

# An assessment of the response to the 2008- 2009 drought in Kenya

A report to the European Union Delegation to the Republic  
of Kenya





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## **List of abbreviations**

APAD- Alliance for Pastoralist Development  
ADDS- Africa Data Dissemination Service  
ALRMP - Arid Lands Resource Management Project  
ASAL- Arid and Semi Arid Lands  
AVHRR- Advanced Very High Resolution Radiometer  
CCPP- Contagious Caprine Pleuropneumonia  
CDF- Constituency Development fund  
CIFA- The Community Initiatives Facilitation and Assistance  
COP- Conference of the Parties, the governing body of the United Nations Framework Convention on Climate Change  
CP- contingency plan  
DCM- Drought Cycle Management  
DCTF- Drought Contingency Trust Fund  
DCWC- Dressed Weight Carcass  
DFID - Department for International Development  
DLMC- District Livestock Marketing Council  
DLPO- District Livestock Production Officer  
DMA- Drought Management Authority  
DMI- Drought Management Initiative  
DSG- Drought Management Structures  
DVO- District Veterinary Officer  
DWE- District Water Engineer  
DWO- District Water Officer  
ECF- East Coast Fever  
ECHO-European Commission Humanitarian Aid  
ELI- Emergency Livestock Interventions  
ELMT- Enhanced Livelihoods in the Manderu Triangle  
EU- European Union  
EWB- Early Warning Bulletins  
EWS- Environmental Water Systems  
FA- Food Aid  
FAO- Food and Agriculture Organization of the United Nations  
FHI- Food for the Hungry International  
FMD- Foot and Mouth disease  
GAA- German Agro-Action / Deutsche Welthungerhilfe  
GCM- Global Circulation Model  
GoK- Government of Kenya  
HQ- Headquarters  
IIED- The International Institute for Environment and Development  
IIRR- International Institute for Reconstruction and Rehabilitation  
ILRI- International Livestock Research Institute  
KARI- Kenya Agricultural Research Institute  
KFSM- Kenya Food Security Meeting

KFSSG- Kenya Food Security Steering Group  
KLMC- Kenya Livestock Marketing Council  
KMC- Kenya Meat Commission  
KRA- Kenyan Revenue Authority  
LEGS- Livestock Emergency Guidelines  
M&E- Monitoring and Evaluation  
MAAP- Maasai AIDS Awareness Programme  
MID-P- Merti Integrated Development Program  
MOLD- Ministry of Livestock Development  
MOW- Ministry of Water  
NDCF- National Drought Contingency Fund  
NDVI- Normalized Difference Vegetation Index  
NGO- Non Governmental Organisation  
NOAA- National Oceanic and Atmospheric Administration  
NIA- Neighbors Initiative Alliance  
NRM- Natural Resource Management  
OFDA - Office of U.S. Foreign Disaster Assistance  
OXFAM- Oxford Committee for Famine Relief  
PISP- Pastoralist Integrated Support Programme  
PPR- Peste des petit Ruminants  
RWUA- Rangelands Water Users Association  
RVF- Rift Valley Fever  
SRES- Special Report on Emission Scenarios  
TLU- Tropical Livestock Units  
UN- United Nations  
UNDP- United Nations Development Programme  
USAID - United States Agency for International Development  
USD- United States Dollar  
VSF Veterinary Sans Frontiers  
WB- World Bank







## 1 Executive summary

Drought is the prime recurrent natural disaster in Kenya . It affects the 10 million mostly livestock dependent people in the ASAL districts. Consequently, the National Drought Management System, a dedicated disaster risk management system addressing drought, was established almost twenty years ago.

There is a risk associated to risk management systems. Once established, they tend to become static while formalizing and focusing on agreed upon procedures. However our societies demand otherwise; risk management systems should be adaptive, which build in mechanisms to improve its performance and objectives based on lessons learned from experience and evaluation.

So far, the Kenyan drought management system has been subject to ad-hoc review and improvement. At present the most far reaching changes since its inception are underway, including major institutional changes through the creation of a Drought Management Authority (DMA) and a National Drought Contingency Fund (NDCF).

The European Union values the importance of lessons learned from experiences in disaster risk reduction management systems. Late 2009, at the conclusion of the 2008 – 2009 drought, the EU delegation thus called for a review of the responses to this drought. The purpose of this review was to contribute to improved effectiveness and efficiency of the drought management system in Kenya and strengthen the capacity to intervene with livestock based interventions in an appropriate, effective and timely fashion.

This report reviews the response to the drought in six arid and semi arid land districts in Kenya. The report first characterizes the severity of the drought and reviews how well its impacts were forecasted in the Early Warning Bulletins (EWB). Satellite imagery, detecting failures in rangeland up greening, revealed that the 2008-2009 drought had been most severe in Kajiado and Laikipia. These emergencies were not reflected by the EWB warning stages. Recommendations are given to improve the EWB forecasting capacity.

The report provides a systematic report of 474 livestock based interventions carried out during the 2008-2009 drought in six arid and semi arid districts in Kenya. It reviews the timeliness, effectiveness, the livelihood implications and the appropriateness of these interventions and assesses to what extent local communities had been involved in their development and implementation. The report shows that the number of livestock related interventions and the funding associated to this has increased considerably compared to the interventions carried out during the 2000 drought. Some of the interventions were considered ineffective and inappropriate, and the report advises on which livestock related interventions to implement during drought.

The report then provides a checklist of advised livestock based interventions in different scenarios and provides guidelines for effective monitoring and evaluation. The report

further provides advice on commercial destocking during drought and reviews the need to develop climate change adaptation strategies in relation to the existing National Drought Management System.

The findings of these reviews and assessments have been used to develop a number of recommendations aiming to improve the effectiveness of the drought management intervention cycle. Finally, the effectiveness of the drought response intervention cycle is constrained by a number of policy constraints. The report identifies these and recommends addressing these.

The consultants wish to stress that the underlying problems in dryland livestock based systems can not be solved by relief interventions alone. It requires a long term development strategy to address the challenges that the people in drylands face. A much univocal emphasis on drought preparedness activities, in conjunction with the relief reviewed in this report, would a good step to achieve this.

## 2 Introduction

### 2.1. Background

Kenya is a drought prone country. Drought affects not only its economic performance but also its attempts to achieve the millennium development goals. Droughts directly impact on the household food security of over 10 million people living in drought-prone areas. Droughts erode the assets of poor communities and undermine their livelihood strategies, culminating in a downward spiral of increasing poverty and food insecurity. Although drought affects the country as a whole, its effects are felt most dramatically by the livestock based economies and livelihoods in the Kenyan Arid and Semi-Arid Lands (ASAL).

The Government of Kenya (GoK), aware of the need for effective response, focuses resources to reduce the negative impacts of droughts. Since 1996 the Office of the President, supported by the World Bank (WB), has been implementing the Arid Lands Resource Management Project (ALRMP<sup>1</sup>) with the objective of enhancing food security and reducing livelihood vulnerability in drought-prone and marginalized communities. The ALRMP, further supported by the European Union (EU) funded Drought Management Initiative (DMI), consolidated a national drought management system, with drought management structures at the national (KFSM<sup>2</sup>, KFSSG<sup>3</sup>), district (DSG's<sup>4</sup>) and community levels.

This drought management system includes policies and strategies, an early warning system<sup>5</sup>, a funded contingency plan and an overall drought coordination and response structure. Main stakeholders involved in drought management in Kenya include the GoK and its line ministries, various development partners and non-governmental organizations (NGO's).

At the end of the 2008-2009 drought, which badly affected livestock based communities in the Kenyan drylands, the delegation of the European Union considered it opportune to review how effectively the above-described drought management structures mitigated and alleviated the negative impacts of the drought. Late 2009 the EU delegation thus called for a review to contribute to improved effectiveness and efficiency of the drought management system in Kenya by strengthening the capacity to intervene with livestock based interventions in an appropriate, effective and timely fashion.

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<sup>1</sup> The ALRMP has been under the Office of the Prime Minister since 2008

<sup>2</sup> KFSM: Kenya Food Security Meeting, an advisory group on drought and food security

<sup>3</sup> KFSSG: Kenya Food Security Steering Group, sub-committee and technical advisory body of the KFSM

<sup>4</sup> DSG: District Steering Group

<sup>5</sup> The GOK has established a community based drought early warning system which releases through the Office of the President monthly early warning bulletins for each of the 28 ASAL districts, to allow adequate response

## ***2.2 The terms of reference***

The terms of reference ([Annex 1](#)) requests to review the effectiveness of livestock based drought response interventions during the 2008 – 2009 drought, suggest a number of improvements to the currently employed drought management system and review the need to develop climate change adaptation strategies in addition to the current drought management policies.

These requested deliverables have been addressed in this report as follows: Chapter 3 provides a general characterization of the drought. An assessment of the drought response for six arid and semi arid districts of Kenya, with consultation of a variety of stakeholders at district and national level is to be found in chapter 4. Chapters 5, 6 and 7 provide a checklist for drought response scenarios, guidelines for monitoring and evaluation and a plan for commercial destocking in one of these districts respectively. Chapter 8 summarizes the climate change forecasts for Kenya and assesses the need for climate change adaptation policies in addition to the drought management strategies discussed and evaluated in this report. Two chapters with discussion and recommendations (Chapter 9) and lessons learned (Chapter 10) complete the report.

The consultants noted that the requested consultancy bears similarity with the evaluation of the response during the drought of 1999 to 2001 (Aklilu and Wekesa 2001). This previous drought response evaluation is interesting as it has a number of recommendations and the report reviews to what extent these recommendations have been effectively implemented. Also, it offers the possibility to compare the drought response in 2009 and assess whether there were any observable improvements. The recommendations of the Aklilu and Wekesa report are included in [Annex 2](#).

## ***2.3 Approach taken***

The consultancy was executed according to an implementation plan submitted to the EU delegation on the 19<sup>th</sup> of February 2010. An adequate drought response relies on a combination of early warning triggering subsequent interventions. As a result, the review was extended to include the timeliness and appropriateness of the early warning information disseminated during the drought to government and non governmental agencies. We also included a post-hoc characterization of the drought (chapter 3) to enable assessment on whether the early warning information had been timely and adequate. The review of the response to the drought was based on interviews with government, non government and local communities in Nairobi and in six arid land districts, namely Kajiado, Isiolo, Samburu, Laikipia, Turkana and Marsabit. [Annex 3](#) provides an overview of the survey questionnaire while [Annex 4](#) summarizes the time schedule and the organizations visited.

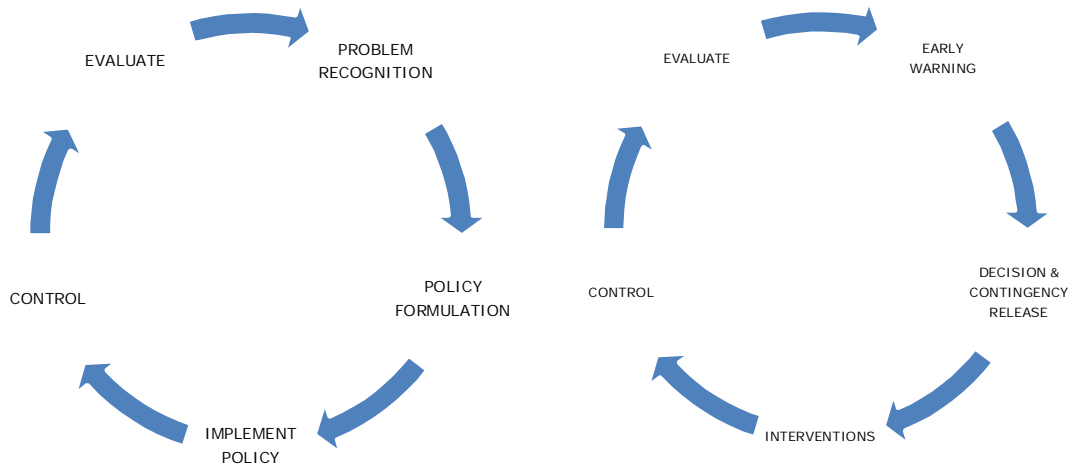


Figure 1. Scheme of a policy cycle (left) and a drought response intervention cycle (right)

The effectiveness of any crisis management system relies on the effectiveness of the disaster response cycle and the effectiveness of the overarching policy cycles (Figure 1). The terms of reference provided by the EU requested to review the drought intervention cycle in particular, and chapter 4 provides a detailed analysis of the response to the drought in 2008 and 2009. During this analysis it was realized that the ineffectiveness of the drought management interventions was constrained by policies. Where appropriate we have referred in the text to such policy constraints.

### 3 Characterization of the 2008-2009 drought

Drought ([Wikipedia 2010](#)) affects livestock owning people to which livestock owners, and governmental and non governmental organizations respond in multiple ways (Blench and Marriage, 1999). In this report we focus on interventions to reduce the effects of the 2008-2009 drought on the livestock production systems that sustain livestock owning communities in the drylands of Kenya. We therefore decided to characterize the drought of 2008 -2009 in view of this orientation towards assessing the timeliness and effectiveness of livestock based drought response interventions. We thus focus this characterization on a number of variables relevant to the assessment of livestock and drought, namely, rainfall data and information on the greenness and condition of the rangeland vegetation as well as the condition and mortality of livestock. It should be noted that this information was compiled from publicly available sources and after the end of the drought.

#### 3.1 Rainfall

Figure 2 displays the average monthly rainfall in 2008 and 2009<sup>6</sup> in five out of the six districts included in this study. The figure compares the monthly rainfall in these five districts with the average monthly rainfall over a number of previous years.

The figure shows that monthly rainfall in all five districts was markedly below the average historic monthly rainfall. The data displayed, which are derived from the district early warning bulletins have a number of shortcomings. First the figure compares rainfall in the current year (2008, 2009) with average monthly rainfall in the past.

The average over previous years in the Early Warning Bulletin (EWB) goes back a few years only however, at best 2000, more frequently the data set starts in 2003. This is a relatively short time span, in which to compare current season rainfall with the longer term averages, for the purpose of identifying anomalies of the current year rainfall from the long term average and thus mark out the droughts from this. We advise to acquire and use climatic data (e.g. monthly averages over a 30 year period), for analysis whether the rainfall in the current month or season is below the long term average, and thus to be considered to represent a drought.

The second shortcoming of the data in the EWB's is that the monthly rainfall figures are based on one or a few rainfall stations only. This may lead to rainfall estimates that might give a biased picture of the situation in drier or wetter parts of a district. Using rainfall data to analyse whether there is a drought emerging in the dryland parts of a district, where drought vulnerable pastoral livelihoods reside, would require analysis of rainfall

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<sup>6</sup> Figures are based on monthly rainfall data derived from the district Early Warning Bulletins, downloaded from <http://www.aridland.go.ke/>



data from these areas. Given the high amounts of rain reported, it is dubious whether for example the rainfall data from Samburu originate from ASAL areas.

It would of course be tempting to analyze the rainfall data displayed in figure 1. Because of the reasons summarized above, we decided, and advise others, to refrain from doing so. Proper analysis of rainfall anomalies with relevance for livestock based interventions in the ASAL zone would require comparison of current rainfall with the longer term average for a number of rainfall stations representative of, and thus located in the ASAL zone.

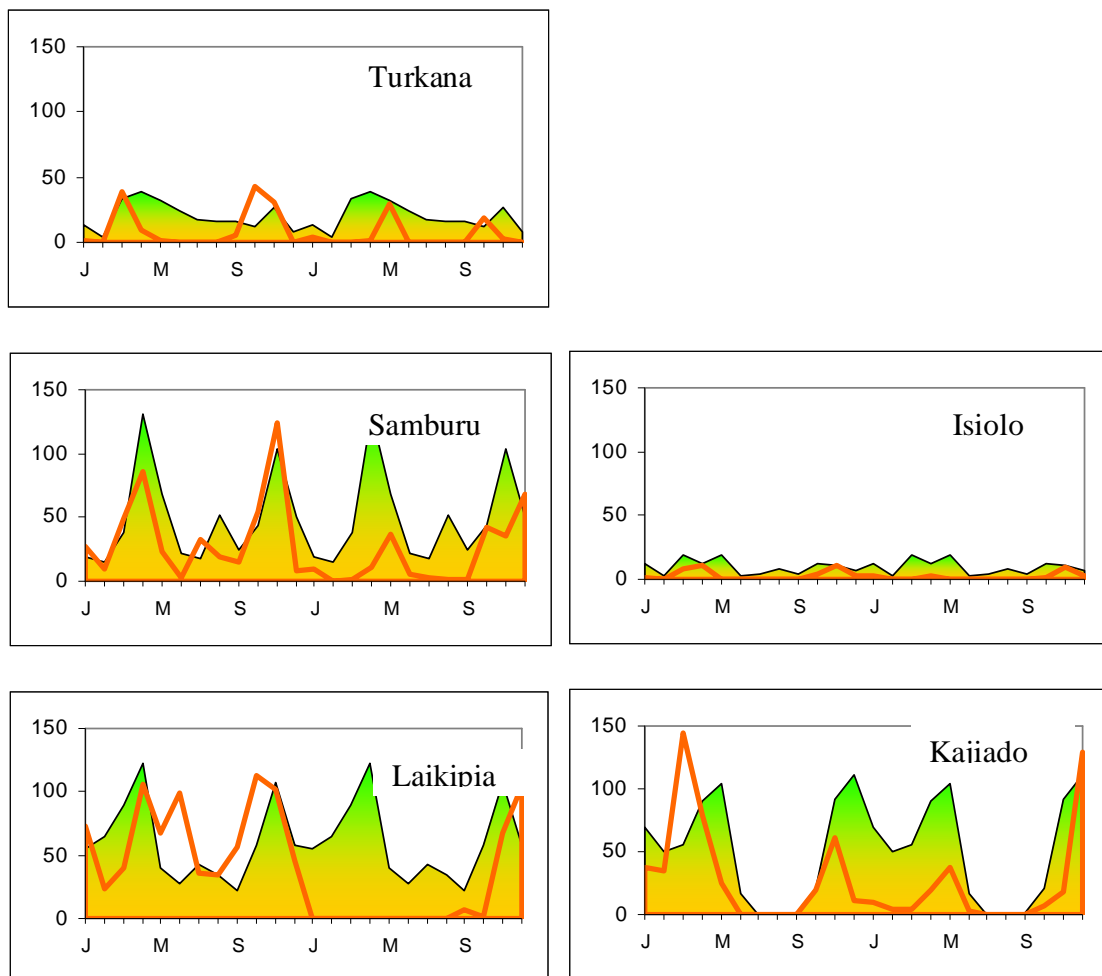
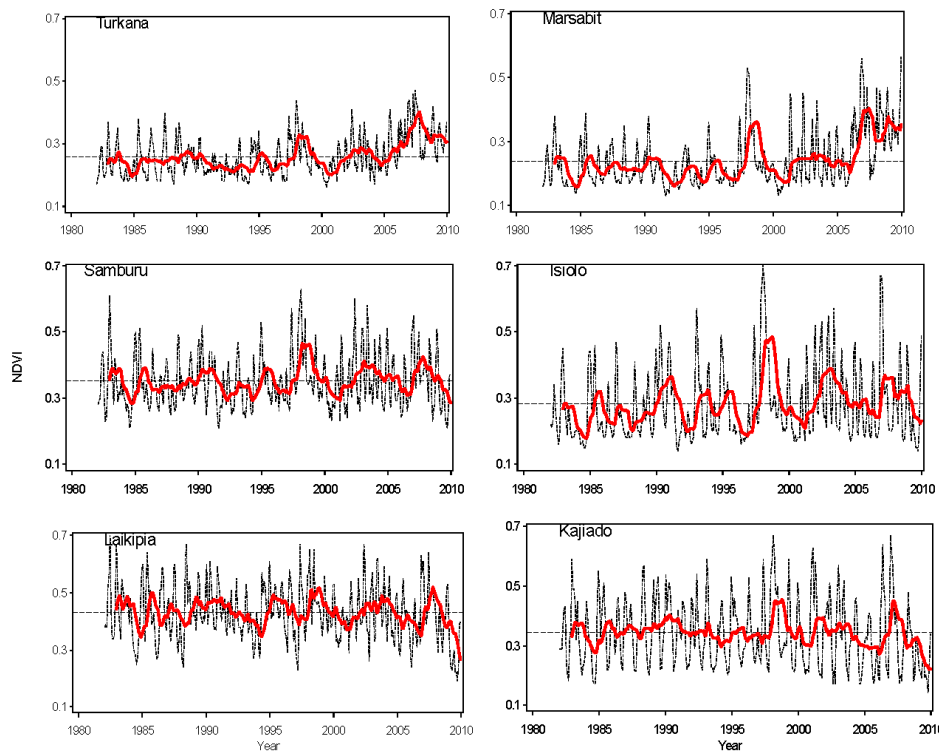


Figure 2. Average monthly rainfall in 2008 and 2009 relative to longer term mean for five districts, according to the Early Warning Bulletins.

### 3.2 Vegetation greenness and rangeland phenology

There is a variety of remotely sensed vegetation indices that allow monitoring the greenness and thus the phenology of rangeland vegetation. In this report we present

monthly Normalized Differential Vegetation Index (NDVI<sup>7</sup>) data for the ASAL area of each district. The monthly ASAL NDVI<sup>8</sup> data fluctuated widely (Figure 3) and it was not easy to discern previous droughts from these data. Historic droughts, such as 1984, 2000 and 2006, were more clearly revealed by NDVI<sub>12</sub>, the 12 month moving average of the monthly NDVI data. The NDVI<sub>12</sub> data also revealed periods with above average greenness such as 1990, the El Nino year of 1998 and 2007. Until 2006 there was synchrony in the alternation of drought and wet years with below and above average greenness between the six districts. This synchrony disappeared in 2006 when the NDVI<sub>12</sub> in Turkana and Marsabit revealed an increase in multi-year (2007 - 2009) average of approximately 0.10 units, an increase of NDVI<sub>12</sub> not matched by the others districts.



<sup>7</sup> The Normalized Differential Vegetation Index (NDVI) is a remote sensing based index (ranging from 0 to 1) reflecting vegetation greenness with NDVI < 0.20 - 0.25 for bare soil and dead vegetation and NDVI of 0.6 to 0.7 for green vegetation with closed canopy.

<sup>8</sup> We calculated average monthly NDVI for Jan 1982 – Dec 2009 for the ASAL of each of the six districts based on monthly NOAA AVHRR NDVI data (8km resolution) downloaded from the African Data Dissemination Service (ADDS). NDVI time series reveal short term month to month fluctuations, which in case of livestock are not very appropriate for drought monitoring, because livestock and pastoralists are well adapted to overcome short term anomalies or the failure of one single rainy season. Problems arise when the vegetation does not green up during more than one rainy season. We calculated a running average of NDVI over the preceding 12 month period (NDVI<sub>12</sub>). We then calculated for every month the standardized residual (in standard deviations) with respect to the long term mean, which was used as an indicator of drought intensity.

Figure 3. Monthly NDVI (----) and the moving average of NDVI over the 12 previous months ( $NDVI_{12}$  —) for the arid and semi arid lands (ASAL) in six Kenyan districts.

In 2007  $NDVI_{12}$  peaked in the first half of that year, following good rains in 2006 and long rains in 2007. The index declined from mid to late 2007 onwards in all six districts, with patterns differing between districts however. In Laikipia and Kajiado  $NDVI_{12}$  dropped to lower values than ever before; the  $NDVI_{12}$  thus suggest that the drought in these districts can be classified as the worst in the 28 year period. The  $NDVI_{12}$  also dipped below the long term average in Samburu and Isiolo districts, but the  $NDVI_{12}$  data suggest that the effects of the drought on rangeland greenness were not as bad as the situation during previous droughts such as 1984, 1992, 1996 and 2000. In Turkana and Marsabit the  $NDVI_{12}$  reduced as well, but remained above the long term average.

The  $NDVI_{12}$  data thus do not provide evidence for drought effects on the rangelands in these two Northern Kenyan districts. It should be noted however, that the  $NDVI_{12}$  values presented in Fig. 3 are averages for the whole district. Figure 4 reveals that there was considerable geographical variation of the average NDVI over 2008 as well in 2009.

Turkana district had a central band from south to north with low annual NDVI values ranging from 0.10 to 0.20, with greener areas towards the border of Uganda, and Pokot, Baringo and Samburu districts. These areas with greener vegetation were in general at higher elevation, and also steeper lands. Although green and thus having vegetation, little use is made of the vegetation resources because of conflict. Another interesting observation are the very high NDVI values in the Karamoja region in Uganda.

Marsabit district had low NDVI values in the north, (inhabited by the Gabbra and the Borana) and the central southern parts. The high NDVI areas along Lake Turkana, mostly high elevation areas such as Mount Kulal, are insecure areas disputed between various tribes. Another area with higher NDVI in the east bordering Wajir district, is also an area avoided because of insecurity.

The remote sensing data thus suggest that rangeland vegetation experienced extreme drought in Kajiado and Laikipia, while there was moderate drought in Samburu and Isiolo. There was considerable geographic variation in the greenness of the rangelands in Turkana and Marsabit, which on average remained above their long term average.

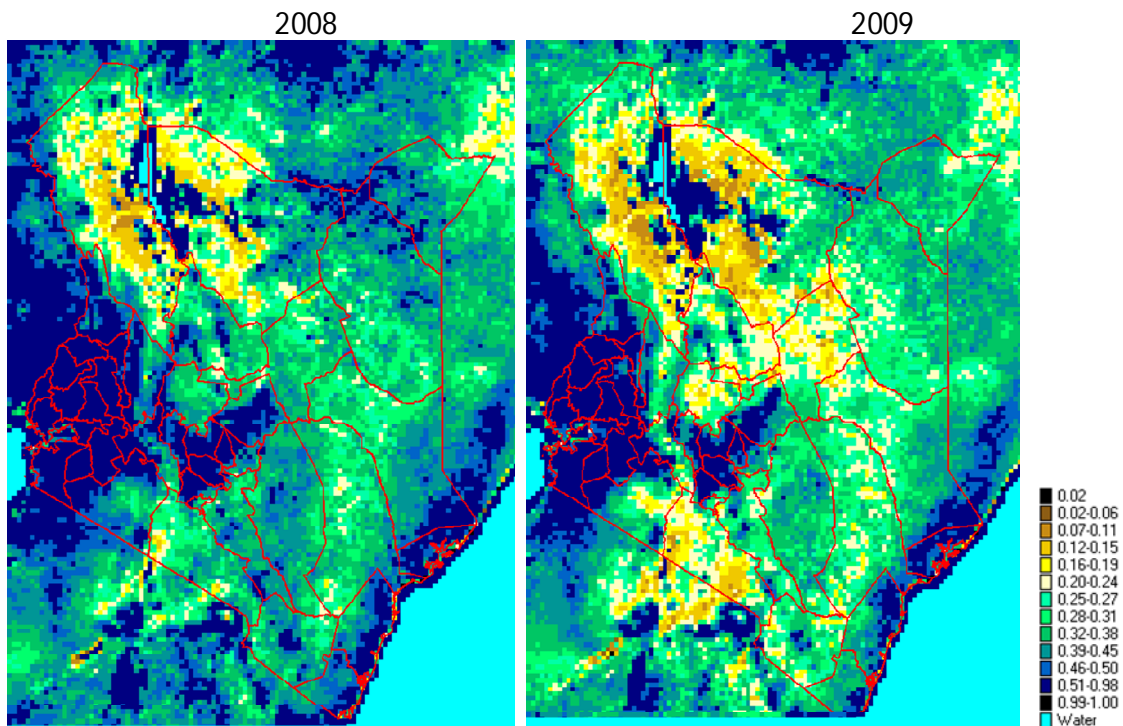


Figure 4. Geographical variation in average annual NDVI in 2008 and 2009.

### *Threshold of NDVI as a trigger for early warning*

When using remote sensing data for early warning one has to decide on thresholds, in order to be able to classify the warning stage. An objective way to do this is to take the normalized residual of the long term mean, which is quantified in standard deviations. Figure 5 shows the standardized residuals of monthly  $NDVI_{12}$  for the 27 year period from 1982 to 2009. The figure reveals differences between districts in length and depth of droughts.

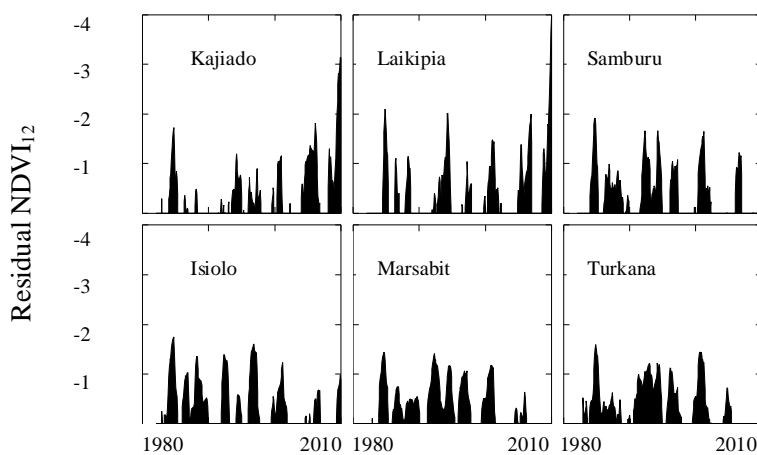


Figure 5. Standardized residuals of  $NDVI_{12}$  for six districts from 1982 to 2009.

The figure furthermore shows that the crossing of the threshold of -0.5 standard deviations (s.d.) below the long term average was in almost all cases followed by a severe drought. Following this analysis we applied this threshold as a criterion for the emergency warning stage. We used thresholds of 0 and -0.25 s.d. to demarcate the boundaries of the alert and alarm phases respectively.

### 3.3 Livestock mortality

Table 1 shows reported mortality rates of livestock during the 2008-2009 drought. We are aware that such livestock mortality statistics are mostly subjective and thus not free of error. While presenting these data here to give an impression of the impact of the drought on livestock populations, we advise to consider and interpret these statistics with care and reservation. It should also be noted that the rates here pertain to periods that cover part of the drought only. For example the Samburu data cover the mortality during 2009, and thus exclude mortality during the onset of the drought in 2008 and the post drought mortality.

Table 1. Livestock mortality (%) during the 08-09 drought in 6 Kenyan ASAL districts

Area	Cattle	Sheep	Goat	Camel	Donkey
Samburu Central <sup>1</sup>	57	65	13	6	16
Laikipia North <sup>2</sup>	64	62	34	1	

Source of information: 1 = Letter from DLO Samburu Central, 14<sup>th</sup> December 2009; 2 = Letter to ILRI from DLO Laikipia North district, 11<sup>th</sup> March 2010.

The table reveals very high mortality rates, particularly for cattle and sheep. Goats and camels had lower mortality rates, presumably these managed to find forage as they are browsers. The livestock losses reported here are extremely high when compared to the livestock losses reported during other recent droughts (Table 2), and compared to those reported during the 1976 drought. These results confirm that the 2008 2009 drought was not only extreme from a meteorological and rangeland production perspective, but also had an extremely devastating impact on livestock resources.

Table 2. Livestock mortality rates (%) reported for previous droughts (from Nkedianye et al., in press)

Area	Cattle (%)	Shoats (%)	Year	Author
Amboseli	32	26	2005	This study
Kitengela	45	44.5		„
Maasai Mara	29	21		„
Simanjiro	13	17		„
Kajiado District	50	20	2000	UNEP & GoK
Kaputiei South	8-29	50	1976	Bekure, 1991
Kaputiei North and Central	70-75	36	1976	Njoka, 1979
Kajiado	70		1961	Talbot 1972
Kajiado	13-15		1927	Sindiga, 1984 <sup>9</sup>
Narok	30 <sup>10</sup>	-	1927	Sindiga, 1984

### 3.4 Key messages on the characterization of 2008-2009 drought:

- A lack of publicly available near real time and historic rainfall data hampered the real time analysis of rainfall anomalies. From a timeliness perspective, rainfall data is the most appropriate source of information for early warning, as it allows the longest response time to scale up relief operations. A number of organizational issues in the hands of government could improve this situation. We suggest that the Kenyan Meteorological Department be mandated to provide near real time rainfall data to the ARLMP and district drought management steering groups free of charge. The Department should be supported to install additional automated rain gauges in the ASAL where needed to obtain a representative coverage of the ASAL.
- Analysis of monthly vegetation greenness anomalies does not appropriately reveal rangeland drought conditions relevant for livestock, as livestock manages to cope with shorter periods of reduced forage availability. A twelve month running average of NDVI detected historic droughts much more precisely, and we advise to consider the use of running average techniques for rangeland early warning purposes.
- Satellite imagery, detecting failures in rangeland up greening, revealed that the 2008-2009 drought had been most severe in Kajiado and Laikipia. The satellite imagery further suggested that these districts suffered the worst drought since the start of the NOAA AVHRR archive early 1980's.
- The satellite imagery revealed heterogeneity in drought intensity in the northern Kenyan districts, with drought in the lowlands accompanied with above normal vegetation conditions in mountains and across borders. Satellite imagery thus allows near real time to screen opportunities for migration and identify for remedial conflict resolution in areas of high insecurity.
- The reporting on livestock body condition, milk production and productivity proved to be inconsistent across districts, frequently incomplete and units of measurement not specified. We advise to harmonize the collection of livestock statistics.

<sup>9</sup> Source: MAR 1927, cited in Sindiga 1984

<sup>10</sup> Not clear whether the last three figures pertain to cattle or livestock in general.

## 4. Assessment of the interventions during the 2008 2009 drought

### 4.1 The timing of warning and the early warning bulletins

#### 4.1.1 The timing of drought warning in the Early Warning Bulletins

In this section we review the timing of the changes in alarm stage in the Kenyan monthly drought Early Warning Bulletins against the onset of the drought as described by the time series of remotely sensed vegetation index data, presented in the previous chapter. The early warning bulletins provide a warning for the period to come. We assessed two aspects of timelines of this warning. The first was whether the EWB warning stage progressed from alarm to emergency in synchrony with the remote sensing data. Secondly, we reviewed whether the early warning bulletins were delivered in time.

Figure 6 shows the monthly warning stage issued by ALRMP<sup>11</sup> along with the NDVI<sub>12</sub> data classified in four classes according to the deviation of NDVI<sub>12</sub> from the long term mean. The figure shows some remarkable differences between the two early warning indicators. Generally speaking, the early warning bulletins were always giving alerts and alarms in 2007, with normal situation reported in Kajiado only. This is in contrast to the remote sensing data which was above or slightly below the long term average for most of the time in 2007.

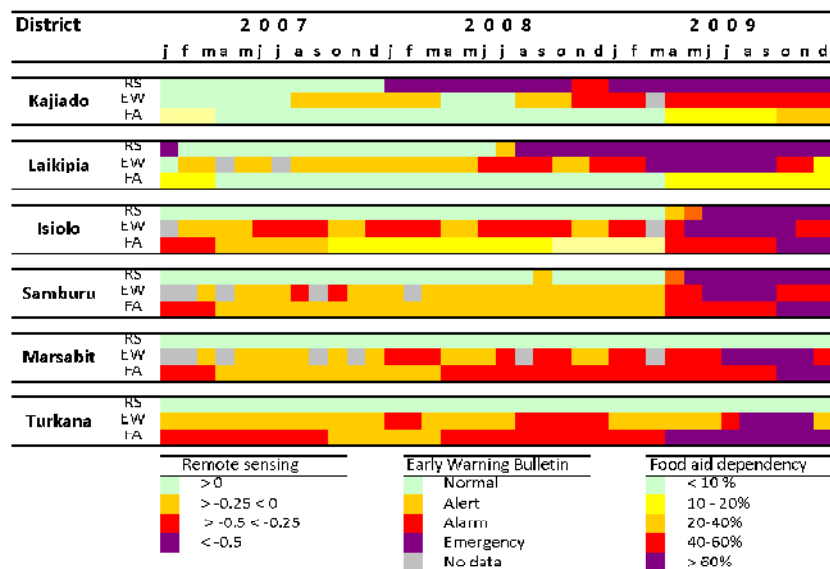


Figure 6. Synopsis of the monthly information from NDVI<sub>12</sub> remote sensing data (RS), the warning stage for the pastoral livelihood zones derived from the district Early Warning Bulletins (EW) and the percentage of the population requiring food aid (FA, from World Food Program) for six districts in Kenya.

<sup>11</sup> Warning stages for pastoral livelihood zones from the monthly district early warning bulletins downloaded from: <http://www.aridland.go.ke/>

In Kajiado a rapid change in warning status of NDVI<sub>12</sub> in early 2008 towards emergency, which lasted for 24 months (!), was not at all followed by an emergency warning stage of the EWB, notwithstanding the truly disastrous rangeland conditions. The remote sensing data and early warning bulletins matched somewhat better in Laikipia district, although the emergency warning from the NDVI data was followed only 7 months later by an emergency warning in the EWB. Emergency rangeland conditions from April May 2009 onwards detected by the NDVI<sub>12</sub> in Isiolo and Samburu district coincided with a change of the early warning status towards emergency. The change of the early warning stage from alarm to emergency in Marsabit and Turkana districts<sup>12</sup> was not paralleled by a change in NDVI<sub>12</sub>; the remote sensing data suggest that good rangeland conditions prevailed for these two districts in 2008 and 2009.

What is the reason for the observed differences between the warning stages derived from the NDVI data and the EWB's? The warning stage in the EWB is a compound index, not clear what determines the warning stages. But it includes livestock and crops and the conditions of human populations. The latter are not early warning indicators of drought, but rather the indicators of response of human, livestock and crops to drought. Early warning indicators are intended to forecast such responses. When including the observations on the response of people, livestock and crops in an early warning indicator, it no longer is an early warning indicator. Instead it tracks the response of the system.

A good early warning indicator detects anomalies in a system a certain period before the more critical parts of the system respond. The length of this period between the early warning and the response of the system is the delay time between the indicator and the response. A good early warning system has a reasonable delay time to allow society to respond. We need this delay time for example to order food from abroad and upscale relief operations.

There is a delay time of several weeks to months between anomalies in rainfall and the greening up of vegetation (or the failure of this) as detected by remote sensing. The length of this delay time depends on the delays which are there in a system. Figure 7 depicts the pastoral livelihood system. There is a delay of approximately two weeks between rainfall and the greening up of vegetation. A shortfall of vegetation biomass affects pastoral livelihoods in two ways with different, but poorly known, delay times. The first, along the milk supply line is extremely rapid. A shortage of biomass rapidly leads to stopping of milk production. The effect of this on the malnutrition status of children depends on the body condition before the drought. Also, the delay between

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<sup>12</sup> Food-aid dependency is already a chronic problem in Turkana and to a lesser extent in Marsabit where food aid has been distributed non-stop since 2002 due to ever larger numbers of people dropping out of the pastoralist system due to relentless population growth (note: the 1999 census give the population of Turkana at 450,000. Unofficial figures for 2009 give this as nearly 1 m!). Prolonged periods with below average rainfall causes the numbers to merely increase. These arid districts do not have alternative access to resources such as is the case with Laikipia and Kajiado where remittances and casual labour provide additional income. Therefore the depicted severity of the drought in Kajiado/Laikipia was largely contained by alternative coping mechanisms as far as malnutrition rates are concerned while this was not the case for Turkana and Marsabit.



drought, fallen milk production and malnutrition is likely to be rapid for those who are sedentary and depend on non mobile livestock. Pastoralists that move their animals may have a possibility to keep the milk production going for longer. A second delay chain goes along the herd size, and with continued forage shortage and livestock mortality, herd size reduces. This has little immediate effect, as milk production will have dropped to zero long time before this. Livestock mortality has another longer lasting effect as it restricts the possibility of milk production to return to normal after a drought.

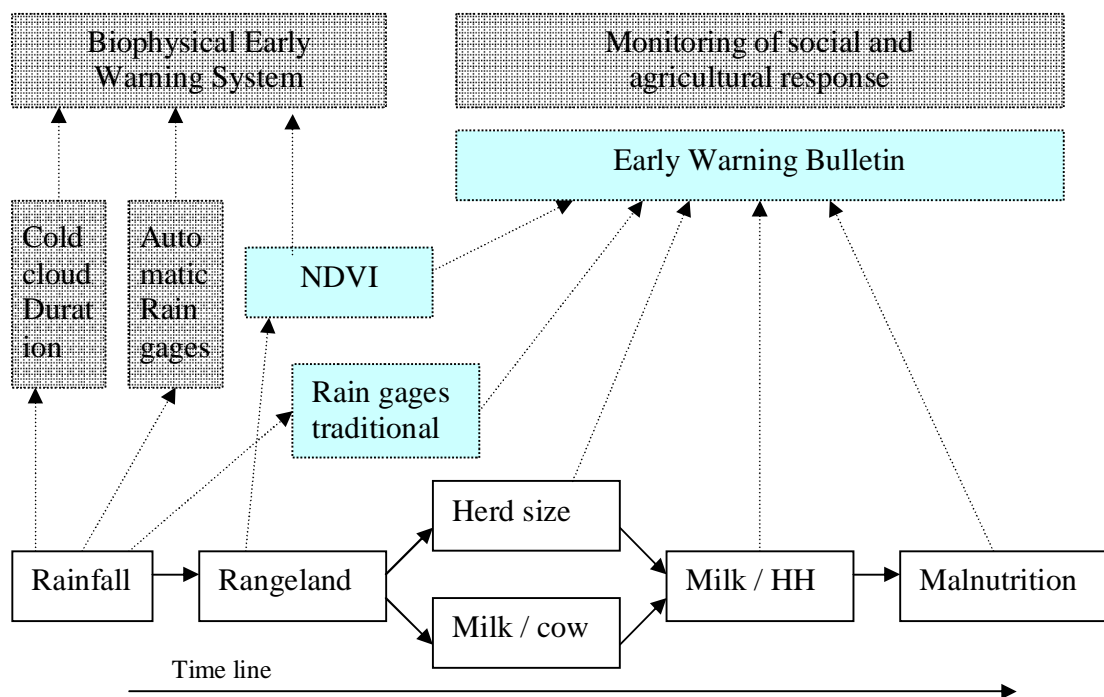


Figure 7. Scheme of linkages and time delays between rainfall, rangeland greenness and productivity, livestock condition and productivity and malnutrition indicators. The blue boxes represent the Early warning system currently used. The red boxes reflect the proposed early warning system and the separate monitoring system the state of the social and agricultural part of the system.

#### 4.1.2 The timing of publication of the Early Warning Bulletins

Figure 9 reveals a skewed distribution of the delay of the publication of the District Early Warning Bulletins, as inferred from the data of creation of the respective pdf files<sup>13</sup>. The target is to publish the EWB's within five days of completion of the month reported on. This was achieved only for a few EWB's in early 2007. The average delay was 11.7 days; 6% of the early warning bulletins had a delay greater than 20 days.

4.<sup>13</sup> Pdf creation files according to the pdf files available at <http://www.aridland.go.ke/>

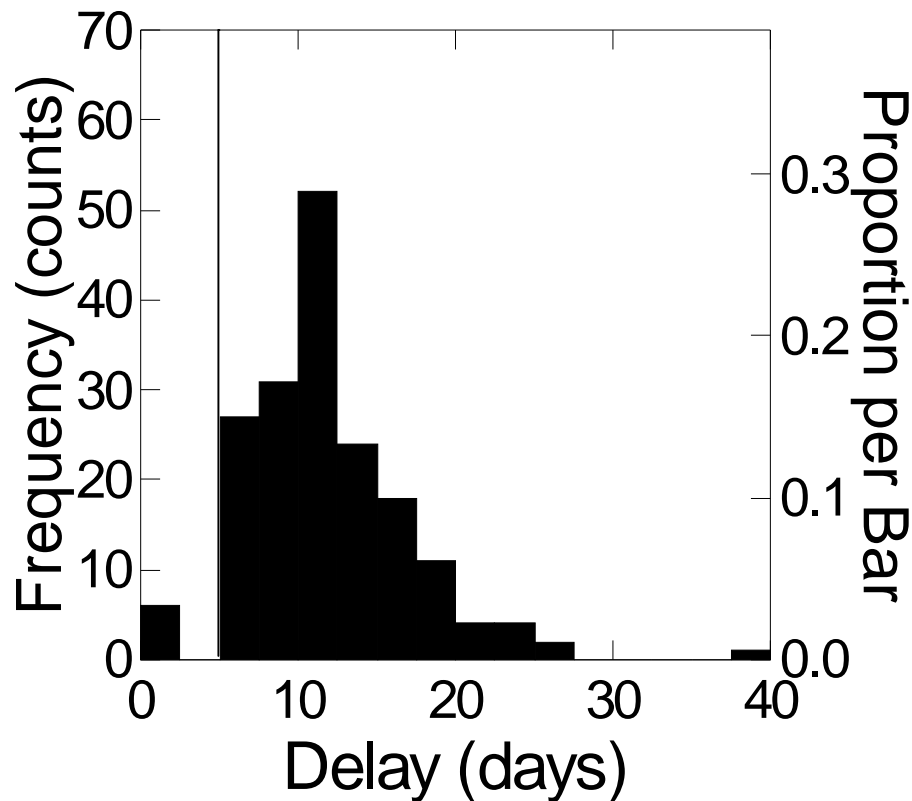


Figure 9. Delay (number of days after the end of the month reported for) in publication date of the District Early Warning Bulletins

#### 4.1.3 Key messages on the Early Warning Bulletin

- The warning stage of the early warning bulletin for pastoral areas does not reflect the condition of rangelands, which is relevant for livestock based interventions. The reason for this is that the EWB warning is a compound index which mixes early warning indicators such as rainfall and NDVI with agricultural and social monitoring indicators which have no forecasting capability for agricultural and social systems. Our advice is to go back to an early warning system based on rainfall and remotely sensed rangeland condition indicators, while reporting separately on the agricultural and social response of the system.
- It is impossible for an outsider to merit the information and warning stages in the district early warning bulletins. This is because there is considerable variation in data collected and presented and variation in reporting styles between districts. It is also irretraceable what criteria are used to decide on the warning stage. It is advised to strive to harmonization in data collection and processing and the classification of warning decision.

#### 4.2 General description of the livestock based interventions

We grouped the 474 livestock-related interventions that we recorded during our survey of the response to the 2008/9 drought into the following 9 categories:

- a. **Water trucking or tinkering:** an activity described as *'the delivery of water by wheeled transport to communities or institutions'*. While this activity largely supports humanitarian activities and provides water for human beings primarily, the water occasionally also benefits livestock. A few water trucking interventions have been reported to be solely for livestock support. In the inventory we cannot distinguish whether the main purpose was for humans or for livestock.
- b. **Boreholes development and maintenance:** This category includes borehole development as well as operational support in the form of provision of diesel, spare parts and pumping equipment and emergency repair of boreholes, support to rapid maintenance units and capacity building of users associations.
- c. **Other water-related interventions:** This category includes distribution of tanks, maintenance and/or construction of shallow wells and pan construction/de-silting, and watershed management interventions.
- d. **Destocking:** We have mainly been confronted by two types of de-stocking:
  - (i) **Commercial de-stocking.** This activity builds on existing marketing structures and is designed to improve access to markets. This can be done in a number of ways such as transport subsidy or through direct purchase of livestock at points where livestock is bought mainly for immediate transport and slaughter Kenya Meat Commission (KMC. In this case, the trader/producer has to deliver the livestock at the final collection point. The second method, also used by KMC was that livestock is bought directly from producers in the affected districts and transported for slaughter at the risk of KMC .In the inventory, the only example of commercial de-stocking are the KMC interventions.
  - (ii) **Slaughter off-take.** This activity was first piloted in Kenya in Samburu District by OXFAM during the 1984 drought. For some time it was used as a 'last-resort' intervention whereby livestock, mainly shoats which are already in poor condition is bought by agencies and is then slaughtered and in most cases the resultant fresh meat is distributed to needy families. An earlier variant was that meat was dried and subsequently stored and distributed. This is seldom used now due to added complexities caused by logistics and need for suitable storage. A recent

variant has been where slaughter/purchase points have been established and remain operational for a number of weeks.

- e. **Animal health.** The main activities in this category include vaccination, control of ecto/endo parasites, provision of drugs and associated trainings.
- f. **Animal Feed.** Interventions include provision of hay, supplements and some pasture related interventions.
- g. **Peace Building** relates to activities that reduce/prevent conflict situations that will in the first instance avoid loss of life but will hugely benefit livestock survival by accessing additional natural resources. These include activities to facilitate cross border migration as well as to access contested grazing areas and water sources within Kenya.
- h. **Other.** This category includes interventions that did not fall into other categories, such as drought related trainings.

**Multiple** includes interventions that consisted of more than one type of intervention, for example water trucking and boreholes.

### 4.3 Analysis of the interventions during the 2008 2009 drought

#### 4.3.1 Types of interventions

The inventory of responses currently contains 474 interventions that were undertaken in response to the 2008/9 drought in the 6 study districts (Table 3). Turkana reported the highest number of interventions (251) and Isiolo the fewest (22). However, the data on expenditure by district gives a different picture (Table 4). Turkana accounts for only 7% of a total expenditure while Kajiado, with 6% of interventions, accounts for 33% of the total expenditure of approximately 365 million Ksh (4.6 million USD)<sup>14</sup>.

**Table 3. The number of intervention by types of interventions and district**

Intervention	District						Total
	Marsabit	Turkana	Samburu	Isiolo	Laijipia	Kajiado	
Water trucking	16	85	0	1	2	1	105
Boreholes	41	51	3	3	10	5	113
Other Water	1	18	0	0	9	2	30
Destocking- Slaughter	17	0	1	2	0	3	23
Destocking commercial	1	2	1	9	1	3	17
Animal Health	2	1	9	4	13	12	41
Animal Feed	5	0	7	2	4	3	21
Peace Building	0	71	2	1	10	1	85
Other	1	23	0	0	6	3	33
Multiple	3	0	0	0	0	0	3
<b>Total</b>	<b>87</b>	<b>251</b>	<b>23</b>	<b>22</b>	<b>56</b>	<b>35</b>	<b>474</b>

The types of interventions implemented vary significantly by district. Water trucking and boreholes were most common in Marsabit and Turkana, while animal health was the most common intervention in the other districts. Peace building was common in Turkana and Laikipia. Most of the water trucking, borehole and peace building interventions were in Turkana, while Marsabit had the highest number of destocking activities.

<sup>14</sup> Aklilu and Wekesa estimate a total of 4 million spent on the 2000 drought nationally, which suggests that expenditure has increased significantly since this inventory covers only 6 districts and is incomplete.

**Table 4 Costs of interventions by district**

<i>District</i>	<i>N</i>	<i>Average cost/ intervention</i>	<i>Min cost /interventio n</i>	<i>Max cost /interventio n</i>	<i>Total cost</i>	<i>% of total cost</i>
Marsabit	57	1,077,637	95,200	5,215,400	61,425,283	17
Turkana	251	102,150	555	4,800,000	25,639,720	7
Samburu	23	1,516,735	1,800	12,108,000	34,884,904	10
Isiolo	22	3,878,773	300,000	34,464,000	85,333,000	23
Laijipia	49	788,917	52,000	4,427,285	38,656,953	11
Kajiado	26	4,589,178	20,000	49,000,000	119,318,616	33
<b>Total</b>	<b>428</b>	<b>853,408</b>	<b>555</b>	<b>49,000,000</b>	<b>365,258,474</b>	<b>100</b>

The three water-related interventions account for 52% of all interventions (248 out of 474), but only 37% of expenditure, mainly because of the relatively low cost of water trucking interventions (Table 5). Commercial destocking interventions accounts for 24% of the total interventions budget across the 6 districts, making them the costliest type of intervention. This was followed by “other water related interventions” which took up 16% of the total budget.

**Table 5 Cost of intervention (KSh) by type of intervention**

<i>District</i>	<i>N</i>	<i>Mean</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Total</i>	<i>%</i>
Water trucking	104	286,391	1,000	6,000,000	29,784,695	8
Boreholes	89	510,701	1,200	4,427,285	45,452,394	12
Other Water	27	2,225,444	1,200	49,000,000	60,086,977	16
Destocking -slaughter	18	2,125,986	350,000	12,108,000	38,267,752	10
Destocking - commercial	17	5,075,858	160,000	34,464,000	86,289,578	24
Animal Health	32	1,098,738	47,500	3,887,000	35,159,622	10
Animal Feed	22	929,860	1,800	3,314,000	20,456,930	6
Peace Building	83	151,033	555	2,500,000	12,535,712	3
Other	33	958,067	5,500	21,606,016	31,616,216	9
Multiple	3	1,869,533	95,200	5,215,400	5,608,600	2
<b>Total</b>	<b>428</b>	<b>853,408</b>	<b>555</b>	<b>49,000,000</b>	<b>365,258,476</b>	<b>100</b>

The vast majority (88%) of projects were implemented by the government (Table 6). All the water trucking activities were implemented by the government while 88 out of the 113 borehole related activities were also implemented by the government. Animal health activities were also almost exclusively implemented by the government. Slaughter

destocking was primarily done by NGO while commercial destocking was mainly done by the government (KMC).

**Table 6. Type of intervention by type of implementer**

Type intervention	NGO	GOV	Total
Water trucking	0	105	105
Boreholes	25	88	113
Other Water	1	29	30
Destocking-slaughter	19	4	23
Destocking-commercial	0	17	17
Animal Health	4	38	42
Animal Feed	4	19	23
Peace Building	2	83	85
Other	1	32	33
Multiple	0	3	3
<b>Total</b>	56	418	474

ALRMP funded 83% of interventions and provided for 46% of total expenditure on drought response (Tables 7 and 8). International donors funded 8% of projects and accounted for 8% of funds. This is likely to be an underestimate since information on cost was not available for two thirds of the projects funded by these donors. Government accounted for 29% of expenditure but only 6% of projects, reflecting the high cost of the commercial destocking interventions. Information available indicates that only one intervention was funded under the constituency development funds.

**Table 7 Type of intervention by source of funds**

Intervention	NGO	GOV	CDF	ALRMP	Int. Donor	Total
Water trucking	0	0	0	105	0	105
Boreholes	2	0	1	83	21	107
Other Water	0	0	0	29	0	29
Destocking-slaughter	4	0	0	0	12	16
Destocking-commercial	0	11	0	1	0	12
Animal Health	3	13	0	15	1	32
Animal Feed	2	3	0	7	0	12
Peace Building	0	0	0	82	1	83
Other	1	0	0	31	0	32
Multiple	0	0	0	3	0	3
<b>Total</b>	12	27	1	356	35	431

**Table 8 Expenditure per intervention by source of funds**

<b>Funder</b>	<b>N</b>	<b>Mean</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Total</b>	<b>% of total</b>
NGO*	12	3,594,647	83,400	21,606,016	43,135,768	16
GOV	21	3,764,557	300,000	34,464,000	79,055,697	29
CDF	1	1,900,000	1,900,000	1,900,000	1,900,000	1
ALRMP	348	350,780	555	6,000,000	122,071,367	46
INT DONOR*	11	1,996,271	542,400	12,108,000		
					21,958,983	8
<b>Total</b>	<b>393</b>	<b>682,244</b>	<b>555</b>	<b>34,464,000</b>	<b>268,121,813</b>	<b>100</b>

NGO=funded with own resources. Where NGOs used resource from ALRMP or international donors, the interventions appear under those categories\*\* Cost data were not available for most projects funded by international donors



### 4.3.2 Timing of interventions

The inventory contains interventions implemented during the 18 month period from July 2008 until Dec 2009. For 46% we have data on the month in which the intervention began. Figure 3 shows that few interventions occurred in mid 2008, when the drought was already at its height. The majority of the interventions took place in 2009.

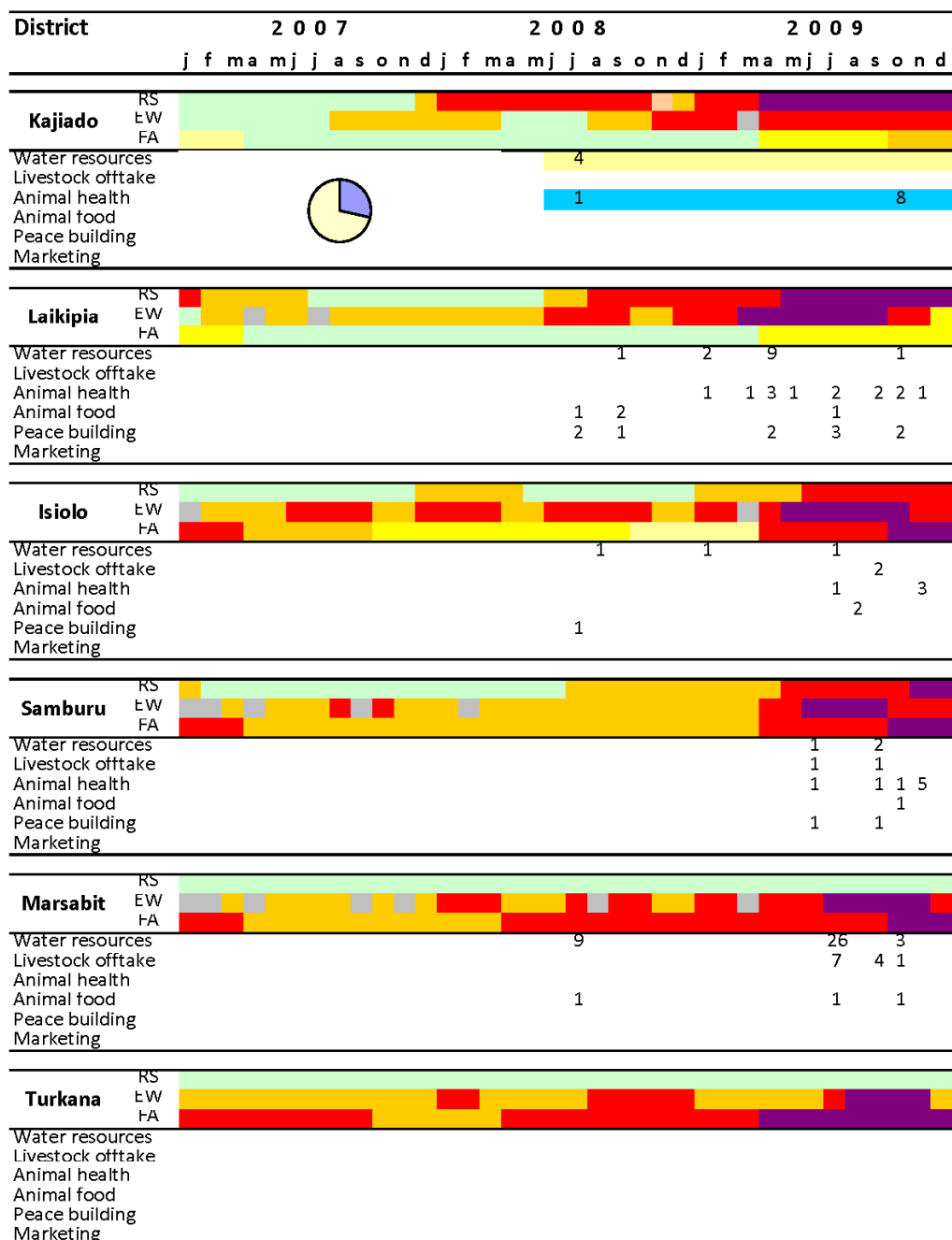


Figure 3. Timing and number of interventions in six Kenyan ASAL districts.

The average start month (May 2009) didn't vary significantly by district. Destocking and animal health interventions started relatively late compared to other types (Table 9). All the destocking activities were carried out after June 2009 when the drought was already at its peak. Sixty three percent of all the interventions were implemented after June 2009, 77% of animal feeding, 70% of borehole development/maintenance and 54% of peace building.

**Table 9 Average start month by type of intervention**

<i>Intervention</i>	<i>N</i>	<i>Mean</i>
Water trucking	22	Feb-09
Boreholes	56	Apr-09
Other Water	11	Feb-09
Destocking-slaughter	14	Aug-09
Destocking-commercial	16	Sep 09
Animal Health	35	Aug-09
Animal Feed	16	Apr-09
Peace Building	13	Apr-09
Other (eg capacity building)	8	Feb-09
Multiple	3	Nov-08
<b>Total</b>	<b>194</b>	<b>May-09</b>

Interventions implemented by government started earlier than those implemented by NGOs (May 09 v Jul 09). Interventions funded by ALRMP started on average in March 2009, at least 3 months earlier than those funded by other donors (Table 10).

**Table 10 Average start date by type of funder**

<i>Funder</i>	<i>N</i>	<i>Mean Start Month</i>
NGO	2	Oct-09
GOV	27	Sep-09
CDF	1	Jul-09
ALRMP	108	Mar-09
INT DONOR	35	Jul-09
<b>Total</b>	<b>173</b>	<b>May-09</b>

#### **4.3.3 Key messages type and timing of interventions:**

1. 474 interventions in 6 districts during the period July 08 to Dec 09, 182 focused on livestock. Aklilu and Wekesa identified only 21 projects in 10 districts during the 2000/2001 drought. Their study only covered 6 months, however most of the livestock interventions were implemented during the height of the drought, so the timing is roughly comparable. Even allowing for differences in how interventions were defined, these results suggest that the number of livestock interventions has increased dramatically.
2. Total expenditure was estimated at USD 4.6 million for these 6 districts, compared to 4 million for the entire country in 2000/2001. Aklilu and Wekesa report a total expenditure of 4 million USD in 2000/2001 for 10 districts. Again this suggests that the response was larger in 2008/9, even accounting for inflation.
3. Traditional livestock interventions such as feed, health and destocking account for 49% of expenditure on livestock-related drought interventions in 2008/9, 53% if peace-building activities are included. According to Aklilu and Wekesa, projects like water development accounted for 1.5 million of the total 4 million in 2000/1 (62.5%) which suggests that relative funding for traditional livestock-related interventions has declined.
4. ALRMP and the government were the main funders of the efforts, which is consistent with the role that these organizations are meant to play under the country's drought management system.
5. Livestock intervention started late. ALRMP interventions started earliest, which according to key informants was because they were the only organization with funds readily available when the drought became apparent.

## 4.4 Effectiveness of the interventions

### 4.4.1 Overall effectiveness

Providers of information about interventions were asked to give an assessment of their effectiveness (Table 11). Effectiveness was defined as whether the intervention was completed as planned and whether it was able to deliver benefits to the intended beneficiaries. For example, the borehole that was sunk but had no water would be considered ineffective. Interventions, especially trainings, which were completed but for which we do not have information about whether participants used the information were ranked as somewhat beneficial.

**Table 11 Effectiveness by type of intervention**

Intervention	Level of effectiveness			Total
	Very	Somewhat	Not	
Water trucking	13	1	0	14
Boreholes	42	9	1	52
Other Water	4	1	5	10
Destocking	13	4	0	17
Animal Health	16	10	0	26
Animal Feed	3	5	4	12
Peace Building	7	3	1	11
Alt. Livelihoods	0	1	0	1
Other	2	5	1	8
Multiple	3	0	0	3
<b>Total</b>	<b>103</b>	<b>39</b>	<b>12</b>	<b>154</b>

Interventions around water trucking, boreholes, destocking and peace building tended to be considered effective, while other water-related (eg dams, water pans), animal health, animal feed and “other” (commonly capacity building) were more likely to have been considered relatively less effective.

**Table 12 Average effectiveness of all interventions by district**

District	N	Mean**	Std. Deviation	Minimum	Maximum
Marsabit	57	1.00	.000	1	1
Samburu	7	1.86	.378	1	2
Isiolo	13	1.92	.277	1	2
Laikipia	48	1.79	.798	1	3
Kajiado	15	1.40	.632	1	3
<b>Total</b>	<b>140</b>	<b>1.44</b>	<b>.649</b>	<b>1</b>	<b>3</b>

\*\* 1=very effective, 2 = somewhat effective 3=not effective

Marsabit has the highest average effectiveness rate—all interventions rated in the district were considered to be effective—while Isiolo had the lowest (Table 12). Interventions implemented by NGOs were on average more effective than those implemented by government. Interventions funded by international donors had the highest average effectiveness ratings while interventions by CDF and NGOs had the lowest Table 13). There is no clear relationship between the effectiveness of an intervention and the time at which it was initiated.

**Table 13 Effectiveness by type of funder**

<b>Funder</b>	<b>N</b>	<b>Mean**</b>	<b>Std. Dev</b>	<b>Min</b>	<b>Max</b>
NGO	3	1.67	.577	1	2
GOV	16	1.56	.512	1	2
CDF	1	2.00	.	2	2
ALRMP*	86	1.45	.714	1	3
INT DONOR	31	1.00	.000	1	1
<b>Total</b>	<b>137</b>	<b>1.37</b>	<b>.630</b>	<b>1</b>	<b>3</b>

\*\* 1=very effective, 2 = somewhat effective 3=not effective

#### 4.4.2 Cost effectiveness-Outputs

Cost effectiveness (cost per unit of output obtained) was calculated for 2 types of interventions—destocking (Ksh/TLU), and animal health (Ksh/animal).

**Emergency Commercial off-take:** An estimated total of 15,873<sup>15</sup> TLU <sup>16</sup>were purchased as part of emergency offtake, at an average cost of 9392 per TLU. Costs of emergency destocking varied significantly by district (Table 14). Average cost was highest in Marsabit and lowest in Kajiado. Average cost was lower for interventions implemented by the government (8089 Ksh) as compared to NGOs (12000Ksh), and for interventions funded by NGOs (8333Ksh) and government (8024Ksh) as compared to international donors (12000Ksh).

**Table 14 Average cost (\$/TLU) for destocking interventions by district**

	<b>N</b>	<b>Mean</b>	<b>Minimum</b>	<b>Maximum</b>
Marsabit	7	12,000	12,000	12,000
Turkana	1	8,000	8,000	8,000
Samburu	1	8,000	8,000	8,000
Isiolo	11	8,204	8,000	10,000
Kajiado	1	7,000	7,000	7,000
<b>Total</b>	<b>21</b>	<b>9,392</b>	<b>7,000</b>	<b>12,000</b>

<sup>15</sup> Based on the 21 interventions for which we have data on numbers purchased, the average is 481 per interventions which when multiplied by 33 interventions gives 15,873.

<sup>16</sup> To calculate TLU, one shoat =.1 cattle.

**Animal health interventions.** Animal health interventions benefits over 5.7 million animals<sup>17</sup> at an average cost per animal of Ksh43. The cost per animal reached with animal health interventions such as vaccination and deworming ranged from 6Ksh in Samburu to 172Ksh in Isiolo (Table 15). All but one were implemented by government. Costs were highest for government-funded interventions and lowest for ALRMP-funded interventions, however the differences are not statistically significant (Table 15).

**Table 15 Average cost (\$/animal) for animal health interventions by district**

<b>District</b>	<b>N</b>	<b>Mean</b>	<b>Minimum</b>	<b>Maximum</b>
Samburu	8	6	0.11	18.75
Isiolo	4	172	4.39	407.61
Laikipia	8	23	5.45	63.75
Kajiado	3	23	18.50	26.05
<b>Total</b>	<b>23</b>	<b>43</b>	<b>0.11</b>	<b>407.61</b>

#### 4.4.3 Cost effectiveness per individual reached.

On average an intervention reached 3,227 individuals<sup>18</sup>, ranging from 55 for peace building to 22,370 for water trucking (Table 16). This suggests that, when assuming no duplication (ie same person benefitting from multiple interventions), a total of more than 1.5 million people benefited. The cost per individual reached was 3,362Ksh, ranging from 163Ksh for water trucking to 8,652Ksh for emergency destocking (Table 17).

**Table 16 Number of individuals reached per intervention type**

<b>Intervention</b>	<b>N</b>	<b>Mean</b>	<b>Minimum</b>	<b>Maximum</b>
Water trucking	2	22370	6240	38500
Boreholes	6	1063	58	4100
Other Water	7	1441	30	5810
Destocking	3	2417	470	3660
Animal Health	10	4027	125	21560
Animal Feed	5	5856	100	23100
Peace Building	9	55	40	78
Other	6	2729	29	16078
<b>Total</b>	<b>48</b>	<b>3227</b>	<b>29</b>	<b>38500</b>

<sup>17</sup> For the 29 interventions for which we have data on number of animals reached, the average per intervention is 139, 197, which when multiplied by 41 (total number of animal health interventions) gives 5,706,340.

<sup>18</sup> Some interventions have beneficiary information in terms of number of households reached. Households were converted to individual by dividing by 7.7, the average household size in arid and semi arid areas in 2009 according to a survey conducted by ILRI on behalf of ALRMP.

**Table 16 Cost per individual reached, by intervention type (Ksh)**

<b>Intervention</b>	<b>N</b>	<b>Mean</b>	<b>Minimum</b>	<b>Maximum</b>
Water trucking	2	163	7	319
Boreholes	6	1,043	502	2,058
Other Water	5	4,731	55	17,333
Destocking	1	8,652	8,652	8,652
Animal Health	5	257	27	973
Animal Feed	5	1,769	65	4,758
Peace Building	7	7,166	2,804	18,575
Other	6	4,204	1,344	7,176
<b>Total</b>	<b>37</b>	<b>3,362</b>	<b>7</b>	<b>18,575</b>

**Key messages on effectiveness from inventory:**

1. In the 6 study districts, an estimated 15,873 TLU were purchased as part of emergency offtake. This is higher than the 9857 TLU were purchased in 2000/1 in 10 districts, according to Aklilu and Wekesa.
2. Over 5.7 million animals were reached by health interventions between July 2008 and December 2009. Over 1.5 million people were reached by interventions, 413,802 with traditional livestock interventions (destocking, animal health and feeds).
3. Some types of interventions are generally considered to be more effective than others, however without information in the size of the benefits delivered to individuals and households, we cannot say anything about their relative impact. Across all types of interventions, there is not a significant relationship between the effectiveness of an intervention and its cost per individual reached. This suggests that being effective is not simply a question of spending more money; significant gains could be made by improving the way current resources are spent.

#### **4.4.4 DSG perceptions on the overall effectiveness of drought response**

##### **Laikipia District**

1. Perception on effectiveness of the interventions was mixed
2. Water trucking was perceived to have had a positive impact as most surface water sources had dried up including most rivers from Mt Kenya and the Aberdares ranges. This was considered expensive and long-term solutions should be found.
3. Provision of hay and concentrates was considered ineffective with poor planning and poor coordination due to a centrally managed operation by MoLD. In addition the quantities delivered were considered ineffective.
4. Animal health interventions such as vaccination campaigns were perceived to be effective but this was measured against coverage achieved and not against impact on livestock mortality. It was agreed that timing of vaccination during a drought was poor practice but lack of funding for routine vaccination during normal times caused this to be carried out during droughts when emergency funds became available.
5. Livestock losses at Mt Kenya were very high due to endemic existence of ECF for which there was no cure and no access to suitable prevention in the form of access to suitable acaricides. The DSG strongly recommended better preparedness in terms of early availability of suitable acaricides.
6. The MoLD funded KMC marketing effort, implemented in two phases was considered ineffective with low prices offered initially attracting very few sellers. Prices offered during the second phase were considered more attractive but extreme poor organisation with many cancellations at the last minute at collection points creating widespread disappointment and huge losses.
7. Coordination was severely hampered due to recent subdivision of the district into five districts.

##### **Kajiado District**

1. Fuel subsidies to diesel driven boreholes was considered most effective
2. The MoLD/KMC commercial off-take was considered ineffective as the quota offered by the KMC was negligible compared to the numbers offered for sale. In addition the intervention was poorly timed with large losses already occurring. Reluctance to sell at the right time due to cultural practices was considered a serious impediment.
3. The recent sub-division of the district into three was considered a very serious impediment as to the overall management of the drought. In particular, coordination and overlap of activities was cited as problematic.

##### **Isiolo District**

1. The MoLD/KMC off-take was considered problematic due to insufficient involvement by the district line ministries.
2. The slaughter off-take by VSF-CH was considered effective but its impact could have improved substantially if more animals could have been bought. The off-take



involved 6,000 animals and some 20,000 were offered. Security concerns when transporting large amounts of cash, was a major issue.

3. Water trucking was cited as expensive and unsustainable although few alternatives could be offered.
4. Support to strategic boreholes was considered as very effective although alleged mismanagement by committees managing boreholes was cited as problematic.
5. Provision of hay and concentrates was not effective as it was too little too late with relatively little impact in relation to the perceived huge costs of transporting this very bulky item over large distances.
6. Animal health interventions such as deworming were considered highly effective with some 38,000 shoats treated by VSF
7. Security issues related to conflict between ethnic groups was noted as a very serious constraint to drought coping mechanisms.

### **Samburu District**

- Animal health interventions were considered effective with the district team quoting vaccination as very useful although animal deaths had been reported due to increased stress levels as a result of vaccinations.
- Deworming was considered very effective with about 158,000 shoats treated but recommended earlier and much larger interventions in future.
- The KMC commercial off-take was given a very low effectiveness ranking. In Samburu Central about 5,000 head of cattle were offered for sale with the actual unilateral quota only being 300.
- Diesel subsidy to boreholes was considered effective but only at the height of the drought.

### **Turkana District**

1. The emergency slaughter off-take was considered very effective with some 35,200 shoats purchased and slaughtered. Earlier and more substantial interventions were recommended. A history of this kind of intervention thereby ensuring local knowledge and acceptance plus the use of recently introduced programmes such as village banking systems, was deemed to have a positive impact.
2. Peace negotiations were considered a top priority and extremely effective which in one particular case allowed the migration of tens of thousands of animals across the border into neighbouring Karamoja (Uganda) and which deemed to have saved the bulk of these animals which otherwise would have been doomed.
3. On-going and upscaling of commercial livestock marketing was cited as very helpful and demonstrated that this activity will be key to future drought management. This was **not** an organised intervention but was entirely trader/commercial operated.
4. Security and related lack of access was a major impediment of coping with drought.
5. Animal health interventions including vaccination campaigns and deworming were considered effective but this could not be measured against reduced livestock mortality. It was acknowledged that vaccination against endemic

- diseases should be done on routine basis but lack of regular funding forced the use of this to be done during the drought.
6. Livestock fodder supply was not considered effective with very limited involvement of the DSG of this centrally managed programme from MoLD HQ's. In addition the quantities supplied were negligible compared to the potential needs.
  7. Coordination of activities was severely hampered by the recent sub-division of the district into six new districts.

### **Marsabit District**

- The questionnaire reported that all interventions were considered effective though some obviously more than others.
- Water trucking remains a big intervention and is considered effective at the height of the drought but the magnitude of this type of intervention is threatening to get out of hand with the proliferation of new settlements that have not been provided with permanent water sources.
- Support to critical boreholes is considered very effective but again like elsewhere the community management is considered highly ineffective and very strong allegations of fraudulent practices by committees abound.
- Livestock fodder supply was considered minimally effective with very small amounts made available through the MoLD managed intervention. The DSG managed intervention was considered much more effective and was specifically targeted to save milk producing/high quality breeding stock at or around Marsabit Mountain.
- Commercial destocking was done by MoLD through KMC and was only implemented in Loyengalani Division. This was considered very ineffective and had no impact on the situation in the larger Marsabit District. A second commercial off-take was done from North Horr area and mainly consisted in transport subsidy. The few who benefited found it very effective but overall extremely high transport costs allowed only for a small intervention.
- Slaughter off-take was considered as having a high impact over a reasonably large area but further increase of coverage was considered important in the future.

### **Key messages from DSG's:**

1. Centrally managed interventions from Nairobi such as the MoLD funded market off-take through KMC and the fodder provision have very little impact and would have been many times more effective if funds could have been made available through DSG's. At times considerable harm was done when publicized market collections did not take place with subsequent large numbers of livestock dying due to lack of water and fodder.
2. There is a very big need to help ensure containment of the need for exponential growing demand of water trucking. The ever growing population and lack of

- suitable water sources make this a priority and a huge challenge but requires serious consideration.
3. Management of community owned water points, mainly diesel powered boreholes requires a rethink as this system is prone to massive mismanagement, fraud and underutilization of critical resources. Outsourcing of management was mentioned as one option.
  4. Poor funding to line ministries results in funding of routine activities. This leaves activities such as water point management/borehole repair and vaccination campaigns being funded only during emergencies where they are often inappropriate, expensive and with reduced impact.
  5. Coordination of drought management has been severely hampered by the recent subdivision of districts. (Marsabit District was the only district where this was seen as positive)
  6. Resource related conflict between ethnic groups, poor management to contain these conflicts and serious lack of political will were quoted as a major constraint to an equitable use of ever diminishing natural resource base.
  7. Lack of access and timely access to contingency funds was seen as a huge constraint in the drought cycle management.

#### **4.4.5 Key messages on effectiveness:**

In the 6 study districts, an estimated 16,996 TLU were purchased or slaughtered in response to the drought. This is higher than the 9,857 TLU purchased in 2000/1 in 10 districts, according to Aklilu and Wekesa. Over 5.7 million animals were reached by health interventions between July 2008 and December 2009. Over 1.5 million people were reached by interventions, 413,802 with traditional livestock interventions (destocking, animal health and feeds).

Water tankering, boreholes and slaughter destocking were generally considered to be the most effective interventions. “Other water” interventions and animal feeding interventions were most likely to be considered ineffective. Across all types of interventions, there is not a significant relationship between the effectiveness of an intervention and its cost per individual reached. Costly interventions are no more likely to be effective than inexpensive ones.

In general the perceptions of the DSG match those of the inventory, with the exception of Marsabit where the DSG offers a more critical assessment of the interventions. In terms of types of intervention, DSG were more critical of destocking interventions, not because they didn’t achieve their objectives in terms of numbers but because they were “too little too late” and didn’t have a significant impact on communities.

The value added of the DSG perceptions is that they give more detail on why interventions were unsuccessful. For many such as animal feed and health, the problems had to do with efficiency of implementation process and with timing. This is consistent with the implication of the previous section that addressing these issues could result in

more impact for the same amount of money spent. Unfortunately, many of the problems mentioned by the DSG's are the same as those mentioned in 2000/1 which suggests that lessons are not being learned.

One exception is the case of transport subsidies for destocking. This was a common intervention in 2000/1, and one that was prone to problems of corruption and mismanagement. There were no cases of this intervention in 2008/9. This seems quite dramatic, though one reason may be that we did not include Mandera, which is where the subsidy worked last time and where they may have used it again.

In the case of vaccination, the DSG was consistent with the inventory but not with accepted practice. Vaccination campaigns may have been successful in vaccinating a high percentage of animals. However vaccination during periods of stress is not recommended. Unfortunately, funding constraints often prevent this from being done on a routine basis, so it is done when emergency funds are available. This suggests that greater flexibility in funding between development and emergency could improve effectiveness of some interventions.

## **4.5 Livelihood implications of the interventions**

In focus group discussions held in 12 communities (2 per district), participants described the impacts from the interventions implemented in their communities.

### **4.5.1 Water-related interventions**

#### Water Tankering

Most water tankering interventions were considered effective in the sense that they delivered the water. However the impacts of that water in communities was relatively limited. In Doldol, it allowed some people to remain in the villages although there were still some deaths from hunger. The community got clean water for cooking food, which saved time, as people did not have to walk 20km to fetch water (from 6am to 3pm daily). The weak animals gained access to water, but the impact of this was minimal since most died anyway.

The shortcomings of the intervention were that it could only be accessed by those who lived near the roads. The terrain restricted travel to interior villages. Similarly, the water could only be used for cooking and drinking. It was not enough for other chores such as washing clothes or bathing.

They mostly targeted schools not the people, therefore the community estimated only about 10 percent of the population benefited. The tankering mainly had an impact on women (rated 30% impact) and school-going children (rated 80% impact). The male members felt it had no direct impact on them. In Merti, Isiolo, the community also felt water bowsers helped the women and children that were left in the villages, whilst the men were migrating with animals.

#### Borehole construction/rehabilitation

Borehole as an intervention is seen as very useful in many communities visited. For example in Ngamata, Samburu the community felt it had the greatest impact in terms of reducing negative drought effects. Prior to the borehole being dug, the women would go to the forest about 7km away twice a day to collect water. The water in the forest was dirty and they were at risk of being infected with water borne diseases. Moreover the forest had wild animals and they would have to go in groups so that as some looked out for dangers, the others would collect water.

This has changed since the borehole was dug. There has been no attack by wild animals, women have more time to gather fodder for animals, to engage in small kitchen gardens and grow sukuma, tomatoes, and other vegetables. Consequently, community health and safety has improved. They sell these and the profit is used to buy more sugar and other food stuff in the town which in turn has increased household income.

The borehole has also brought the community together. They have learnt to use it as a community resource, charging 2KSh per 20litre jerry can of water for domestic usage. For animals, they charge using thresholds, for example if one has 50 heads of cattle or less, it would cost 300 KSh per month. They use the money to buy diesel fuel to pump the generator.

It has also brought new life to the community. Those who lost all their animals during the drought have been able to develop alternative livelihoods by practicing farming. Neighbouring communities now come to buy clean borehole water. The community agreed there are no negative effects as a result of sinking the borehole.

Similarly in Naserian, Kajiado, MAAP, a local NGO constructed a shallow well within the community. The community here as also agreed it had positive impacts during the drought. The weaker animals had access to water and the women also felt it saved time because their 8km journey to fetch water had come to an end.

In Kargi, Laisamis, they said the borehole was not enough to cater for all livestock and they requested another one to be sunk for the animals. In their case however, there were some negative aspects, because the borehole water was salty, consequently community members were experiencing kidney problems and bloating<sup>19</sup>. The community would only use it for livestock and other activities such as washing clothes. During the drought, the water from wells (usually used for drinking and cooking) would dry up, and therefore they would have no choice but to drink the borehole water as well as use it for cooking. They said rice turns yellow, when cooked, an example of the high level of salinity.

Similarly the community in Bubisa, North Horr had the same view. They felt the borehole water was too salty to drink, and they would therefore dig shallow wells on the river bed and collect water. This would take most of the day as the process is very slow.

In Murungai, Laikipia, the community members felt the borehole constructed in 2003 by JAIKA is only serving certain members of the community. Not everyone has access to it as access is by membership. Not many can afford the membership fee and they end up going to fetch water from the river. During the 2008/9 drought the river dried up for the first time.

The community expressed the need for more boreholes and dams as well as proper distribution of resources. In 2008/9 World Vision distributed water to other parts of the community and to decrease the congestion at boreholes. In theory this was a good intervention. The community however expressed concern that these pipes ended up going to the most influential community members. Only the elite members of the community had the voice to dictate where these pipes would lead to and often it was to their homesteads.

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<sup>19</sup> This perception is supported by studies that have shown groundwater in Kargi is considered very poor with high salinity and nitrate content. Fluoride levels are also well beyond accepted norms.

### Diesel Subsidy

In all the six districts visited, diesel subsidy was provided to power boreholes. In some cases (Bubisa and Kargi, in Marsabit), this was viewed as a high impact intervention. Household income from livestock had declined because animals were in poor condition and markets were often far, so without the subsidy households would have been unable to buy diesel to run the boreholes. In Bubisa the community said 90% of people benefited and in Kargi 100% benefited.

In Merti, Isiolo the community felt diesel subsidy was 50/50 in terms of impact. It helped greatly when the generator was working. However, when the generator was not working it did not help and animals moved to different locations, which meant more animal deaths. Some members also felt that the subsidy undermined community cohesion since people had previously come together to manage the borehole.

### **4.5.2 Destocking and restocking**

#### KMC Off take

The National off take programme commenced on 30<sup>th</sup> March 2009 for phase 1, while phase two ran through to November 2009. In phase one the animals were being procured and delivered to the commission with the payments being made after slaughter based on Dressed Carcass Weight (DCW) with a price of kshs 100 per kilo. In the second phase, the animals were uniformly purchased at a standard price set by the government of Kshs 8,000 per animal. Payment was made through respective District Livestock Production Officers (DLPO) who were working in close collaboration with the District Veterinary Officers (DVO). The government paid for transport of the livestock to the KMC factory. However in some instances, this was not possible and slaughter was done on site and the meat distributed to the community.

There were some challenges with such a huge exercise, and in some cases communities were actually harmed. For example in Doldol there was no off take done. The DLPOs office announced that it would take place on 19<sup>th</sup> and 20<sup>th</sup> September 2009 in three locations. Each household brought 3 cattle on average making altogether roughly 30,000 heads of cattle. Word got round to other neighbouring districts and cattle from Samburu, Elwaso and Isiolo were also trekked to Doldol. However no animals were bought. There was no water, no grass, and a lot of congestion therefore a large number of animals died.

Speaking to the DLPO Mugokodo- he confirmed saying he got the information last minute that the off take was not going to take place. The blame lies from HQ in Nairobi. The community said they should be have been told well in advance, to reduce the number of deaths.

In Olobelibel, Kajiado, the community did not participate in the off-take; however it reached the neighbouring town of Bissil. There are five markets within the larger Kajiado. Only 400 cows were allocated for the whole area. That is less than a hundred per market, and therefore it did not have much impact. . The advice they had for the government was to channel the money through NGOs as they felt they had the most impact.

The only community that mentioned benefiting from the KMC off take was in Ilpolei, Laikipia. The community had a meeting and decided to select families that have children in secondary schools to participate in the off take. This, they said, would give them the means to continue paying for school fees. The government bought 20 cattle towards the end of 2009, but the demand offered was for 5000 heads of cattle. They suggested 150-200 should have been bought in each location to have a meaningful impact.

### Slaughter de-stocking

Slaughter destocking, which occurred at the height of the drought, was generally considered more effective. However, overall few animals were purchased, limiting the magnitude of the impact.

In Lokirama, Turkana the community felt slaughter destocking was the most effective intervention, mainly due to its timeliness. Even if the body condition was poor, they benefited from money and meat. Everybody was allowed to sell at least one animal. One goat was sold for 800Ksh and a cow was 10,000KSh. The meat was distributed to the most vulnerable people. Some of the community members saved the money they got and when the conditions got better they restocked, while others purchased household commodities, as well as small items for business such as sugar and beans..

Similarly in Merti, Isiolo the community's opinion was that the slaughter off-take was very good, as everyone in town ate meat. About 200 people had their livestock slaughtered. Meat was only given to those members that did sell their livestock or did not have any. However, those that received the meat rations shared with neighbors and friends and in the end everyone benefited. The women especially thought it was a good intervention as it really boosted the economy of the town, which was good for small businesses, including the ladies selling miraa. This is also true for Olobelibel, Kajiado where 500 steers were bought from the community.

Malkagada, Isiolo also benefited from this intervention however the community said it had very little impact because the community wanted to sell 8000 heads of cattle but MID-P, a local NGO, slaughtered only 20.

In Ngamata, Samburu, the intervention was targeted to the elderly, where 10 cows and 50 small stocks were bought.



### Restocking

The two communities visited in Kajiado mentioned dairy goat restocking programs. In Naserian- the community observed that the timing was average, although it was not a rainy season, they all survived the drought. In Olobelibel- the hay received was used to feed the dairy goats, they did not migrate, and in turn they could milk, and sell. The income from dairy goats was used to educate the girls.

Both communities have seen the benefits of having dairy goats. The first kid born would be given to the neighbour. The plan is to have the very poor in the community develop an alternative livelihood of selling goat milk. This scheme has brought the community together, especially the women.

### **4.5.3 Peace building and Migration**

Migration has always been one of the most effective coping strategies against drought in pastoral communities. In Lokiriana, a Turkana town bordering Uganda, people and animals used to migrate to Kataruk, and some of their animals are still there. Even before that they used to migrate to Pokot, along the Turkwell Gorge and Logebigi. However, because of cattle rustling, they have become enemies and they ceased to migrate to Pokot.

Uganda had both pasture and water. Unfortunately, conflict kept people from going there. PADA a local NGO intervened by approaching Practical Action, an international NGO working in Kenya. They held meetings with communities on both sides as well as both governments. Within two weeks, it was agreed that the Kenyan herders could move their livestock to Uganda subject to certain conditions: no guns, no using designated areas, no destruction of the environment and no theft. The Ugandan President, Yoweri Museveni, who was visiting the Moroto border town at that time agreed to the migration.

Despite encountering a few problems at the border, they were ultimately able to migrate 38000 cattle, 68000 shoats, 18000 camels and 12000 donkeys, a third more than in 2000/1. Unfortunately, the animals were in very bad condition as it was the height of the drought and a large number died on the way. Moreover, when they reached their destination, the animals died from ECF as they were not used to the climate and the quality of grass.

### **4.5.4 Hay and Supplementary feeding**

At the height of the drought, the Government sent to all districts hay and supplementary feeding at two intervals. The first during Jul-Sep 09 and the second during Oct-Dec 09. This included hay survival mash, molasses and survival cubes. This was said to have had very little impact.

Part of the problem seems to have been in implementation and poor targeting. In Doldol, for example, the community witnessed a truck carrying hay and supplementary feeds but they did not receive it. The DLPO stated, he transported the hay from Nanyuki town to Doldol and stored it. Whilst bringing the second batch, the truck broke down at Ilpolei, and hence the distribution took place at Ilpolei but none at Doldol. The store owner at Doldol was asked to hold a meeting and distribute it to community members.

In Ilpolei, they received only 30 bales of hay. One bale was shared by two people. It only lasted a week. The community felt the government should increase the intervention to have a substantial impact.

In Olobelibel, Kajiado the hay intervention did have impact because it was targeted to a women's group, allowing them to reduce their costs and save time and effort of gathering leaves from the forest. Approximately 60% of women in the village benefited.

#### **4.5.6 Key messages livelihood implications:**

Despite lack of data to conduct rigorous cost benefit analysis, the research team gathered community perceptions about impacts. They were generally consistent with the inventory and DGS assessments, but add details about how the interventions impacted individuals and communities. Communities found corruption and mismanagement to be a bigger problem, which was specifically related to supporting services.

1. **Water** – water tankering was useful but had low impacts because relatively few people were reached. It is an expensive and low benefit intervention, but it is worth noting that women and children benefited proportionally more. Boreholes were the most appreciated of the water-related interventions, but in some cases the quantity and quality of water was insufficient. Population growth and the continued and unplanned creation of settlements without access to permanent water continue to put a huge burden on humanitarian sources during a drought. In addition, even when the borehole is functional—and not constructed on private land thus inhibiting access, in some cases an inappropriate balance of support between development and maintenance led to lower levels of satisfaction.
2. **Emergency de-stocking.** The community had views similar to the DSG in their assessment of the emergency efforts. In some cases, they were much more critical since interventions reached neighboring communities but not the ones for which they were intended. At the level of the district this bears little significance, but certainly matters a lot for the communities affected. Given their very high costs, the perceived impacts do not seem to be especially high, and in some cases some people were actually hurt. This needs to be factored in to an assessment of overall impact. There were some examples of cases where things were done better, by involving the community and providing support to people who had sold livestock to invest the money received.

3. **Migration and peace-building.** Generally considered effective; a third more animals were migrated in 2008/9 than in 2000/1. Disease problems reduced effectiveness, which suggests that interventions around these issues should be part of future migrations.

## **4.6 Appropriateness of interventions in reducing drought vulnerability**

### **4.6.1 Appropriateness of interventions in view of contingency plans**

One way of assessing the appropriateness of interventions is to compare them to what is recommended in the district contingency plans (CP). The implementation of interventions is meant to follow contingency plans which are based on the drought management cycle. In this section we compare the interventions that were implemented against what is recommended in these plans.

**Water sector:** At the time of alert/alarm stage the district contingency plan specifies carrying out a series of checks on water sources and service provision facilities. There should be sensitization/training of communities and CBWSP agencies on thrift, water use and service provision strategies, rehabilitation of critical water sources in high population concentration areas, and strengthening capacity for the provision of drought emergency water services as some of the key activities to be undertaken before the emergency. Though not specifically linked to the EWS stages, 34% of borehole interventions, 90 percent of other water resource interventions and 75% of trainings were carried out between July 08 and Jun 09, before the crisis period of the drought. Sixty percent of water tankering was also conducted during this period, which is surprising given that this might be considered more of an emergency response. According to the inventory, very few water resource assessments were carried out which suggests that adequate preparedness for drought emergency water supply may not have been appropriately undertaken.

**Animal health:** Provision of the veterinary services was appropriate during destocking e.g. screening and certification, was according to the CPs and was appropriately implemented. However, as mentioned earlier, vaccinations which should have been carried out during the alert/alarm stage were instead done in emergency phase having a negative impact on livestock losses as most of the animals were weak. Similarly, activities to be undertaken during recovery period were undertaken during emergencies posing new challenges to the pastoralists.

The contingency plan also prescribes the provisioning of **hay and supplementary feeds** during the emergency phase. Hay provisioning, which when well done might be an appropriate intervention, was generally too late and too little to have any significant impact on supporting the livestock through the drought.

**Offtake:** The contingency plans specify that during the alert/alarm stage information on livestock marketing be disseminated and offtake be publicized to buyers and pastoralists and encourage them to sales. This is intended to encourage destocking to be undertaken during the normal sales and reduce losses. Apart from Turkana and Samburu districts where marketing of livestock were emphasized and markets supported, no information was disseminated in other districts. The offtakes were late and more resources used during the emergency offtake.

#### **4.6.2 Appropriateness of interventions timing**

The drought management contingency plans for most districts have been developed and updated in the second half of the first decade of the 21<sup>st</sup> century. The drought management toolkit for the greater Horn of Africa (IRR, Cordaid and Acacia Consultants 2004) has had a significant impact on the development of these contingency plans, also provides a conceptual framework and a toolkit to manage the response to drought. As a result of this, agreement emerges among relief practitioners on the appropriateness of drought relief interventions.

The Livestock Emergency Guidelines and Standards (LEGS, 2009) handbook summarizes livestock specific interventions. It is an excellent toolkit supporting relief practitioners. Secondly, there is an emerging awareness that, while there is increasing understanding as to what are appropriate drought management interventions, much remains to be improved regarding the appropriate timing of such interventions. In view of this we advise to reconsider the drought contingency plans to better understand what intervention makes sense during what phase of the drought management cycle.

#### **4.6.3 Key message appropriateness:**

In summary, while the types of interventions implemented were consistent with what was in the contingency plans, the quality and timing of their implementation were often not consistent. This is particularly true in the case of animal health and commercial destocking.

## 4.7 Assessment of the involvement of communities

### 4.7.1 Observations and reflections on community involvement

Across districts and interventions, there was very little involvement of communities in the design and the implementation of the different interventions. Community involvement in design is especially important as interventions would be responding more appropriately to community needs when designed with the benefits of local knowledge.

In Samburu, only in one instance, the setting up of a livestock market<sup>20</sup>, were the communities called into a meeting to discuss the feasibility and potential benefits of the market (See box 1). In all the other cases communities indicated they had not been involved in contributing to the design of the interventions.

**Table 18: Community involvement in the design and implementation of interventions in Samburu, Marsabit and Turkana**

District	Intervention type (use codes)	Community involvement yes/no (And if yes, nature of involvement)	Implementers
Samburu	Water trucking	No	
	support to boreholes	No	ALRMP
	water resource development	None implemented in the district	
	livestock offtake	No	GoK and KMC
	animal health	No	
	animal feed	No	MOLD
	peace building/migration	No	
	livestock marketing	Yes	
	alternative livelihoods	No info on community involvement	
Marsabit	Water trucking	No	MOW and PISP
	support to boreholes	No	ALRMP /PISP /FHI
	water resource development	No	ALRMP
	livestock offtake	No	PISP/CIFA
	animal health	No	DVO /CIFA
	animal feed	No	MOLD /ALRMP /CIFA
	peace building/migration	No	
	livestock marketing	No	
	alternative livelihoods		
Turakana	Water trucking		
	support to boreholes		
	water resource development		
	livestock offtake	No	
	animal health	No	
	animal feed		
	peace building/migration	Yes	
	livestock marketing		
	alternative livelihoods		

<sup>20</sup> An initiative of the Samburu County Council, the Samburu Integrated Development Programme, the Kenya Livestock Marketing Council and SNV

In Marsabit, the communities indicated they had not been involved in the design and implementation of any of the interventions. This led to negative perceptions of the communities on some of the interventions. For example the community in Kargi town blamed increased livestock deaths on the PPR vaccinations carried out by the Veterinary Department.

In Turkana, the only intervention designed and discussed with communities was the migration to Uganda. Practical Action and PADA held meetings with communities on both sides of the border and with government officials to discuss and agree on the migration and set up rules under which the livestock keepers would abide by while in Uganda. As a result of these meetings, they were able to migrate 38,000 cattle, 68000 sheep and goat, 18,000 camels and 12,000 donkeys.

**Table 19. Community involvement in the design and implementation of interventions in Laikipia, Kajiado and Isiolo**

District	Intervention type (use codes)	Community involvement yes/no (And if yes, nature of involvement)	Implementers
Laikipia	Water trucking	No	MoW/ALRMP
	support to boreholes	No	ALRMP
	water resource development	No	MoW / World Vision /KRA
	livestock offtake	Yes	KMC
	animal health	Yes	DVO
	animal feed	No	MOLD
	peace building/migration	No information on community involvement	
	livestock marketing	No information on community involvement	
	alternative livelihoods	No information on community involvement	UNDP
	Kajiado	Water trucking	No
support to boreholes		No	
water resource development		No	ALRMP/DWE/DLPO
livestock offtake		No	
animal health		No	ALRMP/DVO
animal feed		No	
peace building/migration		No information on community involvement	
alternative livelihoods		No information on community involvement	
Isiols	Water trucking		ALRMP
	support to boreholes	No	ALRMP
	water resource development	No information on community involvement	ALRMP
	livestock offtake	No	ALRMP
	animal health	No	ALRMP
	animal feed	No information on community involvement	ALRMP
	peace building/migration	No information on community involvement	ALRMP
	livestock marketing	No	ALRMP
	alternative livelihoods	No information on community involvement	ALRMP

The only district where there was community consultation was Laikipia and even then it was on only one subject: livestock offtake. The community made the decision on the criteria for selection of households to participate in the livestock offtake programme. This lack of community involvement led to one instance, where the UNDP started a fish pond in an individual's land and therefore the community has no access to it.

In Kajiado, a similar pattern emerges, very little consultations with communities on the interventions. In Naserian, the community wanted to be involved so that they can work on more alternative livelihood strategies rather than relying on relief food during droughts. A goat distribution project that has not been part of the relief efforts and that has had the involvement of the community has been found to be more successful by the community members.

In Isiolo, there were some interesting observations from the community in Merti location. They felt that the provision of diesel for boreholes was making them more dependent. If there was community involvement in the decisions, they would opt to use the funds to dig more boreholes and leave the community to manage the borehole and buy the diesel. Their resolve to do this is such that they have gone to other communities with better management of their boreholes to learn from them. The community would prefer to have a thriving market than rely on the government funded livestock offtake programme. They see investments in pasture management as one way to solve the feed problems during drought. The reaction was however different in Malkagala town where there seems to be a heavy dependency syndrome by the community. The community was also not involved in the design or in discussions on any of the interventions and this seems to perpetuate the attitude that if there are organizations willing to provide free interventions, why should they as a community pay for them.



### **Box 1. The case of Lolguniani Market:**

This market is one of the success story in the Samburu district organized by the Samburu County Council with SIDEP and SNV. One innovative feature is the cSess collection in which for every animal sold the Samburu county council shares with the community by a half. This is thought to have helped community with management of market structures, lending members money for school fees, and hospital charges etc. The council owns the market but shares responsibilities with the community. The community management committees manages the market and collect the cess on behalf of the council which is shared on 50 – 50 basis between the two.

Due to its potential and role in the community, the market was able to continue even during the drought. The animals for sale in the market came all the way from Laisamis and from Barogoi areas. There were also local and external traders providing high demand in the market. Traders came from areas like Isiolo, Nairobi and Moyale. As a result the livestock prices have increased. The council and other partners like the SNV are now planning to build shops, veterinary stores, water sources, and storage facilities around the market.

The major achievement of the market is that it acted as a link between the producers and buyers of livestock. Through SNV, the producers were exposed and linked to the KMC, and Dagoretti market. Other successes of the include:

1. High levels of transactions during the drought
2. Good rapport of traders and producers with involvement of the community
3. The community were able to sell livestock at their areas to cut off the middlemen who often exploit them
4. The community development management committee is able to collect cess and sell livestock
5. Youth are also involved in the buying and selling of livestock.

The market is however faced with the problems of insecurity, selling of stolen livestock, sale of diseased animals' etc. This has been reduced by involvement of brokers and the security hired in the market areas to mitigate this problem. Suggested strategies for further improving thr market are:

Improve the transport and communication network

- a) Targeting areas with high population to ensure constant supply and demand in the markets.
- b) Market structures
- c) Local security
- d) Political will at the local and regional level
- e) Commercialization of livestock producer groups
- f) Work with LINK
- g) Governance with pastoralists and improvement of the whole value chain Involve different actors in the value chain like the abattoirs in Eldoret operated by the private sector

### **4.7.2 Key message on community involvement:**

Overall, communities were not involved in the design and implementation of interventions, with predictably negative implications for effectiveness and impact.

## **4.8 Assessment of triggers for the activation of contingency activities**

### **4.8.1 Observations and reflections on triggers for contingency activation**

This component of the drought cycle management remains the most critical in the process of activation responses. A harmonized approach is lacking, as current guidelines do not provide specific indicators and qualitative thresholds to trigger the release of contingency funds. DSG's have been interpreting the messages from the EWS bulletins subjectively and in most cases the recommended action in the EWS bulletins could not be supported by real statistical evidence. The process of managing statistical information which is closely linked to the quality of the field information remains a fairly 'closed-shop' activity and requires a more transparent system.

In addition, the EWS bulletins provide overly generalized information that does not have a specific livestock focus. Thus the information is late, and inappropriate for livestock interventions. Nor, as taken up in Chapter 5, is variation between districts considered in contingency planning, so recommendations are too generic. Finally, no thresholds have been defined for release of contingency funds.

### **4.8.2 Key message on triggers for contingency activation**

- a. Provide separate livestock alert in EWB & geographic variation in district
- b. Develop district specific contingency plans
- c. Describe methods and harmonize approach to EWB
- d. Develop agreed upon thresholds for variables published in the EWB for contingency funds release
- e. Improve transparency of decision making; be open to stakeholders

## **5. Checklist of livestock based interventions in different scenarios**

### ***5.1 Background issues***

Suitable interventions vary substantially depending on the geographic location, social and economic context of a district and to a certain extent on the characteristic of a particular drought. For example, Laikipia District consists mainly of large commercial ranches that generally manage a drought situation well. However, this district often bears the brunt of large scale in-migration from outlying districts in an attempt to access the forest/wildlife reserves of Mt Kenya and the Aberdare range. This requires movement through privately owned land, often resulting in conflict.

Once in the mountain forests, livestock starts succumbing in large numbers to diseases such as ECF and other tick borne diseases that are not relevant in their areas of origin. This is a contrast to Kajiado District, which mainly consists of group ranches that are increasingly split into individual holdings, has to cope with a surplus livestock population.

Out-migration is often used as a coping mechanism, moving as far as northern Tanzania. At the same time, a substantial number of people and animals remain behind that depend on sedentary services such as health, education and famine relief. In this case interventions to save livestock assets are more related to support to the water sector and suitable veterinary input and, if appropriate and at a sufficient scale, support to livestock marketing.

In the more arid and often remote districts the scenario is completely different, as they lack both private and public resources to support drought management as well as “normal” development activities. Moreover there is often large variation in the severity of the drought within the boundaries of these very large land masses, as indicated by the images shown in section 4.2.

Without a single exception, all pastoralist groups interviewed consider mobility and access to natural resources as the most potent coping mechanism. Ironically, this is also the activity that is increasingly the most impeded. Interventions that facilitate and/or maintain critical migratory movement and/or allow access to unused grazing areas will continue to serve as the most powerful way to mitigate livestock losses during a drought. Often the funds required to achieve this are minimal compared to other interventions and as such it is also the most cost-effective intervention.<sup>21</sup>

Secondly, the study strongly recommends that increased emphasis is given to preparedness and risk reduction. The need for many of the emergency related activities could have wholly or partially been avoided if early, clearly identified and targeted

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<sup>21</sup> A pastoralist group interviewed in Samburu stated ‘If we could have access to grazing areas that we used 30 years ago, this drought would not have affected us and there would have been no need for you to come here’

activities had been implemented. It is therefore a strong recommendation that substantial funds from ‘Contingency Funds’ be reserved for the use of suitable preparedness activities.<sup>22</sup>

The EWB provides critical information as far as the timing of the various interventions is concerned. This system depends therefore entirely on the overall quality of the EWS. Elsewhere in this report recommendations are made to improve on this aspect of the drought cycle management, but it is re-iterated here that this activity is of paramount importance. If the EWS does not provide credible, timely, and livestock-focused information, there is little chance that downstream activities can be successful. This applies especially to thresholds that are designed to trigger release of funds to pay for specific interventions.

In the next section, we list appropriate interventions according to when they should be implemented during a drought cycle. This is the framework that should be used to evaluate the “timeliness” of interventions; actions taken at the wrong time can have negative impacts.

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<sup>22</sup> Many of the relevant preparedness activities are the responsibility of line ministries. Reduced capacity of the district based line ministries has often led to routine activities not being carried out any more and often funds to carry these out become available during an emergency only when such interventions become inappropriate and can do considerable harm.

## 5.2 Proposed checklist of livestock related interventions

<b>EARLY WARNING STAGE</b>	<b>PROPOSED INTERVENTIONS</b>
<b>NORMAL</b>	<ol style="list-style-type: none"><li>I. Identify critical (unused) natural resources, their migratory routes and facilitate negotiations for access during drought. This may include creation of cross border negotiations, regular meetings with stakeholders such as private ranches, KWS etc.</li><li>II. Identify strategic water sources and ensure they are operating well. This may include support to strategic boreholes to ensure full operations during drought, de-silting of pans if and when seasonal rainfall allows etc.</li><li>III. Advocate for and facilitate to ensure that important veterinary routine activities such vaccination, training of CBAHW's, functioning of drug supply chains etc take place.</li><li>IV. Implement labour intensive projects related to livestock support such as bushclearing and de-silting of pans</li><li>V. Awareness creation/training of communities to allow rapid and 'community owned' interventions to take place</li><li>VI. Facilitate fodder/hay production</li><li>VII. Repair and/or construct slaughter-off take slabs</li><li>VIII. Review and update Contingency Plans for each district to make them more appropriate and livestock specific</li></ol>
<b>ALERT</b>	<p><i>Activities triggered by declaration of ALERT stage</i></p> <ol style="list-style-type: none"><li>I. Continue migration facilitation/peace negotiations/conflict resolution</li><li>II. Support livestock disease surveillance</li><li>III. Continue preparedness activities related to water security in strategic locations</li><li>IV. Continue labour intensive livestock related activities</li><li>V. Facilitate increase of commercial off-take</li></ol>
<b>ALARM</b>	<p><i>Activities triggered by declaration of ALARM stage</i></p> <ol style="list-style-type: none"><li>I. Continue migration facilitation/peace negotiations/conflict resolution</li><li>II. Activate carefully targeted and limited veterinary related interventions</li><li>III. Continue labour intensive livestock related activities</li><li>IV. Activate substantial support to commercial off-take</li><li>V. Support livestock disease surveillance</li><li>VI. Initiate limited slaughter off-take</li><li>VII. Activate limited support to critical water supply points</li></ol>
<b>EMERGENCY</b>	<p><i>Activities triggered by declaration of EMERGENCY stage</i></p> <ol style="list-style-type: none"><li>I. Initiate pre-designed monitoring system</li><li>II. Continue migration facilitation/peace negotiations/conflict resolution</li><li>III. Activate veterinary related activities mainly treatment of livestock</li><li>IV. Activate increased support to critical water points</li><li>V. Activate slaughter off-take interventions</li><li>VI. Activate limited fodder/concentrates supply interventions</li></ol>
<b>RECOVERY</b>	<ol style="list-style-type: none"><li>I. Initiate evaluation of response programme</li><li>II. Continue migration facilitation/peace negotiations/conflict resolution</li><li>III. Support limited re-stocking activities</li><li>IV. Revise contingency plans based upon response evaluation results</li></ol>

## 6. Guidelines for effective monitoring and evaluation

An effective monitoring and evaluation system for the various livestock based drought response interventions is needed to allow better information on what works and what does not work. Such an M&E system needs to involve the communities. A four stage process is proposed that includes (i) Understanding the context (ii) Participatory rapid assessment and development of local indicators during the alert/alarm stage (iii) Periodic assessment of interventions during their implementation and (iv) participatory evaluation of effectiveness, appropriateness and timeliness of interventions during the recovery stage. These are described in table XXX below.

*Table XXX: Proposed M&E process to evaluate effectiveness of drought interventions*

Stage	Focus	Rationale	Potential indicators
Normal	Understanding the context	The local context determines the effectiveness of any interventions	Herd movement routes Local organization capacity Existing structures for pasture, water and disease management
Alert/Alarm stage	Participatory rapid assessment of potential drought interventions and development of evaluation indicators	Community involvement in the selection of potential interventions will increase their likelihood of success  Local indicators of effectiveness of interventions can complement standard indicators	Potential reach of interventions Potential impact on livestock, and on livelihoods Probability of success Match between community need and potential interventions A criteria for determining prioritization of interventions in the event of low resources For each intervention, 3-5 key indicators of success from community perspectives
Implementation of interventions	Data collection on indicators	Data needs to be collected during the implementation of the interventions to understand their effectiveness, what works and what does not work	Number of livestock keepers /livestock etc reached Scale of operation Effectiveness in dealing with key issues (livestock deaths, diseases, loss of life, provision of alternative livelihoods , conflict etc Effectiveness of coordination mechanisms (process as well as content)
Recovery	Participatory evaluation of effectiveness of interventions dissemination of information	Communities are key in evaluating the effectiveness of interventions and the extent to which they worked, did not work and areas for improvement. This participatory assessment	Participatory evaluation using tools such as After Action Review and Most Significant Change from each intervention.  The AAR is based on analyzing

complements quantitative data collected during interventions what went well, what did not go well and how this can be improved.

A complimentary participatory evaluation alongside this with all DSG members and actors in each district The MSC looks at what interventions had the most significant change, which ones had the least, and why

Such an M&E system as described above achieves several functions (i) documentation of the interventions and their effectiveness (ii) Bringing in community voices both in the design and the evaluation of the interventions (iii) learning and change through a reflection both at community level and at the DSG level on what worked well, what did not work well and what needs to change in the future. This focuses both on the content of the interventions and the process through which they have been designed, planned by the actors and implemented. And (iv) it helps to inform donors on what works, what does not work, and in what context for prioritizing future funding for drought management.

## 7. Plan for commercial destocking

The ToR of this study requests the consultants to ‘design an example of a contingency plan for the implementation of a commercial de-stocking intervention’. Marsabit District was selected for this exercise and a one day workshop was held on 16<sup>th</sup> April 2010. A broad representation of relevant stakeholders was present (See Annex 5, ‘Report on the workshop on de-stocking’) and the subject was discussed with a great deal of interest. Two overriding recommendations/findings that came from the discussion were:

- that a successful commercial de-stocking intervention is next to impossible if the district does not already have a functioning fully fledged dynamic livestock trade as an ongoing activity during ‘normal’ times. There was no consensus if this was the case in Marsabit District. However it was agreed that livestock trading did exist, however the validity as to it being a fully fledged, ‘accessible to all’ activity was not agreed upon, and
- that ‘emergency’ commercial de-stocking should not be necessary as the commercial sector, if functioning, should be capable to up-scale its activity if and when drought related market surplus became evident. There was a very strong undertone to the discussions that emergency commercial de-stocking could possibly create further dependency on outside agencies which was considered unsustainable and ill advised in its entirety.

It was eventually agreed that the following basket of Early Warning Indicators would provide critical information as to when increased need for de-stocking would have to be implemented:

1. Indicators relating to number of livestock offered for sale would exceed an agreed upon threshold over ‘normal’. The workshop was not in a position to describe what was considered normal and it was agreed that this would require substantial investigation looking at numbers sold from the Veterinary Department and County Council records.
2. Indicators relating to market index prices. It was agreed that the trigger point for this index would be reached if livestock prices reached 40% below the long term average. This would need further investigation.
3. Indicators relating to distance to watering points. It was agreed that the trigger point would be reached if this exceeded 20kms.
4. Indicators relating to livestock milk production. Again no critical trigger point could be agreed and this would be subject to further investigation.
5. Indicators relating to livestock body conditions. This is a fairly subjective indicator and would require further investigation as to it being ‘measurable’ or not.
6. The NDVI reaching a certain threshold. Again to be agreed upon as to what level this would need to reach.

It was further agreed that the above indicators, in order to be useful would require (i) further investigation and research as part of the identified needs to improve on current



contingency plans, and (ii) the current EWS requires further upgrading for it to enable to produce the information quality that would be needed. A weighted index for the above indicators could not be agreed upon and will require further research.

It was observed that the recent commercial de-stocking interventions were not considered viable operations as the cost related to transport subsidy in relationship to the number of livestock transported out of the district was exorbitant. The KMC off-take, with the exception of a highly publicized intervention from Loyengalani Division, was not implemented in Marsabit District.

In this context it was agreed that funding from the NDCF for this kind of operation should consider issuing of **loans** from the Fund (not grants) to existing established livestock marketing institutions, thus supporting sustainability and encouraging a real commercial aspect to the exercise.

## **8. Review of the need for separate climate change adaptation**

### **8.1. Climate change forecasts for the Kenyan Drylands**

#### **8.1.1. Rainfall projections**

Limited information on climate change is available for East Africa at country level or local scale. However, the projected increase in rainfall in East Africa (out to 2080), extending into the Horn of Africa, is robust across the ensemble of GCMs. Eighteen of 21 models project an increase in the core of this region, east of the Great Lakes (Christensen et al., 2007; Doherty et al., 2009). There is still some uncertainty about this trend, however; as other work suggests that climate models to date have probably underestimated warming impacts of the Indian Ocean and thus may well be over-estimating rainfall in East Africa during the present century (Funk et al., 2008).

Thornton et al. (2006) estimated changes in aggregate monthly values for temperature and precipitation. In this study possible future long-term monthly climate normals (rainfall, daily temperature and daily temperature diurnal range) were derived by downscaling GCM output to WorldClim v1.3 climate grids at 18 km<sup>2</sup> resolution (Hijmans et al., 2005). The outputs from several GCMs and SRES scenarios (Special Report on Emissions Scenarios; IPCC, 2000) were used to derive climate normals for 2000, 2005, 2010, 2015, 2020, 2025 and 2030, using the down-scaling methodology described in Jones and Thornton (2003). Total annual precipitation projections for Kenya showed increases in total rainfall in the order of 0.2-0.4% per year. These figures for Kenya correspond with findings of long-term wetting by Christensen et al. (2007) and Hulme et al. (2001). However, the regional variations in precipitation are large; the coastal region is likely to become drier, while the Kenyan highlands and Northern Kenya are likely to become wetter.

According to the UNDP Climate Change Country Profile for Kenya (McSweeney et al., in press) the projections of mean rainfall are consistent in indicating increases in annual rainfall in Kenya. Area average time series show observed climate combined with an ensemble of 15 model simulated recent and future climate under three SRES emissions scenarios (A2, A1B, and B1). The ensemble range spans changes of -1 to +48% by the 2090s. Figure 1 shows the rainfall output for the A2 scenario. The projected increases in total rainfall are largest in October-December, but annually these increases are in the order of 20-40 mm per year to 2090 for the arid districts of Kenya. These small increases may be overshadowed if rainfall variability and the frequency of rainfall extreme events increases in the future.

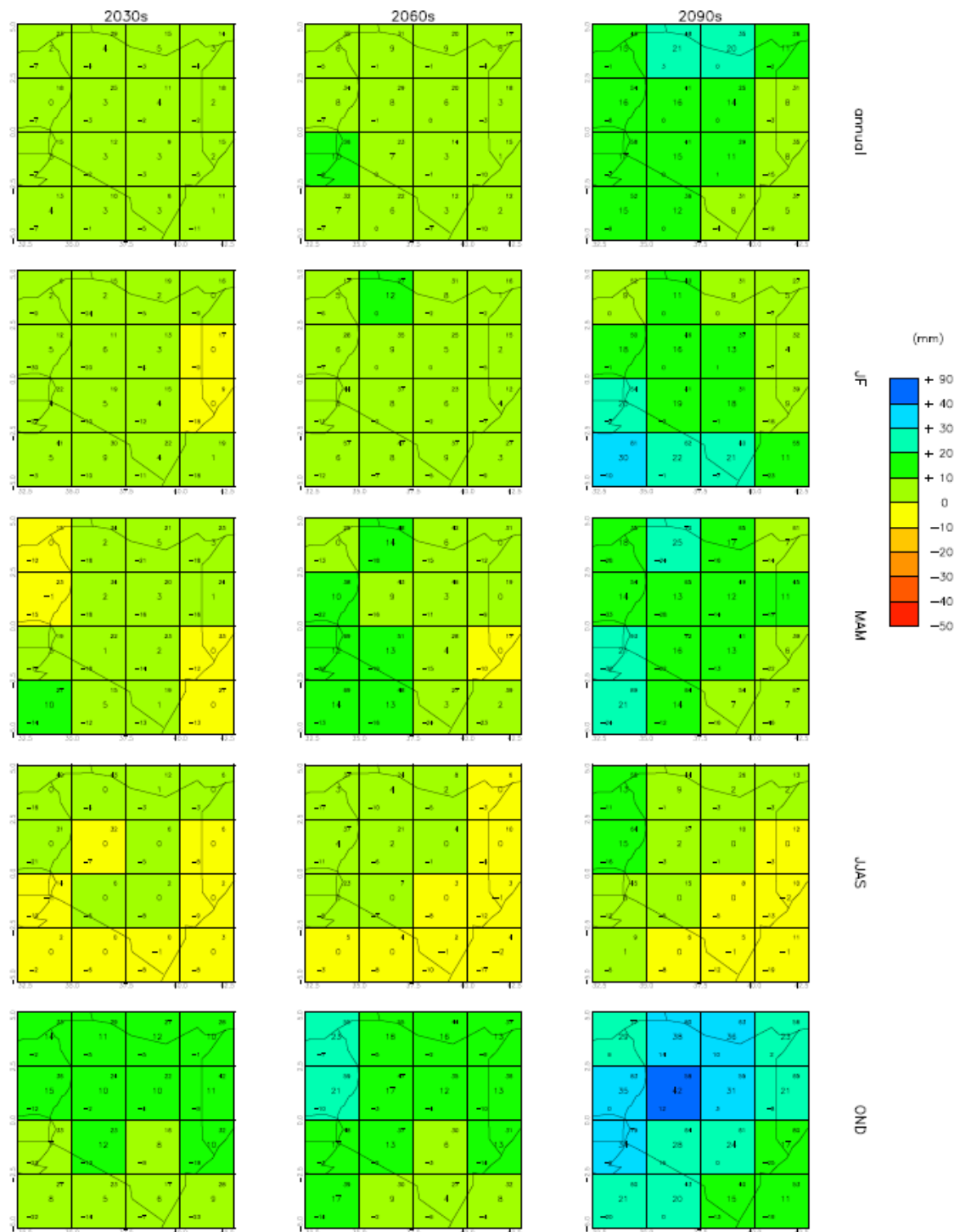


Figure 1. Kenya: Spatial patterns of projected change in monthly precipitation for 10-year periods in the future under the SRES A2 scenario. All values are anomalies relative to the mean climate of 1970-1999 . Source: McSweeney et al, in press, <http://country-profiles.geog.ox.ac.uk/>

### 8.1.2. Temperature

The summary output of 21 Global Circulation Models (GCMs) used by IPCC in their latest report to predict the annual changes in temperature and rainfall that will occur by the end of the 21st century is presented in Table 1. Maximum and minimum predictions of change are given together with the 25, 50 and 75 quartile values from the 21 GCMs (Cooper et al., 2008). Whilst all models agree that it will become warmer, the degree of warming predicted is quite variable. Even though rainfall may increase slightly, the temperature changes projected may increase evapotranspiration, thus offsetting any potential increase in productivity (Herrero et al 2010).

**Table 1.** Regional predictions for climate change in Africa by the end of the 21<sup>st</sup> century (IPCC, 2007).

Region	Season	Temperature response (°C)				
		Min	25	50	75	Max
West Africa	DJF	2.3	2.7	3.0	3.5	4.6
	MAM	1.7	2.8	3.5	3.6	4.8
	JJA	1.5	2.7	3.3	3.7	4.7
	SON	1.9	2.5	3.3	3.7	4.7
	Annual	1.8	2.7	3.3	3.6	4.7
East Africa	DJF	2.0	2.6	3.1	3.4	4.2
	MAM	1.7	2.7	3.2	3.5	4.5
	JJA	1.6	2.7	3.4	3.6	4.7
	SON	1.9	2.6	3.1	3.6	4.3
	Annual	1.8	2.5	3.2	3.4	4.3
Southern Africa	DJF	1.8	2.7	3.1	3.4	4.7
	MAM	1.7	2.9	3.1	3.8	4.7
	JJA	1.9	3.0	3.4	3.6	4.8
	SON	2.1	3.0	3.7	4.0	5.0
	Annual.	1.9	2.9	3.4	3.7	4.8

DJF = December, January and February; MAM = March, April, May, JJA = June, July and August; SON = September, October, November.

Note: temperature response indicates the projected increase in temperature over current values.

## **8.2 Appropriateness of current drought response strategies for climate change adaptation**

The climate change projections from 8.1 indicate that in Kenya climate change will increase temperatures significantly, and marginally increase precipitation. However, these precipitation increases will be overshadowed by increased evapotranspiration. In addition, both the temperature and precipitation changes will likely result in new disease outbreaks, increased pressure on certain productive hotspots relative to surrounding drylands (which may become drier), and a greater chance of floods with more intense rains. Uncertainty about future climatic conditions will persist, unless there is continued investment in seasonal forecasts and downscaled climate projections. Over the next thirty years, we can anticipate a continuation of variable precipitation patterns and warmer temperatures. These present challenges to the already stressed pastoral livelihood systems in Kenyan ASALs.

The evaluation of drought responses in 2008-9 presented here suggests measureable improvements in effectiveness and some improvements in timeliness. However, these responses are not keeping up with the ongoing decline in assets and coping capacities of many pastoral households. In addition, poor governance and mismanagement of funds plague efforts to move from relief responses to longer term development interventions. Conflict over land is largely unresolved and all indications are that it is increasing and severely restricts pastoralist mobility.

Several NGOs, notably OXFAM and IIED, have argued strongly for explicit climate change adaptation policies and approaches to be implemented in ASALs (Nassef et al 2009). The advantages of such an approach largely center around fostering sustainable development in these areas, with more attention to equity and empowerment, and poverty reduction. More attention to managing climate variability and uncertainty and its impact on climate-sensitive livelihoods could also promote better social protection programmes for vulnerable households (IDS 2009), again bridging the gap between relief/ disaster risk reduction programmes, and development. As Nasseff et al (2009) argue convincingly, building adaptive capacity in pastoral regions is critical for poverty reduction and economic growth.

Conceptually, the argument for adding climate change adaptation to the current drought management response is appealing, especially if promised funds for adaptation come through from COP negotiations. Adaptation frameworks tend to promote the development of long term adaptive capacity, such as fostering livelihood support rather than food aid or other emergency interventions. More attention to managing climate variability will also improve the quality and timeliness of climate information. Pragmatically, however, there are drawbacks to imposing a new institutional framework onto existing drought management responses (Longley and Wekesa n.d.), as coordination

is a significant challenge. Contingency planning and effective use of contingency funds needs to be stronger and better integrated with the implementation of livelihood support interventions. Successful adaptation to climate change depends upon developing and maintaining household and community adaptive capacity, which relies on sufficient assets and institutional support to manage household income and food security as well as the surrounding landscape for water and grazing land availability. This will require much greater investment in the development capacity of ASAL institutions (both government and NGO).

Our specific recommendations are:

1. Adopt the approach outlined in sections 4.6, 4.8 and chapter 5, particularly stressing preparedness activities and more appropriate timing of interventions as recommended for good drought cycle management.
2. Continue investment in improved downscaled climate information.
3. Improve governance and processes for disbursement of funds in the ASALs, better integrating drought and flood management into “normal” development activities.
4. Advocate for better drought response and drought cycle management as part of the long term strategy for adaptation to climate change, but do this through existing institutional mechanisms.

## **9. Conclusions and recommendations**

### **9.1 On drought characterization**

#### **Using rainfall data for early warning –**

Conclusion: Rainfall data is the most appropriate source of information for livestock early warning, as it allows response time to scale up relief operations. Rainfall data is under-utilized because delays in data availability and constraints on data access due to privatization of government agencies. Moreover there are too few rainfall stations in the ASAL, and data consistency is poor. This hampers the use of real time rainfall data.

Recommendation: Liberate the societal benefits of rainfall data while making the historic Kenyan meteorological record publicly available; increase meteorological observation network while implementing an automated rain gauge network in the ASAL.

#### **Using NDVI data for early warning of drought in rangeland**

Conclusion: Analysis of monthly vegetation greenness anomalies does not appropriately reveal rangeland drought conditions relevant for livestock, as livestock manages to cope with shorter periods of reduced forage availability. A twelve month running average of NDVI detected historic droughts much more precisely,

Recommendation: Use running average techniques for rangeland early warning purposes.

#### **Using satellite imagery to prioritize conflict resolution**

Conclusion: The satellite imagery revealed heterogeneity in drought intensity in the northern Kenyan districts. Drought in the lowlands was accompanied by above normal vegetation conditions in mountains and across borders. Satellite imagery allows screening opportunities for migration and remedial conflict resolution in areas of high insecurity.

Recommendation: Include analysis of spatial heterogeneity during drought to support remedial conflict resolution in areas of high insecurity.

### **9.2 On the drought management intervention cycle**

#### **The Early Warning Bulletins**

Conclusion: The district Early Warning Bulletins provide a warning based on various indicators including social and livestock related ones. An early warning alarm based on social indicators might come late for livestock, as the condition of livestock worsens before that of human populations. To allow sufficient time to scale up livestock based

interventions it would be preferable to have early warning based on indicators that precede the deterioration of livestock condition, such as rainfall estimates or the greenness of rangeland detected from satellite imagery. Comparison of the district EWB's further suggests that there is variation between the districts in the type and intensity of the data collected. It would be better to have similar procedures used in the various districts, to allow better assessment at national level which districts are worse of and deserve support.

**Recommendation:** Include a separate early warning message in the EWB specifically geared towards triggering interventions aiming at livestock. This should be based on assessment of rainfall anomalies using data from multiple ASAL rainfall stations and satellite rainfall estimates and remotely sensed information on the greenness of the rangeland vegetation. We further recommend harmonization in procedures used among districts for such a livestock early warning system.

### **Timing of interventions.**

**Conclusion:** The timing of several of the interventions, notably destocking, was too late while vaccination was implemented during an inappropriate phase of the drought management cycle. This reduced the effectiveness of these interventions.

**Recommendation:** Strengthen capacity to plan the implementation of each intervention type in view of the phase of the drought management cycle.

### **Effectiveness and appropriateness of interventions**

#### *Water tankering and borehole support*

**Conclusion:** Water tankering and support to boreholes were considered effective, which may explain why they account for an increasing share of intervention funding. However, repair to water infrastructure can be done in periods of reduced stress. When maintaining boreholes there would be no need for this intention during drought and the contingency funds could be used for other purposes.

**Recommendation:** Maintain boreholes and other water infrastructure during periods of reduced stress in order to increase drought preparedness.

#### *Destocking*

**Conclusion:** An estimated 16,996 TLU were purchased or slaughtered in response to the drought in the 6 study districts. This is higher than the 9,857 TLU were purchased in 2000/1 in 10 districts (Aklilu and Wekesa 2001), but far below what would have been needed. Slaughter destocking interventions (25% of TLU; 29% of destocking budget)



were considered more effective than commercial destocking (75% of TLU, 71% of destocking budget).

Recommendation: Make use of existing commercial livestock marketing infrastructure and on site slaughtering to destock during drought. To achieve optimal impact, initiate these interventions early on in the drought management cycle. See chapter 7 and annex 5 commercial destocking workshop section for further recommendations.

### *Health*

Conclusion: Over 5.7 million animals were reached by health interventions between July 2008 and December 2009. De-worming was considered effective and appropriate, while vaccination was not.

Recommendation: Increase de-worming during drought as it keeps animals in better condition for longer. Restrict vaccination at middle or end drought as it might create mortality with animals in poor body condition

### *Forage and supplements*

Conclusion: The provision of feed was far too little and poorly coordinated, overall it was considered among the least effective intervention. To be effective, during drought large quantities of forage would be needed, which would be difficult to upscale from scratch when brought in from outside. It is worthwhile to consider developing hay production and fodder markets locally.

Recommendation: Promote initiatives to develop local hay production, fodder markets and strategic fodder reserves.

### *Migration and peace-building*

Conclusion: Peace building interventions were generally considered effective; 30% more animals migrated in 2008/9 than in 2000/1. Disease problems reduced effectiveness, which suggests that interventions around these issues should be part of future migrations.

Recommendation: Access to disputed land as part of pastoral mobility remains paramount in their coping strategy and more effective means to support this are required. This includes GoK commitment to play their role but specific interventions can be designed in the short and medium term to alleviate this problem as well.

### *Livelihood implications*

Conclusion: The data provide examples of benefits but also of people who have been harmed, and there are many lessons for different types of interventions. In general, interventions generated benefits for some, but few addressed underlying causes of vulnerability in ways that would have longer lasting benefits. Interventions that build on and support local livelihoods and link to longer term development are better than purely emergency ones.

Recommendation: Build on and strengthen rather than undermine local institution, livelihood strategies and coping strategies.

### *Community Involvement*

Conclusion: Despite recommendation from past assessments, few interventions involved the community in design or implementation. Those that did tended to have better outcomes than those that did not.

Recommendation: Involve communities before the drought in the design of drought contingency plans.

### *Triggering of interventions*

Conclusion: The quality of the district drought contingency plans have improved but requires continuous finetuning. As yet there are no agreed upon triggers for the release of contingency funds. Furthermore access to these funds is often delayed due treasury related constraints.

Recommendation: The drought contingency plans should be regularly updated and contain agreed upon quantitative triggers for the release of funds to implement interventions. Creation of a sufficiently endowed national drought contingency fund deserves the highest priority.

### *Climate change adaptation and drought interventions*

Conclusion: The argument for adding climate change adaptation to the current drought management response is appealing, especially if promised funds for adaptation come through from COP negotiations. There is a danger of duplicating efforts already implemented under the drought management strategy and it is advisable to implement climate change adaptation through these existing institutional arrangements.

Recommendation: Implement climate change adaptation policy through existing institutional mechanisms aiming at better drought cycle management.



## 10. Lessons learned

- The continued implementation of a basket of suitable preparedness activities remains the most cost effective approach to reduce the impact of shocks. Activities such as implanted by ECHO and ELMT are beginning to show a marked impact.
- In a limited number of arid districts and in overall humanitarian terms, emergencies of this nature are not solely caused by prolonged periods of rainfall deficit any more but are increasingly caused by a basket of factors whereby reduced access to previously accessible high potential grazing is the single biggest contributor to stress. This is heavily exacerbated by a relentlessly increasing demographic pressure, thus creating a cadre of the population who have limited access to any livestock at all and who are consequently extremely vulnerable to shocks.
- Increased semi-permanent presence of key NGO's in critical areas who are able to encompass a realistic drought management cycle approach has substantially improved information and speed of response. This, in combination with a vastly improved collaboration between agencies, together with improved coordination has at face value provided improved response in both quality and timeliness. The net impact of this is however largely negated due to other factors such as reduced line ministry capacity and related administrative/institutional developments such as the relentless creation of new districts and conflict. Further negative impacts such as mentioned under 1. above, have negatively affected any progress.
- ARLMP II has continued to play a key role in the management of droughts although there is substantial room for improvement to enhance its operations and get added value from the resources invested in this programme. The use of DSG's as a coordinating body has not come to full fruition while the quality and use of the NDCF requires substantial improvement.
- The EWS bulletin continues to provide a first line of information but again its quality can be further improved by providing more area specific information that could, in combination with the bringing on board of environmental information provide a more balanced picture. Independent monitoring systems as to the quality of this crucial process is recommended.
- The most effective interventions remain those where facilitation to access grazing and watering resources, which had hitherto not been accessible, was made accessible.
- Consequently, those districts that are chronically impeded in the above, are more vulnerable than those where this is not the case.

- So-called commercial de-stocking remains the least cost effective intervention. Distance, timing and economies of scale play an important role but more than anything else the lack of a dynamic and lively existing marketing system in many places virtually precludes the creation of a commercial de-stocking operation that will have the required impact at an acceptable cost.
- ‘Livestock-fodder-aid’ comes a close second whereby substantial quantities of bulky commodities such as hay are shipped to some of the furthest locations at huge costs with very little if any measurable impact.
- Slaughter-off take, preferably carried out on the spot with meat being distributed rapidly to presumed needy families is popular with beneficiaries and can have a substantial impact. Popularity is not surprising as those that sell the live animal often benefit from its meat distribution, thus creating a scenario unlikely to see in the reality of the commercial world. However, supplementation of this high protein food can have considerable benefit on nutrition while maintaining a limited purchasing power of those affected.
- Improved access to and use of DCF has supported timely interventions. However, its use has largely been limited to state actors. The, as yet undefined, trigger mechanisms for the release of DCF remain a serious impediment to its transparent use. Early access, once these concerns have been addressed, to increased funding is essential.

## 11. Literature

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## 12. Annexes

### ***Annex 1 – The ToR***

Below are the specific activities mentioned in the ToR. In bold we have added four headings to structure the ToR.

#### **I. General**

Provide an overview of the timing, appropriateness and efficacy of livestock-based interventions implemented by different stakeholders in response to the drought that affected the pastoral areas of Kenya in 2008/09. Lessons learned are expected to indicate possible mechanisms, systems, capacities and institutions which need to be strengthened in order to trigger more timely and appropriate livestock-based responses to drought and climate change.

The consultant is required to review experiences and lessons learned from different agencies and organizations involved in livestock-based interventions in response to the drought experienced in 2008/09, which included sectoral mitigation and relief activities. To this end, a number of key stakeholders shall be consulted to acquire relevant information on the implementation of response activities and their impacts on the livelihood of recipient households. At the national level main stakeholders include the KFSSG, the MoLD, the ALRMP, ECHO, UN agencies and NGOs involved in livestock-based activities. At the district level, main stakeholders comprise the Line Ministries, District Steering Groups, Drought Management Offices, UN agencies and NGOs. At the community level, primary stakeholders are the pastoral households which were targeted for support through the contingency activities and community-based organisations involved in disaster risk reduction and response (e.g. division disaster management committees where established);

#### **II. Facts and assessments on the 2008 - 2009 drought**

The study will analyze, for various livestock-based drought response interventions, factual information and the perception of local stakeholders regarding:

1. The timing and effectiveness of the interventions during the 2008 2009 drought;
2. Identify constraints hindering effective intervention, including those imposed by information from early warning systems, local contingency and preparedness plans and their approval process and different institutions and level of coordination;
3. Assess the livelihood implications and, where possible, the cost effectiveness of the interventions considered;
4. Assess the appropriateness of these interventions in reducing drought vulnerability of livestock-based livelihoods
  - a. Would ILRI have capacity to address appropriateness of vaccinations during droughts?
5. Assess the effectiveness of the involvement of communities in the identification and implementation of these interventions;
6. Assess the use (if any) of specific triggers for the activation of contingency activities (relationship between contingency planning, early warning system and associated triggering mechanisms);

#### **III. Advise how to improve drought response**

**Review EWS** - Strong emphasis shall be given on how to identify the need for livestock-based response interventions to mitigate the negative impact of droughts (early response). The consultant shall suggest a

checklist for the assessment of the drought situation and how this may affect the livelihoods of different people (scenario analysis) so that suitable livestock-based activities are identified and promptly implemented to protect people's livelihoods and thus strengthen local resilience. The methodology for the identification of drought response activities must rely on the district EWS and on the Drought Cycle Management approach.

**Contingency and destocking** - In one district the consultant shall, in collaboration with relevant district stakeholders (MoLD, DSG/DMO, one pastoralist organisation, local traders, etc.), draw up an example of contingency plan for the implementation of commercial de-stocking activities. The example should include good practices for planning of commercial de-stocking focusing on preparedness (definition of institutional arrangements and agreements, logistical plans, awareness creation, market linkages, EW triggers, etc.). The objective is to suggest step to step guidelines that can be used by the district authorities to prepare comprehensive contingency plans that can be activated as early response to an emerging drought;

**Recommend monitoring and evaluation-** The consultant shall provide recommendations and guidelines on how to include effective monitoring and evaluation (M&E) to allow better information for evaluation of effectiveness of livestock-based response interventions

#### **IV. Climate change adaptation**

Summarize existing forecasts regarding the impact of climate change on the recurrence of drought in pastoral areas of Kenya and assess the need to develop climate change adaptation strategies in addition to ongoing pastoral drought response strategies as described under 1 and 2.

The consultant will summarize the climate change forecasts (rainfall and temperature) for the arid lands in Kenya, given the uncertainties in these forecasts assess whether there is reason to expect a change in the recurrence of meteorological drought, and given this review assess the need to develop specific climate change adaptation strategies for pastoral livelihoods in addition to the ongoing drought response strategies as discussed under 1 and 2.



## **Annex 2 – Recommendations from the report by Akililu and Wekesa**

Below we summarize in how far we found evidence during this consultancy for follow up on the recommendations given in the report of Akililu and Wekesa.

Recommendations of Akililu and Wekesa (2001)	Current Status
<ul style="list-style-type: none"> <li>- Strengthen communities' own anti drought measures.</li> </ul> <p>External assistance should be aimed at building rather than undermining or replacing the communities' own anti drought measures.</p>	<p>Increased community participation has been noted but strengthening of community's own drought measures remains limited.</p>
<ul style="list-style-type: none"> <li>- Strengthen the existing drought monitoring system</li> </ul> <p>The emphasis should be on the use of early indicators that trigger actions aimed at not only saving livestock from drought crisis but seeking to preserve their condition and economic value.</p> <p>Refocusing existing systems in order to improve their predictive capability.</p>	<p>Lack of triggers (thresholds) hampers the overall drought management cycle. Quantatively based triggers should provide the trigger to release specific contingency activities. This is not yet in place.</p> <p>The predictive capacity is as yet not functioning</p>
<ul style="list-style-type: none"> <li>- Conflict management and cross border utilization of resources</li> </ul>	<p>Increased recognition on this critical aspect has been given in drought preparedness interventions with good results, but it has as yet not received the systematic inclusion into contingency plans and/or development programmes that it deserves</p>
<ul style="list-style-type: none"> <li>- Supplementary feeding of livestock- 'livestock famine relief camps'</li> </ul> <p>Using concentrates on larger scale for supplementary livestock feeding</p> <p>The cost of supplementary feeding is 1/3 of that of restocking. This saves money and also ensures that animal remain in the same area and probably stil belong to the same owners.</p>	<p>This type of intervention remains largely unused with the exception of a poorly implemented MoLD intervention. Increased use of fodder, mainly hay, is on the increase. Private commercially based activities play a major role. The MoLD intervention was generally considered as poorly implemented with very little impact.</p>

<ul style="list-style-type: none"> <li>- Support to veterinary- related animal health interventions during the drought</li> </ul>	<p>Successful and increased use of treatment against internal parasites is evident but requires more widespread use. Use of and training of CBAHW's remains important and is lacking a systematic approach.</p> <p>Use of so called 'emergency vaccination campaigns' are often inappropriate during a drought.</p>
<ul style="list-style-type: none"> <li>- Encourage de-stocking of livestock in response to changes in the availability of feed in the rangelands</li> </ul>	<p>Increased evidence of community awareness of this aspect is happening. Market systems remain however limited in their capacity to cope with increases caused by supply due to drought.</p>
<ul style="list-style-type: none"> <li>- Slaughtering of camels during drought</li> </ul>	<p>This coping mechanism has not been used by communities in the 2008/09 drought.</p>
<ul style="list-style-type: none"> <li>- Encourage the integration of camels in pastoralist herds</li> </ul>	<p>Many communities that have traditionally not used camels are now increasingly depending on these animals. Many communities complain about unavailability of breeding animals.</p>
<ul style="list-style-type: none"> <li>- Develop community based water supply systems in arid areas</li> </ul> <p>More water resources are needed, and the rehabilitation of wells and maintenance of water sanitation is important.</p> <p>Emphasis in the future should not be in developing new water sources, especially if such sources are permanent such as boreholes, but rather should be in the rehabilitation of existing facilities and in building the capacity of communities themselves to manage them in an effective manner.</p>	<p>Ad-hoc and unplanned creation of additional water sources is continuing unabated. Its impact is largely negative in terms of sustainable resource management.</p> <p>Community managed water points, especially critical boreholes is highly unsuccessful and problematic. Vast resources are committed to this resource during every drought with no sustainability. Much touted water reforms have had little impact and alternative management systems such as outsourcing of management by communities to external expertise, to be considered.</p>
<ul style="list-style-type: none"> <li>- Adopt a multi sectoral approach to planning interventions for livestock</li> </ul> <p>External intervention just be situation</p>	<p>This is increasingly taking place but needs further refining in the DC plans.</p>

specific and must often incorporate a range of multi sectoral interventions.	
- Institutionalize drought management in Kenya  Policy needs to be institutionalised	This process is under way and is embedded in the GoK ASAL Paper which is expected to be ratified this year
- The need for central coordination of activities at the district and national level	ALRMP has made huge strides in this direction and the systems are continually improved and upgraded.
- Establish rapid response funds for drought mitigation	This has been done to a limited extent under the management of ALRMP. Additional sources and systems are currently under design and will result in the National Drought Contingency Trust and the Drought Management Authority.
- The need for improves structural development  Long term development approaches that aim to empower communities through tackling: Improved export market, Support to education, Community training and skills, community organisation, health, water and sanitation, conflict management, improved livestock and agricultural production, Improved natural resource management and tackling of HIV/AIDS.	The lack of decades of development is the main cause of the current high vulnerability of the ASAL's to drought. There is increased but as yet unquantified support to the ASAL's which needs dramatic and sustained advocacy in order to succeed.
- Develop regional drought management perspectives  Regional perspectives with regard to these aspects (droughts, livestock disease, peace initiatives, livestock marketing and trade) need to be developed via appropriate institutions.	Initiatives have started by EU/ECHO and ELMT. These need consolidating and institutionalisation. Efforts through IGAD are under way.



### **Annex 3 – The questionnaires**

Below are the checklists and questionnaires used to collect the information while visiting various stakeholders at district level.

#### **Annex 3.1. Checklist for organizations implementing interventions**

##### **Questions**

1. When and how did you first become aware of the drought?
2. When and how did your organization initiate a response(s) (eg by writing a proposal or by planning an implementation)? Note – if same organization did more than one intervention then we should discuss all)
3. How was the response planned (what information used (data, existing plans), who consulted, etc? This could apply to either writing a proposal or designing an implementation if for some reason they already had funds available)
4. When was the intervention initiated and when did it end (unless it is ongoing)?
5. Did it achieve its concrete targets? Get details
6. What impacts did it have on communities? Get details of what impacts and how estimated
7. For each of the above questions, ask for constraints and for suggestions of how things could be better

Info for data base

name	Unit
Intervention ID (district ID+ intervention number)	
Implementer	
Type of implementer	1=NGO 2=Gov 3+other
Type of implementation	1=emergency de stocking 2=commercial destocking 3=vaccination 4=water trucking 5= ...(get list from TOR)
Location of implementation (within district since district is in ID)	
Funder	
Date proposal submitted	
Date approved	
Date initiated	
Planned end date	
Actual end date	
Role of community in design of intervention	0=none, 1= were consulted prior to submission/approval 2=community gave input that was incorporated into design 3) community initiated
Role of community in implementation	0=recipient 1=decide on beneficiaries 2=hired by project 3 other
Contribution required of community	0=none, 1=cash contribution, payment for services 3=in kind contribution
EWS information used in proposal or design	
Relation to existing drought response plan	0=non 1=based on plan
Coordination with broader drought response	0=non, 1=dsg, 2=other
Budget	
Objectives/targets (proposed)	Number hh, number animals, amt water, etc—need to think about how to code these
Objectives/targets (achieved)	
Total amount spent	
Constraints to implementation	Text or codes?
Broader impacts observed	(i) Income, 2) food security 3) NRM

## Annex 3.2 Checklist for the DSG

### EU/ILRI Assessment of Emergency Livestock Interventions in ASALs DSG/Government Official Checklist

District: \_\_\_\_\_

#### Timeline of the 2008/9 drought

Ask the group to walk you through the drought response in the district.

1. **When was the drought first identified and how?** This is where the discussion of triggers and EWS should come in
2. **Who responded, when and how?** This should cover the donors/funding sources (district, national, international; gov and non gov) and how and when they made their funds available, and to whom. Could identify links between funding and existing community, district or national plans.
3. **What specific interventions were initiated, when, where, by whom?** –this should cover formulation of proposals or design of interventions (including their links to existing plans if any) , approval process and initiation of interventions by NGOs or other organizations. Participation of communities in the process should be mentioned here. Coordination of responses and linkages between community, district and national
4. **Are/were these interventions effective, individually and collectively?**—this covers the effectiveness of individual livestock interventions as well as the overall effectiveness of the drought response. Might also want to ask here about the traditional coping strategies of the communities as well as the external responses. Press for people to identify the information sources on which they are basing their perceptions of effectiveness

Once the timeline is established, ask what could have been done better and how:

Timing of responses  
Appropriateness of response  
Effectiveness of responses  
Coordination of responses  
Overall process – what information would have been helpful at what points in order to improve the outcomes.

At the end, ask the group about climate change and its impact on household livelihoods and overall planning at the district level? What, if any, implications does climate change have for drought preparedness/response strategies and structures?

#### Specific information to gather before or after the meeting

**Drought Management Interventions/Activities**

1. What livestock-related interventions were implemented in response to the 2008/2009 drought by the government/Ministry of livestock (Type of intervention, location, implementer)
  
2. How much money was spent by the ministry of livestock, Ministry of water and other government ministries on livestock-related emergency interventions? (*If possible, provide the breakdown by quarterly*).

**INSERT TABLE**

**Drought Management**

**1) Preparedness/mitigation**

3. What structures are in place for drought preparedness and mitigation?

.....  
.....  
.....  
.....

4. What are some of the district plans used at the district level for drought preparedness and mitigation?

.....  
.....  
.....  
.....

5. Is there DCTF established in the districts?

.....  
.....  
.....  
.....

6. What have been the contributions to the Drought Contingency Trust Fund by other stakeholders in 2008/09?

7. Have the communities invested labour in drought preparedness? If yes, in what activities



8. Have the District Authorities invested either cash or other resources in drought preparedness

**Climate change**

9. What interventions were implemented for adapting to or mitigating climate change?

**Additional questions**

10. Are there conflicts between the communities in the districts? What are the consequences of these conflicts in terms of livelihoods and/or ability to manage drought?
11. What are the key conflict management mechanisms that have been established during the drought?

## **Annex 3.3 – Questionnaire for community based interviews**

### **A. Participatory Impact Mapping**

#### ***Objective***

Asses the impacts of the emergency livestock intervention (s) (ELI) on livelihoods and identify lessons and recommendations for improvement.

#### ***Resources Needed***

- 1) Flip board
- 2) Flip board stand
- 3) Different coloured pens

***Duration:*** 1 – 1 1/2 hrs

#### ***How to conduct the activity***

1. Start by asking the group which emergency livestock interventions were implemented in the community during the last drought. Follow this up by asking ‘who’ implemented the interventions.
2. Ask the group if they have been involved in the design and/or implementation of the interventions. If so, how?
3. If there were more than 1 intervention implemented, ask the community to identify the intervention they felt had the greatest impact in terms of reducing negative drought effects.
4. Continue by drawing the identified intervention at the centre of a sheet of paper. Ask the community ‘what’ the change from the intervention was (eg. Greater access to livestock products, more money to buy food, etc). As impacts can be both positive and negative, divide the paper into 2 sections. Allocate one side of the paper to record positive impacts and the other side of the paper to negative impacts.
5. Ask the community ‘who’ was impacted in the group (women, men, elderly, farmers, mobile pastoralists, marginalised groups, the elite etc).
6. How many or what proportion of community members were impacted? (eg. What proportion of women in the community benefited)?
7. For each change, follow up and ask the subsequent change. For example if the first change was more money, ask what happened as a result of having more money. From this, you will end up with one change branching into another one or more changes like a tree branch diagram. Ideally, there should be multiple impacts for each outcome which may lead to further impacts at different levels. Note that some of the changes may be negative and for these negative impacts, use a different colour or indicate the nature of the impact near the arrow.

8. Using symbols draw a connecting line to the intermediate and final impacts of all interventions (eg. High milk sales by community groups → more money for women in households → improvement in food security during the drought period and beyond)
9. For each of these changes, ask question 5 and 6.
10. Ask the group which impact they felt was the most important/effective towards reducing the negative impacts of the drought and mark this on the map with a short explanation
11. Once the map is complete, ask the group how positive impacts from the livestock intervention could have been increased. Possible answers may include a different type of intervention, better coordination, better efficiency in implementation, increased community participation in implementation etc. You can use the map to identify from the different impacts, areas where communities are less satisfied by impacts of intervention and probe further

**Question 1-3**

Emergency Livestock Intervention	Organisation implementing intervention	Community input into design and/or implementation (Yes/No)	Describe nature of input

**Question 4 – 10**

Drawing of impact map

Most important impact for reducing negative effects of drought

.....

.....

.....

.....

.....

.....

**Question 10**

Recommendations for how intervention could have been improved	Explanation
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1.	
2.	
3.	
4.	

## B. Drought trend activity

### **Objectives**

This activity aims to explore the impact of drought incidences on traditional coping mechanisms.

This tool aims to:

1. Identify the last 2 major drought events
2. Identify various coping strategies (including external interventions) employed to reduce impact of each drought
3. Identify and clearly explain trends in coping strategies and options over the past 2 drought periods.

### **Resources Needed**

- Flip chart paper
- Different coloured marker pens
- Stones/beans

**Duration:** 1 hour

### **How to conduct the activity**

1. Ask the community to identify the years in which the past 2 drought periods occurred.
2. Ask the community to identify the severity of each drought. The group can use stones or seeds to indicate the severity of each drought where 10 stones should indicate the highest severity and zero stones the least severity. Probe for reasons for that level of severity.

### **Questions 1 and 2**

<b>Drought year</b>	<b>Severity (out of 10)</b>	<b>Reasons for severity</b>
Drought year 1.....		
Drought year 2.....		

3. For each drought, ask participants to describe how they coped with the drought, and what interventions (if any) were implemented to deal with the drought.
4. Of these management strategies, request participants indicate the 3 most effective mechanisms and/or external interventions for each drought event and explain why they consider these the most effective?
5. Identify any changes in the use and/effectiveness of mechanisms and interventions across the 2 drought events. Ask the community to explain any changes.
6. From the mechanisms and interventions identified, was there a combination of coping mechanisms and interventions that was particularly effective? Ask the community to list and explain.

**Questions 3 - 5**

<b>Drought Year</b>	<b>Coping strategies</b>	<b>Was it used (Yes, No)</b>	<b>Which 3 mechanisms were the most effective? (in order of most effective to least effective)</b>	<b>Why did you consider this the most effective mechanism?</b>
Drought year 1.....	Used previous season's food stocks			
	Ate wild fruits/ leaves			
	Reduction in consumption			
	Sale of hh assets			
	Sale of livestock			
	Moved to less drought affected areas			
	Relied on assistance from friends/relatives			
	Relied on food aid			
	<b>Other</b>			
	<b>Other</b>			
Drought year 2.....	Used previous season's food stocks			
	Ate wild fruits/ leaves			
	Reduction in consumption			
	Sale of hh assets			
	Sale of livestock			
	Moved to less drought affected areas			
	Relied on assistance from friends/relatives			
	Relied on food aid			
	<b>Other</b>			
	<b>Other</b>			
Reason 1 for difference in effective strategies across 2 drought periods				
Reason 2 for difference in effective strategies across 2 drought periods				

**Questions 3 – 5**

<b>Drought Year</b>	<b>External interventions</b>	<b>Was it used (Yes, No)</b>	<b>Which 2 interventions were the most effective? (in order of most effective, to least effective)</b>	<b>Why did you consider this the most effective intervention?</b>
Drought year 1.....	Commercial de-stocking			

<i>Drought Year</i>	<i>External interventions</i>	<i>Was it used (Yes, No)</i>	<i>Which 2 interventions were the most effective? (in order of most effective, to least effective)</i>	<i>Why did you consider this the most effective intervention?</i>
	Emergency livestock offtake			
	Emergency water trucking			
	Emergency water point repair			
	Fodder provision			
	Animal health curative			
	Animal health preventative			
	Animal health surveillance			
	Livestock migration enhancement activities			
	<i>Other</i>			
	<i>Other</i>			
Drought year 2.....	Commercial de-			
	Emergency livestock offtake			
	Emergency water trucking			
	Emergency water point repair			
	Fodder provision			
	Animal health curative			
	Animal health preventative			
	Animal health surveillance			
	Livestock migration enhancement activities			
	<i>Other</i>			
	<i>Other</i>			
Reason 1 for difference in effective interventions across 2 drought periods				
Reason 2 for difference in effective interventions across 2 drought periods				

**Question 6**

	<b>Coping mechanism</b>	<b>External drought intervention</b>	<b>Reasons for effective combination</b>
Drought year 1 .....			
Drought year 2 .....			





## **Annex 4 - Time schedule and organizations visited**

### **Annex 4.1 Organizations visited:**

1. EU, Delegation Kenya
2. EU, ECHO
3. FAO – Kenya
4. FAO – Regional
5. ALRMP
6. Ministry of Livestock Development
7. USAID/OFDA
8. USAID/REDSO
9. DFID
10. WB
11. OXFAM
12. VSF (DE/CH/BE)
13. CORDAID
14. GAA
15. TERRA NUOVA
16. PRACTICAL ACTION
17. CARE
18. COOPI
19. KMC
20. SNV
21. Kenya Red Cross Society
22. PISP-Marsabit
23. CIFA-Marsabit
24. MAAP-Kajiado
25. NIA-Kajiado
26. CODES-Samburu

### **PERSONS/GROUPS**

1. Evaluation Team of DMI
2. Evaluation FAO Livestock Kenya

### **At district level:**

Perceptions of implementers on achievements, constraints and lessons

- Select which projects to study
- Conduct interviews with project staff (need checklist to guide this conversation)

Perceptions of beneficiaries on achievements, constraints and lessons

- Select communities for further analysis (will cover multiple interventions)
- Conduct focus group discussions (based on tools to be developed)

Perceptions of community leaders on overall achievements, constraints and lessons

- Meeting with DSG (need to develop checklist to guide discussion), NGO's

### **Data collection**

Apart from the information obtained from stakeholders as described in 3.1.2 we will also collect data on the biophysical aspects of the drought, notably:

Rainfall, temperature and NDVI data (chapters 3.1.1 and 7.1)

Livestock mortality (from interviews)

Timing of alert phases for the various early warning systems

## Annex 4.2 Time schedule

<b>PERIOD</b>	<b>ACTIVITY</b>
08 Feb – 21 Feb	<p>NAIROBI.</p> <ul style="list-style-type: none"> <li>• Reading up, scheduling, initial meetings with DelKen, ECHO, team construction.</li> <li>• Preparation and delivery of Inception Report</li> </ul>
22 Feb – 26 Feb	<p>NAIROBI.</p> <ul style="list-style-type: none"> <li>• Meetings with Nairobi based stakeholders including FAO, ALRMP, MoLD and NGO's</li> </ul>
1 Mar – 5 Mar	<p>NAIROBI.</p> <ul style="list-style-type: none"> <li>• Summarizing and 'Mopping-up' of meetings carried over from previous week</li> </ul> <p>KAJIADO.</p> <ul style="list-style-type: none"> <li>• Pilot field mission to Kajiado District</li> </ul>
8 Mar – 27 Mar	<p>LAIKIPIA, ISIOLO, SAMBURU.</p> <ul style="list-style-type: none"> <li>• Field missions to these three districts.</li> </ul>
29 Mar – 1 Apr	<p>NAIROBI.</p> <ul style="list-style-type: none"> <li>• Write-up of preliminary findings (Easter weekend).</li> <li>• Presentation of preliminary findings to EU DelKen.</li> </ul>
6 Apr – 10 Apr	<p>TURKANA.</p> <ul style="list-style-type: none"> <li>• Turkana Field mission</li> </ul>
12 Apr – 19 Apr	<p>MARSABIT</p> <ul style="list-style-type: none"> <li>• Field mission combined with workshop designing 'real-time' contingency plan for Commercial Off-take with local stakeholders.</li> </ul>
20 Apr – 30 Apr	<p>NAIROBI</p> <ul style="list-style-type: none"> <li>• Write-up of draft Report.</li> <li>• Presentation of Draft Report</li> </ul>
3 May – 12 May	<p>NAIROBI.</p> <ul style="list-style-type: none"> <li>• Workshop with stakeholders presenting finding of study.</li> <li>• Writing final report including final meetings with DelKen, ECHO and ALRMP</li> </ul>

## ***Annex 5 Report of the workshop on Destocking***

### **SUMMARY OF PROCEEDINGS**

#### **Implementation of Commercial Offtake/Destocking activities in Kenya: Marsabit Pilot Workshop**

**Meeting held 16<sup>th</sup> April 2010, at Jey Jey Centre, Marsabit**

**On behalf of the**

**European Union (EU) and International Livestock Research Institute (ILRI)**

#### **1.0 Introduction**

The purpose of the workshop is to design a plan for the implementation of commercial offtake activities. It is aimed to draw up an example of contingency plan for the implementation of commercial destocking activities and provide guidance to prospective livestock producers and producer groups, the local traders, partners and persons interested in the livestock marketing with specific emphasis on activities designed for drought interventions.

The plan will include good practices for planning of commercial de-stocking focusing on preparedness and provide step by step guidelines that can be used by the district authorities to prepare comprehensive contingency plans that can be activated as early response to an emerging drought.

The workshop is part of a broader study aimed at providing an overview of the timing, appropriateness and efficacy of livestock-based interventions implemented by different stakeholders in response to the drought that affected the pastoral areas of Kenya in 2008/09. The study documents lessons learned to indicate possible mechanisms, systems, capacities and institutions needed to be strengthened in order to trigger more timely and appropriate livestock-based responses to drought and climate change. It also follows Gill and Pinchak (1999) discussion that the objective of a commercial destocking should be to optimize animal performance of the herd **relative to forage and water supply and facilitate market access and good prices**. They provide four primary rules in destocking:

- (i) The sooner the problem is identified the sooner appropriate actions can be taken.
- (ii) The sooner stocking adjustments are made the less severe the herd reductions will need to be.

- (iii) Maximize available options and minimize long-term negative impacts on the forage resource.
- (iv) During drought maximize the effective use of precipitation by having enough residual forage to capture and utilize limited precipitation and reduce evaporative loss.

Participants included a broad representation of relevant district stakeholders including the MoLD, DMO, Pastoralist organization, local traders, producer groups, research (KARI), DSG members livestock sub-committees etc.

## **2.0 Summary of Notes by Keys Speakers**

It was discussed and agreed that drought management is the most important issue in ASAL in the aim to reducing vulnerability to many pastoral households. Due to population pressure and sedentarization the vulnerability to drought has increased.

The drought management cycle was then put in place as a response measure, using EWS, contingency plans and other guidelines. The contingency plans are basic shelf plans that define during drought on how to respond at the different stages of the drought management cycle. It was agreed that to a limited extent the CPs were used in the greater Marsabit district during the last drought.

Other emergency interventions that were undertaken include provision of animal feeds – hay and supplementary feeding, water tinkering to both animals and humans, support to boreholes, livestock offtake etc. During this period there were limited funding for the contingency plans and the bulk of the funding received for CF was from the DMI which in 2009 was estimated to be over 27 million. This enabled a better managed drought emergency response but timing remained a critical issue. This workshop documented experiences and should provide guidelines for response to future droughts.

It was agreed that the absolute critical factor in the entire process is the need for an existing dynamic and strong livestock marketing system to be in place in order to scale up activities in an organized manner when required.

For a commercial offtake and marketing system to work, combined efforts of different players is needed both from public and private sectors. During the normal times of sale emphasis can be put on the:

- Support and facilitation and exploitation of market avenues
- organize producers groups to enable them have economic scale and bargaining power in the market place and obtain value for their livestock and reduce exploitation by middlemen.
- Encourage and support system of normal trend of selling

It is also useful that market is supported during the crises mainly through:

- Availability of funds
- Use of holding grounds in different districts

- Step by step planning on implementation of offtakes without losses.

Good communications and especially road infrastructure are a prime requisite for a normal and an emergency off-take to function in remote districts such as Marsabit. The new tarmac road which will link Isiolo with Marsabit is expected to be hugely beneficial but other prime feeder roads remain in a deplorable state. This requires long-term planning and commitment and is the responsibility of government.

The private sector on the other hand would look for and facilitate marketing of livestock, development marketing system, establishment of commercial villages or marketing associations and bring examples of places where these has already been working. The private sector and the government can also collectively organize for export markets which are now limited by poor infrastructure development, and lack of holding grounds both at district and at terminal markets etc.

- **Experiences in the district**

Several organizations have undertaken offtake in the last successive droughts in the district most of which were slaughter offtake. As such not many of the players have experience of undertaking a commercial offtake, apart from VSF – Germany that undertook a destocking exercise in the last drought. Through its drought response program, VSF – Germany undertook a community based commercial destocking in North Horr, Marsabit district. This was aimed at subsidizing livestock off-take to markets in the 2008/09 drought. It mainly involved subsidizing transport for traders by using tenders.

Overall the project was termed succesful attributed mainly to the participation and use of local community on the tendering processes and selection of traders. However, the workshop participants felt that proeject was most expensive and did not make any economic value to the producers while the traders benefited the most. The transportation cost was high particularly in Illeret area of North Horr where the project paid upto 200,000 Ksh per trader as the transport subsidies. At the same time, the truck full of 140 shoats only fetched approximately 154,000 Ksh in the Nairobi market where they were sold.

The KMC commercial offtake was not undertaken in Marsabit district as it was considered late and the people were weary of the losses after the broadcasts of experiences in other districts

#### Livestock trade Controls

Due to the varying and uncoordinated supply of livestock to the Nairobi market, specifically to the Kariobangi market a group was set up mainly from Marsabit North to control the livestock supply from that area. This group felt that the KLMC is not working well and formed a mechanism to control and market the livestock. The following are their concerns and aims:

- Current supply outstrips demand in the traditional shoat market (Kariobangi) for Marsabit in Nairobi. Pilots to reduce the supply from 10 lorries per day @ 140 shoats to 3 – 4 lorries have been very effective.
- There are no controls from other regions and markets. It is agreed that KLMC through the DLMCs and other pastoral associations can help in such controls. As it is now, the participants confirm that the DLMC is not active in the region and has no impact.
- Though there is high demand for livestock even within the district, the supply is affected by exploitative middlemen and lack of security in already established market centres.
- Players in the livestock sector should not wait until in a crises situation to act but market must be made work.
- Education and advocacy for the pastoralists is also important.

Marsabit mostly trade small stock through the normal market channels. For example, in 2005, the small stock taken to the Nairobi market from the district were estimated to be 245, 000, while in 2008, they were about 100, 000. In 2009, the numbers were less about 80,000. The participants agree that pastoralist are now more aware of the impact of the drought, and have some information about the markets therefore are inclined to selling their livestock.

- **Guidelines for preparation of comprehensive contingency plans**

This is intended to be a step by step guideline for district authorities to prepare comprehensive contingency plans that can be activated as early response to an emerging drought. It would need to be based on a working flexible marketing system that is viable during normal periods and can be upscaled in an emergency situation.

The EWS while providing an outlook of the district to all partners during dry season should also indicate the emergency intervention needed for response based on/ or in reference to the contingency plans. The participants to the workshop also feel that the content of the EWS bulletin though representative is broad and lacks area specific information. In addition, there was concern that rapid assessment might not be needed if the bulletin and general EWS systems are working and credible. In most cases the EWS bulletin also has similar information as the rapid assessments. As time is of essence, and the rapid assessment takes a week to ten days to compile it was proposed to be done away with.

### **5.0 Parameters or triggers for a commercial offtake**

Following a highly animated discussion it was unanimously agreed that if markets were functioning as they should be, there should be no need for external interventions as regular market forces are expected to take up any surplus supply.



However, some of the basic prerequisites to ensure the existence of a competitive market system are not yet in place and therefore measures/plans to bridge a gap should be instituted

It was agreed that to undertake a timely commercial offtake/destocking program, the following basket of information is important in order to trigger a decision:

- Indicators relating to number of livestock provided for sale and the prices. This information is available at the county councils and the DVS.
- Indicators relating to distance to watering points. The distance to watering points vary from place to place but in general a distance of 20 km is considered far and that the drought conditions are worsening.
- Reduced livestock produce indicators – specifically milk. The reducing trend in milk production by livestock could indicate worsening situation. Reduced milk production also indicate that pastoralist are food insecure since majority of them consume milk as food or sale to obtain other food items.
- Livestock body condition. The deteriorating livestock body conditions could indicate an alarm and that action need to be taken.
- The NDVI measure can also be considered as a complimenting indicator. For example, Marsabit central during the good times has the highest NDVI of 0.6 and the low of 0.1. When the NDVI is less than 0.3 then commercial destocking can be undertaken.

In general it was agreed that the livestock prices index would be the main parameter to be used in determining the trigger for an offtake. The trigger would be for prices of livestock to go below the long term average then action needs to be taken for a commercial destocking. The long term average of livestock in Marsabit is 1,200 shillings which is 40% production price.

Again based on the earlier suggestion that an externally funded intervention should be done as a last resort, and in order to support existing marketing structures, it was proposed that such structures be provided with loans from a NDCF to support increased commercial offtake and that such loans be wholly or partly be repaid to the NDCF. Furthermore that speedy access to such funds be guaranteed in order to provide for timely interventions.

The commercial destocking should also be done in a gradual manner to reduce market distortions through prices and number of livestock supplied. For example, in Korr town during the normal times and when the prices are higher about 20 – 30 shoats are brought for sale. During the onset of a stress period when the prices are low about 50 – 100 shoats are brought to the market which is about 200% increase from the normal periods. A 200% increase the commercial destocking should therefore be undertaken.

## **6.0 Necessary environment for a Commercial offtake**

An effective commercial offtake will need working marketing system and the Early Warning System to respond at the right time. The following is list of necessary measures needed to be in place for an appropriate and effective commercial offtake:

- Well developed market chain
- Mobilization of producer groups made of herders themselves. Understanding and handling of group dynamics is also important.
- Identify different market alternatives for the livestock
- Establishment of grazing patterns that supports commercial offtake
- Guaranteed minimum price – price at which the animals can be bought only at the stress areas for a short time. This is done so that it does not affect the overall market prices.
- Establishment of either a revolving fund at the district level or access to the proposed drought contingency funds.
- Developing working systems involving producers and buyers of livestock to enable that the normal market systems are scaled up.
- Improving the existing structures, i.e. roads, slaughter houses, holding grounds etc.
- Improve the political will. In many market the Cess collected from the sales is not spent in the market development.

The logic for undertaking the commercial destocking is doing it small and to stop it when the drought stops and increase the drought is emanate it is increased. It should target areas with high concentration of livestock and high mortality and should be based on the existing plans. Timeliness and preparation is therefore key. Increased capital to the marketing organization and producer groups would help in purchasing more livestock. For the purposes of sustainability, this could be in form of a soft loan that the groups will have to pay back at last. This will require new systems to be put in place. Increased DCF that include not only the government department but other players as well could in facilitating the process.

## **7.0 Conclusion and Recommendations**

In conclusion, the elements most at risk in event of drought in the ASAL districts of Kenya include:

- 3.0 Pasture and water,
- 4.0 Livestock productivity
- 5.0 Livestock health and body condition
- 6.0 Range condition.
- 7.0 Livestock trade

In general, a timely response is necessary for the emergency interventions to protect the household livelihoods. An all inclusive planning is necessary where the communities are involved to obtain maximum impact in a sustainable fashion. Commercial destocking

should be an ongoing process where advocacy, facilitation and establishment of the comprehensive marketing systems are put in place.

There are no short cuts and it all depends with long term development in the ASALs and the political will to develop the infructure in the region. The process of commercial offtake if done properly will reduce panic during crises and the impact of the huge losses of livestock. With the hopeful establishment of DMA and DCTF commercial destocking and other interventions in the region would have a meaningful impact in the livelihoods of pastoralists. The following are some the main recommendations from the workshop.

1. Commercial destocking should be encourage but in a gradual manner with less interfferance with the markets.
2. Increase the resource base in terms of the soft loan for the communities to access it where they are also encouraged to pay back.
3. Inceace the drought contingency fund
4. Support to the producer groups and pastoralist to avoid exploitations.

## **ANNEX I**

### **European Union (EU) and International Livestock Research Institute (ILRI)**

#### **Implementation of Commercial Offtake/Destocking activities in Kenya: Marsabit Pilot Workshop**

*Agenda for a meeting held on Friday, 16<sup>th</sup> April, 2010, at Jey Jey Centre, Marsabit*

<b>TIME</b>	<b>TOPIC</b>
8.30 AM	Welcome Note by: <ul style="list-style-type: none"> <li>- Godana Doyo, DMO ALRMPII, Marsabit</li> <li>- Lammert Zwaagstra, Lead Consultant, EU/ILRI</li> </ul>
9.00 AM	Open discussion on experiences of previous commercial offtake
10.00 AM	TEA BREAK
10.20 AM	Good practices for planning of commercial de-stocking
	<ol style="list-style-type: none"> <li>1. This would mainly provide general, known good practices applied in instituting an effective commercial offtake</li> </ol>

11.30 AM	Preparedness for effective commercial offtake
	<p>In this topic details on each of the following issues will be discussed:</p> <ul style="list-style-type: none"> <li>- Definition of institutional arrangements and agreements,</li> <li>- Logistical plans,</li> <li>- Awareness creation,</li> <li>- Market linkages,</li> <li>- Use of EW triggers etc.</li> </ul>
1.00 PM	LUNCH BREAK
2.00 PM	Guidelines for preparation of comprehensive contingency plans
	<ul style="list-style-type: none"> <li>- This is intended to set a step to step guidelines for district authorities to prepare comprehensive contingency plans that can be activated as early response to an emerging drought.</li> </ul>
3.20 PM	Open discussion and Recap on the key issues
4.00 PM	<p>Concluding Remarks</p> <ul style="list-style-type: none"> <li>o Godana Doyo, DMO ALRMPII, Marsabit</li> <li>o Lammert Zwaagstra, Lead Consultant, EU/ILRI</li> </ul>

## ANNEX II

### LIST OF PARTICIPANTS

1	Lammert Zwaagstra	ILRI-EU	Team leader
2	Ayago Wambile	ILRI-EU	Team member
3	Zahra Sharif	ILRI-EU	Team member
4	Hawo Abdi	DLMC - Marsabit	Member
5	Sororo Elema	DLMC - Marsabit	Chairlady
6	Wako Jillo	DLMC/Livestock trade	Member
7	Galgollo Gufu	DLMC/Livestock trade	Secretary
8	Ibrae M. Guyo	PACIDA	Field officer
9	Tune Ali Duba	PISP	Programme officer
10	Daud Tamasot	CIFA	Livestock Officer
11	Halkano J. Boru	CARE - Kenya	Project officer
12	Mohamed shibia	ILRI - KARI	Field Officer
13	Isako Karayu	Trade Association/Livestock owner	Member
14	Gindole Katelo	Livestock owner/association	Member
15	James Ogago	Ministry of Livestock Development	D/DLPO
16	Simon G. Kuria	KARI	Centre Director
17	G. C. Machira	Ministry of Livestock Development	DVO
18	Godana Doyo	ALRMP	Drought Management Officer
19			