1%). The animals sold to butchers are mostly consumed within the area, while those animals sold to large scale traders will be sent to markets in other areas, especially the Nairobi market. Either way, all of these animals are traded as

meat. Many animals sold to pastoralists are quite possibly bought for herd maintenance as well as for reproductive purposes.

Table AF7.2.48 Sales contacts with Local Traders (Buyer)

Sale yard	1st priority			2nd Priority					3rd Priority			
	Butcher	Large scale	Refugee	Large scale	Butcher	Refugee	Pastoralist	Tullowoil	Pastoralist	Large scale	Butcher	NGOs
Kakuma	16	4	2	16	5	1	0	0	10	4	1	0
Kerio	8	12	0	3	6	0	10	1	6	4	5	1
Lodwar	20	0	0	6	0	0	13	0	6	10	0	0
Lokichar	16	4	0	9	3	0	6	0	6	3	0	0
Total	60 (73%)	20 (24%)	2 (2%)	34 (43%)	14 (18%)	1 (1%)	29 (37%)	1 (1%)	28 (50%)	21 (38%)	6 (11%)	1 (1%)

Source: JICA Project Team

3) Merit of Livestock Trading at Sale yard

As Table AF7.2.49 shows, the most popular answers to this question were security related answers (48%), such as that the livestock, bought there, are safe from being plundered at the sale yard. The next most popular answer was that the sale yard facilities are highly convenient (19%), followed by 'tax payment on livestock trade to the county' (16%), 'fair trade at the authorized market and with a witnesses' (15%) and 'trade at a fair price' (2%).

Table AF7.2.49 Merit of Livestock Trading at Sale yard (multiple answer)

Sale yard	Avoid stolen	Security	Authorized place	Have witness	Pay public levy	Easy to transaction	Facility	Faire price
Kakuma	20	3	12	3	15	2	4	0
Kerio	15	3	3	3	6	7	2	2
Lodwar	18	0	1	1	4	9	2	0
Lokichar	20	0	1	2	2	1	3	2
Total	73 (44%)	6 (4%)	17 (10%)	9 (5%)	27 (16%)	19 (12%)	11 (7%)	4 (2%)

Source: JICA Project Team

4) Profitability of Livestock Trading

Livestock traders answered to the question 'is it profitable?' 100% answered 'yes.' As for the reason, 96% said they get cash income constantly, 1% because they are self-employed and 2% did not offer an answer. Local traders (buyers), who make their living through pastoralism and livestock trading, gain profits by selling livestock to butchers and/or large scale traders, when acting as an agent. The local traders are keeping some of their animals for the proper maintenance of their herds (Table AF7.2.50).

Table AF7.2.50 Profitability of Livestock Trading

Sale yard	Yes	No	Reason for Yes	
			Sustainable cash income	Self employment
Kakuma	22	0	21	0
Kerio	20	0	20	0
Lodwar	20	0	18	1
Lokichar	20	0	20	0
Total	82 (100%)	0	79 (99%)	1 (1%)

Source: JICA Project Team

5) Finance for Purchasing

The answers to the procurement of finances for purchases are as Table AF7.2.51 shows. More than half of the respondents (58%) finance themselves by selling their livestock (Plowback). Some have savings and cash income from labour, other than trading livestock (13%), financial support from family (9%) and loans from bank (7%). Considering their financing situation, it is assumable that 90% of local traders are practicing small-scale trades.

Table AF7.2.51 Finance for Purchasing Livestock (multiple answer)

Saleyard	Personal saving	Sell personal livestock	Doing chores	Contribution of family	Loan
Kakuma	3	15	3	7	0
Kerio	3	16	3	2	1
Lodwar	6	10	6	0	6
Lokichar	1	19	1	1	0
Total	13 (13%)	60 (58%)	13 (13%)	10 (9%)	7 (7%)

Source: JICA Project Team

6) Relation with Large Scale Traders

Regarding coordination with large scale traders, who take livestock to the market outside of the county, especially to the Nairobi market, 79% answered “yes, they coordinate” and 21% answered “no, they don’t coordinate.” The coordination with large scale traders may help their business as they act also as a trade agent. The largest number of local traders coordinate with Nairobi traders (38%), followed by groups with large scale traders as core figures (24%), Boran people (12%), Somali (12%), refugees (8%), Sudanese (3%) and Ugandan (1%). One percent did not specify with whom but said they also coordinate their business with someone (Table AF7.2.52).

Table AF7.2.52 Relation with Large Scale Traders (multiple answer)

			Related Large Scale Trader								
Saleyard	Yes	No	Boran	Nairobi Trader	Trader's Group	Somali	Uganda	Sudanese	Refugee	Lodwar trader	Not specific
Kakuma	20	2	9	9	2	0	1	3	3	0	0
Kerio	17	3	0	2	13	0	0	0	3	0	1
Lodwar	17	3	1	15	3	10	0	0	0	0	0
Lokichar	11	9	0	7	3	0	0	0	1	1	0
Total	65 (79%)	17 (21%)	10 (12%)	33 (38%)	21 (24%)	10 (12%)	1 (1%)	3 (3%)	7 (8%)	1 (1%)	1 (1%)

Source: JICA Project Team

7) Network of Selling and Buying Livestock

To the question what kind of people are involved in selling and buying livestock, the percentage of local traders that answered ‘local trader friends’ was (31%), ‘friends’ (22%), ‘relatives’ (16%), ‘District Livestock Marketing Council’ (10%,) ‘Veterinary service agency’ (7%), ‘LMA’ (6%), ‘NGOs’ (6%), ‘pastoralist’ (4%), ‘butchers’ (1%) and ‘Location chief’ (1%) (Table AF7.2.53).

Table AF7.2.53 Network of Livestock Trading (multiple answer)

Sale yard	Livestock traders	DLMC	LMAs	TUPADO	Vet. Dept.	Govt. (Chief)	Friend	Relatives	Pastoralist	Butcher
Kakuma	9	15	7	13	12	1	0	0	0	0
Kerio	13	1	1	0	1	1	16	10	7	2
Lodwar	18	2	2	0	1	0	19	15	0	0
Lokichar	16	2	3	0	0	0	12	10	1	0
Total	56 (27%)	20 (10%)	13 (6%)	13 (6%)	14 (7%)	2 (1%)	47 (22%)	35 (16%)	8 (4%)	2 (1%)

Source: JICA Project Team

8) Payment method

As Table AF7.2.54 shows, 95% of livestock trade is settled by cash at the time of buying and selling. There was no local trader who practices credit trading and 5% said they do settle only a few trades by credit. So these traders do both cash and credit settlements.

Table AF7.2.54 Payment Method

Sale yard	Cash	Credit	Cash/Credit
Kakuma	22	0	0
Kerio	18	0	2
Lodwar	18	0	2
Lokichar	20	0	0
Total	78 (95%)	0	4 (5%)

Source: JICA Project Team

9) Frequency of Participation to Sale yard

As Table AF7.2.55 shows, in Kakuma, Lodwar and Lokichar, the sale yards are open every day, so the majority (77%), said they participate seven days a week (every day), followed by 10% for six days, 6% for one day, 3% for three days, 2% for four days and 2% for two days. As for Kerio, the sale yard opens once a week, and 90% said they participate every week, 10% participate twice a month.

Table AF7.2.55 Frequency of Participation to Sale yard

Saleyard	One day	Two days	Three days	Four days	Five days	Six days	Seven days	Once a week	Twice a month
Kakuma (Daily)	0	0	1	1	0	2	18		
Kerio (Weekly)								18	2
Lodwar (Daily)	4	0	0	0	1	4	11		
Lokichar (Daily)	0	0	1	0	0	0	19		
Total	4 (6%)	0	2 (3%)	1 (2%)	1 (2%)	6 (10%)	48 (77%)	18 (90%)	2 (10%)

Source: JICA Project Team

10) Possession of Bank Accounts

To the question regarding their bank accounts, 38% said they have an account where 62% said they do not have an account. Among local traders without bank accounts, more than half of them (65%) said that they have M-Pesa accounts. At the same time, 48% of local traders with bank accounts said that they also have M-Pesa accounts (Table AF7.2.56).

Table AF7.2.56 Possession of Bank Accounts

Saleyard	Yes	No	M-pesa Account Holder		KCB	Equity	Cooperative	Post bank
			Answered No	Answered Yes				
Kakuma	8	14	7	0	3	5	0	0
Kerio	8	12	8	4	1	7	0	1
Lodwar	11	9	8	9	3	4	4	0
Lokichar	4	16	10	2	2	2	0	0
Total	31 (38%)	51 (62%)	33 (65%)	15 (48%)	9	18	4	1

Source: JICA Project Team

F7.2.6 Summary and Consideration on the Baseline Survey

- What should be noted in regard to the trade record of the Turkana main markets is the fact that the supply (the number of livestock to be sold) outnumbers the demand (the number of livestock to be bought). Since the price has been stable enough, the supply has not been excessive enough to cause problems yet. But some livestock have always remained unsold. The negotiation on price may have been unsettled and/or those unsold livestock would not meet the buyers' needs. At the same time, the reason why the price does not come down even though the demand increases is because local traders, who are also pastoralists, adopt these unsold livestock into their herds. As the above table shows, most of the local traders are both pastoralists and traders, it is assumed that these two aspects of their business are complementing each other to earn their living.

- Many of sellers gather livestock from local friends, relatives and/or trader friends and carry these livestock to the sale yard. Likewise, buyers also operate their trading business within their local pastoral society consisting of trader friends, friends as well as relatives. Local traders are having strong relationships with friends and relatives in order to operate as pastoralists and livestock traders. So this has been structurally beneficial for the pastoral society when local traders succeed in their business. It is also relatively easy for local traders to buy the necessary livestock with a selection of type, sex and age of livestock. Therefore, if the pastoral society takes advantage of the business of local traders, it is possible to establish a solid and stable base for earning their living.

- Regarding livestock trading at the sale yard, 24% of local traders answered that the barter trading system has advantages. Perhaps that is because the condition becomes better through barter trading, if there are barter partners for food and livestock, rather than obtaining cash through cash trading. On the other hand, 67% of target local traders answered that cash trading is the market trading that has advantages. The majority (95%) said the reason is because "there is no time loss and cash can be gained promptly." The exchange of livestock based on the economic interests at the sale yard involves not only cash but also the aspect of time. More than 90% of trading here is settled by cash, except a small part dealt with through credit.

To the question dealing with the profitability of their job, all respondents, sellers and buyers, answered that it is profitable due to the fact that their revenue is visible. According to Table AF7.2.32, a large number of local traders finance their next buying opportunities through selling. So it seems inevitable to obtain cash as quickly and as safely as possible. The sale yard seems satisfactory to meet the needs of the local traders who run their business on a shoestring operation. It is also a fact that there are only 20% of local traders who finance themselves through savings and loans.

Due to the fact that more than 60% of them do not have bank accounts and many of them keep their cash in a metal safe at home, it is assumed that in reality; most of the local traders are small-scale traders.

- The majority (94%) of buyers buy livestock in order to sell them to either butchers or large scale traders. Other buyers may have different reasons, such as to adopt some livestock to maintain their own farm and/or for reproduction purposes and/or to sell them to pastoralists. Although the role played by butchers and pastoralists as consumers within the market area is also an important factor for the livestock trading, the role played by large scale traders, who transport livestock to other areas, especially Nairobi, a big market, is very important. This can be understood by examining the sale yard trading records. It should not be forgotten that large scale traders are contributing greatly to the livestock value chain in Turkana county.

- The survey found that 60% of sellers and 79% of buyers are trading with large scale traders in order to coordinate transportation of livestock to Nairobi. A large number of these large scale traders are people belonging to other ethnic groups from outside Turkana, such as the Boran and the Somali. These traders are not particularly favouring the Turkana but chose their locations for their own benefit. They look for more profitable markets to buy livestock from in order to sell them to the Nairobi market for more return. They therefore compare one location with another for the price, animal condition, distribution expenses and so on.
Unfortunately, the transportation route from Turkana to Nairobi is a long distance with rather unfavourable conditions, resulting in everyone bearing a high transportation expense. Under free and open competition, this is not a favourable factor for livestock trading in Turkana. Therefore, it is absolutely necessary to support the livestock dealers in Turkana for vitalising their activities in terms of infrastructure, such as road access, market facilities, etc, and capacity development for trading.

- Considering the above outcomes of the survey, it is evident that the sale yard has played important roles such as the livestock trade itself for money, exchange of animal type, sex and age, the sharing of the market information, the establishment of commercial networks.

Since these activities are actually taking place at the sale yard, it is reasonable for the sale yard to contribute towards the area becoming more resilient against drought. Nevertheless, LMA, the organization at the sale yard, has been financially weak and has not yet developed as an autonomous organization. Its main financial resource comes from membership and annual fees as well as handling fees during livestock trade. However only 40% of the local traders have joined the LMA, as the above outcome indicates.

Among these members, only 40% said that they recognize the importance of the membership. Although this is the time when the importance of the sale yard has been well understood and the continuous operation of LMA is needed, this status would not enable the LMA develop into an autonomous organization in the future. for the time being therefore, the LMA should concentrate on offering better services particularly in areas where members mentioned the merits of being a member, such as access to the livestock market information, social welfare, loans and mutual-aid, so that new members may be encouraged to join the association. At the same time, all the people involved in the livestock trade business should be ready to take responsibility if the sale yard operations become financially unviable.

F7.3 Overview and Analysis of the Livestock Markets in Turkana County

F7.3.1 Imbalance in Supply and Demand in Livestock Market

In order to have an overview of the livestock distribution in Turkana, the study referred to the transaction records of Lodwar sale yard for the years 2012 and 2013. Table AF7.3.1 indicates the monthly total livestock offered and total livestock sold at the sale yards. In particular, regarding the number of shoats traded in Lodwar in 2012, the total offered (supply) was far more than the total sold (demand). One of the reasons may be that the price offered by buyers is too low to settle the trade.

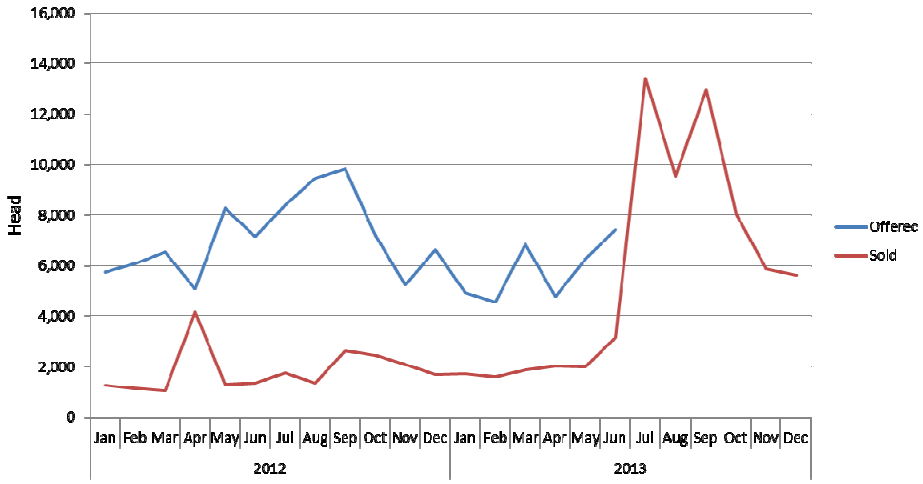
(1) Main Trading Small Animal is Goat in Turkana Market

In the market records, generally goat and sheep together are marked as “Shoats”, however the majority of shoats traded on the livestock market of Turkana are goats. It can be proved in the slaughter figures of shoats within the Lodwar municipality in Table AF7.3.2. It shows that approximately 64% is goat and the remaining 36% is sheep. In addition, it is said that, being the only goat able to withstand a long distance and poor road conditions from Turkana to the capital city, shoats transported to the Nairobi markets are all goats.

Table AF7.3.1 Monthly Livestock Transaction at Lodwar Sale yard in 2012, 2013

Livestock Species		2012 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Shorts	Offered	5,726	6,056	6,519	5,057	8,258	7,142	8,398	9,450	9,804	7,197	5,220	6,619
	Sold	1,243	1,127	1,037	4,140	1,290	1,343	1,733	1,356	2,616	2,430	2,076	1,680
Camel	Offered	19	13	37	12	12	11	11	20	19	20	9	11
	Sold	19	13	37	12	12	11	7	20	19	20	9	11
Donkey	Offered	14	31	45	13	23	15	15	13	11	11	14	23
	Sold	14	31	45	13	23	15	11	13	11	11	14	23
Cattle	Offered	0	0	0	0	4	2	7	6	8	7	6	10
	Sold	0	0	0	0	4	2	0	6	8	7	6	10
Livestock Species		2013 Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Shorts	Offered	4,913	4,532	6,832	4,756	6,260	7,418	NA	NA	NA	NA	NA	NA
	Sold	1,703	1,582	1,873	2,012	2,002	3,134	13,423	9,532	12,955	8,030	5,856	5,627
Camel	Offered	15	7	14	5	6	6	NA	NA	NA	NA	NA	NA
	Sold	15	7	14	5	6	6	44	31	36	57	30	23
Donkey	Offered	20	13	34	39	30	15	NA	NA	NA	NA	NA	NA
	Sold	20	13	34	39	30	15	41	38	40	34	40	54
Cattle	Offered	7	5	0	5	1	7	NA	NA	NA	NA	NA	NA
	Sold	7	5	0	5	1	7	26	18	36	22	12	9

Source : Livestock Marketing Association NA : Not available



Source: Livestock Marketing Association Lodwar

Figure A7.3.1 Trend of Shoats Transaction on Lodwar Sale yard in 2012, 2013

(2) Slaughtered Livestock in Lodwar

Table AF7.3.2 was drawn up based on the monthly reports of the district veterinary office for the year 2012. Comparing these slaughtered number with an assumed number based on slaughtered information obtained by interviewing the manager of five slaughter slabs/houses within the Lodwar municipality, the number of cattle and camel tallies with the general assumption.

The number of goats and sheep, however, significantly fall below the assumed number, and thus the actual consumption in the area can be assumed to be more than twice that shown in the table below. Within the Lodwar municipality, around 1,500 or so heads of goat and sheep are assumed to be consumed in a month. According to the monthly numbers for sold shoat in 2012 in Table AF7.3.1, the sold numbers fall below the assumed number of 1,500 between January and March, because over 20% to 30% of goat and sheep are slaughtered without passing through the Lodwar sale yard. The number of sold shoats in April sharply rose (Figure AF7.3.1), this is because large-scale traders selling on the Nairobi market purchased a large amount of goats. Similarly, the 20% to 70% increase from July to November is the effect of large-scale traders transporting to Nairobi. According to an interview survey, approximately 60% of traded animals are consumed around Lodwar, 40% are purchased by large-scale

traders and transported to Nairobi. However, the ratio to Nairobi has increased to more than 60% since April 2013, and that of local consumption reduced.

Table AF7.3.2 Monthly Slaughter Figures in Lodwar Municipality

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total	Average head /month
Goat	577	376	422	382	431	400	572	475	400	380	400	434	5,249	437
Sheep	299	264	238	252	301	184	320	325	204	140	241	230	2,998	250
Shorts	876	640	660	634	732	584	892	800	604	520	641	664	8,247	687
Cattle	16	26	24	30	32	28	19	21	22	14	28	27	287	24
Camel	4	4	1	0	10	16	8	22	10	6	2	7	90	8

Source: District Veterinanary office, Turkana Central, Lodwar

(3) Activities of Nairobi Traders in Lodwar

At a meeting held in Mid-July 2013 with traders from Nairobi (five traders from Nairobi and fourteen local traders attended), it was confirmed that five traders from Nairobi worked with local traders as a team and four such teams are working. It was also said that a lorry with 250 to 300 goats makes two return trips every week, which means 2,000 to 2,400 goats are transported to Nairobi in one month by each team.

As far as Figure A7.3.1 indicates, large number of shoats was sold between July and October 2013. This is because a large number of goats were transported to the Nairobi market. The number of shoats traded has rapidly increased since July 2013 and the reason for this is that animals increased the body weight and body condition improved during the wet season due to good rainfall received in Turkana in 2013.

The sale yards at Lokichar and Kakuma also conducted the interview survey based on the trading data of each. As a result, it was found that the quantity purchased by large-scale traders transporting to Nairobi affects the trade quantities and the prices of goats.

F7.3.2 Consideration for Market Activation

Judging from the trading conditions of the main livestock markets of Lodwar, Lokichar, Kakuma and Kerio that were surveyed, it seems that the following perspectives are most important components to activate the livestock markets in Turkana.

- Perspective of Pastoralist (Producer)

Producers should create activities that contribute to market operation, having a link to increase the profit of pastoralist (producer and trader). For instance, setting up the market day operated in Kerio sale yard as well as other stalls, for other items such as food, clothes, daily goods, decoration goods, etc. is likely to motivate the purchase intention of pastoralists. They can sell the animals on the market day and shop for other essential items at the same time before returning home.

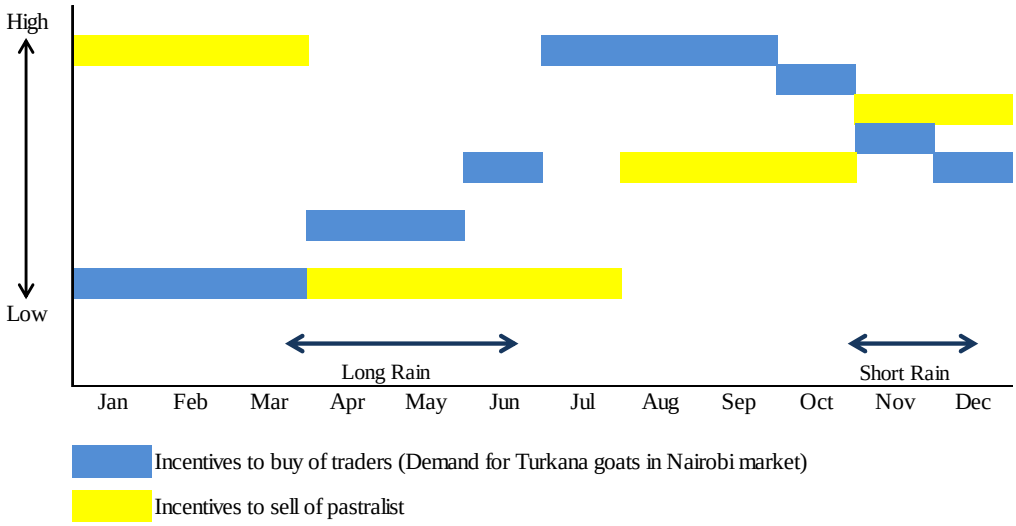
- Perspective of Trader (Local and Large scale)

The market facility should be repaired so that a new system can be established: a new system in which only the necessary number of animals can be located where and when traders require. In other words, the market facility should be improved to suit external traders' use of it and for their animal distribution activities.

(1) Timing of Selling and Buying Livestock

Currently the large-scale traders with access to a relatively large amount of livestock purchasing funds (operating capital) work on the buying, gathering, and transportation of goats with the local traders with limited operating capital as a team. Hence it is necessary to develop the mechanism for promoting these activities smoothly.

Figure AF7.3.2 has been compiled using information from interview surveys of local traders, pastoralist, and large-scale traders, as well as the LMA trading conditions from 2012 and 2013.



Source: JICA Project Team

Figure AF7.3.2 Seasonal Livestock Trading Behaviour of Trader and Pastoralist

(2) Pastoralists' Incentive to Sell (Normal Year)

- Pastoralists' incentive to sell increases in January when the beginning of the school year means a need for cash. On the other hand, the purchasing desire of the general consumer is diminished with the increase in spending. Furthermore, forage becomes extremely scarce during the dry months of January, February and March. Livestock begin to lose weight, and pastoralists' incentive to sell increases as it becomes more difficult to keep the animals.

- As livestock begin to gain weight from April through July when the wet season begins and pasture conditions improve, pastoralists have less incentive to sell. The wet season is also the time for births and mating.

- When the wet season ends around August, the bodyweight of livestock has increased and the pastoralists are relatively eager to sell, as the improved condition of the livestock means an increase in the price per head.

- Incentive to sell is high during the Christmas season when general demand increases and prices rise accordingly.

(3) Livestock Traders' Incentives to Buy

- Turkana goat is popular on the Nairobi market for the good quality of its meat. However, during the months of January, February and March its dominance in the Nairobi market is reduced by strong competition from relatively larger sized goats from the North-eastern regions, resulting in a decrease in the large-scale traders' incentive to buy.

- As the condition of livestock improves with the onset of the wet season around April, the decreased incentive to buy of traders also begins to see an improvement.

- Although it depends on rainfall conditions, traders' incentives to buy increases after the wet season ends from around July to October when the livestock are in good condition with increased bodyweight. As demand increases, so does the price per head. During this period there is an increase in the number of large-scale traders transporting goat to the Nairobi market.

- Although this also depends on precipitation during the short rainy season, in November and December livestock generally begin to lose weight and also to lose competitiveness against other regions on the Nairobi market. As selling on the Nairobi market becomes more difficult, the traders' incentives to buy begin to diminish.

F7.3.3 Constraints to be Tackled

(1) Linkage of Markets with Appropriate Timing

From the viewpoint of supply and demand, it is possible to control the decreased body weight by supplemental feed such as crop residues, leguminous tree pods, hay etc., during the short rains season (Oct. to Dec.) when the shortage of pasture begins. As a result of this, it is possible to raise the price of goats and the number purchased. This pilot sub-project is anticipating to use synergies from the activation of the livestock market and enforcement of the drought resilience practices among pastoralists.

(2) Livestock Market Information Improvement

Among the many suggested activities at the traders' workshop held on 30th January 2014 there was no specific and immediate cure-all remedy. Improvement of access to livestock market information and capacity development of LMA officials who are responsible for managing livestock markets, both of which are basic for the revitalization of livestock distribution, were identified.

Even though livestock market information is important for stakeholders such as producers, distribution centres' buyers, meat processors, retailers, and exporters, it has not yet been shared by LMA which collects the data. Taking collection of correct information and revenue collection as a monitoring indicator, the plan will implement training for the purpose of reinforcing management in major LMAs. The draft training plan and draft monitoring sheet are prepared. The first three months after the training are designated as a monitoring period, and then disseminating information in all parts of Turkana county through radio will be considered as a second step if information is well collected.

F7.4 Sub-project Activities

F7.4.1 Core Management Training for LMAs Officials

The above training was carried out for Kerio, Lokichar, Lodwar and Kakuma LMAs and the table below shows dates, venue and the participants for each LMA.

Table AF7.4.1 Details for the LMAs Officials Training

LMA	Details
Kerio	**Dates**: 31st March 2014 to 1st April 2014, **Venue**: Kerio LMA Sale yard old office **Participants:** 5 Kerio LMA officials, **1** chief and 2 Community Development Committee officials
Lodwar	**Dates**: 12th May 2014 to 13th May 2014, **Venue**: Conference Hall, CLMO **Participants**: **5** Lodwar LMA officials and **1** chief (Lodwar Township Location).
Kakuma	**Dates:** 24th March 2014 to 25th March 2014, **Venue:** Kakuma Guest House **Participants: 5** Kakuma LMA officials and **1** chief
Lokichar	**Dates**: 3rd April 2014 to 4th April 2014, **Venue**: Naperobei Guest House, Lokichar. **Participants: 5** Lokichar LMA officials, **1** Assistant chief and **2** Community Development Committee officials

Source: JICA Project Team

The following table shows the contents of training for the LMA officials:

Table AF7.4.2 Training Schedule Contents

Day 1	Day 2
- Introductions, climate setting, expectations and responsibilities. - LMA Objectives and core values. - Role of CLMO and role of County Director of Livestock production. - Role of LMA Committee and working relationship with development committee and reporting Model-lecture	- Practicals on reporting model and feedback from practicals. - Recap on Role of LMAs Committees - Users of LMAs reports / Dissemination of market information. - Way forward and Recommendation - Closure of the workshop

Source: JICA Project Team

Details of the Training Contents are complied and presented in Attachment-F7-1


Source: JICA Project Team

Figure AF7.4.1 Livestock Market Training

F7.4.2 Livestock Marketing Training Workshop for Kerio Livestock Market Association Officials, Traders and Producers

(1) Outline of the Workshop

"Livestock Marketing/Trading Workshop for Kerio Livestock Market Association Officials, Traders and Producers" was implemented on 21st and 22nd of January 2015 at Kerio Livestock Market office building. The Project invited counterpart personnel as a lecturer (livestock expert) from the Ministry of Devolution and Planning.

35 Participants were composed of (i) 10 persons from Kerio livestock market officials, (ii) 10 persons from traders, (iii) 12 persons from producers, and (iv) 3 officials from Community Development Committee (CDC).

The main workshop training contents are as follows:

- Livestock Information Needs and Requirements
- General Livestock Health
- Livestock Record Keeping and Training Needs
- Book Keeping & Group Dynamics
- Livestock Value Chain Players and their roles
- Marketing and M-pesa Services

Taking into consideration of opening of a cellular telephone coverage in Kerio area, a special programme on electronic trading, i.e. "M-Pesa", was included in the workshop with the aim of accelerating electronic trading technique by traders and producers in the Kerio livestock market.

(2) Observations of the Workshop

Through the workshop, the followings were observed.

- Preparation of the workshop was well done because the local LMA officials of the Kerio market were involved in the process of selecting the participants; and in other logistics of running the training;
- However, during the training it emerged that most traders double up both as traders and as producers, therefore reducing the chances for the producers' representation;
- It was suggested that the producers be assisted by the Project Team or any other stakeholder to form their own organization which will spearhead and lobby for the actual needs, constraints and challenges facing them;
- After such a producer association is formed, its training is required because producers have their own special training needs and requirements, different from those of traders and LMA officials;
- After training of the producer association, follow-up and mentoring activities are necessary in order to ensure that producers have fully understood the concepts involved and required to keep them together as a group;
- Concepts such as group dynamics, record keeping, book keeping, conflict resolutions and others will need to be trained over and over again until the groups 'mature up' and are able to stand on their own;
- It is important to note that, it is only with strong producer organizations that pastoral producers can have a greater 'say' and control of the pastoral marketing chains. This is because the strong groups will give them greater bargaining power, greater share, and good control of the market. This will also afford them access to loans and insurance facilities since the groups could act as sureties.
- Finally we MUST remember and appreciate the fact that it is only with strong producer associations in the ASALs that productivity in these areas will improve; otherwise the current situation is very exploitative where traders, brokers and middlemen exploit the pastoral producers.

F7.5 Results and Analysis

(1) Market Information System

The project team introduced, as a pilot case, the new reporting format (Daily or weekly recording of different grades of various species of livestock, data of livestock brought to livestock market, daily/weekly data of livestock sold at the livestock market) to Kerio, Lokichar, Lodwar and Kakuma Livestock markets. Through investigations by the Project, it was found that those four markets which had instructions by the Project utilized it for their trading activities.

However other markets were not involved and therefore the data collected by the County Livestock marketing Organization from across Turkana is not uniform. Other LMAs are not reporting essential data as reported by the above LMAs trained on the new format. It is not possible to get a record of prices of various livestock species grades for all the LMAs in Turkana County. It is necessary to have trainings to the other markets in order to get a uniform system in the entire County.

Observation:

a) County Livestock Marketing Organization (CLMO).

Four LMAs i.e. Kerio, Lokichar, Lodwar and Kakuma are submitting on monthly basis to CLMO their reports and later avail the copies to the County Director of Livestock Production. The Project Coordinator of the CLMO is updating on a monthly basis the progress of the LMAs to the Kenya Livestock Marketing Council. During submission of the monthly data to CLMO the LMA officials gather data from other LMA members e.g. supply and demand of livestock in their areas, prices of various grades of livestock and incidences of livestock diseases. At Kerio Livestock Market, this essential information used to be disseminated during the markets days to other Kerio LMA officials and livestock traders. However the mode of dissemination of the information is informal and such information does not reach to producers who are not involved in the LMA.

Among the 26 LMAs in the County only four LMAs were trained on improved livestock marketing information systems, therefore the data the CLMO is gathering and documenting is not uniform. Programme coordinator of CLMO reported that other LMAs are also interested in the training on how to improve marketing information systems.

b) Livestock Marketing Associations (LMAs)

Kerio LMA are submitting monthly reports to CLMO at Lodwar and keeping their copy in their office file. While at Lodwar, the Kerio LMA officials collect useful data from other LMAs so as they can disseminate the information to other LMA officials and livestock traders during their weekly market days. The weekly Kerio livestock market is doing well and this is one of the reasons why the LMA officials are motivated to write the report because they know that every week there is some money that is collected from the livestock trade for their association. Some of the members managed to get a grant from an NGO called ADESO and the LMA officials reported this was because of their Livestock market being busy and also due to their prompt monthly reporting to the CLMO at Lodwar.

The Kakuma LMA channelled their report to CLMO through TUPADO. They get updates on essential marketing information from other LMAs through mobile phones. The essential information gathered is relayed to other Kakuma LMA officials and livestock traders during their daily market days. The association acquired a desk top computer from a donor to digitize the marketing information data collected. The Vice Chairman of Kerio LMA reported that the previous training carried out by ECoRAD has enabled their LMA access essential livestock marketing data from other active livestock markets. The essential data is mainly on supply and demand of livestock and also prices of various livestock grades and species.

Lodwar LMA is submitting monthly reports to the Project Coordinator of CLMO. The officials are motivated in writing the reports because their association is directly benefitting from the daily collections at the livestock market.

Lokichar LMA had some difficulties in regular monthly reporting because the previous revenue officer had joined Tullow Oil Company. The CLMO Project Coordinator reported that during their visit to Lokichar late last year, the officials had identified another revenue officer who will soon start collecting, documenting data and writing monthly reports to the CLMO at Lodwar.

c) Accuracy of Collected Data

There is a challenge in trying to determine the accuracy of the livestock marketing information data. For example, when Kerio LMA sends its report to Lodwar CLMO and remits some money to the county government nobody can verify whether this data is correct or not.

(2) LMA is dominated by Traders

The constitution of the Livestock Marketing Associations and the former District Livestock marketing Council stipulates that the composition of an LMA is supposed to include also the livestock producers.

However on the ground it was established that most LMAs were composed of only livestock traders while livestock producers are not in the association.

The livestock traders used to visit producers in villages and buy livestock from them at cheap prices and thereafter make higher profits either at Kerio Livestock Market or Lodwar Livestock Market. Further, since most livestock traders also own some livestock, they regard themselves as the representatives of the livestock producers while in the real sense they are spear heading only their individual interests.

(3) Points Observed in Kerio Market

a) Market Operation Hours

Before implementation of the Project, most of the trading activities were closed by around 11:00am in order to avoid heat from sunshine. However, after the Project constructed shades at several sections for protecting people and animals from the sun, the time of trading was extended and the market is open up to 2:00-3:00pm. This time extension could affect trading prices significantly, especially for the pastoralists who want to sell livestock at a higher price than that at earlier negotiations in the morning session. They can have much more time to negotiate for better prices without concern for the sun and heat.

(b) Cattle and Camel Trading in the Market

It was reported that, after the Project implementation, there is new trend in which several big animals, i.e. cattle and camels, are brought to the market for sale. This according to market officials, was due to the availability of a holding pen which was made by the Project. Before construction of the holding pen, it was very hard to keep animal at one place, and big animals were not brought to the market due to the difficulty of controlling them.

(c) New Traders from Other Places

It was reported that there are traders that come from the eastern side of Lake Turkana (North Horr in Marsabit County) to buy young Camels which are traded at lower prices than that in Marsabit. They ordered local traders to collect 10-20 young camels. It is expected that such business to Marsabit area could be scaled up, if more big animals continue to be gathered at the Kerio market.

(d) Establishment of Autonomous Group Action: Kerio Producers Association

Since the Livestock Market Association shall be an organization for both traders and producers, the traders are currently dominant in the Kerio LMA, and producers were not involved in its activities.

In consideration of this situation, there is opinion view from several producers that they need to establish an association just for producers in order to strengthen their bargaining power and compete with livestock traders in the Kerio market. This is an independent and welcome opinion by themselves that is meant to better their welfare.

CHAPTER F8. SUB-PROJECT FOR PASTURE ESTABLISHMENT BY RESEEDING

F8.1 Outline of the Sub-project

"a Reseeding farm" is a plot surrounded by a fence to avoid intrusion of livestock into the plot where pasture is protected for recovery in wet season. In the reseeding farm plot, seeds are sown to recover vegetation and to harvest fodder and seeds. It requires low technique and low investment for this activity. What they need are only (i) a fence and, (ii) a local rule in which the intrusion into the plot will not be allowed in a community.

The outline of the sub-project is summarized in the following table.

Table AF8.1.1 Project Profile

Item	Contents	
1. Objectives	1) Pasture establishment in reseeding farms to provide pasture to livestock near community 2) To provide livestock in good condition, in particular after/during dry season, in line with the revitalization of the livestock market. 3) To produce seed for sale as income generation to the community and for expansion of area under pasture 4) To provide a learning site (demonstration plot) to pastoralists on pasture production, conservation and utilization.	
2. Number of Beneficiaries	185 members in 2 reseeding farm groups in Lokichoggio, and Loritit, 42 individuals in Kangakipur, and Lopii communities.	
3. Implementation Organization	JICA/ ECoRAD Project	
4. Project Contents		
1) Project Outline	1) Selection of sites and fencing of pasture reseeding plots. 2) Technical assistance-exposure visit/educational tour to existing functional pasture reseeding plot. 3) Technical assistance for establishment of reseeding farm, on water harvesting structures, planting of seeds, hay and seed harvesting. 4) Monitoring	
2) Facility / Activity	*Facilities/Activities*	*Implementer*
	1) Identification and fencing of pasture reseeding plot 2) Exposure visit/Educational tour 3) Technical assistance training 4) Monitoring	1) Identified Agro-pastoralists and Pastoralists and Lokichoggio and Loritit development committee. 2) Lokichoggio and Loritit CDC officials and Project Team 3) CDC, Pasture management committee, Sub-County Livestock Production officer, and Project Team. 4) CDLP and Project Team
3) Organization for O&M	Identified Agro-pastoralists and Pastoralist, Pasture Management Committees and , Community development committees	
4) Activity Period	8 months	

Source: JICA Project Team

F8.1.1 Plan of Operation

(1) General

After 11 Sub locations (pilot project sites) were selected, Community Managed Disaster Risk Reduction (CMDRR), and Early Warning System (EWS) training for improvement of drought resilience was implemented in each sub-location. In CMDRR training, Community Development Committee (CDC) was organized in each site. At the end of each training, a Community Action Plan (CAP) was formulated as a Drought Risk Mitigation Activity in each site. CAP was divided into 2 activities; independent activity and activity with external support. In terms of independent activities related to livestock development motivated by the training, the following items were listed:

1) Pasture establishment as a means of reseeding,
2) Human-induced management of *Prosopis* were proposed,
3) Establishment of a drug store for animals,
4) Foundation of livestock market,
5) Commercial sale of livestock,
6) Diffusion of poultry was planned on 2 sites each.
7) Establishment of local EWS
8) Reduction for Community Animal Health Worker,
9) Encouraging vaccination, and
10) Introducing the leather business was planned in one site each.

Each activity was planned to be led by CDC, assistant chief and elders through the public meetings. However the public meetings were not held as planned and the sub-committee or the group which have the role of implementing the activities were not organized. According to the plan, trained CDC were to lecture the sub-committee or group but it was clear through interviews with CDC members at each site that the technical assistance from specialists and technicians were needed to implement each of the activities. In this pilot project, it was difficult to assist all activities because of the issues of time and human resource, thus at the end of discussion, the pasture establishment by reseeding were selected for the livestock pilot project. These activities were both important and generate a lot of interest in 2 sites and were related to the livestock value chain. Furthermore, pasture establishment by reseeding can promote business activities mentioned earlier as part of revitalization of the livestock market.

Loritit and Lokichoggio were selected as the trial sites for the pilot project from the view of the condition of the rangeland, amount of precipitation, motivation of CDC, assistant chief and elder and progress situation (see Table AF8.1.2).

Table AF8.1.2 Site Assessment of Adaptability for Reseeding Project

Sub county	Sub location	Rangeland condition	Long Rain	Motivation	Progress on Action Plan After CMDRR Training
T.North	MLIMA TATU	Fair/Poor	Fair/Poor	Low	CDC* desire to enforce deferred grazing but not reseeding
	KANGAKIPUR	Poor/Fair	Fair/Poor	High	CDC willing to practice reseeding but the area for reseeding has not identified yet
T.West	LOKICHOGGIO	Good	Good	High	CDC held meeting on pasture development and reseeding
	LORITIT	Fair	Good	High	CDC have already set a plot and fenced it and another reseeding plot has been identified
Loima	LORENGIKIPPI	Good	Good	High	Any action has not been taken so far
	LOKIRIAMA	Good	Good	Medium	CDC was talking about possibility of reseeding in the low land with community
T.Central	ELIYE	Fair/Poor	Fair	Medium	Any action has not been taken so far but some committee members think about pasture development using spring water
	KERIO	Fair/Poor	Fair	Medium	Any action has been taken so far but CDC are interested in Prosopis management
T.South	LOKICHAR	Fair/Poor	Fair/Poor	Low	Range management committee has already set dry season grazing area in Kamarese Village
	LOCHWA	Poor	Fair/Poor	Low	Any action has not been taken so far
T.East	LOPII	Good	Good	High	CDC talked about reviving a pasture in Lopii through reseeding

*CDC = Community Development Committee

Source: JICA Project Team

(2) Selected Site

1) Loritit Sub-location

Seed of grass (*Cenchrus ciliaris*, Buffel grass) was broadcasted at the grazing area near the settlement for the dry season. Parts of the established pasture were reserved for collecting the seed and those seeds were used for enlargement of the grazing land. This pasture was planned to be mainly used for the female animals for milk production and castrated goats for selling.

2) Lokichoggio Sub-location

On 18/02/2014 the Project Team visited Lokichoggio to follow up on the progress of setting aside a plot for pasture reseeding by the development committee in collaboration with the area Assistant Chief. After some discussions the team visited the site. The Chief allocated the committee Chairman a large portion of land where the committee could go ahead with their plan of pasture reseeding, the Chief said the site was suitable because Emerukwa (Cenchrus Ciliaris) germinated naturally in the portion of land allocated to the development committee.

F8.2 Activities of Sub-project

F8.2.1 First Exposure Tour

(1) General

Participants for the exposure tour constituted of 5 Officials each from Loritit and Lokichoggio CDCs.

Project team and District Livestock Production Officer and Technician of water harvesting structures from Turkana West Sub-County accompanied the CDC officials during the tour.

The purpose of the tour was to expose the CDC officials to the pasture reseeding projects that already exist in Turkana West. The reseeding plot visited is owned by Natiira pasture production group.

Objectives of the tour:

- To expose the CDC officials to work already being undertaken by other existing pasture reseeding groups in the sub county.
- The make them appreciate the potential and possibility of pasture reseeding in their respective areas.
- To enable them carry out reseeding with their community members even with little supervision in order that implementation is not delayed.

Field observations:

Lokichoggio CDC have already identified more than 20 acres of land for reseeding. Loritit CDC has also identified a site with over 20 acres and is already fenced with thorn bushes.

- The Natiira pasture plot visited is a community group that has 50 acres under pasture.
- Hay and seed is harvested continuously in this Natiira pasture reseeding plot.
- They have a hay store with over 310 bales and are still harvesting. They also have 20 bags of pasture seed harvested from the same plot. They sell one bale of hay at 500/= and 1 kg of seed at 800/=.
- The Natiira group also has two manual hay balers donated by UNDP for harvesting the hay.

Field operations at Natiira pasture reseeding plot includes the following: fencing, bush control, construction of micro catchments, planting, weeding, seed harvesting and hay marketing.

Detail Exposure Tour Report is given in Attachment-F8-1 for further reference.

F8.2.1 Second Exposure Tour

Following the first exposure tour, other exposure tours were conducted by the Project with groups from Lokichoggio and Loritit communities.

Table AF8.2.1 Details of the Exposure Tour

Dates	Committees	Category of official	How the exposure tour was organized
25/09/2014	Lokichoggio range management committee Lokichoggio Community development officials	Chairperson of LRMC. Secretary of LRMC Treasurer of LRMC Vice-Chairperson of LCDC	Tour to Natiira pasture plot by Lokichoggio range management committee/CDC officials and participatory discussion with Natiira pasture group. Input from Lokichoggio pasture group: Natiira pasture group touring Lokichoggio pasture plot and then give some advice to the young pasture group on possible ways of dealing with challenges at Lokichoggio pasture plot.
22/12/2014	Loritit range management committee Loritit Community development officials	Chairperson of LRMC. Secretary of LRMC Treasurer of LRMC Two Loritit range management committee members. Vice-Chairperson of LCDC Secretary of LCDC	Tour to Natiira pasture plot by Loritit range management committee/CDC officials and participatory discussion with Natiira pasture group. Input from Loritit pasture group: Natiira pasture group touring Loritit pasture plot and then give some advice to the young pasture group on possible ways of dealing with challenges at Loritit pasture plot.

Source: JICA Project Team

(1) Objective of the Exposure Tour:

Exposure tours were implemented to encourage/motivate Lokichoggio and Loritit range management committee and community development committee officials on the continuation of pasture establishment by reseeding at their pasture plot.
The educational tour destination was to Natiira pasture group with a vast plot of 50 acres while Lokichoggio pasture is around 4 acres with 1 acre planted with pasture seeds.
Mode of Training during tour:

a) Exchange visit

In addition to visit Natiira plot, the Project brought Natiira members to the reseeding plots in Lokichoggio and Loritit to give feedback and advice to them.

b) Exchange opinions and discussions

Participatory discussions between Senior Natiira pasture group and the Lokichoggio and Loritit pasture groups were made.

(2) Process of the Tour:

a) Site visits: Four Lokichoggio range management committee officials and one CDC representative were picked from Lokichoggio Town. Also the same was done on a different date where five officials of Loritit range management committee and two CDC representatives were also picked from Loritit to Natiira centre.

b) Courtesy call to Assistant Chief - Natiira Sub-location..
A courtesy call was made to Assistant Chiefs office at Natiira Sub-Location. The purpose was making known our purpose and objective to his location and also why his and Senior Natiira pasture group are essential in motivating the Junior Lokichoggio pasture group who are just embarking on pasture establishment by reseeding. Lokichoggio pasture group officials were also introduced to the Assistant Chief.

c) Tour of Natiira pasture plot by Lokichoggio and Loritit range management committee/CDC officials and participatory discussion with Natiira pasture group.
The junior pasture groups were taken through a tour within the plot by the officials of Natiira pasture group. At Natiira plot, Lokichoggio and Loritit pasture groups were shown a store where bales of hay and seeds are kept. The process of construction and functions of micro-catchments and semi-circular bands was explained to Lokichoggio and Loritit pasture group.
After the tour of Natiira pasture plot, Lokichoggio and Loritit pasture group members were asked to make comparisons between their pasture plot and what they had seen at Natiira pasture plot.

Table AF8.2.2 Discussions among Nakipi, Lokichoggio and Loritit Pasture Groups:

Opinions from Lokichoggio pasture group	Opinions from Loritit pasture group	Current condition of Natiira pasture group
Our plots are: - pasture plot bigger - plot not well fenced - only 2 semi-circular bands - No micro-catchment constructed - Lack of collaboration between the pasture group and local administration.	They do not have a plot of their own but are temporarily using one given by the community. At Loritit plot they using bigger semi-circular bands made by Turkana Rehabilitation Project. There are a few micro-catchments at Loritit compared to Natiira. Their local administrators are not involved in the affairs of the pasture group. At Loritit they still use local fence in comparison with Natiira which is wire fence and also reinforced with the local thorn fence.	Pasture plot smaller Plot well fenced 500 semi-circular bands 2000 micro-catchments already constructed There is collaboration between the pasture group and local administration.

Source: JICA Project Team

d) The Natiira pasture group touring Lokichoggio and Loritit pasture plots: Natiira members moved and visited to Lokichoggio and Loritit plots then gave some advice to the junior pasture groups on possible ways of dealing with challenges at Lokichoggio pasture plot.
After touring Lokichoggio pasture plot Natiira pasture group officials were able to give the following advice:

Table AF8.2.3 Advice from Natiira Group

Pasture group	**What is good about the plot/group**	**Specific points necessary for improvement.**
Lokichoggio	- Soils are fertile and good for pasture establishment. - Willingness to clear 4 acres of land without any external support.	- There is need to construct more semi-circular bands. - Local fence need more reinforcement to prevent livestock from destroying the pasture. - Should explore ways of initiating and sustaining collaboration with local administration.
Loritit	- Good potential area for pasture production - Members of the bigger TRP farm plot are also part of the junior Loritit pasture group. - Planting of pasture seeds was easier because already most unwanted bush had been cleared.	- Loritit pasture group explore ways of acquiring their plot of their own so as to facilitate ease management of the plot. - Pasture plots should be separated from plots where food crops because this can cause conflict.

Source: JICA Project Team


Source: JICA Project Team

Figure AF8.2.1 Participatory Discussion between Natiira Pasture Group and Lokichoggio and Loritit Range Management Committee/CDC Officials

5 Discussion on Way forward for Lokichoggio and Loritit range management committee /CDC officials:

These sessions were tough for Lokichoggio and Loritit pasture group because it was clear from their discussions that the groups still has the mentality for wanting to rely on external support (i.e. food and wire fence).After some encouraging words from

Natiira pasture group encouraged the others that pasture establishment by reseeding can be done when people are committed people even without relief food and that a local fence can be used when the wire fence is not available.

Way forward for Lokichoggio pasture group

Lokichoggio pasture group decided to seek the assistance of the Chairman of Lokichoggio CDC and organize a meeting with the area Chief. That meeting would plan for a baraza where the importance of pasture establishment by reseeding would be explained to the community.

They agreed to try again and re-do the local fence so as to reduce pasture plot to a manageable size that is easier to maintain.

Way forward for Loritit pasture group

They agreed to organize a meeting between the community and the local administration on the possibility of allocating the pasture group a separate piece of land outside the bigger TRP plot so as minimize conflict. They also agreed to harvest and locally store the pasture seeds when they were mature so that they can be used for planting when they acquire another new piece of land.

Source: JICA Project Team

Figure AF8.2.2 Natiira Assistant Chief sharing Experience about his Community.

F8.2.2 Pasture Reseeding Practical Training

(1) Training

Pasture reseeding practical training was carried out at Lokichoggio, Loritit, Kangakipur and Lopii/Kaaruko communities. The training methodology was on site training, demonstrations mixture of lecturing, active participation, and practical's. The department of livestock production, County Government provided pasture seeds free of charge to the two sites.

The table below shows dates of training, number of participants, facilitator and if communal or individual land.

Table AF8.2.4 Outline of Reseeding Practical Trainings

Location	Community Land or Own Land	Other Details
Lokichoggio	Community land	**Dates**:18th April, 2014 **Facilitator**: Turkana West Sub-County Livestock Production Officer. **Number of participants**: 65
Loritit	Community land	**Dates:** 17th of April, 2014 **Facilitator:** Turkana West Sub-County Livestock Production Officer. **Number of participants:** 120 members
Kangakipur	Individual land	**Dates:** 21st and 24th April 2014 **Facilitator:** Turkana North Sub-County Livestock Production Officer. **Number of participants**: 11
Lopii/Kaaruko	Individual land	**Dates:** 25th and 26th of April, 2014 **Facilitator:** Turkana East Sub-County Livestock Production Officer. **Number of participants**: 31

Source: JICA Project Team

The following table shows training contents for the pasture reseeding practical trainings:

Table AF8.2.5 Details for the pasture reseeding practical trainings

Contents for the Training	
- Site selection - Steps involved before planting pasture - Bush clearing - Construction of water harvesting structure (semicircular bund and micro catchment for moisture improvement)	- Spacing - Reseeding methods/Planting methods - Why pasture reseeding is done - Pasture seed selection. - Reasons why ploughing land is important before planting

Source: JICA Project Team

For further details refer to Attachment F8-2, sample of pasture reseeding practical training prepared by Livestock Production Officer.

(2) Observation after training

In Loritit, it was worth to note that the Project Team facilitated the first practical training for planting pasture seeds on April 17, 2014 while the community themselves went ahead with second planting on April 19-21, 2014 and the work was being carried out from 7.30 am to 12.00 pm each day. All members of the six villages turned up for planting and all the seeds issued to them were planted.

In Lokichoggio, the Project Team facilitated the first practical training for planting and construction of one semi-circular band on 18/04/14, thereafter the 65 members from Kiroiroik (25), Ataaekale (15) and

Aroot (25) continued by themselves to do bush clearing, planting, construction of one more additional semi-circular band and fencing for the rest of the 4 acres of land.


Source: JICA Project Team

Figure AF8.2.3 Reseeding Farm of Lokichoggio with semi – circular bunds and germinated pasture

In Lopii and Karuko, pasture establishment was implemented on an individual basis, with each person making a fence on his piece of land and planting pasture seeds.

During the monitoring period the communities had high hopes of rains falling and believed that after the expected rains the reseeded pieces of land would germinate and flourish well.


Source: JICA Project Team

Figure AF8.2.4 Well Fenced Piece of Land for Pasture Reseeding at Kaaruko.

In Kangakipur pasture establishment was done on individual basis i.e. one would fence personally his or her piece of land and also sowed the pasture seeds.

F8.3 Results and Analysis

(1) Lokichoggio

After the exposure visit they managed to hold a meeting/Baraza organized by the area Assistant Chief. The point of discussion emphasised by the chief during the baraza was the need of community members to keep livestock away from the group's pasture plot and also for group members to be committed in regular repairs of the local thorn fence whenever need arose.

During the Project team's follow-up on Lokichoggio pasture plot, it was found that the pasture group had not repaired the local fence and even the little pasture that had germinated had been eaten by livestock in December, 2014. The pasture group members said they were discouraged from repairing the fence because of the poor amounts of short rains received in their area.

(2) Loritit

The pasture seeds germinated well after the short rains season. Heavy rain was received in this area compared to the rest of the County. The pasture group had planted 0.5 acres of land but the wind and floods spread the seeds to the nearby bigger TRP community farm land and around 2 acres of land was covered by grass.


Source: JICA Project Team

Figure AF8.3.1 Loritit Reseeding Plots after Short Rainy Season

However there was some dispute between the pasture group and Loritit community. Because the community members demanded to use the pasture for livestock in their areas of land but pasture group did not agree it until full growth of pasture with seeds for next year. But after several follow-ups by the Project Team, the pasture group decided the best alternative was to abandon the land with pasture so as all community members will benefit from it. And the pasture group had to explore a new piece of land for reseeding pasture production in December 2014.

During one of the follow-up in December, 2014 the Project Team encouraged the group to fence off the piece of land allocated to them but members said this was difficult for them not to bring conflict even though they were originally given that portion of land for demonstration purposes. Also during the follow up the Project Team encouraged the pasture group to cut the pasture and divide among the members. But they were not buying the idea since they said community had already started depleting the grown pasture and would prefer to all community members use the pasture.

The pasture group claimed that many community members were not cooperating in protection of pasture for future use during drought. Most of them let their livestock sneak into the pasture plot quietly without being unnoticed.

(3) Kangakipur

The Project Team had observed the followings:

- The short rains in this area were below normal but there was pasture germination for 2 individual pastoralists who had planted along the wet streams/laggas of their village.
- Such individuals had planted pastures where rain water normally retains,
- Local thorn fence was well done for the areas with planted pasture in those individual plots.

F8.4 Conclusion, and Lessons Learned

Through the activities in the Project, the following lessons learned were derived:

- Involvement f the entire community involvement is an important factor for pasture reseeding activities. Guidance/leadership of local administrators is crucial in decision making/discussions undertaken by community members. The success of Natiira pasture group has been attributed to continuous guidance by the local administrator from the initial stages of the pasture reseeding activity.

- Reseeding pasture farm could be one of the good practices which do not require a big input in funds and human resources. In Natiira young livestock, emaciated livestock, and a few lactating livestock were able to survive within the fenced and secured pasture during drought. The members of the pasture group and the surrounding community benefited from the pasture reseeding farm.
- A Committed and well-organized range management committee is essential in realizing benefits of fodder production. The Community development committee should have an oversight role in pasture reseeding but the interested group or individuals are supposed to be the ones that steer the process for the benefits to be realized and felt.
- In the case of Loritit pasture group, some members were also members of the bigger TRP farm. As a result, protection of the group ideas for pasture protection could not be agreed with other members of the bigger TRP farm. It's preferable for a group to do pasture reseeding where they are in control and can reap the benefits but not work hard only to let others benefit from their effort.
- If a strong leadership by the government administrator is not forthcoming, it is recommended that the reseeding activities are introduced on an individual basis. In the Kangakipur reseeding farm case where the reseeding activities were implemented by each individual, there was much willingness and commitment in comparison with Lokichoggio and Loritit pasture groups where not all members were seriously involved in the management and protection of their pasture plot.

Tables

Table BF2.2.1 Baseline survey summary at Dirib and Kalacha (1/4)

LIVESTOCK SPECIES	ITEM	DIRIB	KALACHA
CATTLE	Population	4641	2250
	Herd composition: ratio of productive & none productive.	1.5:1	6:1
	No marketable	19%	7.6%
	Av prices of cattle	25000	0
	Distance to market	12 km	5 – 15kms
	Existence of market days	No market. They have to trek the animals to Marsabit town for sale.	A market exists but is hardly ever used.
	Herd dynamics	2% increase & 31% decrease	0% increase & 8.8% decrease
	Av milk production	Very small amount of milk was available at the time when survey was conducted	Very small amount of milk was available at the time when survey was conducted
	Av milk price	Kshs120/liter	Kshs80 /liter
	Demand for breeding stock in percentage	54%	33%
	No. of house hold owning cattle	84%	13%
	Main cattle buyers	Brokers & itinerant in Marsabit market	Small scale itinerant livestock traders
	Need for cattle auctions	96.49%	88.75%
	Major constraints	Drought, inadequate pasture & water, uncontrolled grazing, diseases and poor breeding system.	Drought, inadequate pasture & water, uncontrolled grazing, diseases and poor breeding system.

Source: JICA Project Team

Table BF2.2.1 Baseline survey summary at Dirib and Kalacha (2/4)

LIVESTOCK SPECIES	ITEM	DIRIB	KALACHA
GOAT	Population	10608	32568
	Herd composition: ratio of productive & none productive.	5.8:1	3.4:1
	No marketable	29.1%	17.8%
	Av prices of goats	4750	4400
	Distance to mkt	12 km	5 – 15kms
	Existence of mkt days	Open every day in the stadium	A market exists but is hardly ever used. Open every day under trees at water point.
	Herd dynamics	1.7% increase & 24.3% decrease	0.7% increase & 18.6% decrease
	Av milk production	Very small amount of milk was available at the time when survey was conducted	Very small amount of milk was available at the time when survey was conducted
	Av milk price	Kshs120/liter	Kshs80 /liter
	Demand for breeding stock in percentage	88%	36%
	No. of house hold owning goats	93%	56%
	Main goats buyers	Brokers & itinerants in Marsabit market	Small scale itinerant livestock traders
	Need for goats auctions	96.49%	88.75%
	Major constraints	Drought, inadequate pasture & water, uncontrolled grazing, diseases and poor breeding system.	Drought, inadequate pasture & water, uncontrolled grazing, diseases and poor breeding system.

Source: JICA Project Team

Table BF2.2.1 Baseline survey summary at Dirib and Kalacha (3/4)

LIVESTOCK SPECIES	ITEM	DIRIB	KALACHA
CAMEL	Population	357	6303
	Herd composition: ratio of productive & none productive.	1.6:1	2:1
	No marketable	10.6%	31.3
	Av prices of camel	35000	33000
	Distance to mkt	12 km	5 – 15kms
	Existence of mkt days	No market in dirib	The market is used a few days a month when camel for sale are available
	Herd dynamics	6% increase & 15% decrease	3% increase & 19.2% decrease
	Av milk production	Very small amount of milk was available at the time when survey was conducted	Very small amount of milk was available at the time when survey was conducted
	Av milk price	Kshs120/ liter	Kshs80 / liter
	Demand for breeding stock in percentage	82%	84%
	No. of house hold owning camel	23%	57%
	Main camel buyers	Brokers & itinerant in Marsabit market	Small scale itinerant livestock traders
	Need for camel auctions	96.49%	88.75%
	Major constraints	Drought, inadequate pasture & water, uncontrolled grazing, diseases and poor breeding system.	Drought, inadequate pasture & water, uncontrolled grazing, diseases and poor breeding system.

Source: JICA Project Team

Table BF2.2.1 Baseline survey summary at Dirib and Kalacha (4/4)

LIVESTOCK SPECIES	ITEM	DIRIB	KALACHA
SHEEP	Population	1326	37557
	Herd composition: ratio of productive & none productive.	1.2:1	2.7:1
	No marketable	20.7%	41%
	Av prices of sheep	3000	1950
	Distance to market	12 km	5 – 15kms
	Existence of market days	Open every day in the stadium	Open every day under trees at watering points.
	Herd dynamics	2.9% increase & 38.7% decrease	0.7% increase & 18.6% decrease
	Av milk production	Very small amount of milk was available at the time when survey was conducted	Very small amount of milk was available at the time when survey was conducted
	Av milk price	Kshs120/ liter	Kshs80 / liter
	Demand for breeding stock in percentage	56%	23%
	No. of house hold owning sheep	39%	60%
	Main sheep buyers	Brokers & itinerant in Marsabit market	Small scale itinerant livestock traders
	Need for sheep auctions	96.49%	88.75%
	Major constraints	Drought, inadequate pasture & water, uncontrolled grazing, diseases and poor breeding system.	Drought, inadequate pasture & water, uncontrolled grazing, diseases and poor breeding system.

Source: JICA Project Team

Table BF2.2.2 Baseline survey summary at Korr and Jirime (1/4)

LIVESTOCK SPECIES	ITEM	KORR	JIRIME
CATTLE	Population	7889	16968
	Herd composition: ratio of productive & none productive.	2.5:1	2.6:1
	No marketable	19.2%	22.4%
	Av prices of cattle	30500	ksh28000
	Distance to market	2 – 7kms	7 – 12kms
	Existence of market days	Every Saturday. A vibrant market but no cattle are ever sold in this market.	A market exists but traders prefer the stadium in town.
	Herd dynamics	9.7% increase & 56.8% decrease	2.4% increase & 33.8% decrease
	Av milk production	Very small amount of milk was available at the time when survey was conducted	Very small amount of milk was available at the time when survey was conducted
	Av milk price	Kshs90/liter	Ksh120/liter
	Demand for breeding stock in percentage	51%	66%
	No. of house hold owning cattle	45%	79%
	Main cattle buyers	Brokers & itinerant in Korr market	Butcher & itinerant
	Need for cattle auctions	78.5%	96.49%
	Major constraints	Drought, inadequate pasture & water, uncontrolled grazing, diseases and poor breeding system.	Drought, inadequate pasture & water, uncontrolled grazing, diseases and poor breeding system.

Source: JICA Project Team

Table BF2.2.2 Baseline survey summary at Korr and Jirime (2/4)

LIVESTOCK SPECIES	ITEM	KORR	JIRIME
GOAT	Population	95784	87990
	Herd composition: ratio of productive & none productive.	2.5:1	3.6:1
	No marketable	13.3%	32.3%
	Av prices of goats	3570	Ksh4500
	Distance to mkt	2 – 7kms	7 – 12kms
	Existence of mkt days	Every Saturday and a vibrant market for small stock	Open every day in the stadium
	Herd dynamics	7.3% increase & 31%decrease	0.8% increase & 23.9% decrease
	Av milk production	Very small amount of milk was available at the time when survey was conducted	Very small amount of milk was available at the time when survey was conducted
	Av milk price	Kshs90/liter	Ksh120
	Demand for breeding stock in percentage	83%	90%
	No. of house hold owning goats	100%	94%
	Main goats buyers	Brokers & itinerant in Korr market	Middlemen & butchers
	Need for goats auctions	78.5%	70.5%
	Major constraints	Drought, inadequate pasture & water, uncontrolled grazing, diseases and poor breeding system.	Drought, inadequate pasture & water, uncontrolled grazing, diseases and poor breeding system.

Source: JICA Project Team

Table BF2.2.2 Baseline survey summary at Korr and Jirime (3/4)

LIVESTOCK SPECIES	ITEM	KORR	JIRIME
CAMEL	Population	34935	17600
	Herd composition: ratio of productive & none productive.	1.7:1	
	No marketable	15.7%	18.6%
	Av prices of camel	34500	ksh45000
	Distance to mkt	2 – 7kms	7 – 12kms
	Existence of mkt days	Every Saturday but camel are not sold in this market	Open every day in the stadium camel are hardly available in the market
	Herd dynamics	5.2% increase & 44.5%decrease	2.5% increase & 6.1% decrease
	Av milk production	Very small amount of milk was available at the time when survey was conducted	Very small amount of milk was available at the time when survey was conducted
	Av milk price	Kshs90/liter	Ksh120
	Demand for breeding stock in percentage	71%	84%
	No. of house hold owning camel	84%	40%
	Main camel buyers	Brokers & itinerant in Korr market	Small scale itinerant livestock traders
	Need for camel auctions	78.5%	70.5%
	Major constraints	Drought, inadequate pasture & water, uncontrolled grazing, diseases and poor breeding system.	Drought, inadequate pasture & water, uncontrolled grazing, diseases and poor breeding system.

Source: JICA Project Team

Table BF2.2.2 Baseline survey summary at Korr and Jirime (4/4)

	ITEM	KORR	JIRIME
LIVESTOCK SPECIES	Population	93795	44000
	Herd composition: ratio of productive & none productive.	2.2:1	8.3:1
	No marketable	19%	8.6%
	Av prices of sheep	2850	3500
	Distance to market	2 – 7kms	7 – 12kms
	Existence of market days	Every Saturday and a vibrant market for small stock	Open every day in the stadium
	Herd dynamics	1.5% increase & 30%decrease	2.8% increase & 24.7% decrease
	Av milk production	Very small amount of milk was available at the time when survey was conducted	Very small amount of milk was available at the time when survey was conducted
	Av milk price	Kshs90/liter	Ksh120 liter
	Demand for breeding stock in percentage	34%	40%
	No. of house hold owning sheep	98%	82%
	Main sheep buyers	Brokers & intermediaries in Korr market	Middlemen & butchers
	Need for sheep auctions	78.5%	70.5%
	Major constraints	Drought, inadequate pasture & water, uncontrolled grazing, diseases and poor breeding system.	Drought, inadequate pasture & water, uncontrolled grazing, diseases and poor breeding system.

Source: JICA Project Team

Table BF3.5.1 1st Trial: Weak Goat Resold by Kalacha Feedlot Member

No.	Species	B/Price	Class	Years	Weighing Dates 2014														
					3rd Feb	11th Feb		17th Feb		24th Feb		5th Mar		12th Mar		18th Mar			
					Purchase Weight	1st week	Weight Gain in kg	2nd week	Weight Gain in kg	3rd week	Weight Gain in kg	4th week	Weight Gain in kg	5th week	Weight Gain in kg	6th week	Weight Gain in kg	Total Weight Gain per Goat	Selling Price
1.	Goat	1,200	M	1	17	18	1	19	1	19.5	0.5	21	1.5	21.5	0.5	21	-0.5	4.0	2,000
2.	Goat	2,500	M	2	26	27.5	1.5	28	0.5	28.5	0.5	30	1.5	31	1	30	-1	4.0	3,000
3.	Goat	2,800	M	2	28	29.5	1.5	30	0.5	30.5	0.5	31	0.5	31.5	0.5	31.5	0	3.5	3,300
4.	Goat	2,800	M	1.5	24.5	25.5	1	26.5	1	28	1.5	28.5	0.5	29.5	1	30.1	0.6	5.6	3,400
5.	Goat	2,800	M	2.5	27.5	28.5	1	29.7	1.2	30.5	0.8	32	1.5	34	2	30	-4	2.5	3,500
6.	Goat	2,700	F	2.5	28.5	30.5	2	30.8	0.3	32	1.2	33.5	1.5	31	-2.5	29	-2	0.5	3,000
7.	Goat	2,800	F	3	27	28	1	28.5	0.5	28.6	0.1							1.6	3,300
8.	Goat	2,700	F	3	28	28.5	0.5	29	0.5	29.3	0.3	30	0.7	31	1	29	-2	1.0	3,200
9.	Goat	2,000	M	2	21	22	1	23.5	1.5	24.2	0.7	25	0.8	26	1	25	-1	4.0	2,600
10.	Goat	2,000	M	1.5	20.5	22	1.5	23	1	23.5	0.5	24	0.5	24.5	0.5	25	0.5	4.5	2,600
11.	Goat	2,000	M	1.5	21.5	22.5	1	23	0.5	23	0	25.5	2.5	25	-0.5	24.5	-0.5	3.0	2,500
12.	Goat	2,000	M	2	28	30	2	31	1	32.5	1.5	33	0.5	33.5	0.5	32	-1.5	4.0	4,000
13.	Goat	2,000	M	1.5	21.5	22.5	1	24	1.5	24.5	0.5	26.5	2	27	0.5	26	-1	4.5	4,000
14.	Goat	2,500	M	1.5	21.5	22.5	1	23	0.5	24	1	25.5	1.5	27	1.5	27.5	0.5	6.0	3,100
15.	Goat	2,800	F	2.5	23.5	24.5	1	25.6	1.1	26.5	0.9							3.0	3,300
16	Sheep	2,500	M	3	27	28.5	1.5	29.8	1.3	30.5	0.7							3.5	3,200
17	Sheep	2,600	M	2	24			25	1	25.5	0.5							1.5	3,000
18	Goat	2,200	M	1.5	20			22	2	23	1							3.0	2,800
19	Goat	2,000	M	1.5	20			22	2	22.5	0.5							2.5	2,900
20	Goat	2,000	M	2	31.5													0.0	2,700
	Average	2,345		2.0	24.3	25.7	1.2	26.0	1.0	26.7	0.7	28.1	1.2	28.7	0.5	27.7	-0.9	3.1	3,070
	Total	46,900		40	486.5	410.5	19.5	493.4	18.9	506.6	13.2	365.5	15.5	372.5	7.0	360.6	-11.9	62.2	61,400

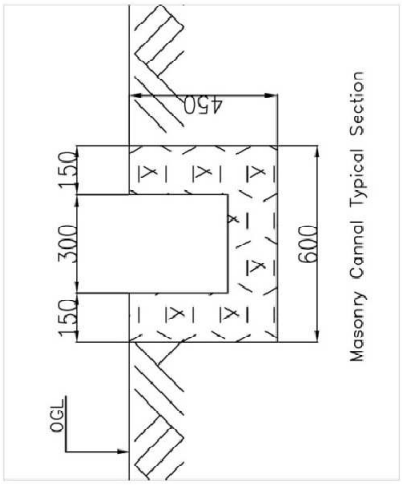
Source: JICA Project Team

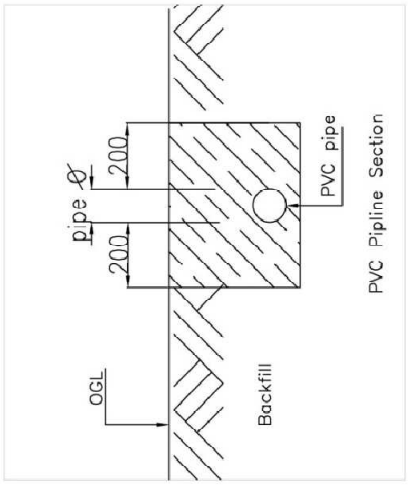
Table BF3.5.2 2nd Trial: Week Goats Monitoring at Feedlot

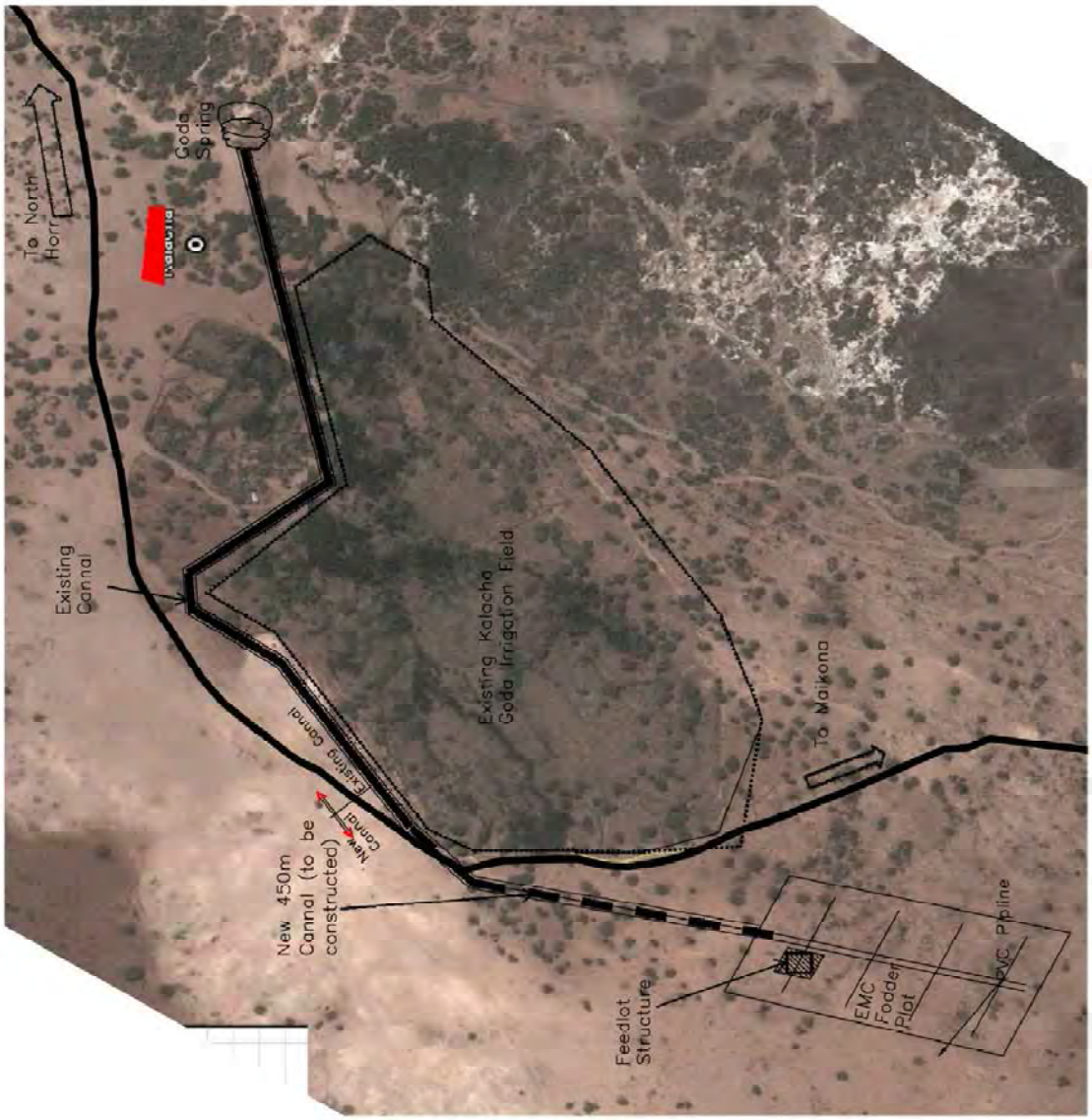
No.	Speceis	Buying Price	Class	Age in Years		Weighing Dates 2014						
					12/8/2014	20/8/2014		26/8/2014		3/9/2104		
					Purchase Weight	1st week	Weight Gain in kg	2nd week	Weight Gain in kg	3rd week	Weight Gain in kg	Total Weight Gain per Goat
1.	Goat	3,500	M	1.5	34.0	36.0	2.0	38.5	2.5	40.0	1.5	6.0
2.	Goat	3,500	M	2.0	27.0	28.0	1.0	29.0	1.0	31.0	2.0	4.0
3.	Goat	2,200	F	1.0	28.0	31.0	3.0	33.0	2.0	35.5	2.5	7.5
4.	Goat	2,200	F	1.5	32.0	36.0	4.0	37.5	1.5	39.0	1.5	7.0
5.	Goat	4,000	M	2.5	36.0	38.0	2.0	40.0	2.0	40.5	0.5	4.5
6.	Sheep	2,000	M	2.0	23.0	25.5	2.5	28.0	2.5	29.0	1.0	6.0
7.	Goat	2,200	F	2.5	35.0	37.0	2.0	39.0	2.0	40.5	1.5	5.5
8.	Goat	4,000	M	2.0	37.0	39.0	2.0	41.0	2.0	43.0	2.0	6.0
9.	Goat	2,500	M	2.0	30.0	32.5	2.5	35.0	2.5	37.0	2.0	7.0
10.	Goat	2,400	M	1.5	28.0	30.0	2.0	33.0	3.0	35.0	2.0	7.0
11.	Goat	2,500	M	1.0	27.5	30.0	2.5	34.0	4.0	36.5	2.5	9.0
12.	Goat	3,500	M	2.0	31.0	32.0	1.0	34.0	2.0	36.5	2.5	5.5
13.	Goat	1,500	M	1.5	19.5	20.0	0.5	21.0	1.0	22.5	1.5	3.0
14.	Sheep	2,000	M	1.5	24.0	26.0	2.0	30.0	4.0	32.0	2.0	8.0
15.	Sheep	2,200	M	2.5	24.5	26.0	1.5	28.0	2.0	30.5	2.5	6.0
16.	Sheep	2,200	M	3.0	20.5	22.0	1.5	25.0	3.0	28.0	3.0	7.5
17.	Sheep	2,100	M	2.0	22.0	24.0	2.0	25.5	1.5	27.0	1.5	5.0
18.	Sheep	2,100	M	1.5	20.0	22.0	2.0	23.5	1.5	25.0	1.5	5.0
19.	Sheep	2,300	M	1.5	22.5	24.0	1.5	27.5	3.5	28.0	0.5	5.5
20.	Sheep	2,400	M	2.0	27.0	30.0	3.0	32.0	2.0	34.0	2.0	7.0
	AVERAGE	2,565		1.9	27.4	29.5	2.0	31.7	2.3	33.5	1.8	6.1
	TOTAL				548.5	589.0	40.5	634.5	45.5	670.5	36.0	122.0

Source: JICA Project Team

Figures

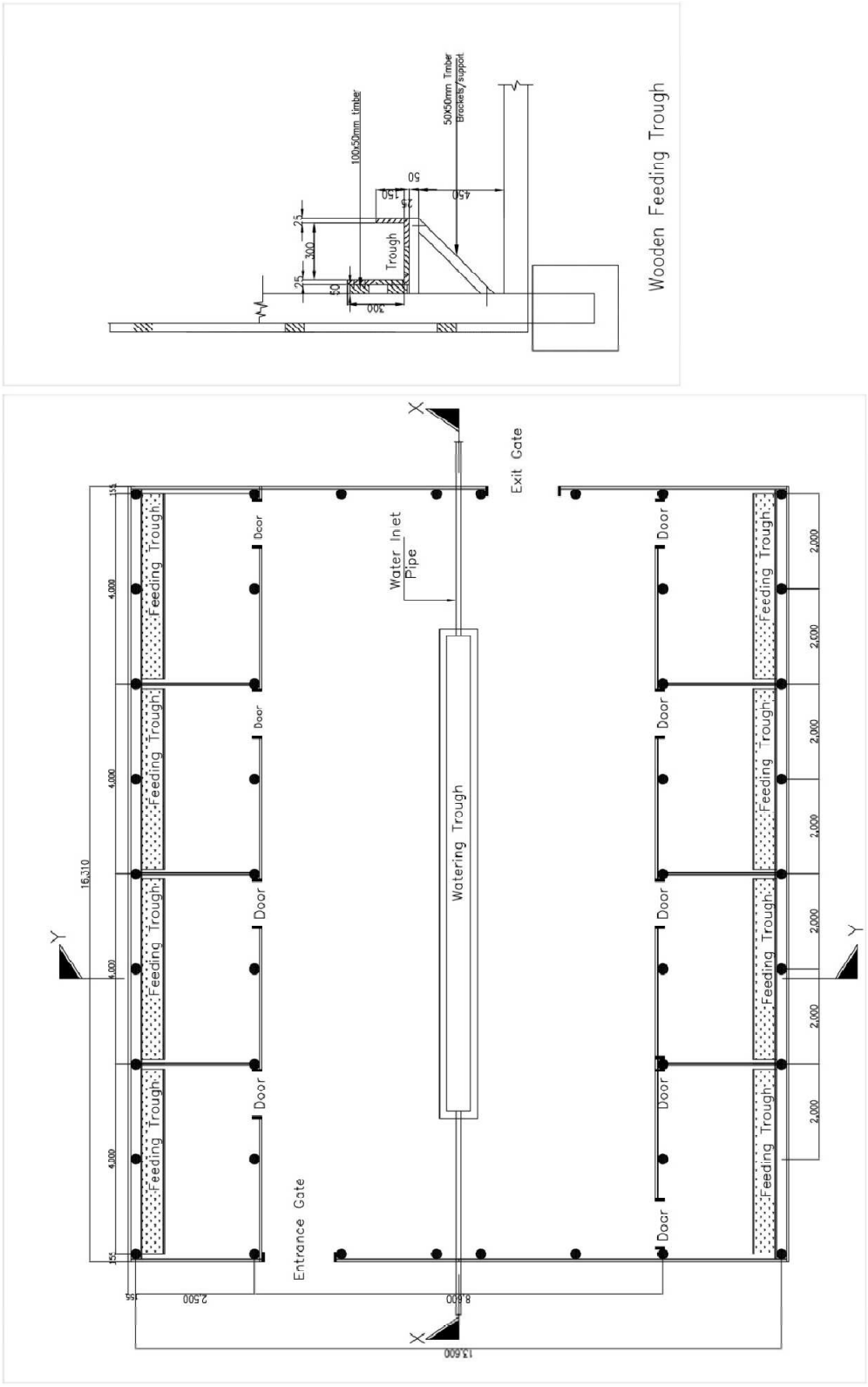






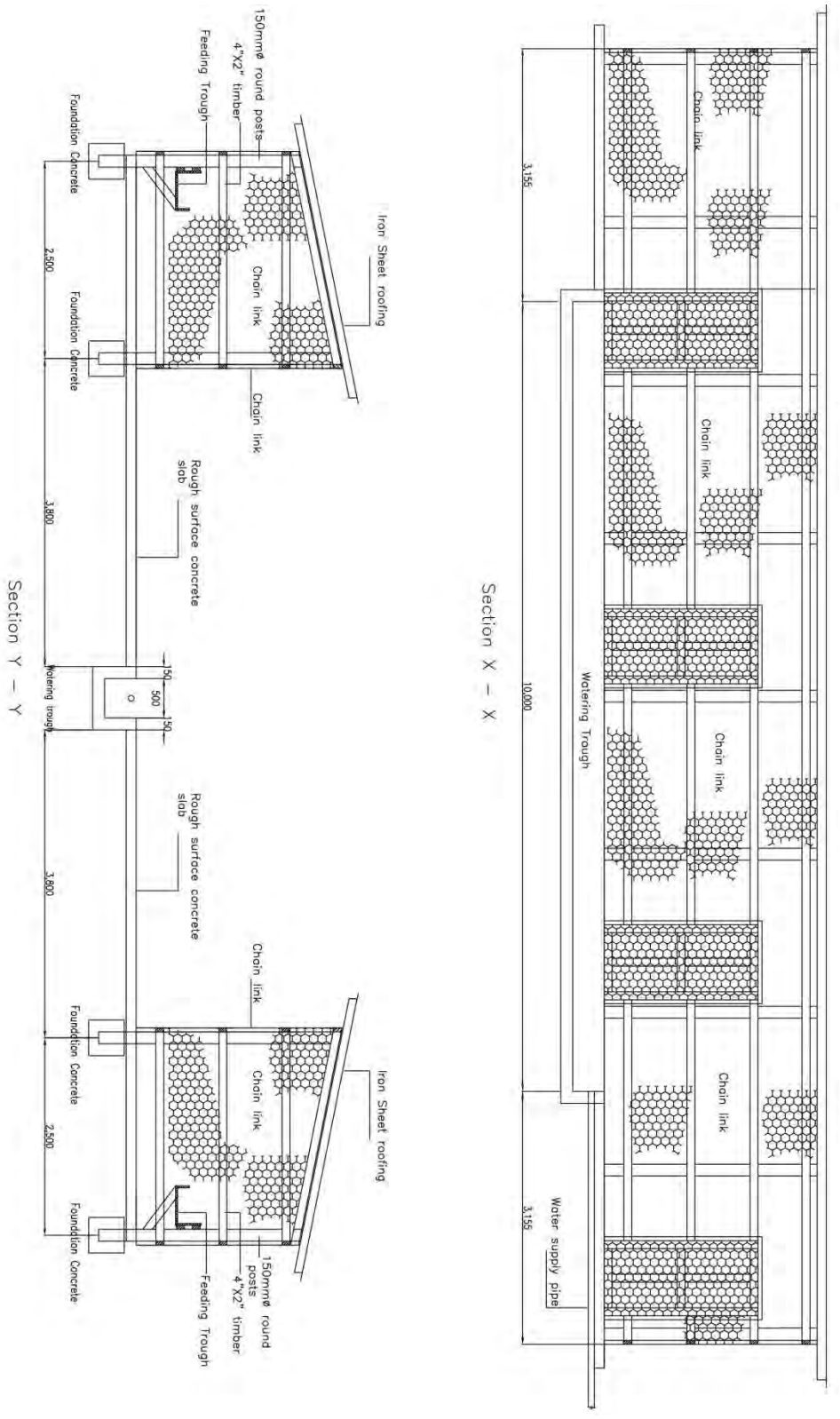
Source: JICA Project Team

Figure BF3.2.1 (1/3) Location Map for Kalacha EMC Fodder Plat



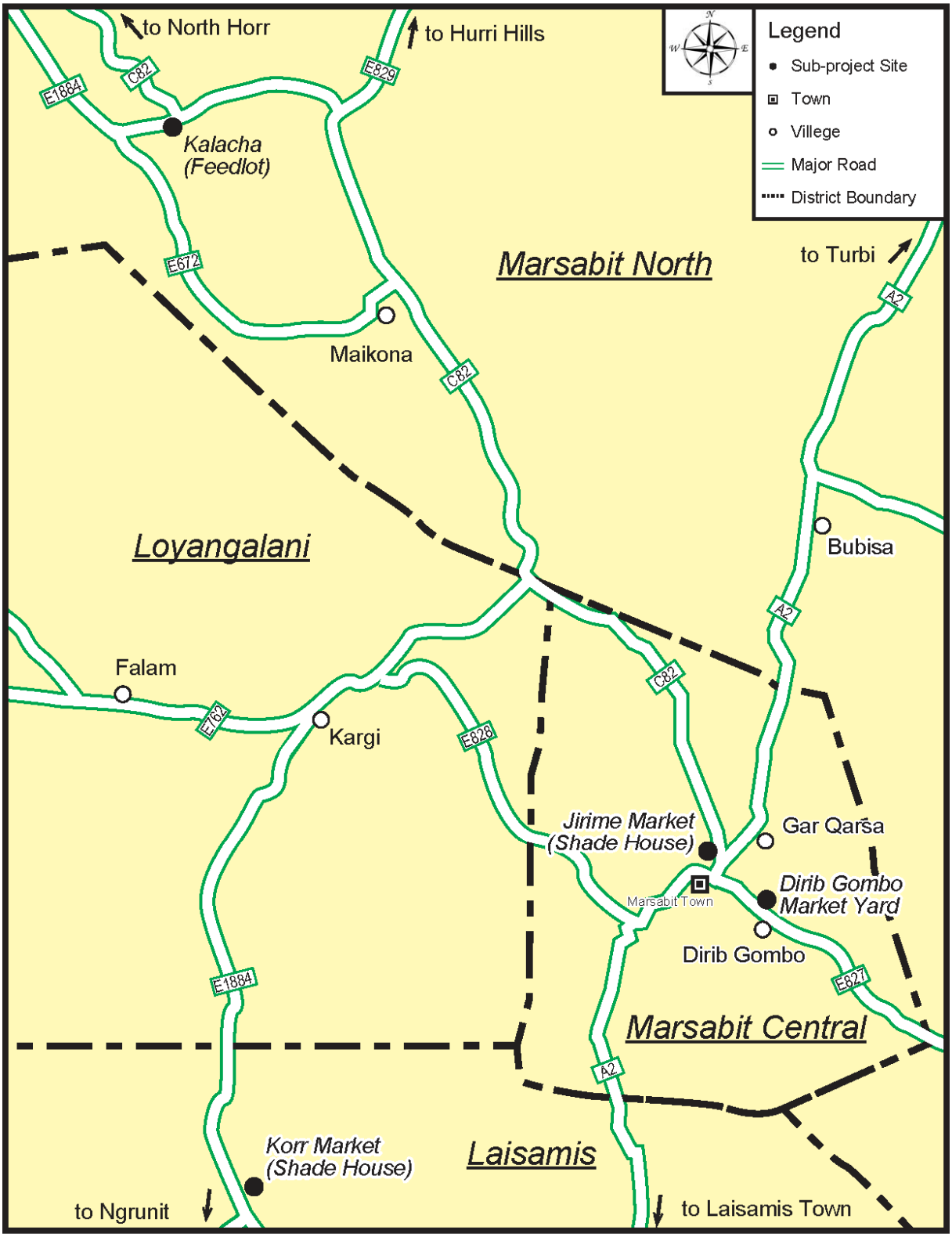
Source: JICA Project Team

Figure BF3.2.1 (2/3) Feedlot Structure at Kalacha (1/2)



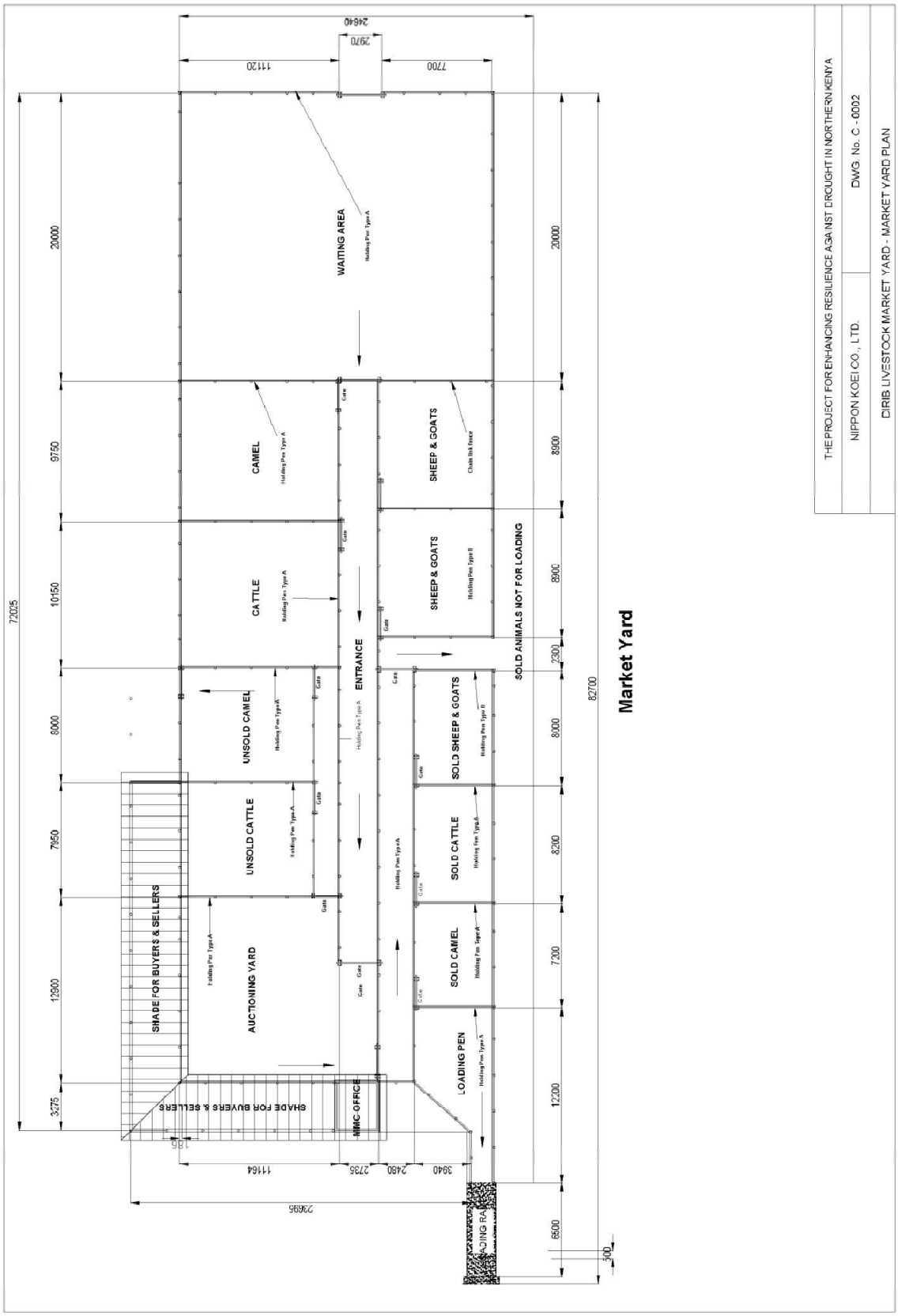
Source: JICA Project Team

Figure BF3.2.1 (3/3) Feedlot Structure at Kalacha (2/2)



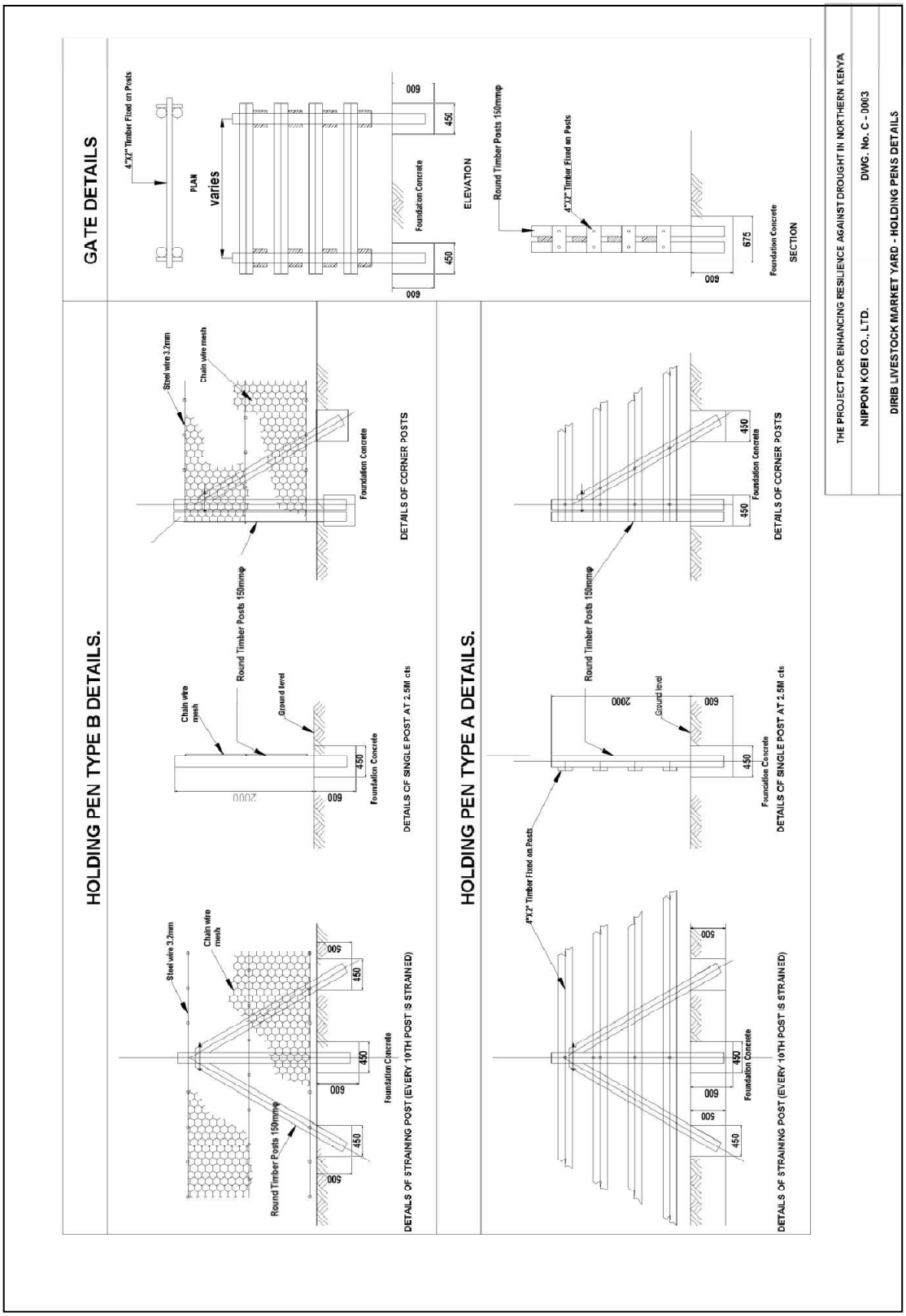
Source: JICA Project Team

Figure BF4.2.1 Location Map of New and Improvement of Livestock Facilities



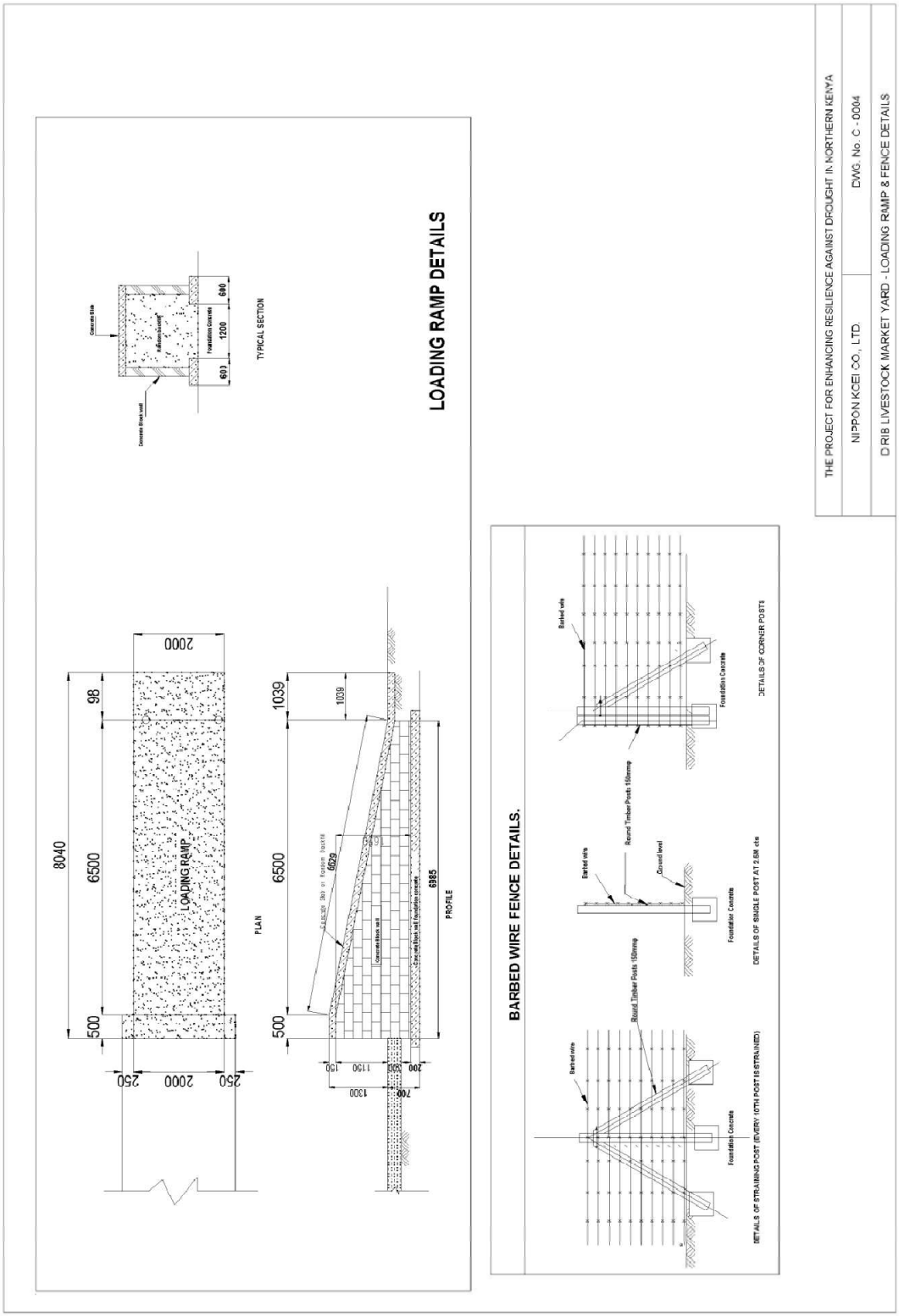
Source: JICA Project Team

Figure BF4.2.2 Plan of Dirib Gombo Market Yard



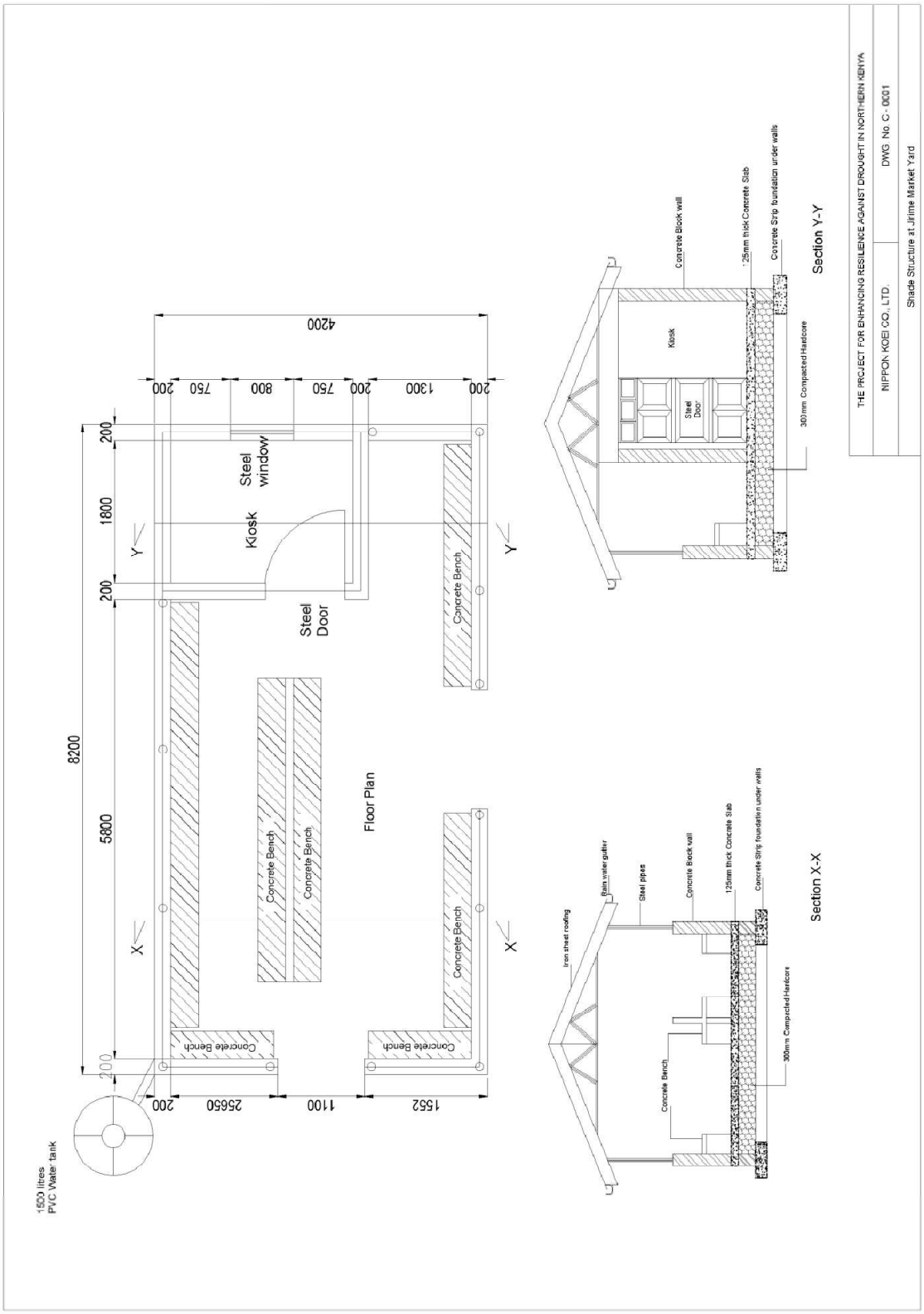
Source: JICA Project Team

Figure BF4.2.3 Details of Holding Pens of Dirib Gombo Market Yard



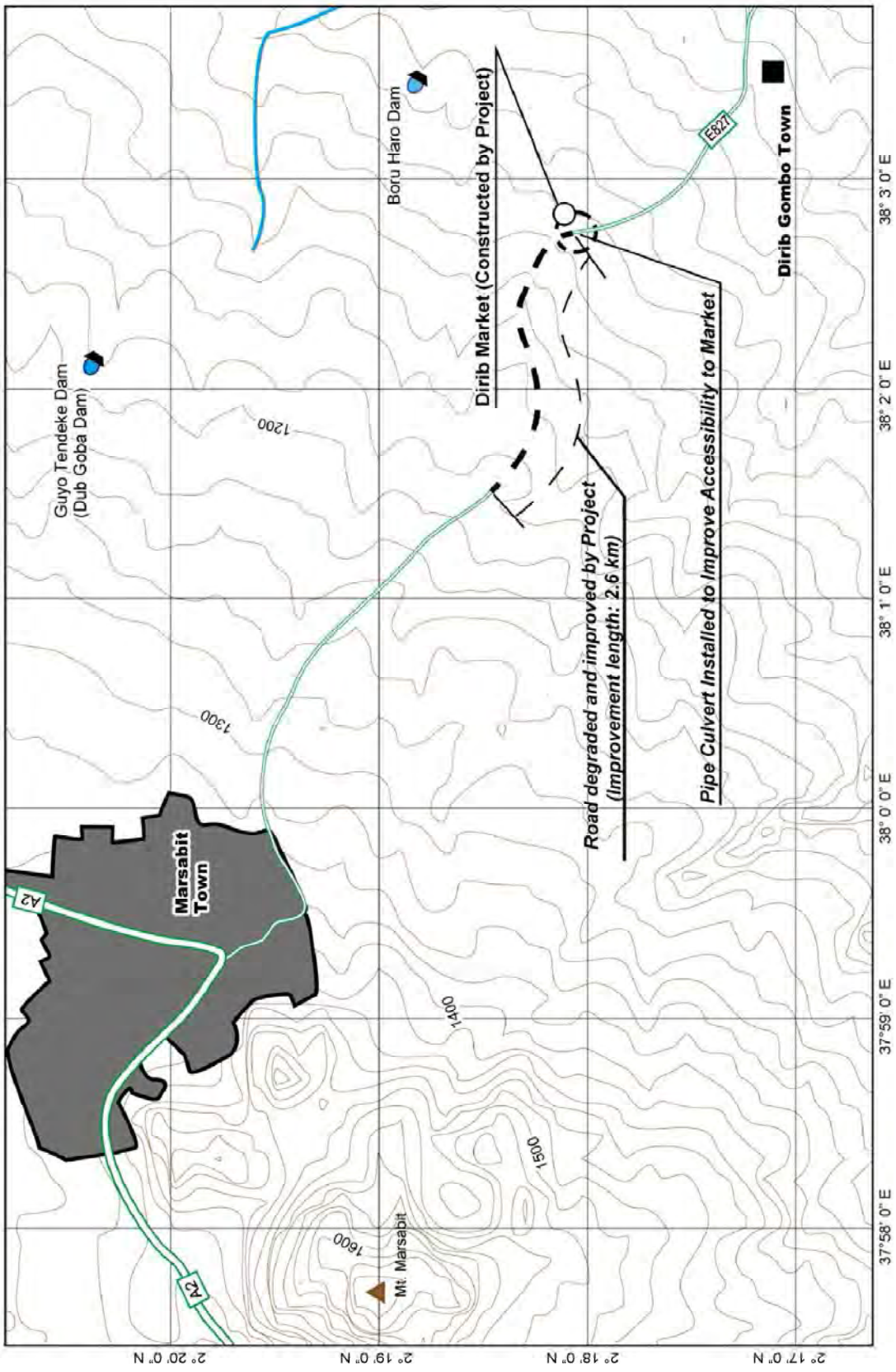
Source: JICA Project Team

Figure BF4.2.4 Details of Loading Ramp and Fence of Dirib Market Yard



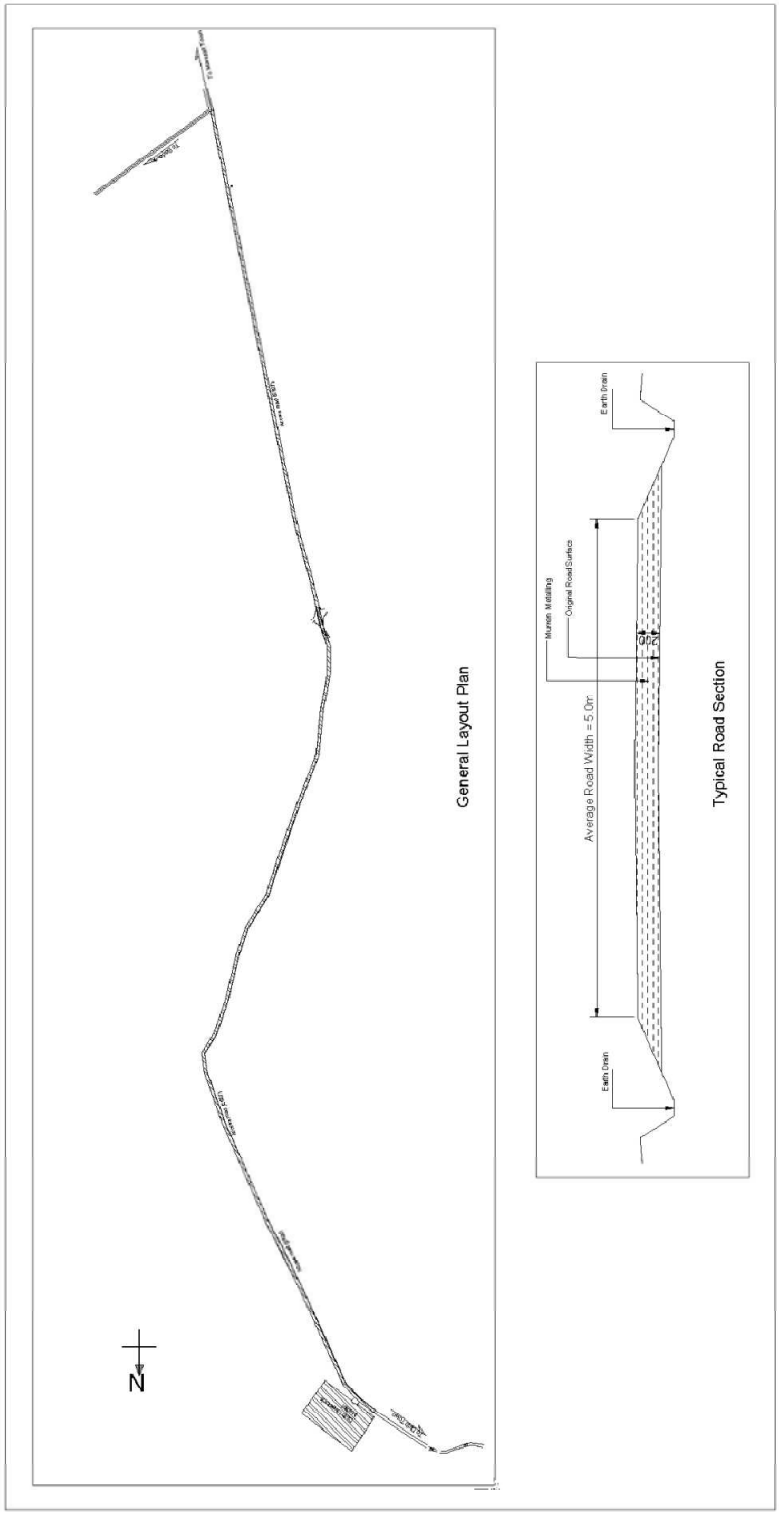
Source: JICA Project Team

Figure BF4.2.5 Plan and Section of Shade House at Jirime and Korr



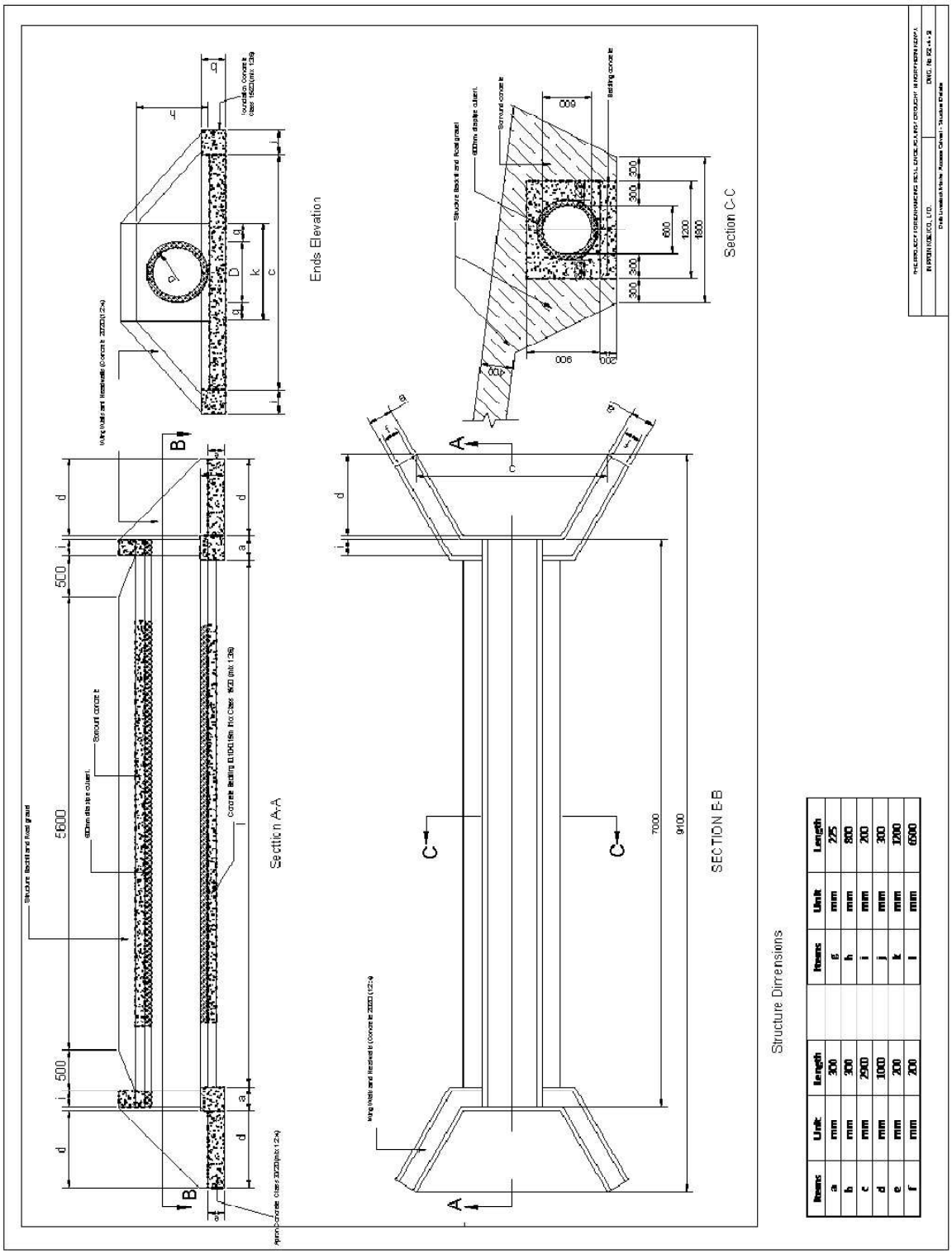
Source: JICA Project Team

Figure BF5.2.1 Location Map of Road Rehabilitation near Dirib Market



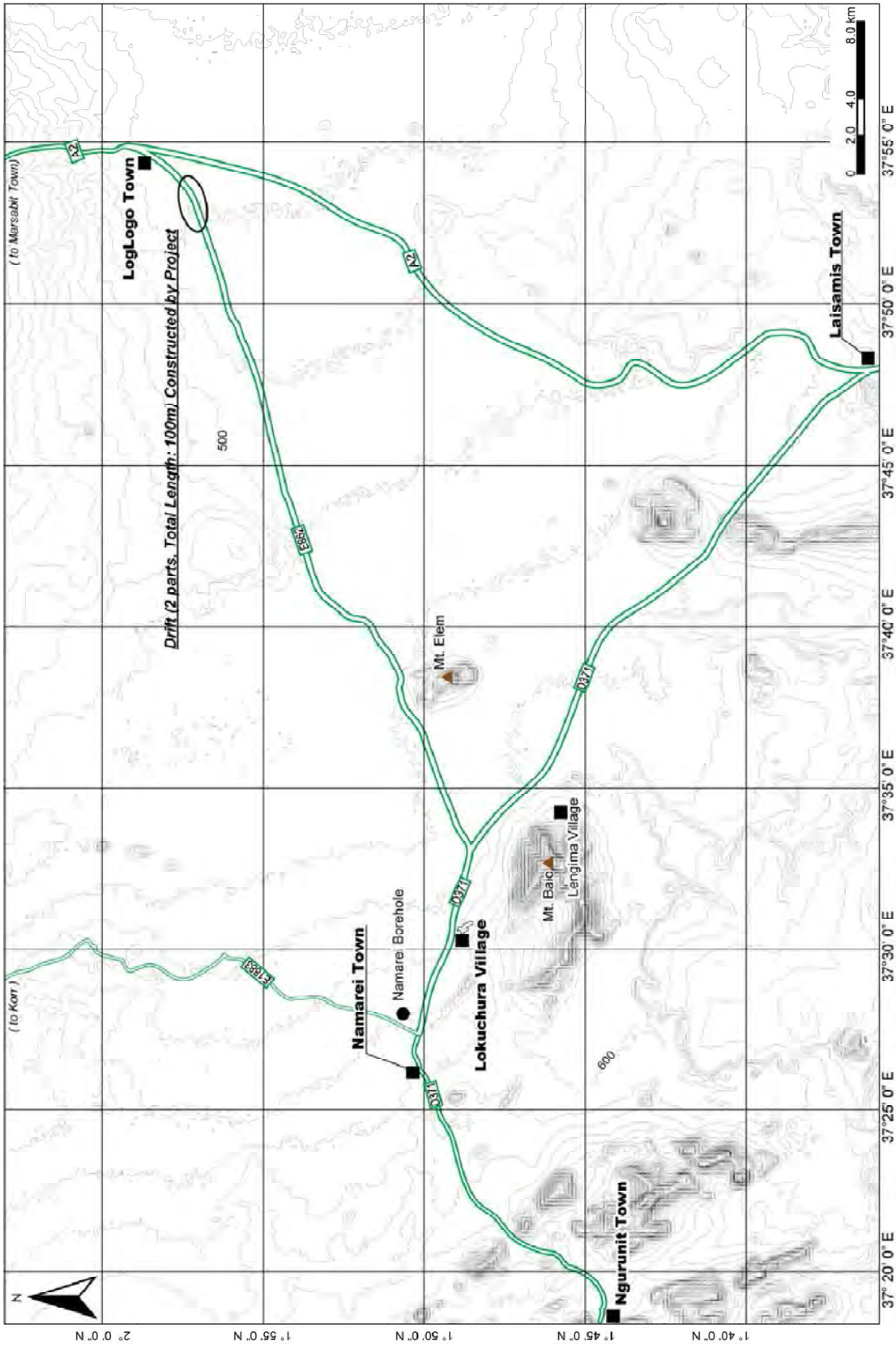
Source: JICA Project Team

Figure BF5.2.2 General Layout and Typical Section of Road Rehabilitation near Dirib Market



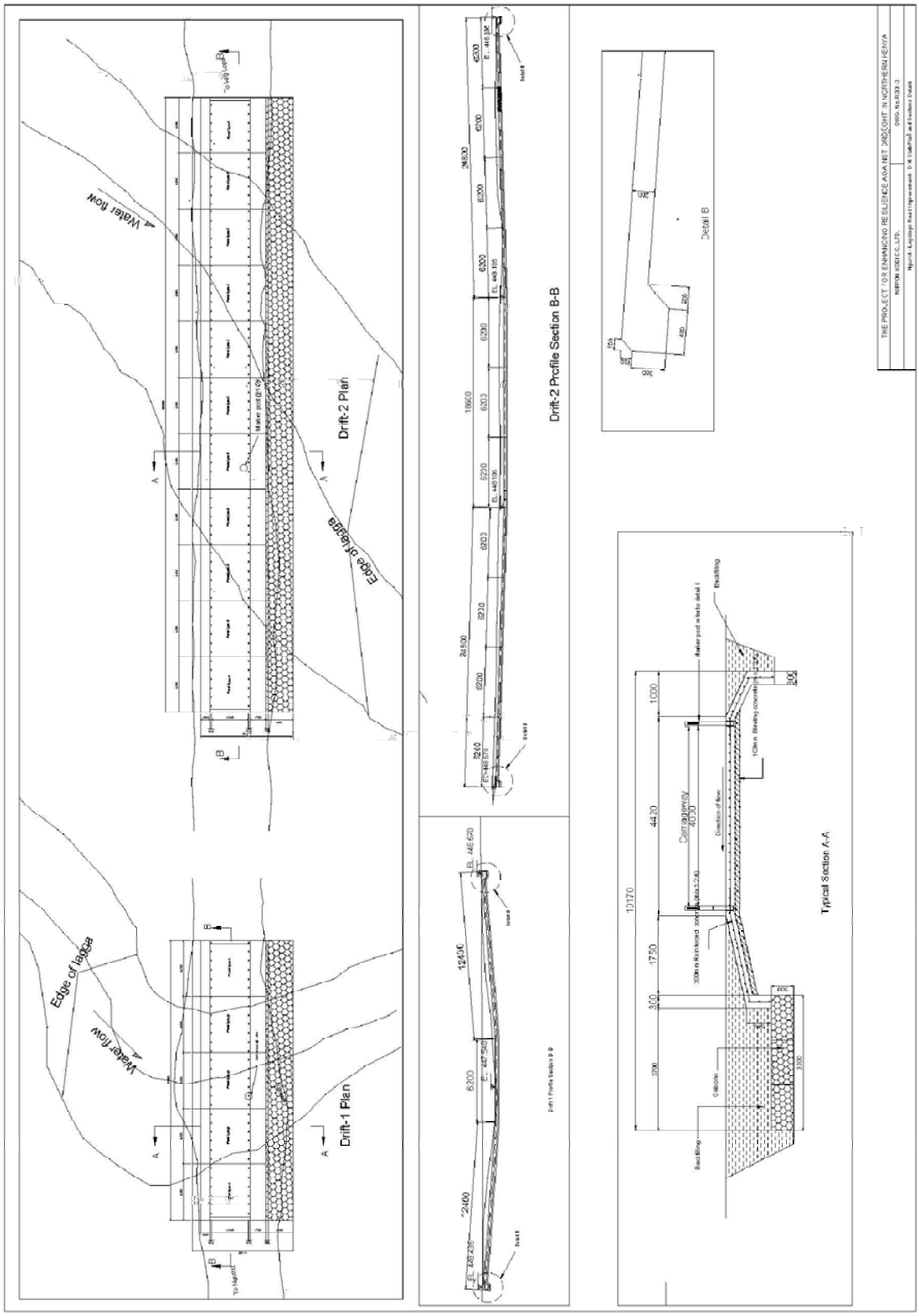
Source: JICA Project Team

Figure BF5.2.3 General Layout and Typical Section of Road Rehabilitation near Dirib Market (Pipe Culvert)



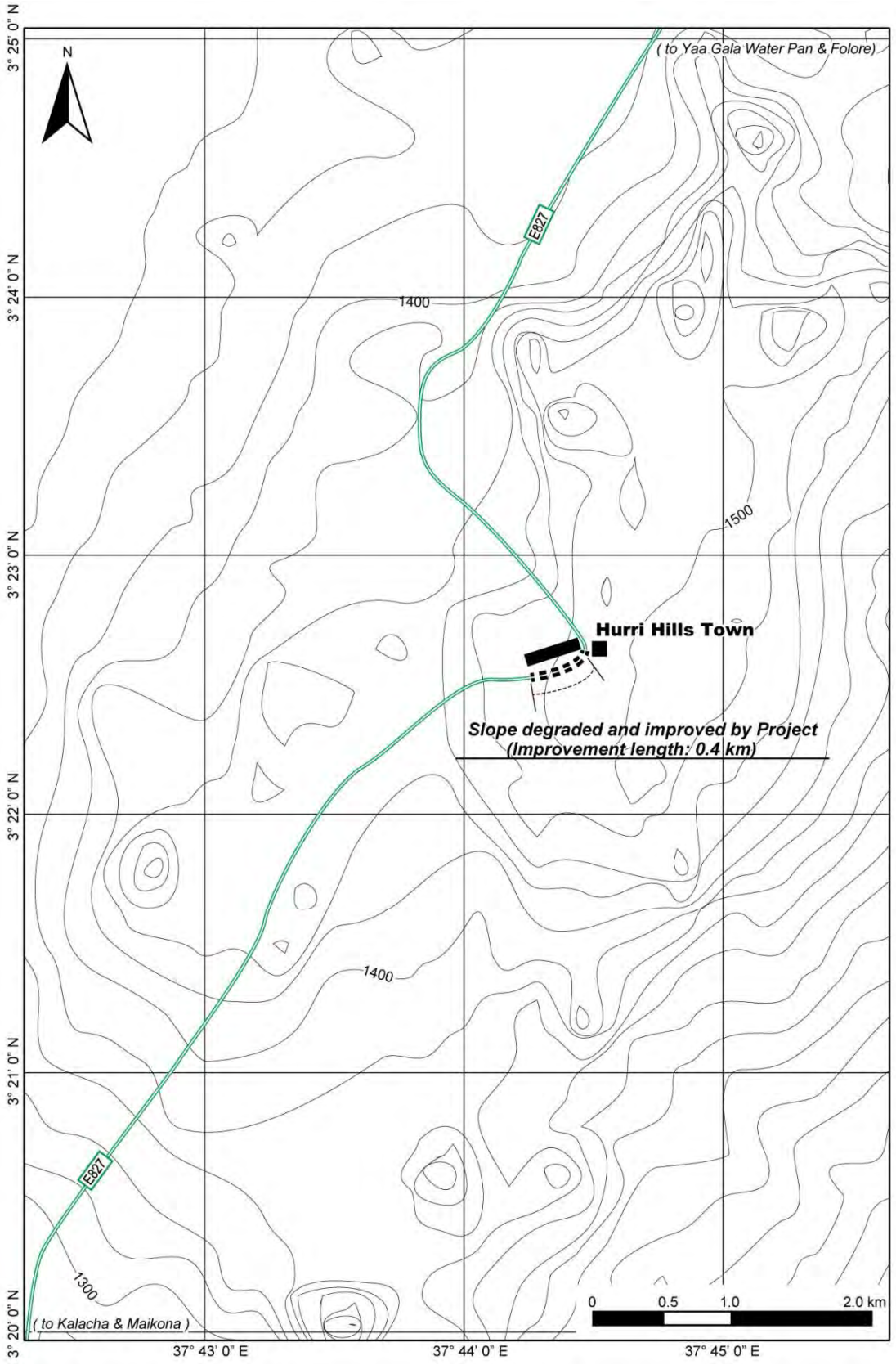
Source: JICA Project Team

Figure BF5.2.4 Location Map of Road Rehabilitation near Logulogo Connected to Korr Market



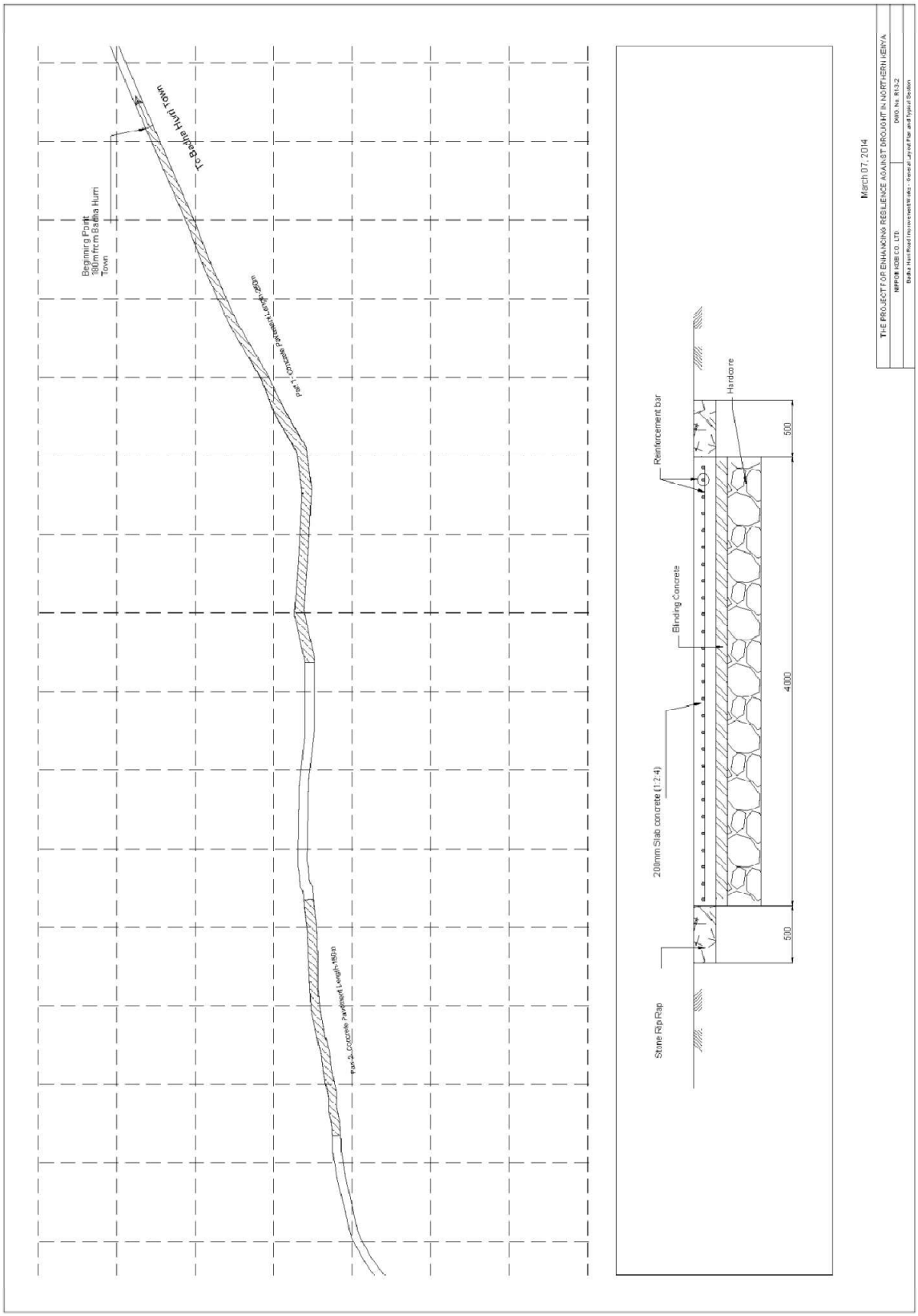
Source: JICA Project Team

Figure BF5.2.5 General Layout and Typical Section of Road Rehabilitation near Loglogo Connected to Korr Market



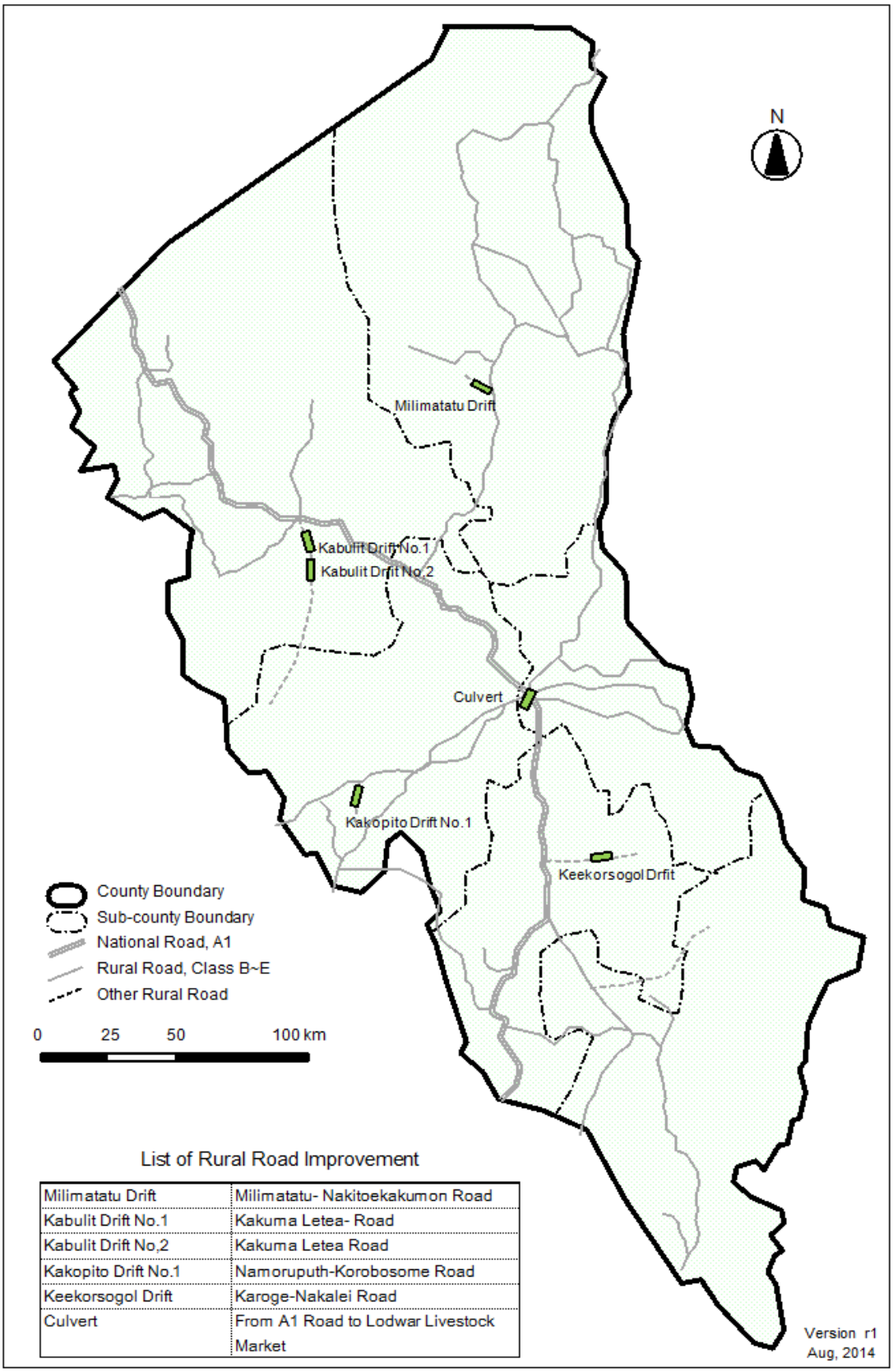
Source: JICA Project Team

Figure BF5.2.6 Location Map of Road Rehabilitation near Hurri Hills Connected to Kalacha



Source: JICA Project Team

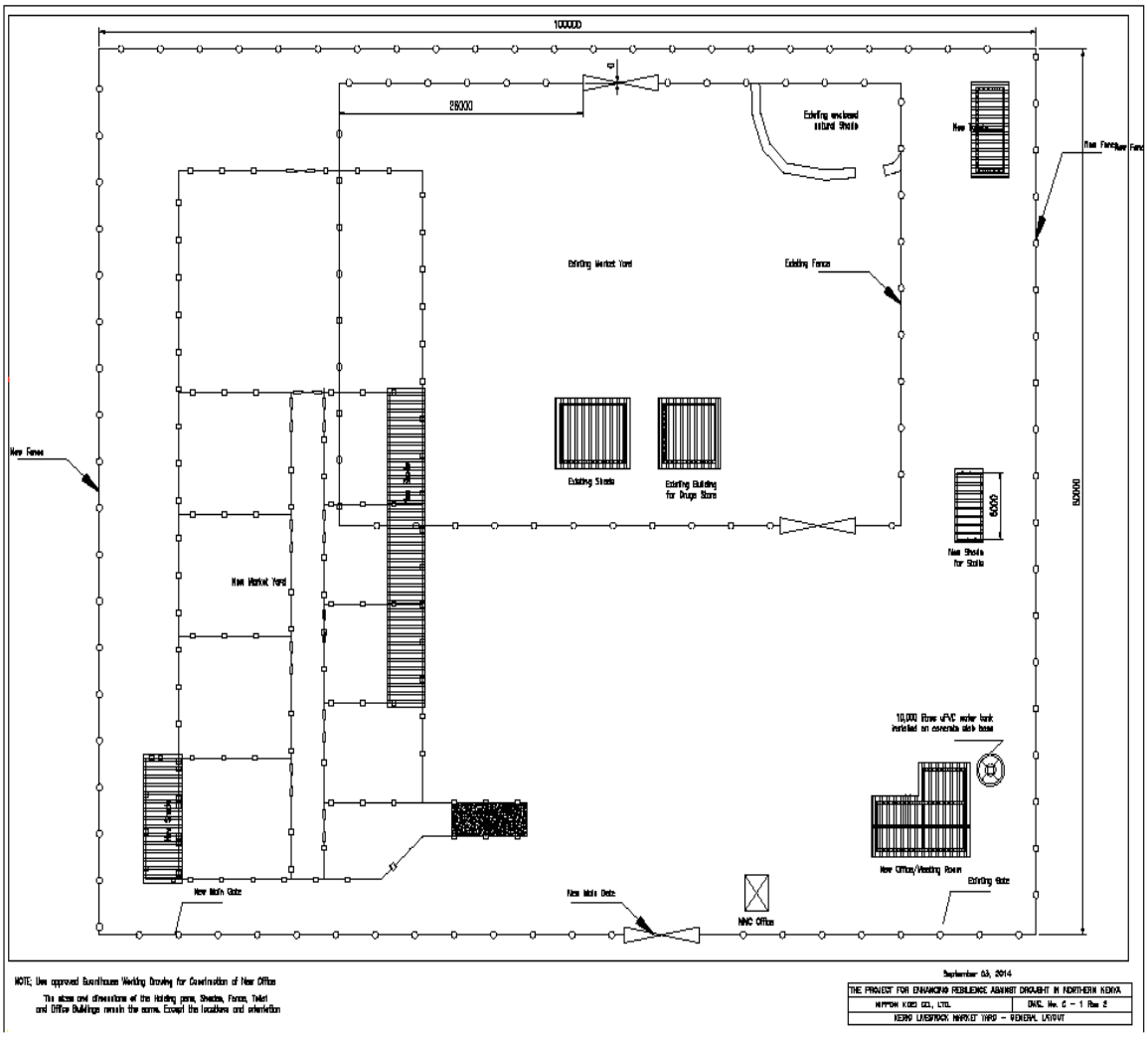
Figure BF5.2.7 General Layout and Typical Section of Road Rehabilitation near Hurri Hills Connected to Kalacha



Milimatatu Drift	Milimatatu- Nakitoekakumon Road
Kabulit Drift No.1	Kakuma Letea- Road
Kabulit Drift No,2	Kakuma Letea Road
Kakopito Drift No.1	Namoruputh-Korobosome Road
Keekorsogol Drift	Karoge-Nakalei Road
Culvert	From A1 Road to Lodwar Livestock Market

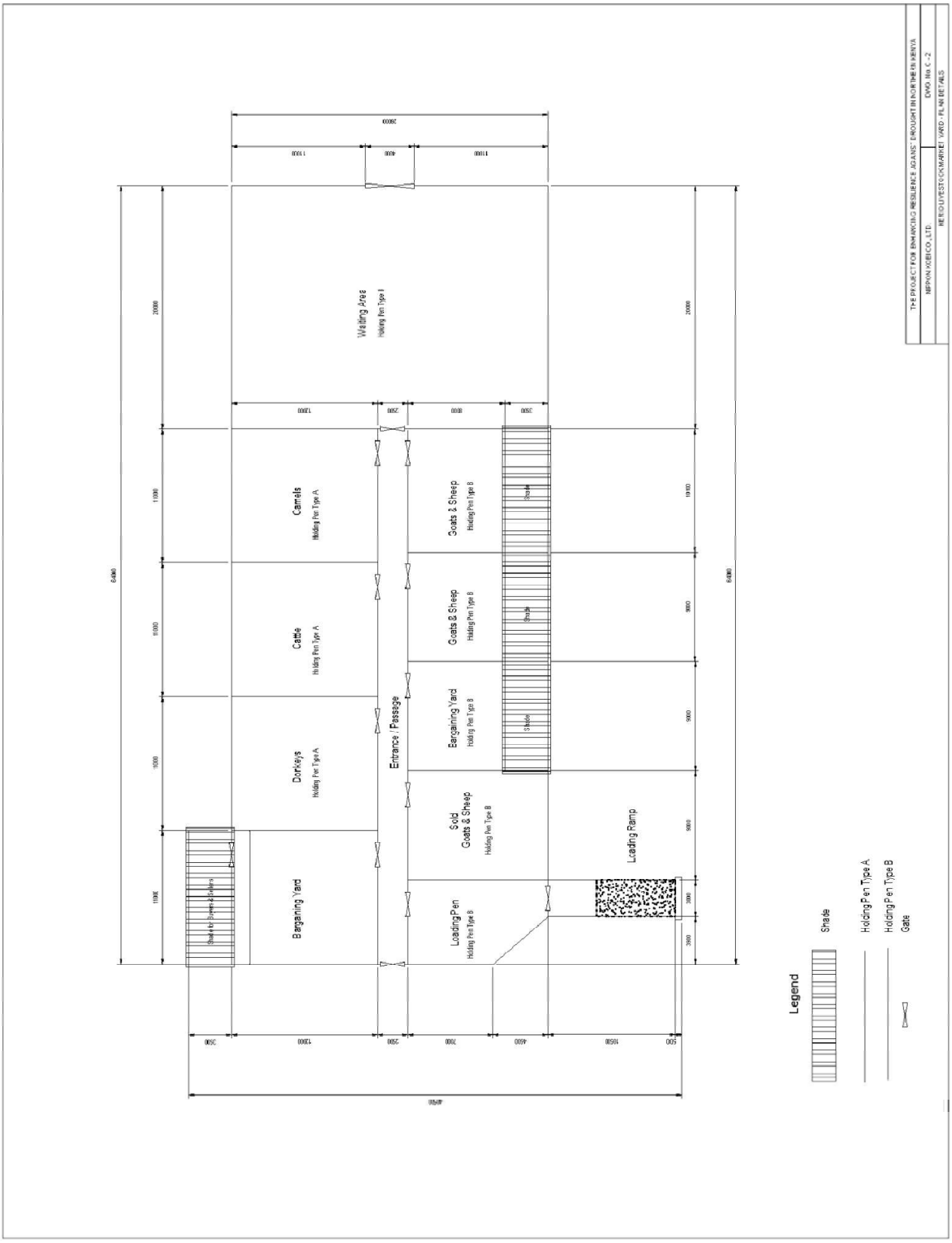
Source: JICA Project Team

Figure BF6.1.1 Location Map of Road Improvement in Turkana County



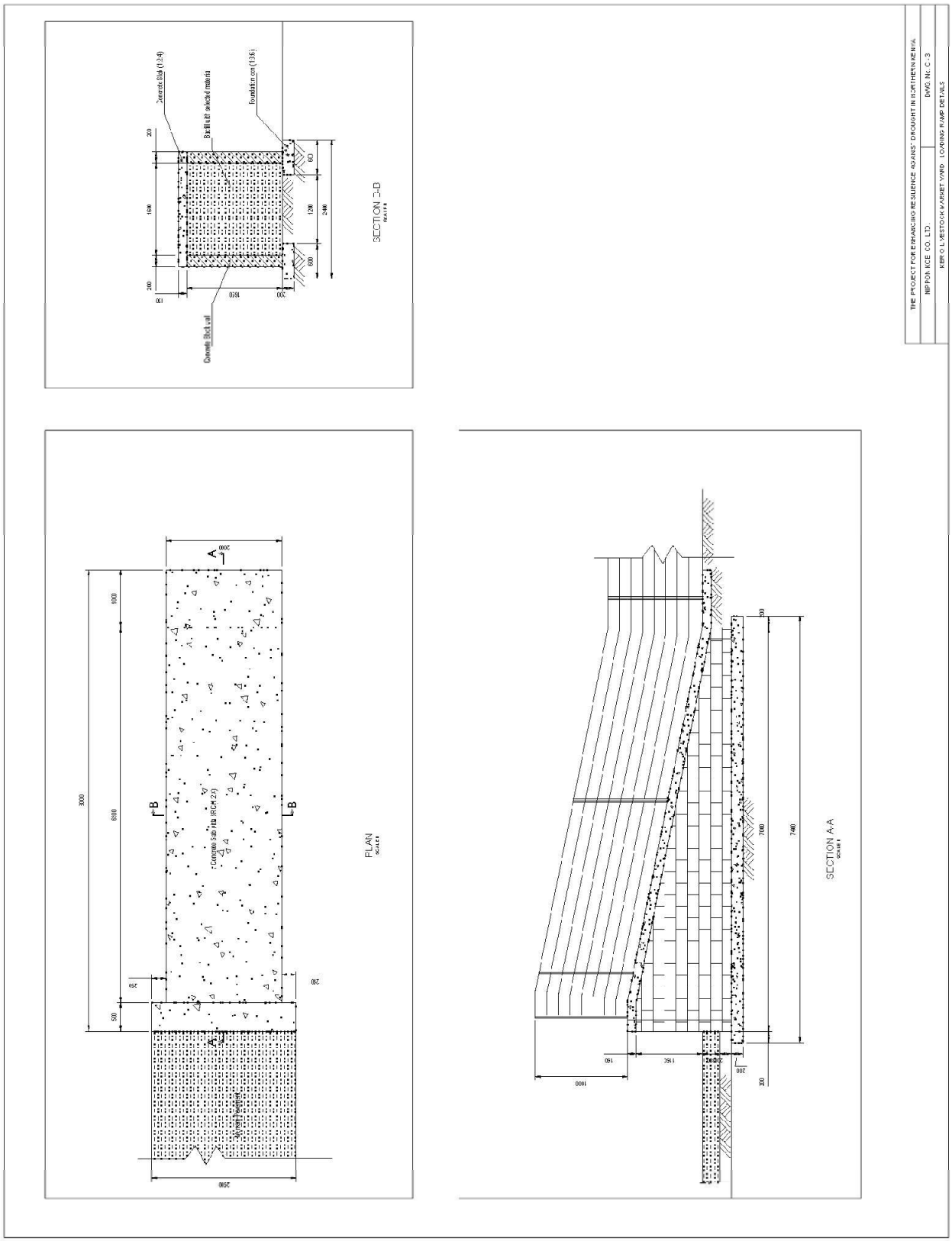
Source: JICA Project Team

Figure BF6.2.1 General Layout of Kerio Market Yard



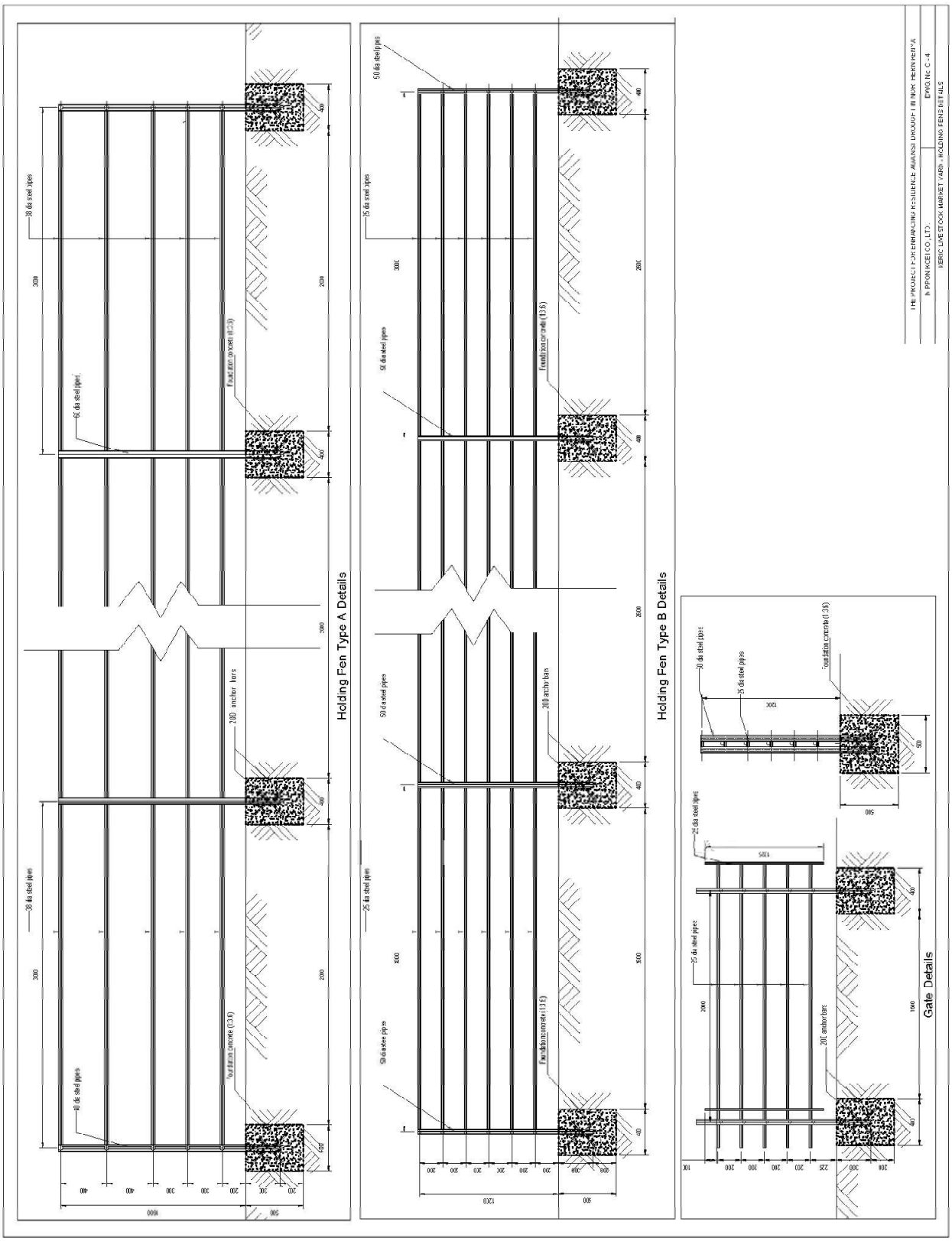
Source: JICA Project Team

Figure BF6.2.2 General Plan of Shade House in Kerio Market Yard



Source: JICA Project Team

Figure BF6.2.3 Details of Loading Ramp of Kerio Market Yard



Source: JICA Project Team

Figure BF6.2.4 Details of Holding Pens of Kerio Market Yard

Attachments

Attachment F2-1

Application Form in Dirib Gombo Market

Attachment F2-1 Application Form in Dirib Gombo Market

JICA ECoRAD MARSABIT OFFICE
LIVESTOCK TRADERS LOAN APPLICATION FORM
LIVESTOCK VALUE CHAIN

INDIVIDUAL LIVESTOCK TRADERS LOAN SCHEME

1. *APLICANT PARTICULARS*

a) *NAME OF THE TRADER:* ----------

b) *ID /NO. OF THE TRADER:* ----------

c) *LOCATION:* ----------

d) *DIVISION:* ----------

e) *DISTRICT:* ----------

f) *COUNTY:* ----------

2. *AMOUNT OF LOAN APPLIED FOR IN (KSHS) :* ----------

3. *LOAN REPAYMENT*

The loan repayment starts after a grace period of at least TWO month (1 month) after receiving the money AND REPAID AT MONTHLY INSTALMENT 10% OF THE AMOUNT RECEIVED.
The traders should return money in part or full after bulk livestock sale.

4. *LOAN INTEREST*

The loan repaid back at zero interest

5. *TRANSACTION COST*

The successful livestock trader expected to pay fixed transaction cost kenyan shillings two thousand only (2000) before receiving the approved.

6. PURPOSE OF THE LOAN

Should be strictly livestock trading. .....

7. *LOAN SECURITY:*

A. *LIVESTOCK*

i) Cattle no. _____ Location .....
ii) Goats no. _____ Location .....
iii) Camel no. _____ Location .....

B. *OTHER ASSETS*

i) Land in acreage _____

ii) House no. _____ Types_____

I ..... ID NO. ..... HERE BY PLACE THE ABOVE MENSIONED ASSETS AS COLLATERAL FOR LOAN REQUESTED AND AUTHORIZED BY JIRIME /DIRIB LIVESTOCK TRADERS ASSOCIATION TO TAKE CHARGE OF THE ANY OF THE ASSET MENSIONED ABOVED IN CASE OF FAILURE TO REPAY THE LOAN WITH IN THE STIPULATED PERIOD AND DISPOSE SUCH ASSETS FOR THE PURPOSE OF LOAN RECOVERY. THE ASSETS LOCATIONS IS WELL KNOWN TO THE JIRIME LIVESTOCK MARKET ASSOCIATION MEMBERS AND OFFICIALS

8. GUARANTORS.

FIRST GUARANTOR

I/WE.....IDNO. ..... HAVE AGREED TO PLACETHE ASSET MENTIONED BELOW AS COLLATERAL FOR THE LOAN MENTIONED IN THIS DOCUMENT AND AUTHORISE THE JIRIME DIRIB LIVESTOCK MARKETING ASSOCIATION TO TAKE CHARGE OF ANY OF THESE ASSETS FOR THE PURPOSE OF LOAN RECOVERY.

A. LIVESTOCK

i) Cattle no._____ Location .....

ii) Goats no._____ Location .....

iii) Camel no._____ Location .....

B. OTHER ASSETS

i) Land in acreage _____

ii) House no. _____ Types_____

SIGNATURE:_____

NAME:_____

SECOND GUARATOR

I/ WE.....IDNO. ..... HAVE AGREED TO PLACETHE ASSET MENTIONED BELOW AS COLLATERAL FOR THE LOAN MENTIONED IN THIS DOCUMENT AND AUTHORISE THE JIRIMEME LIVESTOCK MARKETING ASSOCIATION TO TAKE CHARGE OF ANY OF THESE ASSETS FOR THE PURPOSE OF LOAN RECOVERY.

A. LIVESTOCK

i) Cattle no._____ Location .....

ii) Goats no._____ Location .....

iii) Camel no _____ Location .....

B. OTHER ASSETS

i) Land in acreage _____

ii) House no. _____ Types_____

SIGNATURE: _____

NAME: _____

9. LOAN APPROVAL

THE JIRIME / DIRIB LIVESTOCK TRADERS ASSOCIATION HEREBY APPROVE / REJECT

a) Name: .....

Signature: .....

Position: .....

ID NO .....

Date: .....

b) Name: .....

Signature: .....

Position: .....

ID NO. .....

Date: .....

AMOUNT APPROVED. .....

.....

WITNESS

NAME: .....

ID NO. .....

SIGNATURE: .....

CHIEF / ASS. CHIEF

Name: .....

Signature and stamp.....

Date: .....

APPROVAL BY DRR COMMITTEE

THE JIRIME / DIRIB DRR COMMITTEE HEREBY APPROVE / REJECT

a) Name: .....

Signature: .....

Position: .....

ID NO. .....

Date: .....

b) Name: .....

Signature: .....

Position: .....

ID NO. .....

Date: .....

10. LOAN ACCEPTANCE

a) AMOUNT LOANED .....

b) AMOUNT RECEIVED .....

c) APPLICANT SIGNATURE & DATE .....

WITNESS BY FAMILY MEMBER

NAME: .....

ID NO. .....

SIGNATURE .....

DATE: .....

11. RITERIA OF BENEFICIARY IDENTIFICATION

i) The loan beneficiaries are expected to apply for the loan filling soft loan application form Jirime/ Dirib livestock marketing association Market Management Committee(MMC)
ii) The committee then identifies the beneficiary based on the qualification enlisted below.
iii) The selected beneficiaries are expected to appear before the JIRIME/DIRIB MARKET MANAGEMENT COMMITTEE / JIRIME/DIRIB LIVESTOCK MARKETING ASSOCIATION for further explanations of their qualifications.

12. QUALIFICATIONS:

i) The beneficiary must have at least 10% of the amount requested
ii) The person must be a re-known livestock trader and have trading skills required
iii) The person must be a person trading in Jirime / Dirib livestock market
iv) The person does not have any other loans
v) The beneficiary must be well known to the JIRIME /DIRIB LIVESTOCK MARKETING ASSOCIATION (MMC)
vi) He / she must be family person and family back ground known to community and committee members.
vii) A person must own some properties in terms of asset (livestock, land, farms, house etc
viii) The person must be honest, respectful and with good track record
ix) He / she must be Kenyan citizen (possess a valid national identity card)

Attachment F2-2

VICOBA Training of Traders and LMA
Dirib, Jirime LMA, Korr LMA and Kalacha EMC

Attachment F2-2
VICOBA Training of Traders and LMA Dirib, Jirime LMA, Korr LMA and Kalacha EMC

(1) TRAININGS OVERVIEW

Before the training commenced there was brief introduction of Care and its projects, Brief history of VICOBA and how it got its way to Marsabit in the year 2011. The group members showed enthusiasm to learn the VICOBA Methodology.

Training objectives were laid down to enable the participant have smooth flow of the training program, they include the following;

- To Learn about groups and Individual self-screening
- To know about Group Leadership and Governance
- To Know importance of Saving, Credit and Social funds.
- To develop Group constitutions
- Learn about Record Keeping &First share purchase, and loan disbursement and repayment procedures
- Principles of VICOBA.

In order to achieve the above training objectives we laid down modules that need to be covered in the training.

(2) TRAININGS MODULES.

a. **Groups Individual Self screening, Leadership and Elections**.

Here we informed them on; groups, causes of conflicts in groups, how to solve conflicts in groups, how individuals need to look at themselves before joining a group so that they do not end up defaulting group loans, leadership and their qualities (Chair person, Record keeper, Box keeper, Money counter one and money counter 2)

The Election procedures were also taught emphasis being on the secret ballot to make the election free and fair.

Causes of Conflicts in a group, its effects and how to counter it were also discussed.

b. Development of rules and Policies Governing Savings, Credit and Social funds.

The seating arrangement (semi-circular form) was discussed to ensure Transparency and keep meetings orderly and therefore short. Importance of Savings, credit and social funds were also

discussed. In addition rules on the same were discussed to be inserted their constitution where necessary.

In same light, the differences between saving as a group and individual were discussed to give groups spirit of saving together.

c. Development of group Constitution

The importance of Constitution in Groups was discussed. Constitution framework was laid down and groups given the opportunity to select clauses that they need to add to their previous group constitution.

d. Record Keeping& Meeting Procedures

Groups were taught on how to enter group transaction entries in passbooks and how Memory based Record keeping do for groups where all the members are illiterate. Group meeting procedures were also discussed.

e. First Share Purchase (Saving) and Loaning Procedures

The groups were taught on first saving, and how to loan out the saved money putting into consideration the meeting procedures. Someone is loaned depending on the number of shares bought (savings), and loans repaid with 10% interest after one month.

f. Simulations exercise(Practical application)

Groups were taken through simulation exercises, where they demonstrated how they they will conduct themselves in the meeting (meeting procedure). From how they performed in the simulations recaps are done to enable them follow the stipulated guidelines on their own.

(3) FINDINGS

a) DIRIB GOMBO.

Dirib Livestock Marketing Association (LMA) committees had good cohesion. The committees had prior knowledge of how GS&L operates at their village levels. They therefore agreed to form the association to carry out the savings and loaning as stipulated in the trainings.

The weaknesses they had was that they do not have fixed membership, hence for traders to access and repay the loans without defaults, they agreed to join the association, save and be able to repay within their constitutional framework. The registration to join membership is ongoing.

The group also accepted to join Pamoja Account, which is as a result of partnership of CARE and Equity Bank. The Account has benefits to group's in terms of low interest rates, low withdrawal charges, free cheque books to the groups etc. They agreed and switched their previous account to Pamoja savings account.

With the laid down strategies the committees are positive that the members will be able to repay the loans promptly than before.

b) KALACHA

The members were initially not cohesive towards their group activities in that most of the group members do not assist towards group's farm. For purpose of cohesiveness of the group, the members decided to branch into 3 smaller groups to engage in different activities like Fattening of goats, taking care of fodder, and environmental conservation.

The different groups are to carry out the activities stipulated in addition to saving and loaning.

c) KORR

Korr is a location within Laisamis district and far from towns. The inhabitants are majorly pastoralists.

Korr Livestock Marketing Association had 18 members who attended the trainings. The training took place as planned on 6th of July 2014. The participants were involved in terms of participation towards the training. They also had knowledge on group savings and loans methodology promoted by CARE K at group levels in their villages; some have even managed to use the loans access by their wives at their groups to engage in income generating activities.

The group said they already have community account that the fees from the Livestock market are to be deposited based on the share they had agreed with the county council.

The groups concluded that they really liked the trainings and they took action to start saving on 28th of June 2014, and CARE CBT (community Based Trainers based in Korr took the initiative to follow up with them to guide them during their first saving.

They also accepted to open a Pamoja account with Equity Bank for the group and this too will be discussed during the group meeting when they will be saving their contributions.

Source: JICA Project Team

Figure 1 Training Session at Korr

d) JIRIME

Jirime is a location within the heart of Marsabit town. The traders here are somehow enlightened and were quick to learn. The meeting was very participative. However, some members who never managed to save according to group rules are yet to be excluded. Two members of the group had received Kshs 600,000 from the project under the heifer exchange program and repaid the loan in full .The group accepted to save contributions according to shares/ saving amount depends on members ability to save and at the end the individuals can access loans not more than three times their shares to reduce the likelihood of loan defaulting.

The members agreed to do the following as an action plan;

- The Jirime LMA group agreed to talk to County government on the issue of moving the Livestock market to the site instead of the stadium. This should be done by30th August 2014
- The group members agreed to have discussion on saving and loaning activities on 19th July 2014
- The group members agreed to audit their saving contributions before 19th to see the active members who will continue the activities together.
- They also agreed that the group members have accepted to work in unity to enable the group achieve their goals and objective.
- The group also agreed to switch their Group account to Pamoja savings account.

Source: JICA Project Team

Figure 2 Training Session at Jirime

(4) WAY FORWARD

The trainings ended in action plans where the groups committed to undertake the following activities; saving and loaning at group level depending on their share values, Open Pamoja account, to use the Jirime livestock market, and to ensure that groups follow their constitution to ensure non-defaulting of loans disbursed.

(5) CONCLUSION

The training took place as planned. It was a very interactive training, where participant really engaged in discussions. The group members understood what group entails, its dynamics and accepted to purchase shares to be able to access loans based on the principle of three times their shares.

In the trainings, we utilized several training techniques suitable for the adult learners; some among them are Group discussions, Use of caricatures, Presentations, Question and answer sessions, Recaps and use of their skills to show what they learnt.

Attachment F7-1

Material for Workshop on Improving Livestock Marketing Information System

Attachment F7-1
Material for Workshop on Improving Livestock Marketing Information System

Place of workshop: Lodwar.
Venue of Workshop: Conference Hall, DLMC, Saleyard.
Dates: 12th May 2014 to 13th May 2014
Audience: **5** Lodwar LMA officials.
1 chief (Lodwar Township Location).
Facilitators: Project Coordinator (CLMO)
Sub - County Livestock Production Officer
JICA / ECoRAD team: Yasunori Kanda / Hosea Eleman / John Chupao

Introduction / opening remarks:
The meeting started, with a word of prayer which was recited by one of the participants. Later the participants were given time to introduce themselves. The introduction was done on the criteria which required that one had to mention the name, the designation and occupation done. Consequently the facilitators and the JICA / ECoRAD team also had the opportunity to introduce themselves using the same criteria.

Workshop Norms / Rules - Sheria:
- ✓ Phones to be put on vibration mode / silent mode.
- ✓ Avoid unnecessary movement.
- ✓ Respect for other participants opinions / views.
- ✓ Seek permission for absenteeism.
- ✓ Punctuality (time management - KEEP TIME.
- ✓ Let us avoid hard drinks during sessions.
- ✓ Raise hand when you want to talk.

Workshop expectations:
- ❖ Education on livestock marketing information systems.
- ❖ Linkage between JICA / ECoRAD and Lodwar LMA on livestock marketing information systems.
- ❖ Problems / needs JICA / ECoRAD has identified among livestock traders in Turkana County.
- ❖ To be awarded with certificates after workshop.
- ❖ Can JICA / ECoRAD facilitate the renovation of paddocks for big stocks and small stocks?
- ❖ Possibility of drilling a borehole closer to Lodwar LMA sale yard.
- ❖ How can JICA / ECoRAD assist Lodwar LMA access better markets for the traders / pastoralists “livestock”?

Workshop responsible persons:
1. Energizer – Mr. Francis Akori.
2. Spiritual person – Mr. Micheal Ewesit.
3. Time keeper – Mr. John Kivoi.
4. Welfare – Mr. Asena Sefania.

Who owns Livestock Marketing Association (LMA)?

Livestock marketing association is a livestock association owned by the community. The community in this case represents the greater spectrum of pure pastoralists, traders and other stakeholders within and outside the County. However, the association is managed by the elected officials comprising the chair, vice chair, secretary, treasurer and organizing secretary on behalf of the community. In this respect, Lodwar LMA has a membership figure of 274. Every member registers with the association with only ksh. 200.

Objectives of Livestock Marketing Associations (LMAs):

- ❖ To provide linkages with other livestock markets.
- ❖ To advocate for the rights of the members on livestock matters in collaboration with other partners.
- ❖ To promote livestock trade products locally, nationally and internationally through networking and market linkages.
- ❖ Timely dissemination of marketing information to farmers and traders.
- ❖ Lobbying for livestock markets in potential market areas.
- ❖ Capacity building of livestock farmers (pastoralists) and traders.

Livestock Marketing Association Core Values:

- Integrity
- Transparency and accountability
- Fairness and equity
- Respect of human dignity
- Quality service delivery
- Efficiency and effectiveness
- Commitment
- Teamwork

Objectives of County Livestock Marketing Organization (CLMO):

- ✓ Advocating for the rights of Livestock Marketing Associations (LMAs).
- ✓ Acting as a link between Livestock Marketing Associations and Kenya Livestock Marketing Council (KLMC).
- ✓ Carrying out training of Livestock Marketing Association officials.
- ✓ Disbursement of funds when received from KLMC.
- ✓ To assist or guide LMAs in writing proposals.
- ✓ To promote livestock trade.
- ✓ To advocate for policy change to favor appropriate livestock development.
- ✓ To develop local market institutions (LMAs) and capacity build the LMAs to sustainably manage livestock related infrastructure.

Core values of Livestock Production Department:

- Professionalism
- Integrity
- Meritocracy
- Impartiality
- Gender equity
- Team work.

Role of County Director of Livestock Production (CDLP):

- ✓ To provide technical and legal policy reviews.

- ✓ Prepares County Livestock Production work plans.
- ✓ Attends County departmental meetings (County Steering Group).
- ✓ Shares Livestock programmes with other departments and partners.
- ✓ Links between National and County governments.
- ✓ Guides implementation of livestock activities in the County.
- ✓ To control and eradicate trade sensitive diseases.
- ✓ Improve productivity of livestock enterprises by;
- Collecting, analyzing and disseminating livestock market information.
- Strengthening linkages between livestock producers and outlets.
- Establishing a market data quality assurance mechanism.
- Rehabilitating strategic holding grounds.
- Constructing an export abattoir.
- Constructing satellite abattoir.

Who to do market linkages?

Linkage is defined as the ability to develop productive relationships with wide variety of organizations. Linkages therefore will include regular communication, interaction and exchange of information and resources.

The following are market linkages or stakeholders involved in the livestock marketing information system;

- LMA committees
- District Livestock Marketing Council
- Ward representatives (politicians)
- GOK representatives.

Where to get livestock markets?

- ✓ Supply to non governmental organizations
- ✓ Hotels, restaurants and bars
- ✓ Kenya Meat Commission
- ✓ Cooperatives e.g. Lomidat and External buyers
- ✓ Learning institutions such as primary, secondary, colleges and universities
- ✓ Kenya Wildlife Service
- ✓ Guests lodgings
- ✓ Army barracks
- ✓ Prison rehabilitation centres
- ✓ Motels

How to popularize the LMA markets / dissemination of market information:

- ❖ Through subsidized and attractive buying and selling prices
- ❖ Through setting of market days
- ❖ Community barazas such as chiefs' public meetings
- ❖ Radio programs e.g. FM radios such as radio Akicha, Hosana, Maata e.t.c.

Uses of LMA Revenue collected:

- ✓ Expanding LMA cooperate business e.g. purchase of LMA lorry, supply for ready tenders e.t.c.
- ✓ Micro – financing (loaning) active LMA members with interest returns.
- ✓ Repairs and maintenance of sale yard.

- ✓ Correspondence / communications for crucial LMA matters e.g. Meetings and business lunches during LMA meetings.
- ✓ Supporting of common corporate activities.
- ✓ Payment of Sale yard workers e. g. Revenue collectors & security officers.
- ✓ Payment of school fees for the members children especially the very needy.
- ✓ Payment of funeral expenses for the members.
- ✓ Payment of water and electricity bills.

Reporting Model:
Both the **weekly** and **daily reporting models** were explained to the participants. However the participants (LMA officials) found out that the weekly reporting model needed few changes in terms of the information required and consequently requested that the **weekly livestock prices** reporting model title to be changed to **daily livestock prices** for ease of understanding.

Users of Livestock Marketing Association Reports:
- ❖ County Livestock Marketing Organization
- ❖ Kenya Livestock Marketing Council
- ❖ Government of Kenya – National and County governments.

Stakeholders using Livestock Marketing Association Reports:
- ❖ JICA / ECoRAD.
- ❖ World Vision Kenya
- ❖ VSF – Belgium, VSF – Germany.
- ❖ African Development Solutions - ADESO
- ❖ United States African Development Foundation - USADF
- ❖ Diocese of Lodwar - DOL
- ❖ OXFAM
- ❖ International Rescue Committee - IRC
- ❖ Agency for Pastoralists Development - APAD
- ❖ National Drought Management Authority - NDMA
- ❖

A group photo during the closure of the two days workshop.

Way forward / Recommendations:
- ✓ There should be a weighing scale to ascertain animals grades based on kilogrammes.
- ✓ Electric counting machine should be introduced to give exact numbers of animals entering the sale yard to avoid uncertainty of the correct number of animals.
- ✓ Animal prices are highly escalating and therefore there is need for pastoralist traders exchange visits to understand prices charged for livestock in other areas to avoid unwarranted increase in livestock prices.
- ✓ LMA constitution should be reviewed to accommodate many revenue collection gaps identified during the workshop.
- ✓ Government should improve Lodwar - Kitale road network for easy access to the livestock markets.
- ✓ The JICA / ECoRAD senior management should pay a courtesy visit to the office of the chief in Lodwar township sub- location for awareness.

Workshop report compiled by Livestock Value Chain JICA ECoRAD Team.

Attachment F8-1

1st Exposure Tour Report

ATTACHMENT F8-1 1ST EXPORSURE TOUR REPORT

REPORT OF THE EXPOSURE TOUR TO NATIIRA PASTURE RESEEDING PLOT BY LORTIT AND LOKICHOGGIO CDC OFFICALS.

Dates 26/28/2/2014 to 1st /3/2014.

LIST OF PARTICIPANTS

NAME:	ID NO:	DESIGNATION:
LORTITI CDC:		
1. Joseph Adiaka	12433247	A.G chief
2. Simon Achapan	21596357	V.Chairman
3. Elizabeth Awesit	9337199	Chairlady
4. Shadrack Ewaat	237662728	Secretary
5. Akalale Eyenae	24522008	Treasurer

LOKICHOGGIO CDC:

NAME:	POSITION	PHONE NO:
1. Danson Ekal	Chairman	0718 861736
2. Joseph Ebaal	V. Chairman	0710711 864
3. Veronica Emuria	Treasurer	0726962421
4. Jeremiah	Member	0713 173442
5. Daniel Losil	Chief	0700783998

GOK OFFICIALS:

Reuben M. Wekunda - District Livestock Production Officer Turkana West Sub-County.

Joseph Ekaran – Technician on design of micro catchment/semi-circular bunds designs.

INTRODUCTION

The tour was taken to expose the CDC officials to the pasture reseeding projects that already exist in Turkana West. The site visited was Natira pasture production group.

The CDC officials were the ones who were taken for the exposure on behalf of the committee so that they could educate pasture management sub-committee when formed and other members of their committee and rest of community.

Objectives of the tour.

To expose the CDC officials to work already being undertaken by other existing pasture reseeding groups in the sub county.

The make them appreciate the potential and possibility of pasture reseeding in their respective areas.

To enable them carry out reseeding with their community members even with little supervision in order that implementation is not delayed.

Time table

S/NO:	DATE	PLACE	REMARKS
1.	26/2/2014	Lodwar –Loritit - Lokichoggio	Sensitizing CDC officials on tour
2.	27/2/2014	Lokichoggio-Natiira and back	CDC Officials,Gok,JICA/ECoRAD staff
3.	28/2/2014	Lokichoggio/Loritit-Natira-Loritit-Kakuma	CDC Loritit,Gok/JICA/ECoRAD
4.	1/3/2014	Kakuma	report compilation

FIELD OBSERVATIONS:

Lokichoggio CDC have already identified land over 20 acres for reseeding. Loritit CDC has also identified a site of over 20 acres and is already fenced with thorn bushes.

The Natira pasture plot visited is a community group that has 50 acres under pasture. The plot is fenced with chain link and thorn bush support from Turkana Rehabilitation Programme. The thorn fence was community contribution. It's therefore permanent and very secure. It can guard the pasture for a long time from damage from animals.

Hay and seed is harvested continuously in this Natiira pasture reseeding plot.

They have a hay store with over 310 bales and are still harvesting. They also have 20 bags of pasture seed harvested from the same plot. They sell one bale of hay at 500/= and 1 kg of seed at 800/=. They have orders already from FAO and UNDP for their hay and seed. The rest of the hay is for sale to local pastoralists, for their own members use and for expansion/gapping of their pasture plot.

The Natira group also has two manual hay balers donated by UNDP for harvesting the hay.

FIELD OPERATIONS AT NATIIRA PASTURE RESEEDING PLOT

Fencing

It's made of chain link and reinforced by thorn bush. It's very secure and permanent.

BUSH CONTROL

Selective bush control done by community on food for work basis and community contribution.

CONSTRUCTION OF MICRO CATCHMENTS:

Semi- circular bunds constructed all over the plot to hold run-off water during rains to enhance pasture growth.

They have Negarims to hold water and enable fodder shrub growth. Local indigenous shrubs established which are multipurpose i.e. Fodder and fruit production for humans.

PLANTING:

Was done during long rain season but with subsequent replanting/gapping of bare spots where seed had failed to growth. Seed was procured from Baringo County.

WEEDING:

Done selectively by hand to remove obnoxious weeds.

SEED HARVESTING

Done after pasture and seed have matured.

It's done by hand and stored in gunny bags in store.

HAY MARKETING:

It's done by hand using pangas and sickles after which the grass is baled by use of the manual hay baler provided.

It's then ready for use/sale.

The group members also take what is sufficient for use by their livestock feeding. Storage is in the hay store.

The stored hay is for sale to any willing buyer and it's also reserved for their own livestock during drought situation.

QUESTION AND ANSWER SESSIONS:

After the CDC officials were taken through the pasture reseeding processes at Natira by the Natira group chairman and Gok officer, they then visited the plot to view the state of the plot, the harvesting and the state and layout of the micro catchments/semi-circular bunds. They then practically participated in harvesting of the pasture and baling.

They then asked questions and were answered by the Natira group chairman and Gok officials.

Q1: - When was Natira plot started?

Ans: 2010.

Q2: - How many fodders shrubs have you planted?

Ans: - 1535 shrubs.

Q3: How deep are the micro catchments?

Ans: - 1 meter deep and 3 meters square wide.

Q4:- How much seed was used:

Ans: - 500kgm of Cenchrus ciliaris (Emerukwa in local language)

Q4:- Why did you plant Emeruka i.e. Cenchrus ciliaris?

Ans: - It is indigenous to the area;

- It's mostly preferred by livestock
- Its drought tolerant.

- It produces a lot of seed.
- It has high herbages

Q5:-Which methods of planting did you use?

Ans: - Broad casting and planting in rows

Q6:- How much soil do you cover the seed with?

Ans: - you cover with thin layer of soil since seed is small. You can also use a rake or thorn bush to make sure the seeds gets into the soil.

Q7:- When do you harvest seed?

Ans: - it's should be immediately you see some seeds detaching easily from the plant. It should be done quickly otherwise seed will be blown away by wind.

Q8:- How much does one bale of hay weigh?

Ans:-9 kgs but depends on how much you load the manual baler and how hard you press the lid of the baler.

Q10:- How will you repair fence if destroyed by other people?

Ans:-we have by-laws and will involve the local chief and village elders to impose a fine to the offender.

WAY FORWARD:

Facilitation of CDCs by JICA/ECoRAD and GOK Livestock production (in regard technical collaboration) to be fast to take advantage of the expected April long rains.

The groups should be supported to increase area under pasture since one acre is small for the community to realize high yields to cushion them against forages scarcity during drought.

The groups should be supported with a permanent fence since pasture plot remains productive for along time while still in production. Thorn bush is too temporary and decomposes quickly under the hot environment. Thorn bush cutting will also lead to damage to the fragile vegetation of the area.

REUBEN WEKUNDA

LIVESTOCK PRODUCTION OFFICER
TURKANA WEST

JOSEPH EKARAN

TECHNICIAN WEST MICROCATCHMENT DESIGNER

Attachment F8-2

Kangakipur Pasture Reseeding Practical Training Report (Sample)

Attachment F8-2 Kangakipur Pasture Reseeding Practical Training Report *(Sample)*

Due to the continued decline in grass cover all over the sub county of Turkana north it is increasingly becoming necessary to reseed the Rangeland if we are going to improve both on the Range productivity and livestock production. With this in mind the above training was conducted between 21st and 24th April 2014 at Kangakipur. The department of livestock production provided pasture seeds free of charge to the two sites and training as part of their contribution to the joint co-operation with JICA ECoRAD.

METHODOLOGY

Given that these are adult learners the method used in the training was a mixture of lecturing, active participation, and practical's. The trainings were non-residential for the Pastoralists and methodology used was on site training and demonstrations. That was to allow Pastoralists time to go back to their homes to attend to other needs

SITES FOR TRAINING: Kangakipur (Town), Akalalioit Village and Loukomoro Village.

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TRAINING CONTENTS

1) WHY DO WE DO PASTURE RESEEDING?

- To provide grass for animals
- To protect the soil from erosion
- To get grass for thatching houses

2) WHAT ARE THE STEPS INVOLVED BEFORE PLANTING PASTURE

- Site selection
- Fencing
- Bush clearing
- Construction of water harvesting structures
- Ploughing
- Trainings

3) PASTURE SEED SELECTION

- Cencrus ciliaris (emeruka)
- Since it grows Fast and drought tolerant and animals like it very much.

4) WHO DO WE PLOUGH THE LAND BEFORE PLANTING?

- To remove stubborn bushes that is not liked by animals.
- To get fine seed bed for the pasture seed which are small in size.
- Can do minimum tillage in areas if weeds are absent

5) PLANTING METHODS: Broadcasting of seed and the raking of the seed into the soil. This was shown practically

6) DRILLING METHOD

By Use of Hand Hoes and Covering of Introduced Seed with Light Soil

7) SPACING
Drill at 1 ft inter-row and use sisal twine tied on one foot wide.. This was demonstrated practically and members practiced it.

8) CONTRUCTION OF SEMICIRCULAR BUNDS
- One semicircular bunds was designed and members did the construction (Laying)
- It's used to hold runoff water to be used for pasture growth
- Its dimensions were; LENGTH – 30 M, DEPTH - 15M, HEIGHT – 30 CM, SLOPE OF LAND 0.5 % and SIDES – 15 M LONG.

9) FARM DEMONSTRATIONS
- Members were taken through the above steps after which practical on- farm demonstration done on choice of pasture species (cencrus ciliaris).
- Planting method demonstrated was drilling at 1^{ft} spacing, planting of seed done evenly in the drill and seed covering done with little soil since seed size is small.
- Seed to be deposited close to soil to avoid drifts by wind.
- Drills made by jembes (hard hoes) spacing of 1 ft apart maintained by use of a sisal twine.
- Members after the practical demonstration continued to plant over one acre on that particular day.
- Members were left with more pasture seed to continue planting in the remaining portions of the site.

PARTICIPANTS THAT ATTENDED THE PRACTICAL TRAINING:

NAMES OF TRAINEES	
1. ITAABA LOCHA	17. LOKOPE LOWOI
2. APUA AKUUTA	18. ALIMEMUSE
3. MIRIAM ERIKOT	19. NAKALALE LOWOI
4. PHILIP LOWOTO	20. NAKAI LOWOI
5. EDAPAL KALEENG	21. LOKAMAR AKAALE
6. ADAPAL NAWOTIN	22. NATELENG AKAALE
7. ANANIAS EKADELI	23. LOKOCHIL INGOLAN
8. HELLEN NARIMON	24. NAKALALE MEYAN
9. JOSEPH EKUSI	25. AKARU LOSURU
10. LOPUS LOKOLIL	26. AKIRU NAMONIA
11. REGINA PEDO	27. ANNA NAUTAT
12. ESTHER AKUBO	28. ESTHER AEMUN
13. KOKURO LOCHOK	29. KOKUROLOCHOK
14. ROSALINE ARUPE	30. AROT EMOJONG
15. LOCHOMINLOPETET	31. EKIRU LOKITELA
16. AKOPE LOCHOMIN	