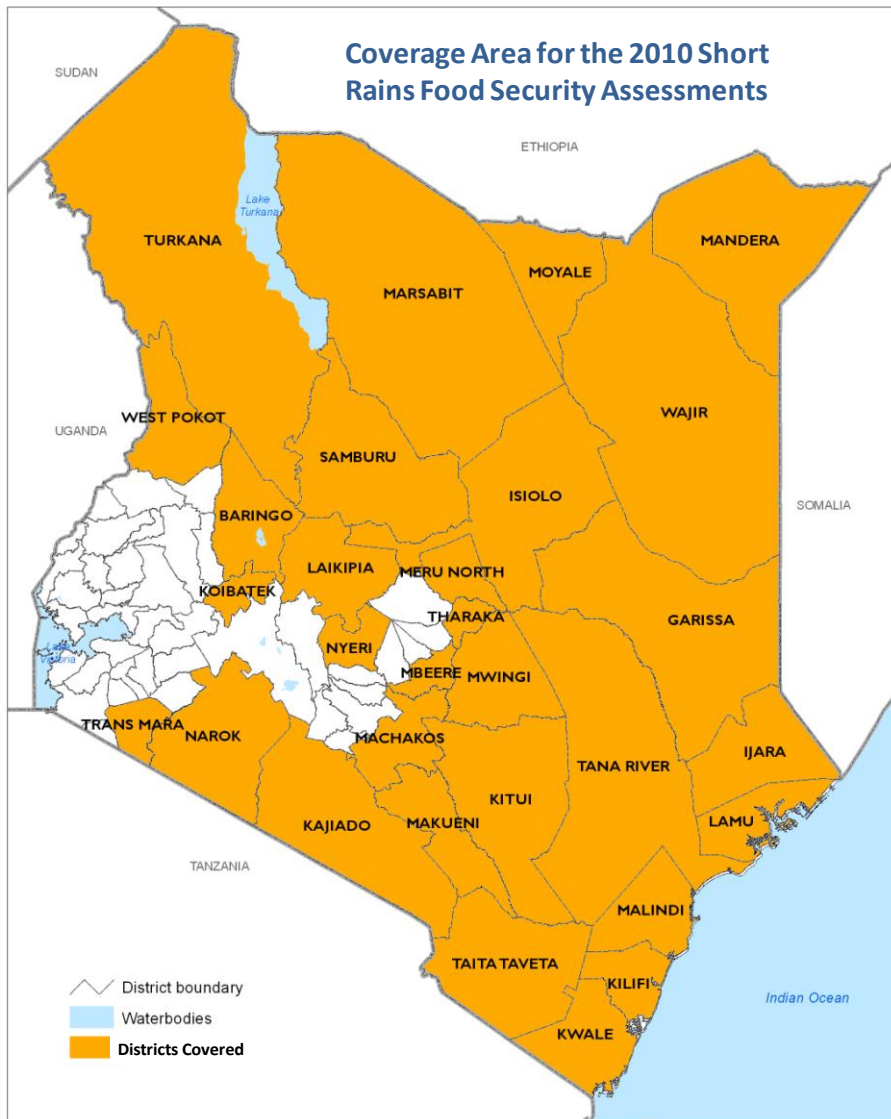




## Government of Kenya

### THE 2010 SHORT RAINS SEASON ASSESSMENT REPORT

### Kenya Food Security Steering Group (KFSSG)



Collaborative report of the Kenya Food Security Steering Group: Office of the President, Office of the Prime Minister, Ministries of Development of Northern Kenya and other Arid Lands, Agriculture, Livestock Development, Fisheries Development, Water and Irrigation, Public Health and Sanitation, Medical Services, and Education, WFP/VAM, FEWS NET, UNICEF, FAO, OCHA, Oxfam GB, UNDP, World Vision; with financial support from the Government of Kenya, FAO and WFP.

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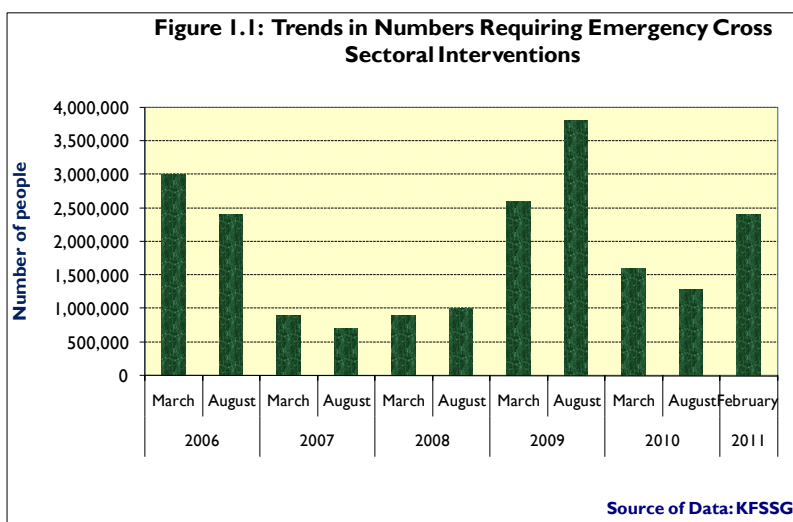
## 1.0 Executive Summary and Key Recommendations

### 1.1 Summary of Key findings

#### Deterioration in food security across pastoral and marginal agricultural livelihoods

An estimated 2.4 million persons, up from 1.6 million in August 2010, require food and non-food assistance for the next six months, at least. The interventions are required urgently, so as to bridge significant household food gaps while protecting livelihoods. The exceptionally poor performance of the 2010 October to December short rains occurred after similarly poor March-June long rains in the northern and northeastern pastoral areas; and the southeastern and coastal lowlands. The impacts of cumulative poor rains have precipitated a rapid decline in household food security in these areas. The deterioration in food security is significant because households and livelihoods were just beginning to recover from the effects of the prolonged drought that started in 2007 and ended in October 2009.

The current decline in food security has been moderated by the extension of the 2009 short rains that continued through February 2010, beyond their normal December cessation. Subsequently, food prices have remained lower than during previous droughts, while livestock prices are only just beginning to decline. However, it is anticipated that the decline in rates of child nutrition and overall food security may deepen more quickly than normal, because neighboring countries such as Ethiopia and Somalia are faced with equally poor conditions. Figure 1.1 is an illustration of the trend in populations that have been food insecure, over the past seven years, showing a generally unstable food security situation. The key areas of immediate concern include Marsabit, Isiolo, Moyale, Mandera, Wajir and Garissa and several parts of the southeastern and coastal lowlands. Nevertheless, maize production in Kenya's 'grain basket' districts of the Rift Valley and parts of western Kenya is favorable and could mitigate a sudden, sharp rise in food prices.



#### Urban food insecurity – summary findings

The Kenya Food Security Steering Group (KFSSG) carried a detailed household survey in high population density urban centers across all livelihoods. An estimated 3,900 households were interviewed and 5,180 children surveyed, in order to establish the characteristics of urban food insecurity and nutrition, across the country. One third of Kenya's 38.6 million people live in urban areas, out of which 40 percent reside in slums. Preliminary results from the baseline survey were telling – rising food insecurity was precipitated by several factors, including, rapid and rising urbanization - the current population in urban centers is eight times what it was at independence; a high dependence ratio, such that dependents exceed the wage earners; unpredictable rise in food and non-food prices; insecurity; and growing unemployment.

In spite of deteriorating food security and income indicators in high population density urban centers, urban migration is rising steadily. The rise is attributed to declining land holdings in rural areas coupled with significant disparities in development and income earning opportunities. The survey outcomes indicated that up to 45 percent of slum dwellers had no access to safe drinking water, while sanitation coverage was less than 40 percent. In addition, close to 50 percent of overall household income was allocated to food purchases, a clear indication of heightened vulnerability due to volatility in food prices, amidst unstable labor opportunities. A large proportion of urban dwellers were unable to meet food needs on a sustained basis over an extended period, adopting instead, detrimental coping strategies such as increased child labor, skipping meals and foregoing non-food expenditures, so as to bridge significant deficits.

The detailed findings of the urban assessments will be included in a forthcoming report.

### **Scope of the 2010 short rains food security assessments**

The multi-sectoral 2010 short rains assessments were conducted by the GoK, UN, NGOs and district-level technical teams, in 30 districts in the pastoral, agropastoral and southeast and coastal marginal agricultural lowlands. The teams evaluated the impacts of one or two consecutive poor seasons on: crop and livestock production; water availability and quality; nutrition and health; markets and prices; education; and food availability and access at the household level. The impacts on household food security of other hazards including conflict and livestock disease outbreaks were also assessed. Detailed cross-sectoral interventions, intended to address immediate short-term needs were formulated in the first instance. Concurrently, interventions and policy options intended to address causal factors underlying seemingly intractable food insecurity were outlined.

### **Numbers and categories of the food Insecure**

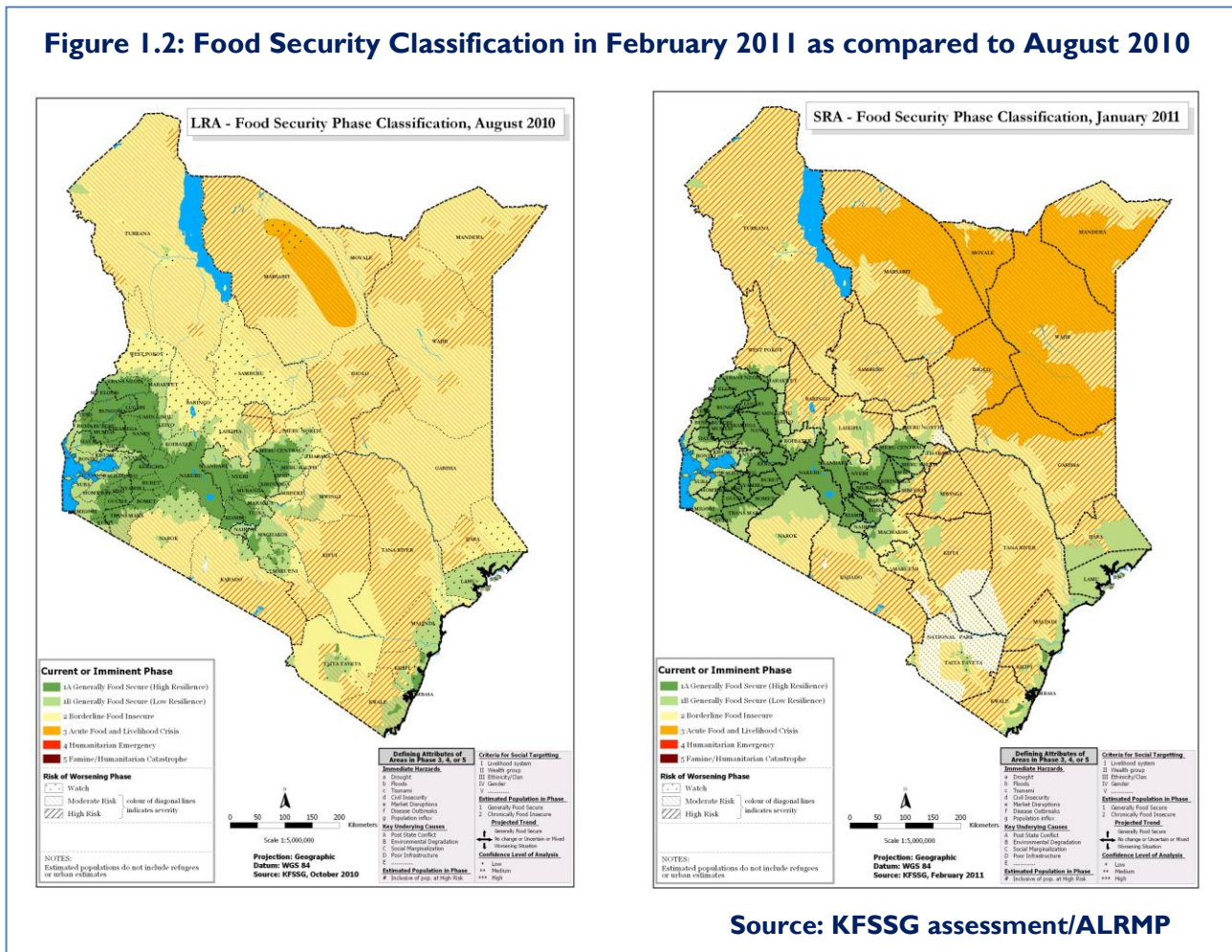
The food security status of an estimated 2.4 million pastoralists, agropastoralists and marginal agricultural farm households is assessed to be precarious and deepening, requiring food and non-food interventions. A large proportion of the population is residing in areas where both the 2010 long and short rains were unfavorable. Impacts of 'traditional' conflict in the northern pastoral districts and 'new' conflict in the northeastern pastoral, southern and coastal lowlands have also accentuated the impacts of the current drought. An estimated 670,500 school children are included in the on-going School Meals Programme. In addition, about 113,000 moderately malnourished pregnant and lactating women and children less than five years of age, in pastoral and marginal agricultural areas are included in the supplementary feeding programme. Results from previous urban assessments suggested that at least 3.5 million persons in urban centers across all livelihoods were severely food insecure. The absence of widespread and comprehensive short, medium and long-term interventions in urban areas has motivated adoption of negative coping strategies. Subsequently, urban food insecurity has deepened and is increasingly cyclical, creating a large population of people that are persistently unable to meet basic food and non-food needs.

### **1.2 Overall Phase classification in February 2011 as compared to August 2010**

Food security had declined noticeably for pastoralists and agropastoralists in the north and northeast and the majority of farmers in the southeastern and coastal lowlands. The impacts of the poor 2010 October–December short rains and poor long rains of 2010 in many of the same areas are largely responsible for the deterioration in food security. Figure 1.2 is an illustration of change in food security situation in the last six months (August 2010 to February 2011).

Significant areas of the northern and northeastern pastoral districts fall in the Acute Food and Livelihood Crisis phase, shaded orange. Most other pastoral, agropastoral and marginal agricultural areas are in the Borderline Food Insecure phase, with increased likelihood of sliding to a worse phase. The borderline food insecure areas are shaded yellow. Some few marginal agricultural areas are in the Generally Food Secure Phase, low resilience, with a moderate risk of the food security worsening to the Borderline Phase.

**Figure 1.2: Food Security Classification in February 2011 as compared to August 2010**



### 1.2.1 Areas classified in the Acute Food and Livelihood Crisis Food Security Phase

The 'Acute Food and Livelihood Crisis', phase 3, shaded deep Orange, is defined as a highly stressed situation coupled with critical lack of food access, with high and above normal rates of malnutrition coupled with accelerated depletion of livelihood assets that, if continued, will slide the population into the 'Emergency' phase.

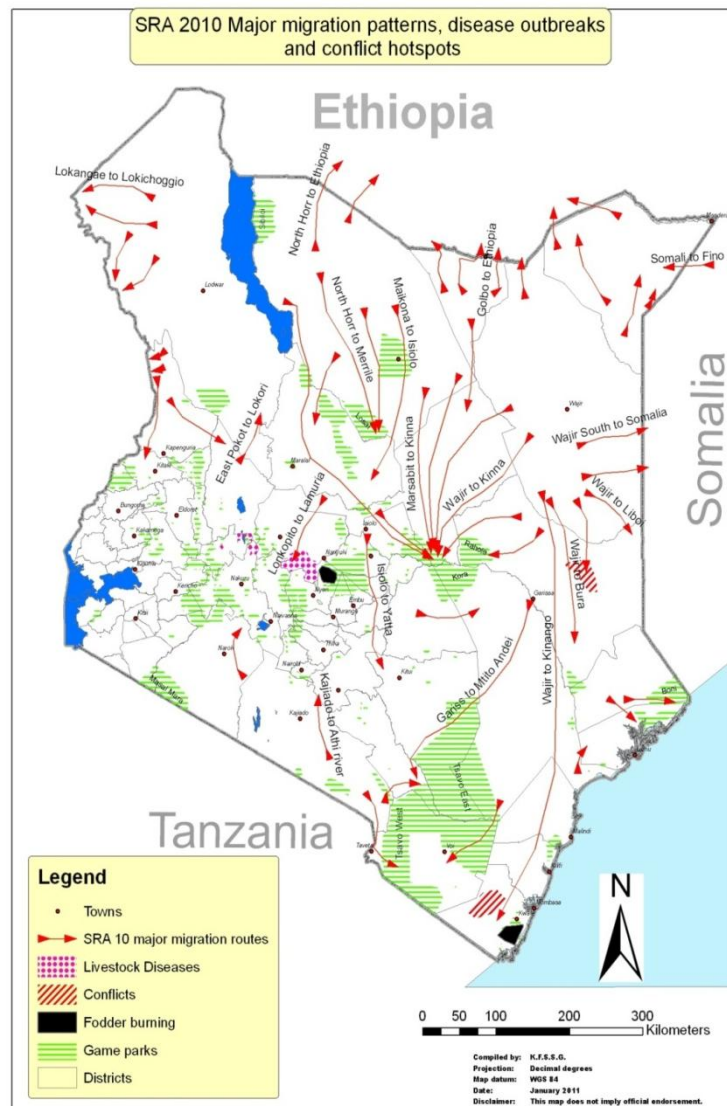
The districts falling under the Acute Food and Livelihood Crisis phase include many areas of Marsabit, Isiolo, Moyale, Mandera, Wajir and Garissa. Most of these areas received less than 20 percent of normal rains during the short-rains season. Poor short rains were also characteristic of neighboring areas in Ethiopia and Somalia, restricting migration options, while at the same time heightening undesirable competition for key environmental resources - water, pasture and browse.

Trekking distances in search of pasture, browse were as high as 30-45 kilometers as compared to January averages of about 10 kilometers, underlining extensive depletion of pasture and water. Figure 1.3 is an illustration of on-going livestock migration routes, depicting a general haphazardness in migration patterns. However, migration is also restricted by uniformity in the scarcity of grazing resources in most areas as well as by growing conflict. Scarcity of water is of most serious concern, as both the quality and quantity of water has precariously declined. Most pastoralists were using the same sources for both domestic and livestock use, predisposing households to water-borne disease epidemic.

Household access to milk and livestock products has declined markedly as most livestock migrated from normal wet-season grazing areas as early as November. In addition, the purchasing capacities of livestock keepers have declined in this phase. Up to 3-4 goats are required to purchase a bag of maize as compared to a January average of about 1.5-2 goats, underlining the deterioration in pastoral terms of trade.

Subsequently, sedentary household members including the women, children and elderly are having difficulties bridging their food deficits. The rates of malnutrition measured using the upper arm circumference (MUAC), by the Arid Lands and Resource Management's surveillance

system shows that the risk of malnutrition among children under five years of age, uncharacteristically increased in January and are between 22-27 in Wajir, Mandera, Marsabit, Isiolo and Moyale. The assessment teams also found that the Coping Strategies Index (CSI) had increased in some of these areas to 0.32, close to the critical threshold of 0.4. Increasingly, undesirable coping strategies were being adopted by over 30 percent of households, in a bid to meet food needs and at the same time protect livelihoods. Some of the strategies included sharing of food assistance, increased household debts, separation of herds, skipping meals and sale of firewood. In extreme cases, pastoralists were slaughtering new-borne calves to protect mothers, such as in Moyale and Isiolo. The food security situation is expected to deteriorate rapidly in areas under this phase, from now onward through March, because no appreciable rains are anticipated before then. In addition, most of coping strategies adopted by this category are detrimental to future production because most of them necessitate destruction of livelihoods and suppression of nutrition levels. While on-going interventions have mitigated a rapid deterioration in food security, an urgent, expanded intervention is required to protect lives and livelihoods from further deterioration in food security.



### 1.2.2 Areas classified in the Borderline Food Insecure Phase

The phase 'Borderline Food Insecure', Phase 2, shaded yellow, is defined as borderline adequate food access with a high risk of sliding into Acute Food and Livelihoods Crisis Phase. Anticipated deterioration in food security is likely to occur because no rains are likely to be experienced until the onset of the long rains in late March and early April. The areas falling within Phase 2 encompass most of the rest of the assessment areas in the northern, northwestern and northeastern pastoral and agropastoral areas and most of the southeastern and coastal marginal agricultural areas. See figure 1.2. While food security has declined significantly in the short-rains dependent southeastern and coastal lowlands in particular, the deterioration in food security has not warranted a shift to the Acute Food and Livelihood Crisis phase. Households in the southeastern marginal lowlands had substantial carry over stock from the 2009 short rains harvest and food prices were generally below average levels through most of 2010.

The pastoral and agropastoral districts falling under this phase include Turkana, Samburu, southwestern Marsabit, southwestern Isiolo, southern Garissa, Tana River, Ijara, Baringo, Kajiado, Laikipia, West Pokot and Koibatek. Many of these areas experienced favorable 2010 long rains, in addition to extended 2009 short rains which continued into February 2010. However, the 2010 October-December short rains were poor in most areas, as shown on figure 1.4, halting the recovery process that had just begun to take hold. Poor rains in neighboring pastoral districts have also led to in-migrations and an influx of livestock from the Phase 3 areas, resulting in rapid deterioration of pasture, water and browse and increased conflict incidents, particularly in Wajir, Isiolo, Turkana and parts of Marsabit. Scarcity of water is growing as are trekking distances which have reached 15 kilometers, as compared to normal January levels of less than 10 kilometers. Livestock prices are 10-20 percent above average, while terms of trade are increasingly unfavorable, because grain prices are up to 33 percent higher than average. While the risk of malnutrition remains below 20 percent, rates are rising after a sustained period of below normal levels of malnutrition.

Most of the southeastern and coastal marginal agricultural lowland districts fall under this category including Machakos, Makueni, Mwingi, Kitui, Mbeere, Tharaka, Meru North, Kieni, Taita Taveta, Kwale, Kilifi, Malindi and Lamu. The poor 2010 short and long rains coupled with crop and income losses that occurred after the maize harvest was deemed to have been infected with aflatoxin, have combined to accentuate food insecurity among lowland farmers. The purchasing capacities of the bumper 2009 short rains crop was negated by a trade ban that prevented farmers and traders from accessing markets that were outside production epicenters. The failure of the critical 2010 short rains has exacerbated the loss, after close to 80 percent of the short rains crop was lost. In addition, trekking distances in search of water and pasture have caused a decline in the value and productivity of livestock. Water prices are far higher than respective January averages, compromising further, household purchasing capacities. Labor opportunities have also reduced because of the failure of the short rains crop. Households have increased charcoal production, are purchasing food on credit, skipping meals and are unable to send their children to school, underlining increasing food insecurity.

The risk of deterioration into the Acute Food and Livelihood Crisis for pastoralists is increasing because of the influx of livestock from adjacent areas that is likely to result in increased disease and conflict incidents while depleting key grazing resources. If the long rains are delayed or are poor, households in this phase are likely to slide into an Acute Food Security and Livelihood Crisis. A proportion of very poor farmers in the southeastern and coastal lowlands are likely to slide into the Acute Food and Livelihood Crisis, should the long rains failure or if an expanded cross-sectoral intervention is not instituted. Many of those households have eroded their capacities to cope, because of a succession of two poor seasons in 2010. In addition, substantial income losses were incurred after the bumper harvest of 2009 was unmarketable due to suspected aflatoxin poisoning.

### 1.2.3 Areas classified in the Food Secure - Low Resilience Phase

The phase 1B, 'Generally Food Secure – low resilience', shaded light green, is defined as adequate food access, with moderate to low risk of sliding into the 'Borderline Food Insecure' Category. Most of these areas are nevertheless characterized by chronic food insecurity exacerbated by recurrent shocks and hazards, in particular drought. The areas classified in the food secure, low resilience phase include the marginal agricultural cropping lowlands along the coastal strip, Lamu, southern Ijara and the hill masses of Kitui, Machakos, Makueni, Mbeere, Kitui, Tharaka, Mbeere, Kieni and Meru North districts, as shown in figure 1.2.

Household food security was sustained by a succession of three good seasons starting in October 2009 through December 2010. Most households in this phase still retain food stocks from the good harvest in 2010, in addition to moderate harvests from the 2010 long and short rains crops. The food security of these households would have been even more favorable but for the inability to market harvested surpluses, after imposition of a trade ban. The ban was intended to halt the sale and consumption of aflatoxin-infected maize. If the 2011 long rains are normal, farm households are expected to remain food secure. However, if the rains are poor, household food stocks will have been depleted and the next major harvest is not anticipated until March 2012, resulting in declining food security for households in this phase.

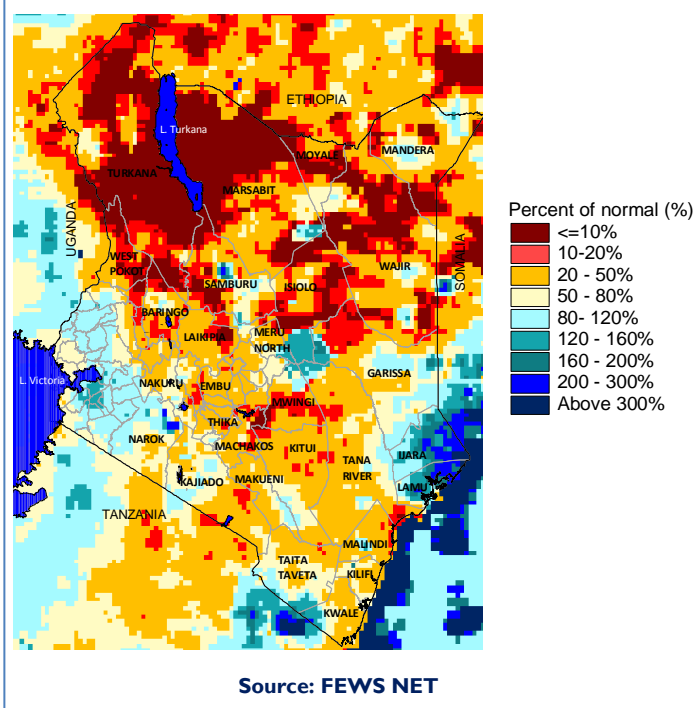
### 1.3 Short Rains Performance and Prospects for the 2011 Long Rains

The 2010 short rains began about two to three weeks later than expected in most of the assessment districts. The La Niña rains were low and characterized by poor spatial and temporal distribution throughout the season. In addition, rains ended after six weeks to one month, in most areas. Figure 1.4 is an illustration of short rains anomalies highlighting the poor performance of short rains. All areas shaded orange and red depict areas that experienced below normal cumulative rainfall throughout the entire season. The vast regions shaded red in the northern, northwestern and northeastern pastoral areas are illustrative of areas that received

less than 20 percent of normal and are the key areas of concern. The orange areas in most of the rest of the pastoral, agropastoral and marginal agricultural and coastal lowlands show areas that received between 20-50 percent of normal rains. The poor rains are the key factor that has accelerated depletion of resources and livelihood productivities, precipitating a marked decline in household food security.

Nevertheless, the 2010 short rains were favorable in parts of Western, Nyanza and, Rift Valley highlands as well as in Ijara and Lamu districts. The areas shaded blue illustrate the few geographic areas that experienced generally above normal rains. Detailed analysis of the rainfall performance for each cluster will be covered in subsequent sections of this report.

Figure I.4: Comparative 2010 Short rains





Prospects for the 2011 March to June long rains remain unclear – some models such as the National Oceanic and Atmospheric Administration (NOAA’s) Climate Prediction Centre suggest normal long rains across the country. Others such as the European center of medium range weather forecasts (ECMWF) suggest below normal rains in some parts of the southeastern lowlands as well as parts of Marsabit and Isiolo. The forecast for the long-rains season will be clarified during the first week of March during the bi-annual regional consensus forecast forum.

## 1.4 Overall National Maize Supply Situation

### Background

Maize is the overwhelming national staple in Kenya. It is also the predominant crop grown across most livelihoods, even in agro-ecological zones that are not necessarily suitable for production. Area put to maize is about 1.8 million hectares annually, accounting for nearly 60 percent of all land planted to key cereals and pulses. The long-rains season is the most important with respect to maize production, accounting for 85 percent of the annual maize output. Up to 80 percent of national output is derived from the Rift Valley, Western and Nyanza highlands. Unfortunately, the country has a structural deficit in production of the majority of key pulses and cereals including maize, resulting in dependence on inflows through cross-border trade and imports from often volatile overseas markets. A shortfall in domestic production often heightens food insecurity for close to 70 percent of the net deficit-producers and consumers, situated primarily in urban, pastoral, agropastoral and several areas of the southeastern and coastal marginal agricultural livelihoods.

### Maize production during the July 2010 – June 2011 production year and prognosis

The July 2010 to June 2011 cropping season is mixed – well above normal harvests in the key growing areas of Rift Valley, Western and Nyanza highlands and poor production in the southeastern and coastal lowlands. Crop output has also been below normal in the central and eastern highlands particularly during the 2010 short-rains season. An estimated 2.8 million MT of maize will be harvested during the 2010/11 production season. Cumulative output is below the short-term average of about 3.0 million MT. Although annual national maize consumption is estimated to be 3.4 million MT, the shortfall may be covered by carryover stock and significant, anticipated cross border imports through June 2011. See table 1.1. However, the market is likely to tighten considerably after May, causing dramatic increases in maize prices. The short-rains dependent southeastern and coastal lowlands as well as the pastoral and agropastoral areas will be most affected by a tightening market because on-farm food stocks are quickly depleting and purchasing capacities are similarly compromised. It is imperative that national maize supply is monitored closely to ensure that traditional cross border imports will indeed fill the production gap.

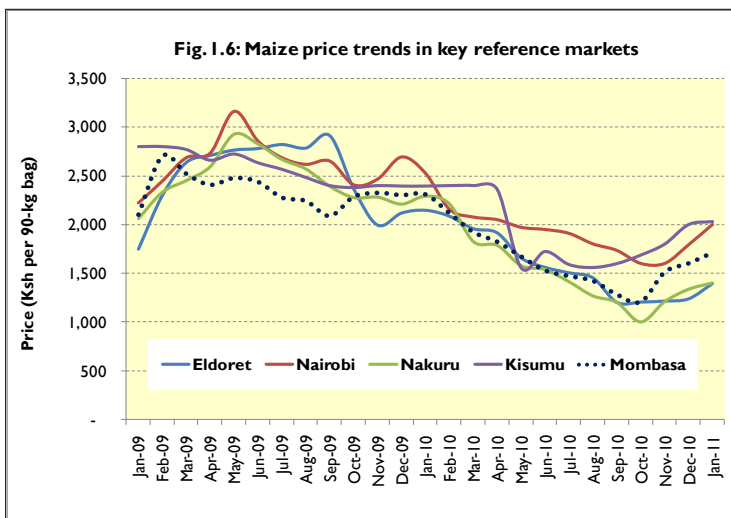
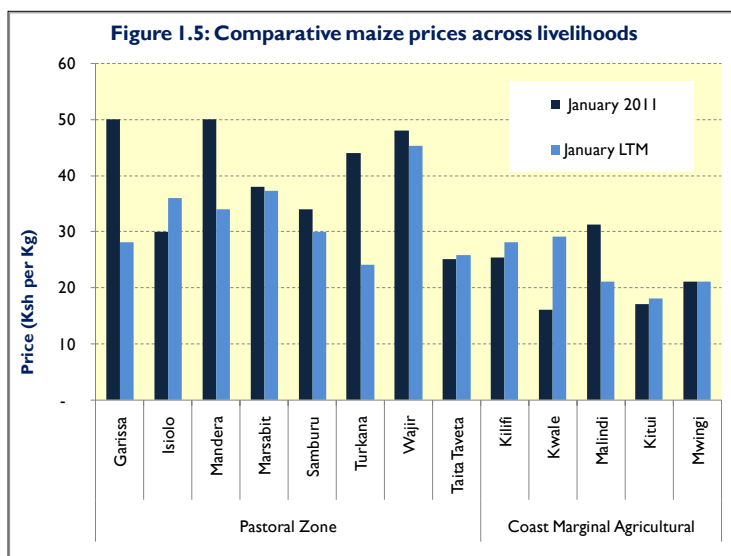
**Table 1.1 Maize Availability: August 2010 - June 2011**

Period	Source	Quantity (MT)
August 2010	Opening stocks (Farmers, NCPB, millers, traders)	1,800,000
January - August 2010	Imports ( cross border and Japan grant)	115,000
September 2010 - January 2011	Long rains output from 'grain basket'	1,700,000
February-March 2011	National short rains output	200,000
September 2010 - June 2011	Post-harvest losses	350,000
June 2011	Total national availability	3,465,000
September 2010 - June 2011	Total national consumption	3,140,000
<b>July 1, 2011</b>	<b>Surplus</b>	<b>325,000</b>

Source of Data: MoA, MoSSP, RATIN, NCPB, Millers and Traders

## 1.5 Food Price Trends

Maize prices are on an upward trend across all livelihoods, after a sustained period of below average prices from September 2009, through December 2010. The price of maize varied widely across livelihoods, ranging from Ksh. 18-22 in the key growing areas, to Ksh. 20-30 in the marginal agricultural livelihood and Ksh. 30-45 in pastoral markets. The inability to sell the 2009 short rains harvest has kept prices below average levels, throughout most of 2010, in markets in the marginal agricultural areas. Figure 1.5 is an illustration of comparative maize prices across livelihoods, while figure 1.6 depicts the recent upward trend in maize prices in key reference markets.



The prices are anticipated to rise significantly in coming months because the next harvest is not expected until August 2011. The long-rains season is also the minor season in the southeastern and coastal lowlands and little output is anticipated in those areas, until March 2012. The prices are likely to rise most significantly in the pastoral and marginal agricultural livelihoods because stocks are depleting rapidly after a failed short-rains season in those areas. In addition, markets in pastoral areas in particular, are poorly integrated and carry substantial transaction costs. The high costs are attributed to a combination of a poor trade infrastructure and a significant risk premium due to recurrent and heightening insecurity. The high and rising food prices are an additional source of vulnerability for households that are already grappling with diminishing household food stocks, declining terms of trade, eroding purchasing capacities, growing water scarcity and amidst constrained coping capacities.

## 1.6 Options for Response

An expanded food and non-food intervention for an estimated 2.4 million people residing in pastoral, agropastoral and marginal agricultural livelihoods is required. The need for an expanded intervention is motivated by several factors that are summarized below:

- The failure of the short rains has culminated in the second successive poor season in key areas of concern in pastoral, agropastoral and marginal agricultural livelihoods, deepening food insecurity.
- The recovery process that began in October 2009 has halted and livelihood productivities are likely to erode precariously, in the event that interventions are not instituted urgently.
- The just-concluded poor short-rains season is the most important season in marginal agricultural areas and the next harvest is not anticipated until March 2012 in the lowlands.
- Current poor environmental conditions are characteristic of neighboring areas in Ethiopia and Somalia, suggesting that options for migration are limited severely.
- Livestock mortalities are beginning to occur, such as in Moyale and Isiolo and it is important that pastoralists do not lose their sole asset, livestock.
- An urgent intervention such as livestock off-take and provision of water for livestock and domestic use could protect livelihoods, while mitigating outbreaks of water-borne diseases.
- Rates of child malnutrition are beginning to rise after an extended period of below average levels that prevailed over the past one-and-half years.
- Coping strategies, including undesirable ones, are increasingly being employed and some have been instituted as livelihood strategies.
- Implementation of non-food interventions has been far below requirement, over the past several years.

Table 1.2, in the following page, is a summary of interventions that are required for each sector. More detailed analysis of sector-specific interventions will be expounded in the last chapter of this document.

**Table 1.2: Summary of Priority Interventions by Sector – March 2011 -Aug. 2011**

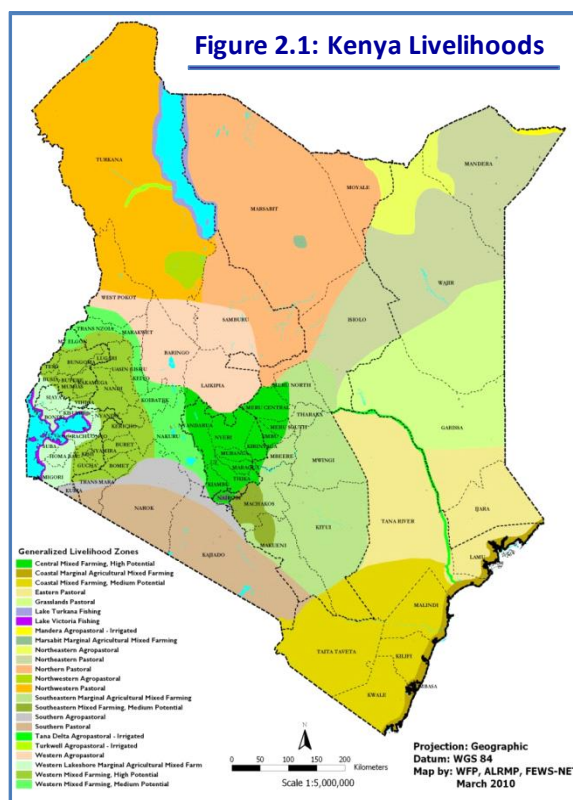
	<b>SECTOR</b>	<b>INTERVENTION</b>	<b>COST</b>
1.	AGRICULTURE SECTOR	Promote water harvesting, soil conservation and agro-forestry; timely provision of drought tolerant certified seeds and fertilizer; capacity building on Good Agricultural Practices (GAP) and post-harvest management; construction of community based storage facilities; provision of green house and micro-irrigation kits; promote fruits processing and value addition; construction and expansion of irrigation infrastructure; and promotion of conservation agriculture.	Ksh. 790M (\$9.75M)
2.	LIVESTOCK SECTOR	Disease surveillance and vaccinations; livestock treatments; hay and feeds supplements; livestock off-take; and Kenya Meat Commission (KMC) meat processing.	Ksh.1.5B (\$18.5M)
3.	HEALTH AND NUTRITION SECTOR	Scale-up integrated management of acute malnutrition through provision of therapeutic feeds; accelerated integrated mobile outreach services in hard to reach areas to increase access to health and nutrition services; promotion and protection of infant and young child feeding practices including health education; blanket supplementary feeding to all children under two years and pregnant and lactating women; procurement of additional drugs, long lasting insecticide treated nets (LLITNs); micronutrient supplementation for children and mothers at community and facility level and de-worming; and accelerated disease, water safety and nutrition surveillance.	Ksh. 945M (\$11.7M)
4.	WATER SECTOR	Rehabilitation of boreholes, dams and pans, repair of water supplies; water trucking; purchase and distribution of plastic tanks; water quality surveillance and treatment chemical; drilling of emergency boreholes and fuel subsidy.	Ksh. 890M (\$11M)
5.	EDUCATION SECTOR	Expansion of home grown school meals programme; water trucking to schools; advocacy; campaigns against child labor and early marriages; provision of water tanks for rain water harvesting; health education campaign and de-worming.	Ksh. 690M (\$8.5M)
6.	MARKET SECTOR	Market infrastructure development – information technology, storage and cooling facilities’ development, transportation facilitation; cereal banking; capacity strengthening on value addition; supply chains development for inputs and outputs.	Ksh. 401M (\$4.9M)
7.	FOOD SECTOR	Food and associated costs for 2.4 million people affected by drought, for the next six months (March - August 2011). An estimated 96,310 MT of food commodities will be required.	Ksh. 12.75B (\$157.4M)
	<b>Grand Total</b>		<b>Ksh. 17.97B (\$221.73Million)</b>

## 2.0 Food Security Assessment Methodology and Scope

### 2.1 Background and Objectives

The 2010 short rains assessments were carried out under the auspices of the Kenya Food Security Steering Group (KFSSG) that includes institutions in the Government, the United Nations, NGOs and key development partners. The coverage of the assessment extended to 30 traditionally drought-prone pastoral, agropastoral and marginal agricultural districts. The map on page 1 shows the assessment coverage, representing about 80 percent of the country's geographic area. Figure 2.1 shows the generalized livelihood zones. The livelihood zone is the unit of analysis. While the newly sub-divided districts were assessed, the point of reference is the pre-November 2007 district boundaries. The actual field assessments were carried out in the following five livelihood clusters:

- Northern Pastoral Cluster (Turkana, Moyale, Marsabit and Samburu districts).
- Eastern Pastoral Cluster (Mandera, Wajir, Garissa, Isiolo, Ijara and Tana River districts).
- Agro-Pastoral Cluster (Baringo, Koibatek, West Pokot, Nyeri, Laikipia, Trans Mara, Narok and Kajiado districts).
- South Eastern Marginal Agricultural Cluster (Tharaka, Mbeere, Meru North, Makueni, Machakos, Mwingi, and Kitui districts).
- Coastal Marginal Agricultural Cluster (Taita Taveta, Malindi, Kilifi, Lamu and Kwale districts).



The overall objective of the assessment was to inform humanitarian, recovery and short term interventions across the food; water and sanitation; health and nutrition; agriculture and livestock; markets and the education sectors.

Specific objectives were to:

- Ascertain at the livelihood level, the quality and quantity of the short rains, and assess their impact on all key sectors.
- Establish required non-food interventions, with particular emphasis on programs that promote recovery and build household resilience.
- Assess potential food needs, including options for, food for assets and general food distribution.
- Establish the impacts of other compounding factors such as conflict, livestock disease, higher than average food prices and floods on household food security.

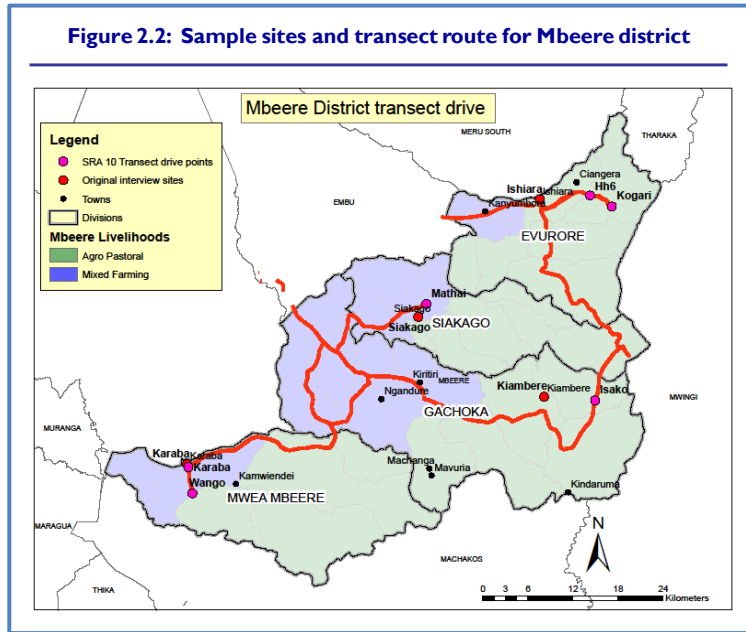
## 2.2 The Approach

The overall assessment processes and methodologies were coordinated and developed by the KFSSG. First secondary data for all assessed districts were collected and collated. Thereafter, the KFSSG organized a one week training workshop for assessment teams. During the workshop, the teams refined sectoral indicators, and were taken through the entire assessment process, including, DSG briefing, interviewing and data collection techniques, data analysis process, report writing and DSG debriefing. At the same time, the KFSSG identified interview sites, statistically, to minimize bias in data collection and analysis. In the field, each assessment team conducted a minimum of two household; two community; two key informant; and two market interviews in each sample site. The teams also used visual inspection techniques through transect drives, to obtain qualitative information. Figure 2.2 depict the sites sampled for interviews and the assessment team transect route for Mbeere district.

The field data was collated, reviewed, analyzed and triangulated to verify its validity. The Arid Lands Resource Management Project (ALRMP) drought monitoring bulletins and the DISK monthly Food Security Updates provided important additional information.

The KFSSG adopted a multi-sectoral approach covering the Agriculture, Livestock, Markets, Health and Nutrition, Water and Sanitation, Education and the Food Sectors. The analytical framework is the livelihood, while the required outcome is a detailed understanding of the changes in food security and identification of populations in need of multi-sectoral external support, particularly in the immediate term. Results from sampled areas were used, along with outcomes of discussions with the larger District Steering Groups (DSGs) and secondary data analysis to draw inferences for non-visited areas situated in similar livelihood zones. While the analysis was conducted at the livelihood zone level, findings and recommendations were provided at the district and divisional level for planning purposes. The integrated phase classification was employed in categorizing levels of food security.

**Figure 2.2: Sample sites and transect route for Mbeere district**



### 3.0 Food Security Analysis by Livelihood Cluster

#### 3.1 The Northern Pastoral Livelihood Cluster

##### 3.1.1 Cluster Background

The northern Pastoral cluster consists of the larger Turkana, Marsabit, Moyale and Samburu districts. It covers 169,465 square Kilometers and has an estimated population of 1,370,512 persons. The four larger districts have been subdivided into fourteen new administrative districts. The pastoral livelihood zone accounts for 60 percent of the population while agropastoral, 21 percent; formal employment, eleven percent; and fisheries, eight percent. Figure 3.1.1 show the location of the cluster and the main livelihood zones. Eighty percent of household income is derived from livestock production, which is the main income source.

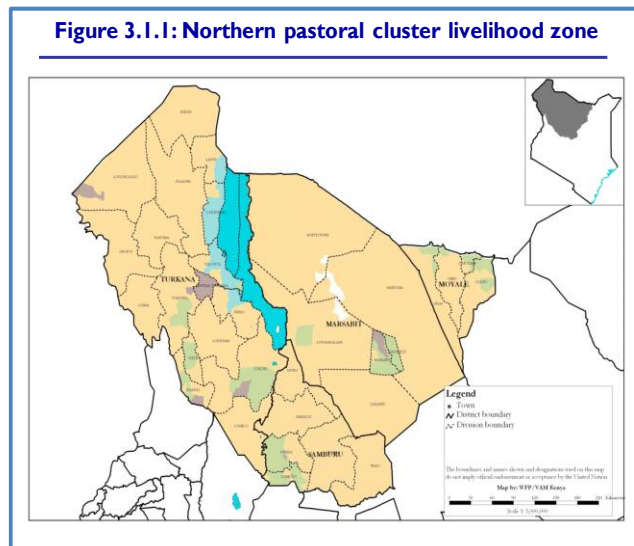


Figure 3.1.1: Northern pastoral cluster livelihood zone

##### 3.1.2 Factors Affecting Food Security

The main factors affecting food security in the cluster include frequent droughts; widespread land degradation; poor road infrastructure that result into high transport costs, which translate to high food and non-food commodity prices; endemic livestock diseases; limited water sources; insecurity and cattle rustling in Marsabit, Turkana and Samburu districts.

##### 3.1.3 Overall Food Security Situation

Figure 3.1.2 shows the overall food security situation in January 2011 compared to August 2010. Most parts of the Northern pastoral cluster have remained in Borderline Food Insecure

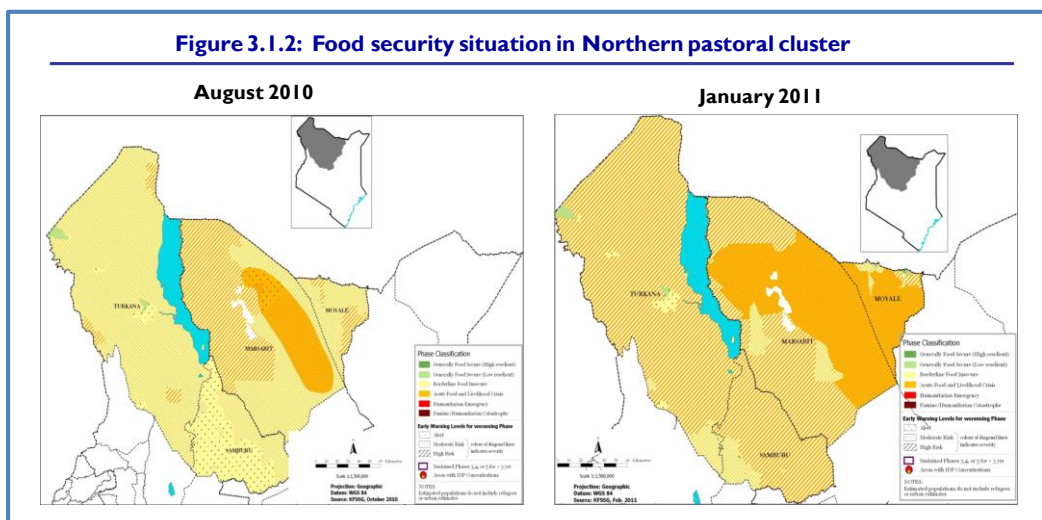


Figure 3.1.2: Food security situation in Northern pastoral cluster

(BFI) phase with the exception of north eastern Marsabit and most of Moyale where the food security situation has declined to Acute Food and Livelihood Crisis (AFLC) phase. The risk of food security situation worsening is moderate in areas that are in AFLC phase, and high in areas that are in BFI phase.

### **3.1.4 Food Security Trends**

In general, the food security situation declined in most parts of the cluster, after poor performance of the short rains. The decline to food security situation warranted the change in phase classification from BFI to AFLC phase in the eastern part of Marsabit and most parts of Moyale. Otherwise, the rest of the cluster has remained in BFI phase. The situation is likely to continue deteriorating as livestock productivity and prices continue to decline; conflicts over resources heighten; and high cereal prices lead to unfavorable terms of trade, at least, up to the period after the onset of the long rains, in May 2011. However, poor long rains may exacerbate food insecurity, in many places.

### **3.1.5 Current Shocks and Hazards**

#### **3.1.5.1 Rainfall**

In most parts of the cluster, the onset of the short rains delayed by 1-4 weeks, with the exception of central Turkana and eastern Marsabit where onset was early, in the second week of October 2010. Rainfall amounts varied across the cluster and ranged between 10-50 percent of normal in most parts except in Oropoi, northern Lapur and southeastern Kibish in Turkana district and part of Waso in Samburu district that received up to 80 percent of normal rains. The rains were poorly distributed temporally and spatially across the cluster and ceased in the first week of November, up to five weeks earlier than normal. However, Kibish and Lapur, and pastoral areas of Lokitaung, Lokichoggio, Kibish and Lapur division in Turkana received some rains in late December 2010 and January 2011.

#### **3.1.5.2 Other Shocks and Hazards**

Other shocks and hazards to food security in the cluster include civil insecurity particularly in Samburu, Marsabit and Turkana and conflicts over grazing resources. Insecurity resulted into displacement and destitution of households in Baragoi division of Samburu district. At the same time conflict incidences over water, pasture and browse, were rising in Marsabit.

### **3.1.6 Impact of the Shocks and Hazards**

#### **3.1.6.1 Crop Production**

Though the cluster is typically pastoral, crop production is carried out in agropastoral areas in Marsabit central, south of Turkana and south western Samburu. Crop production is mainly rain-fed with the exception of pocket areas in Turkwel, Katilu, Kainuk and Lokori in Turkana where irrigated cropping occurs. Sorghum, maize and beans that contribute to 45, 35 and 20 percent of food, and 45, 10 and 20 percent of income, are the most important crops that are produced within the cluster. Other crops, including, vegetables, banana and cowpeas are mainly produced for consumption.

In general, short rains crop production performed poorly across the cluster due to below normal and poorly distributed rains. The area planted was significantly lower than normal in response to the La Nina warning. Majority of households did not have food stocks as at January 2011. At the same time, traders were holding only 50-60 percent of normal stocks.

#### **3.1.6.2 Livestock Production**

Pasture and browse was depleted in most parts of the cluster except in pocket areas of Marsabit, Turkana and Moyale where forage condition ranged from fair to poor, and was expected to last until end of February 2011. In the lowlands and plateau regions of Samburu pasture and browse condition was fair to good and was expected to last for 3-6 months. Livestock trekking distances increased from the normal of less than 10-14 kilometres to 11-30 kilometres in many places. However, in Samburu trekking distances were low and averaged 3-5 kilometres, and contrasts with the 30-40 kilometres in Marsabit and Moyale.



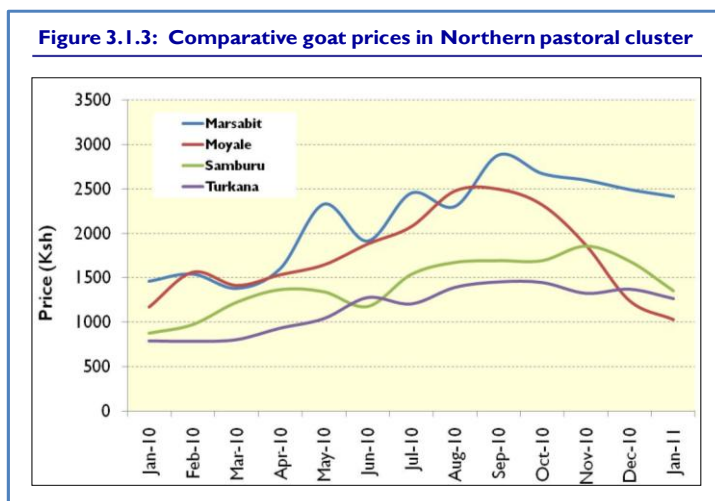
Poor forage condition coupled with unusually long trekking distances impacted livestock productivity, negatively. As a result, livestock body condition ranged between fair to good in Turkana and Samburu and fair to poor in Marsabit and Moyale districts. Livestock body condition was rapidly deteriorating across the cluster while milk availability at household level declined drastically to below one litre, compared to the normal of up to five litres. Apart from an outbreak of Foot and Mouth Disease (FMD) reported in Samburu, no serious livestock disease outbreaks were reported in other parts of the cluster. However, drought related livestock mortality had started to be reported in Moyale and Marsabit.

### 3.1.6.3 Water and Sanitation

The main sources of water for domestic and livestock use in the cluster are, dams/pans, boreholes, shallow wells, piped water schemes, rivers, springs and the lake (in Turkana and Marsabit). However, temporal water sources did not recharge adequately after the short rains and were expected to last for one to two months only. The average distances to the water sources ranged from one to 10 kilometers in many places and up to 40 kilometers in Moyale and Marsabit. The cost of water ranged between Ksh. 2-5 per 20 liters for households residing near boreholes, which was normal. However, water cost was up to 60 percent above average in urban areas of Moyale and Marsabit. Water consumption declined and averaged 3-10 liters per person per day from the usual of 10-15 liters, except in most of Turkana and agropastoral areas of Samburu where water consumption averaged 15-20 liters per person per day.

### 3.1.6.4 Market performance

Livestock market operations were disrupted in Moyale and Marsabit due to extensive livestock migrations. At the same time, increased food purchase on credit was affecting traders' ability to effectively replenish stocks. Maize prices ranged between Ksh. 30-40 and were 5-10 percent and 30-35 percent above average in Samburu and Turkana, and Moyale and Marsabit, respectively. Goat prices ranged from Ksh. 1,200-1,700 in Moyale and Samburu, and Ksh. 2,000-3,000 in Marsabit and Turkana. Though



goat prices were up to 90 percent above average, prices were deteriorating rapidly due to poor livestock body condition as figure 3.1.3 illustrates. Only about 20-30 percent of households that were able to sell livestock were benefiting from the favorable terms of trade.

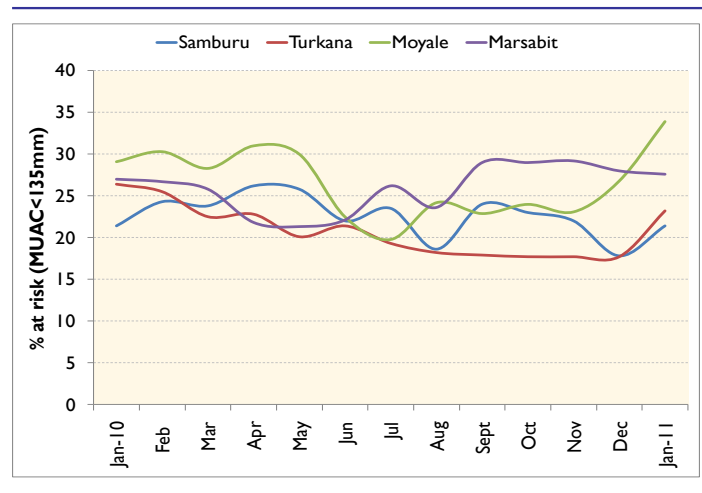
### 3.1.6.5 Health and Nutrition

The leading causes of morbidity among the general population in the cluster were malaria, Respiratory Tract Infections (RTI), diarrhea, pneumonia, and skin infections, which were within normal range. However, dysentery outbreaks occurred in Moyale, Turkana and Samburu due to poor quality of water. Also, 15 cases of measles were reported in Turkana. Nevertheless, mortality rates were below the emergency thresholds of 2/10,000/day.

Improved health seeking behavior among pastoralists and concerted efforts by the Ministry of Health (MoH) and other partners, through outreach programs, has led to improved immunization coverage across the cluster. However, coverage remained well below national targets of 80 percent and averaged 50-70 percent in Turkana and Marsabit. Lack of cool storage facilities for vaccines was cited as a major hindrance to improved coverage. Vitamin-A coverage was generally high across the cluster except in Samburu where it was 42 percent, mainly due to high mobility of the pastoralists.

The proportion of children at risk of malnutrition depicts an increasing trend as figure 3.1.4 shows. In Moyale and Marsabit, the proportion of children at risk of malnutrition was above long term averages indicating a serious situation. In Samburu the GAM and SAM rates were 15.7 and 3.2 percent respectively, which is above the emergency thresholds of 15 and three percent respectively, suggesting poor nutrition situation. Dietary diversity was poor for majority of the pastoralists who were consuming 1-2 meals consisting of cereals and oil (mainly sourced from relief food).

**Figure 3.1.4: Trends of under five year olds at risk of malnutrition in Northern pastoral cluster**



During normal times, households consume 2-3 meals composed of cereals, milk, meat and pulses. Scarcity of water was identified as affecting the consumption of beans, which require copious amounts of water to prepare.

### 3.1.6.6 Education

The average primary school enrolment rates were 55.9 percent for boys and 45.2 percent for girls. School attendance was noted to be stable during the period, across the cluster. Improved school enrolment and attendance was attributable to ongoing school meals programme (SMP) in all schools. However, success of the SMP was constrained by persistent acute water shortage, inadequate cooking facilities and delay in food delivery to schools.

### 3.1.6.7 Coping strategies

Households in this cluster were increasingly employing coping mechanisms such as skipping meals, reduced meal sizes, sharing of food and charcoal burning. However, the intensity of application of the coping mechanisms was only starting to rise. The coping strategy index (CSI) ranged from 0.09-0.32, which though was 20-80 percent below the critical threshold of 0.4, was of concern in many areas.

### 3.1.7 Food Security Prognosis

The food security situation in this cluster is likely to deteriorate in the next three months due to declining forage and water availability, likely upsurge of resource-based conflicts and unfavorable terms of trade. Although good performance of the long rains may bring relief to households and livelihoods, from May 2011 onwards, affected households have experienced two successive poor seasons and require more than one good season to start recovering. Poor performance of the long rains would deepen food insecurity and result into heightened loss of livelihood assets.

### 3.2 The Eastern Pastoral Livelihood Cluster

#### 3.2.1 Cluster Background

The Eastern pastoral livelihood cluster consists of the larger Mandera, Garissa, Wajir, Tana River, Isiolo and Ijara districts. The cluster covers 190,753 square Kilometers and has an estimated population of 1,887,501 persons.<sup>1</sup> The larger districts have been subdivided into 22 new districts.

The main livelihoods in the cluster are pastoral and agropastoral (figure 3.2.1), which account for 60 and 21 percent of the cluster population, respectively. Others livelihoods including irrigated cropping, firewood/charcoal selling and formal employment which account for 19 percent of the cluster population. The main sources of income for households are, livestock and crop production, which contribute to 60 and 30 percent of total household income, respectively.

#### 3.2.2 Factors Affecting Food Security

The main factors affecting food security in the cluster include frequent droughts; recurrent livestock disease outbreaks; poor road infrastructure; poorly integrated agricultural markets; land degradation, due to poor grazing regimes; frequent flash floods; insecurity and resource-based conflicts.

#### 3.2.3 Overall Food Security Situation

Many areas of the southern part of cluster including most of Tana River, lower parts of Isiolo and Garissa are in Borderline Food Insecure phase while most of the northern part of the cluster, including most of Mandera, Wajir and northern Isiolo are in Acute Food and Livelihood Crisis phase. The risk of food security deteriorating to the next phase is high, in most areas. Figure 3.2.2 show the food security situation in January 2011 compared to August 2010.

Figure 3.2.1: Eastern pastoral livelihood cluster

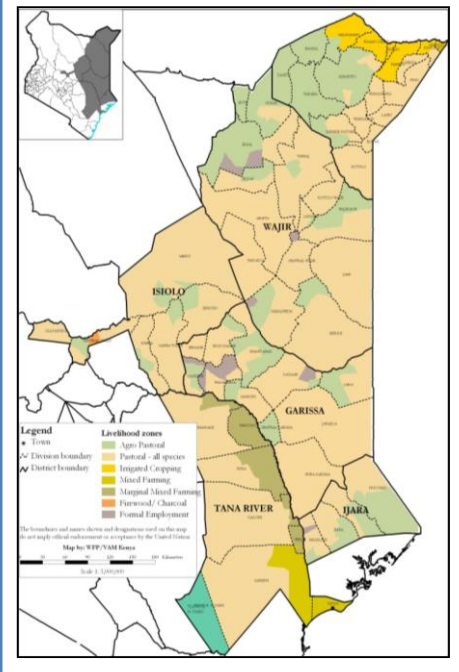
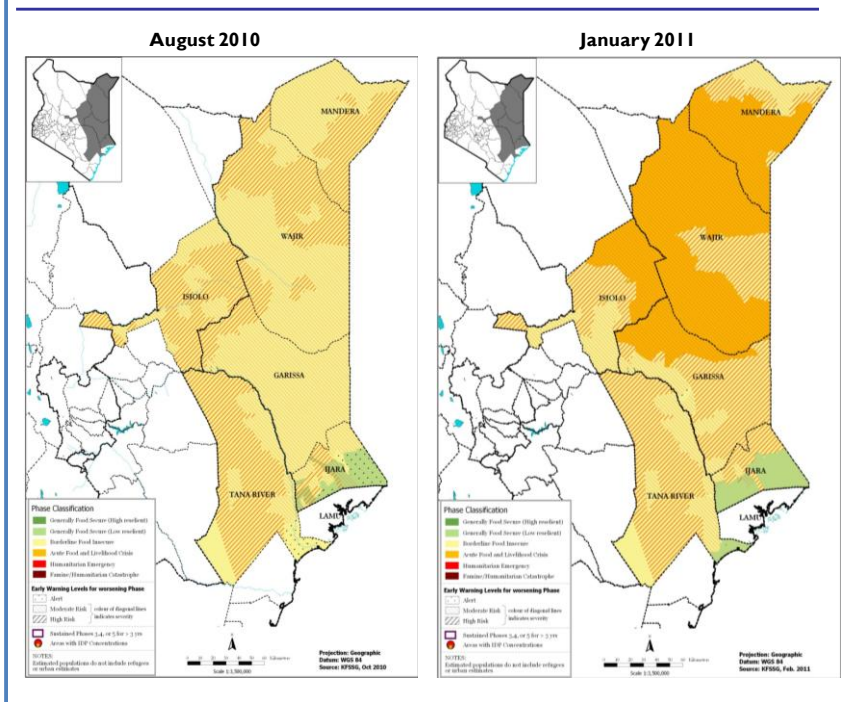


Figure 3.2.2: Food security situation in Eastern pastoral cluster



<sup>1</sup> According to the 2009 population projections for Mandera and Garissa, and the 2009 population census for Ijara, Isiolo, Tana River, and Wajir districts.

### 3.2.4 Food Security Trends

The food security situation in the cluster is worsening. Exceptionally poor performance of the short rains has resulted into inadequate replenishment of water sources and poor regeneration of pasture and browse leading to extremely long trekking distances, for livestock. As a result, the rapidly declining livestock body condition has triggered a decline in livestock prices. Meanwhile, cereal prices are rising due to enhanced demand. The continued deterioration of livestock productivity coupled with erosion of pastoral purchasing power is likely to worsen food security for majority of households, before the onset of long rains in April 2011. The food security situation may degenerate if the long rains perform poorly.

### 3.2.5 Current Shocks and Hazards

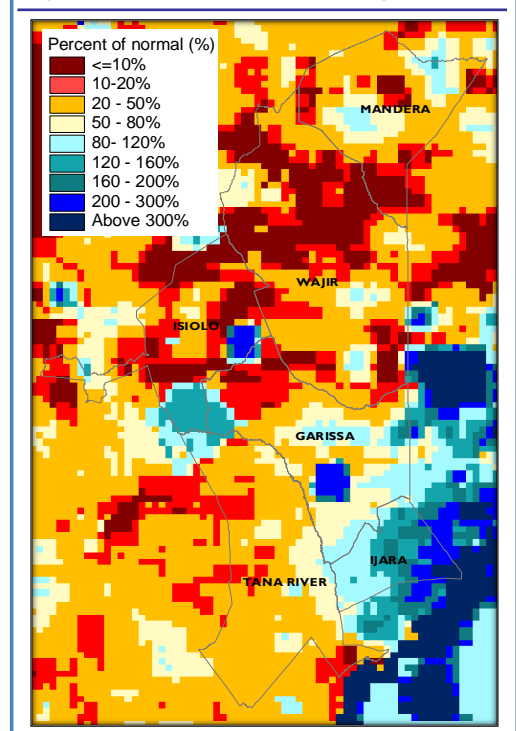
#### 3.2.5.1 Rainfall

The onset of the 2010 short rains was timely across the cluster except in the northern and central parts of Garissa district that experienced a two week delay in the start of rains. The amount of rains varied but was generally below 50 percent of normal, in many areas. The lowest rainfall amounts, less than 20 percent of normal, were received in Shanta-Abaq and Modogashe divisions in Garissa; Sericho in Isiolo; Kotulo in Mandera; and Kotulo and Tarbaj in Wajir. The highest rainfall amounts averaging 120-200 percent of normal were received in Ijara district, and pockets in Central part of Garissa as figure 3.2.3 shows. Overall, the rains were erratic and characterized by uneven spatial distribution. Rains ceased between the third week of November and second week of December 2010, which was about two weeks earlier than normal.

#### 3.2.5.2 Other Shocks and Hazards

Other shocks and hazards affecting food security within the cluster included conflicts over grazing resources between pastoralists and crop farmers in Tana River; livestock disease outbreaks in many areas; and floods along Daua River in Mandera, which affected irrigation structures.

Figure 3.2.3: Rainfall estimates for Eastern pastoral cluster



### 3.2.6 Impacts of Shocks and Hazards

#### 3.2.6.1 Crop Production

Crop production is important in the agropastoral livelihood zone as it contributes to 30 percent of income and up to 35 percent of food, for households. However the area planted during the short rains season reduced significantly to 33 percent of normal, due mainly to agropastoralists' response to the La Nina warning. In addition, irrigated area was lower than usual. For instance in Mandera, 190 hectares compared to the normal 430 hectares was irrigated due to reduced water level in river Daua. While no harvests were realized in the rain-fed cropping areas, less than 20 percent of normal short rains harvest was obtained in irrigated areas of Mandera, Garissa and Tana River. Overall, households maize stocks had depleted while traders' stocks were below normal. For example in Wajir, traders were holding about 80 percent of maize stocks normally held in January 2011.

### **3.2.6.2 Livestock Production**

Livestock production contributes to 80 and 50 percent of income for pastoral and agropastoral households, respectively. However, livestock production was adversely affected in many areas of the cluster due to poor and below normal pasture and browse condition with the exception of Ijara where pasture condition was good. Available pasture and browse was expected to last until end of February 2011 except in agropastoral areas of Ijara where it was projected to last until early April 2011, at onset of long rains. In addition, earlier than usual drying of water pans and dams increased trekking distances for livestock to an average of 15-20 kilometres and up to 40 kilometres in Wajir and Mandera compared to the normal 5-10 kilometres.

As a result, livestock productivity declined precipitously. For instance, milk production dropped to less than one litre per household compared to the normal 2.5 litres. However, due to extensive livestock migrations, less than 30 percent of households can access milk from own herds. Consequently, milk price increased significantly and a litre of milk was selling for Ksh. 60 compared to the normal of Ksh. 20. In addition, livestock body condition had declined and ranged from fair to poor, which was below normal for January. The decline in livestock productivity was mainly attributed to long trekking distances since livestock disease outbreaks were largely absent, across the cluster. Nevertheless, unconfirmed cases of FMD and an upsurge of Contagious Bovine Pleuro Pneumonia (CBPP) were reported in Sericho division of Isiolo district. Likelihood of contagious livestock disease outbreaks was heightened by increased livestock clustering in areas where limited pasture, browse and water were available. Livestock from Moyale, Marsabit, Wajir, Garissa and Samburu were clustering in Kinna area of Isiolo district while most of the livestock in Mandera clustered in Warankara division. Livestock migrations into Mandera from Somalia; and to Ethiopia from Wajir and Mandera were reported to have occurred during the period.

### **3.2.6.3 Water and Sanitation**

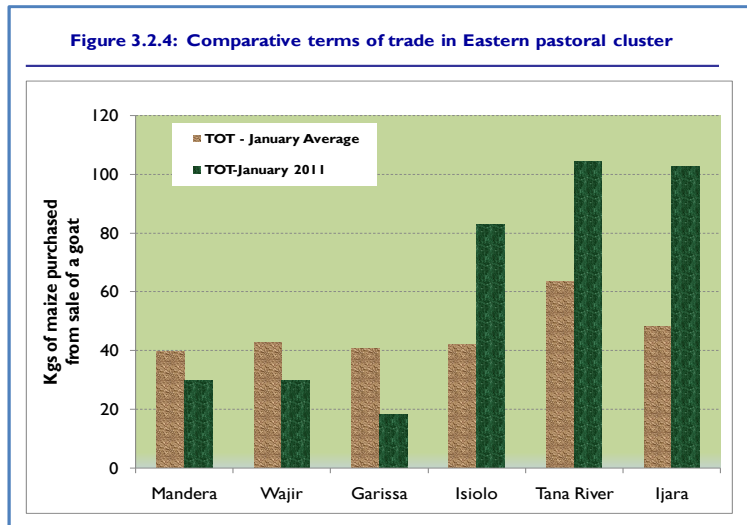
Most temporal water sources including pans and dams had dried in most parts of the cluster and households were relying on boreholes, shallow wells, Tana River and water trucking (which were ongoing in 30-50 sites per district in Garissa, Mandera, Wajir and Isiolo). In Mandera, less than five percent of water pans had water, which was expected to deplete before end of February 2011. Consequently, distances to water sources increased to between five and ten kilometers in Garissa, Isiolo, Tana River and Ijara districts, and up to 10-20 kilometers in Wajir and Mandera, compared to the normal of less than five kilometers. The cost of water averaged five shillings per 20 liters except in Garissa where it was selling for Ksh. 10-20, from private water vendors. Water consumption declined significantly to 3-8 liters per person per day compared to the normal of 10 liters.

### **3.2.6.4 Market Performance**

Markets functions were disrupted by significant livestock migrations to remote and poorly accessible areas. As a result, volumes of livestock traded in the markets were significantly lower than normal. At the same time increased purchase of food on credit was limiting traders' ability to effectively replenish stocks.

Maize price varied significantly within the cluster. A kilogram of maize grain was selling for between Ksh. 50-55 (70-80 percent above average), in Garissa, Wajir and Mandera; and between Ksh. 20-30 (5-10 percent below average) in Ijara, Tana River and Isiolo. Maize prices that have been rising since November 2010 are likely to continue increasing because of heightened demand, due to lack of alternative livestock products. Similarly, livestock prices varied significantly. For instance, a goat was selling for Ksh. 1,100-1,300 (20-35 percent above average) in Mandera, Wajir and Garissa; and Ksh. 2,000-2,500 (60-100 percent above average), in Tana River, Ijara and Isiolo. Livestock prices were declining rapidly as livestock body condition worsened.

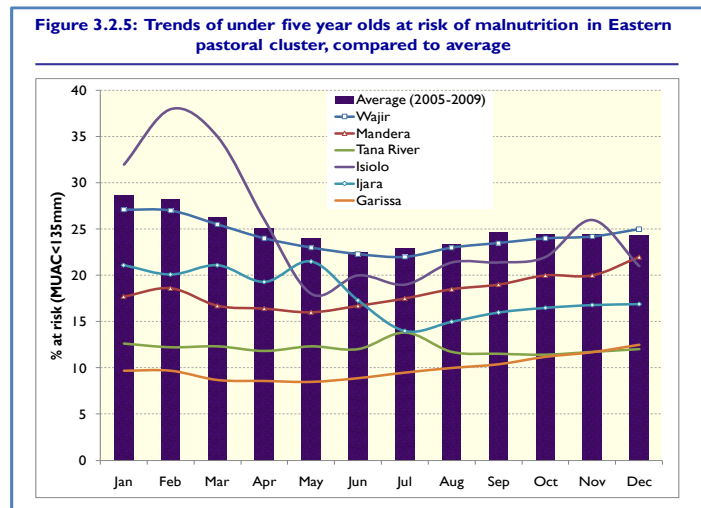
Terms of trade were favorable in Isiolo, Tana River and Ijara where a household was able to purchase 80-100 kilograms of maize from sale of a goat, compared to the normal of 40-45 kilograms. In Mandera, Garissa and Wajir, households were able to purchase only 20-30 kilograms of maize as opposed to the normal average of 40 kilograms. However, benefits of improved terms of trade were limited to 20-30 percent of households that were able to participate in markets, to sell livestock.



### 3.2.6.5 Health and Nutrition

The prevalence of diseases was within normal range in many areas with the exception of Garissa and Isiolo where there was an upsurge of malaria, respiratory tract infections and diarrhea. Increased disease incidences were attributed to ineffective use of mosquito nets, poor sanitation and dusty conditions. Immunization and vitamin-A supplementation, which are important in prevention of morbidity and mortality in children, were below national target of 80 percent throughout the cluster, except in Isiolo district.

The proportion of children under five years at risk of malnutrition as measured using MUAC<135mm ranged between 12-26 percent, which was 10-30 percent above average, in Garissa, Ijara, Mandera and Isiolo. As figure 3.2.5 shows, the trend of percent 'at risk' has been increasing since October 2010, which depict the worsening of nutrition status. The main factors contributing to poor nutrition status were identified as low availability of milk, at household level; poor child care practices; and poor infant and young child feeding practices. Majority of households were experiencing significant food gaps leading to poor dietary diversity. In general, meals were composed of 2-3 food groups compared to the normal of more than three. In addition, households reduced number of meals to 1-2 compared to the usual three meals per day.



### 3.2.6.6 Education

School enrolment declined by 1.5-6 percent across the cluster, possibly due to migration of pastoralists in search of pastures and water for livestock. However, all primary schools within the cluster were implementing the School Meals Programme (SMP) which partly explains increased attendance in the first term of 2011 compared to third term of 2010. However, acute water shortage was constraining the SMP particularly in Mandera, Wajir, Ijara and Isiolo districts where 70 percent of schools lacked water storage tanks.

### 3.2.6.7 Coping Strategies

The Coping Strategy Index (CSI) ranged between 0.06-0.36, which is below the critical threshold of 0.4, and indicative of absence of severe coping mechanisms. However, in Isiolo households had started slaughtering calves to save lactating cows, which is an extreme coping strategy. The majority of households have increased purchasing of food on credit; selling firewood; sharing food rations; and skipping or reducing meals sizes.

### 3.2.7 Food Security Prognosis

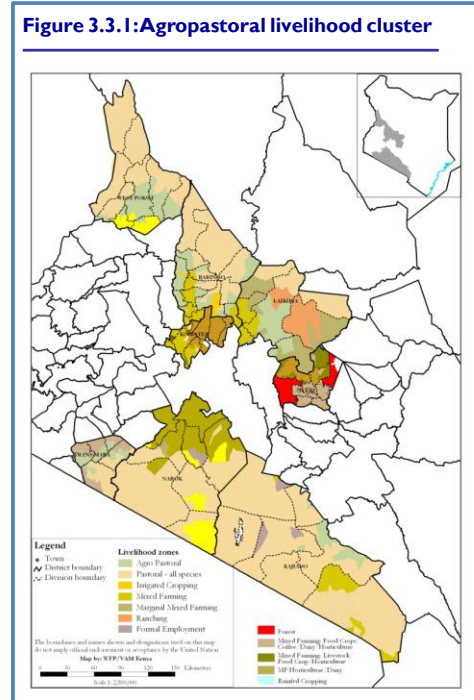
Food security situation is likely to worsen in the next three months, due to rapid depreciation of terms of trade; poor livestock productivity and even loss of livestock livelihood, in most areas. However, in Tana River and Ijara food security situation is likely to remain stable due to availability of water, pasture and browse, which may stabilize livestock productivity. Recovery to food security status is likely to be prolonged for most of the affected households, as they will require successive good seasons to effectively rebuild livelihoods and resilience.

## 3.3 The Agropastoral Livelihood Cluster

### 3.3.1 Cluster Background

Agropastoral cluster comprises of the larger Kajiado, Narok, West Pokot, Baringo, Laikipia, Koibatek and Kieni districts. It has an estimated population of 2,546,588 persons and covers an area of 70,925 square kilometers. The larger districts have been further subdivided into 25 new districts.

The main livelihood zones are pastoral-all species, mixed farming and agro pastoral as illustrated in figure 3.3.1. Livestock production accounts for 85 percent of cash income in pastoral all species livelihood zone while crop production contributes to 55 percent of cash income in agropastoral livelihood zones. Households in this cluster access 30 and 60 percent of food from own production and market purchases respectively.

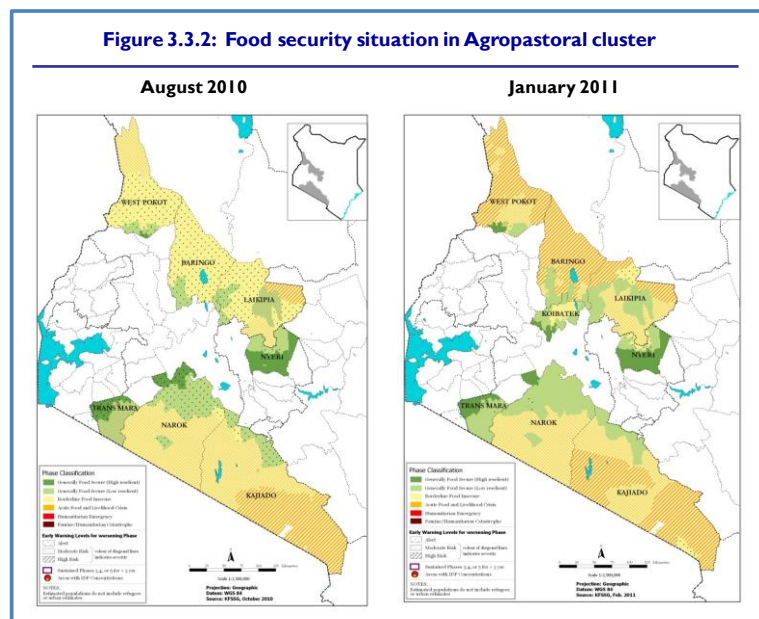


### 3.3.2 Factors Affecting Food Security

The main factors affecting food security in this cluster are rampant cattle rustling particularly in East Pokot; land degradation; human-wildlife conflict in Baringo, Laikipia and Narok; endemic livestock diseases; low use of certified seeds and fertilizers; and poor road network, which contribute to high and unpredictable fluctuations of commodity prices.

### 3.3.3 Overall Food Security Situation

Figure 3.3.2 shows the food security situation in the agropastoral cluster in August 2010 and January 2011.



The agro pastoral cluster is generally at Borderline Food Insecure phase with moderate to high risk of deterioration to Acute Food and Livelihood Crisis phase. The mixed farming and agro pastoral zones of Trans Mara are in Generally Food Secure phase, with high resilience, while the mixed farming zone and irrigation area of Baringo, West Pokot, and Koibatek are also Generally Food Secure but with low resilience. Kieni district has deteriorated from Generally Food Secure, low resilience to Borderline Food Insecure and the risk is at watch, while pastoral areas of East Pokot which are in Borderline Food Insecure phase are at a high risk of moving to at Acute Food and Livelihood Crisis.

### **3.3.4 Food Security Trends**

The food security situation is likely to deteriorate in the next two months in areas that received below normal rains. Availability and access to water and pasture is progressively diminishing, resulting in poor livestock body condition and corresponding depressed prices. Meanwhile, livestock migration that has reduced milk availability is likely to affect purchasing power of the pastoralists and may predispose the livestock to diseases. Other factors that are likely to affect food security include total crop failure in rain-fed cropping areas that has eliminated household food stocks and resulted to increased market dependence, and increased insecurity in Baringo and West Pokot. The improvement in food security is dependent on the performance of the long rains.

### **3.3.5 Current Shocks and Hazards**

#### **3.3.5.1 Rainfall**

The onset of 2010 short rain delayed in Kieni, Koibatek and Kajiado districts. In the mixed farming livelihood zone of Koibatek district, onset was earlier than normal, in early September while in Baringo onset was timely and coincided with the end of continental rainy season received between July and September. Rainfall amounts averaged 20-50 percent of normal across the cluster. However, below normal and poorly distributed rains, which ranged between 10-20 percent of normal, were received in some parts of Baringo. The spatial and temporal distribution of the rains was poor in most areas of the cluster. The rains ceased between late October and early November across the cluster, which was earlier than the normal cessation period, December.

#### **3.3.5.2 Other Shocks and Hazards**

Other shocks and hazards reported in the agro-pastoral cluster were civil insecurity and cattle rustling along the border of East Pokot and Turkana, West Pokot, Baringo and Laikipia districts. Outbreaks of Foot and Mouth Disease (FMD) were reported in Laikipia West, Central and East and in Baringo district leading to closure of livestock markets. Human-wildlife conflicts over water and grazing resources were also reported in Laikipia.

### **3.3.6 Impacts of Shocks and Hazards**

#### **3.3.6.1 Crop Production**

The area put to short rains crop in most of the mixed farming zones was normal to above normal leading to an average to above average production. For instance about 90 percent of normal short rains harvest was realized in Trans Mara district. In most of the pastoral and marginal mixed farming zones, rains were poor leading to about 95 percent crop failure, for instance, in West Pokot, Kajiado, Narok, Laikipia and Baringo districts. However, most of these areas are long rains dependent. Among the factors identified as constraining crop production included the use of unsuitable seed varieties and pest infestation.



Majority of households within agropastoral cluster had carryover stocks from the extraordinarily good 2010 long rains harvest. Available food stocks may last for two to four months, particularly in the mixed cropping livelihood zone. Meanwhile, households in the other zones had stocks that could last for one to one and half months in January 2011. About 60 percent of households in Laikipia had enough food to last for three months. However, poor post harvest management and storage resulted into substantial loss of long rains harvest that either rotted or was attacked by weevils and rodents. For example, in Narok district a reported 50 percent of the long rains harvest was lost to storage pests.

### **3.3.6.2 Livestock Production**

Pasture and browse condition ranged between fair to poor and was likely to last for 1-2 months in most parts the cluster except in the mixed farming livelihood zones of West Pokot, Narok and Laikipia. In the ranching livelihood zone of Laikipia, pasture condition was fair to good and likely last 2-4 months. Crop residues in the mixed farming areas of Narok positively impacted on forage availability. However, trekking distances to watering points increased by up to 150 percent, for example, from 3-4 kilometers to 8-10 kilometers, in the pastoral zone in Narok. Increased trekking distances had started to affect livestock productivity. For instance, the body condition of grazers ranged from fair to poor compared to browsers that ranged from fair to good. In the mixed farming and ranching livelihood zones, grazers had good body condition. Also, milk availability at household level decreased to 0.25 liters in many places against a normal of 5-10 liters per day. As a result, milk prices increased to Ksh. 30-60 per liter compared to the normal of Ksh. 15-30.

Livestock disease outbreaks occurred in many parts of the cluster. For instance, FMD outbreak was reported in West Pokot, Koibatek, Laikipia, Narok, Baringo and Kieni; *Pestes des Petits Ruminants* (PPR) was reported in Kajiado; while Lumpy Skin Disease and Malignant Catarrh Fever were reported in Narok. Intensifying livestock migrations may lead to additional disease outbreaks. Pastoralists from West Pokot were reported to have moved cattle from the agropastoral and pastoral livelihood zones to Mara west, Trans Nzoia and to the border of Kenya and Uganda. Meanwhile, in Baringo pastoralists have migrated to Turkana and Laikipia districts.

### **3.3.6.3 Water and Sanitation**

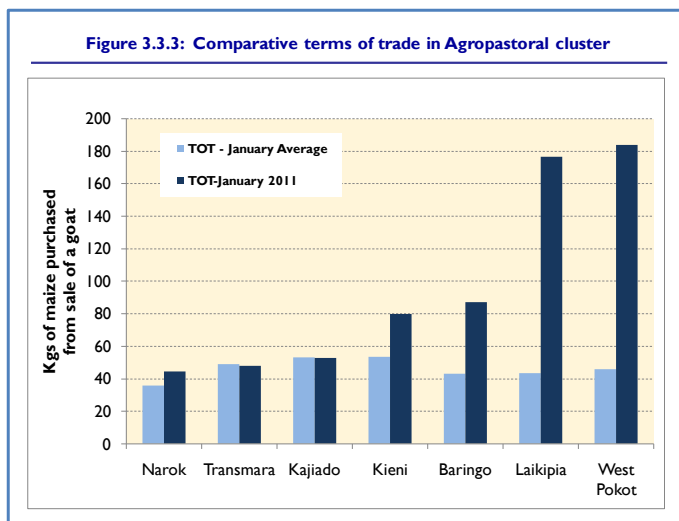
The main sources of water for domestic and livestock use in the cluster are pans, rivers and springs. Other important sources include boreholes, shallow wells and piped water schemes and the lake (in Baringo). The temporal water sources recharged poorly and were expected to last for three months except in Kajiado, Narok and West Pokot, where water sources were likely to last for a month only. The average distances to water sources ranged from 1.5 to 12 kilometers and were up to 20 kilometers in Kajiado. Generally, the distances to water increased only marginally, compared to normal. Water consumption level ranged between from 5-15 liters per person per day with the exception of Trans Mara which recorded an average of 20 liters per person per day.

### **3.3.6.4 Market Performance**

Markets functioned normally during the period with the exception of markets in Marigat (Baringo) and Kapedo (East Pokot), which were closed due outbreak of FMD and high insecurity, respectively. In West Pokot, high tensions disrupted operations in Cheptuya and Kishaure markets.

Maize prices ranged between Ksh. 25-30 per kilogram and were 10-35 percent above average in Trans Mara, Kajiado, Narok, Baringo and West Pokot. Maize prices were 10-25 percent below average in Kieni and Laikipia. However, livestock prices remained above average in most areas. Cattle prices ranged from Ksh. 7,500-20,500, which was 20-65 percent above five year average with the highest price recorded in Kieni and the lowest prices occurring in Baringo. Livestock prices had started dropping due deteriorating livestock body condition.

Figure 3.3.3 shows the generally favorable terms of trade across the cluster. Households in West Pokot, Laikipia, Kieni and Baringo were able to purchase nearly 1-2 bags of maize from the sale of a goat compared to the normal half a bag. In the other areas terms of trade were just about normal. Improvement to terms of trade was attributed to generally low maize prices compared to high livestock prices.



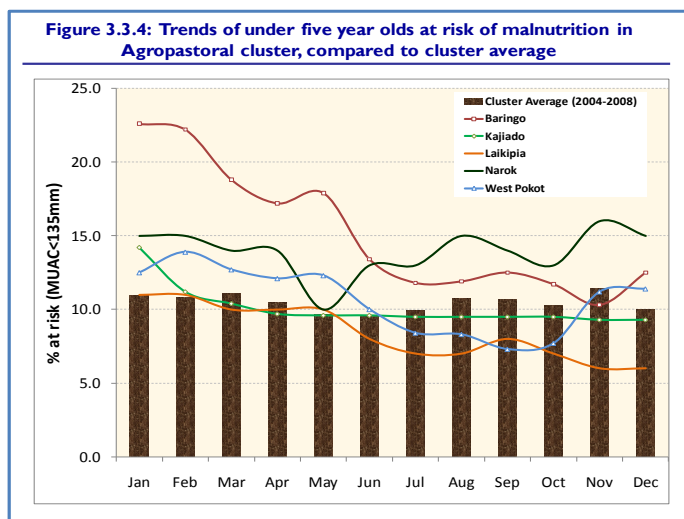
### 3.3.6.5 Health and Nutrition

There were no outbreaks of epidemic prone diseases during the period under review. However, malaria, upper respiratory tract infection and diarrheal diseases remained the leading causes of morbidity. Upsurges of malaria in West Pokot and URTI in Baringo, and cases of typhoid in Laikipia and Koibatek, were reported within the cluster. Nevertheless, crude and under five mortality rates were below alert threshold of 1/10,000/day and 2/10,000/day, respectively. However, under five mortality rates in East Pokot district averaged 1.4 and 2.55/10,000/day, which were above alert levels and were alarming.

Immunization coverage varied across the cluster but was below national target of 80 percent although they depicted a rising trend. The fully Immunized coverage stood at 79, 78, 66 and 39 percent for Baringo, Laikipia, Kajiado and West Pokot districts respectively. Similarly vitamin-A supplementation coverage for children who are 6-59 months improved in Baringo and Narok, to 83 and 85 percent respectively. The lowest coverage was reported in West Pokot at 51 percent, attributed to limited facilities and poor health seeking behavior among communities.

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The nutrition status of children under five years as depicted by the proportion of children at risk of malnutrition and measured using Mid Upper Arm Circumference (MUAC<135mm) varied within the cluster. Figure 3.3.4 illustrates the worsening nutrition status in West Pokot and Baringo.



The deterioration in nutrition status is partly attributed to poor child feeding practices. However, prevailing dry condition lead to limited access to milk, which is the main food for children. The nutrition situation is likely to worsen when livestock migrations intensifies. The household dietary diversity across the cluster suggests a worsening situation. Households were consuming an average of two meals per day compared to the normal of 3-4 meals. The meals were mainly composed of cereals and pulses with occasional milk and meat.

### 3.3.6.6 Education

The primary school enrolment rate within the cluster averaged 70 percent. Similarly, school attendance was high and averaged 86 percent. However, low attendance rates were reported in Laikipia and Narok. High attendance rates were reported in schools that had school meals programs while low attendance and high drop outs were associated with movements of households in search of pasture for livestock. Narok had the highest dropout rates of 8.9 percent, which was partly attributed to the deterioration of food security situation and withdrawal of school meals program.

### 3.3.6.7 Coping Mechanisms

The main coping mechanisms included charcoal burning, skipping meals, selling firewood, eating wild fruits and borrowing. The Coping Strategy Index (CSI) ranged between 0.14-0.32 which is 20-65 percent below the critical level of 0.4. Although severe coping strategies were largely absent, a CSI of 0.32 is worrying. Increased charcoal burning was reported in Baringo and West Pokot districts, illustrating deteriorating food security conditions.

### 3.3.7 Food Security Prognosis

The food security situation is likely to worsen in the next three months in many parts of the cluster due to declining household food stocks; depletion of forage and water; and weakening purchasing capacities. A reversal or stabilization of the food security situation is not expected until June-July 2011, after long rains harvest and only if 2011 long rains performance is good. However, should the long rains perform poorly, food security situation is likely deteriorate rapidly, particularly in the pastoral areas of Kajiado, Narok and West Pokot.

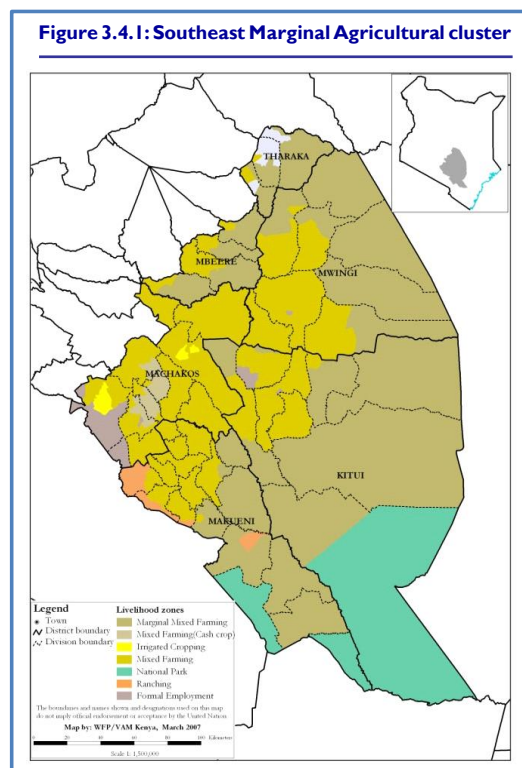
## 3.4 The Southern Marginal Agricultural Livelihood Cluster

### 3.4.1 Cluster Background

Southeastern marginal agricultural livelihood cluster comprises of the larger Tharaka, Mbeere, Makueni, Machakos, Mwingi, Kitui and Meru North districts which have been subdivided further into 37 new districts. The cluster covers 52,168 square kilometers and has an estimated population of 4,092,977. The main livelihood zones, which are illustrated in Figure 3.4.1, are mixed farming and marginal mixed farming which account for 65 and 26 percent of the population. Crop production is the most important source of income, contributing to 40 percent of household incomes. Livestock production and employment related activities account for 35 and 25 percent of household income, respectively.

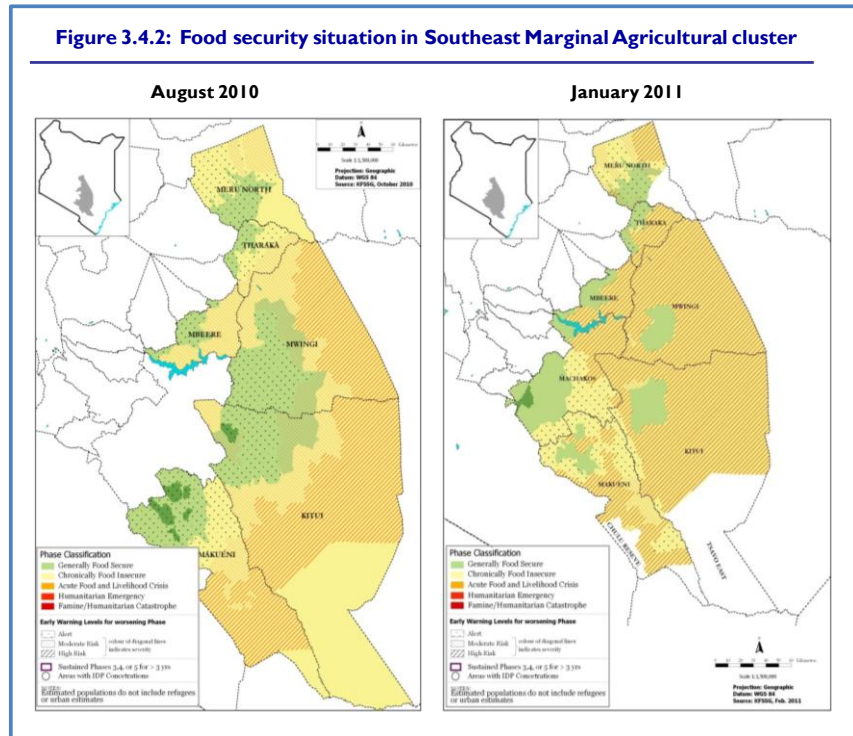
### 3.4.2 Factors affecting food security

The factors affecting food security in the area include cyclic droughts; poor crop enterprise choice; poor infrastructure leading to poor market access; land degradation; low livestock holdings; poor sanitation and hygiene and high post harvest losses.



### 3.4.3 Overall Food Security Situation

The food security situation in the marginal mixed farming livelihood zone has remained at Borderline Food Insecure phase and is at high risk of deteriorating to Acute Food and Livelihood Crisis (AFLC), in many places. In the mixed farming zone the situation has deteriorated as compared to the period after the 2010 long rains to Borderline Food Insecure with moderate risk of deteriorating to AFLC from General Food Secure, low resilience phase. However, in Tharaka food security situation in the marginal mixed farming is at Borderline Food Insecure and the risk is at watch. Figure 3.4.2 shows the food security situation in southeast marginal agricultural zone in August 2010 and January 2011.



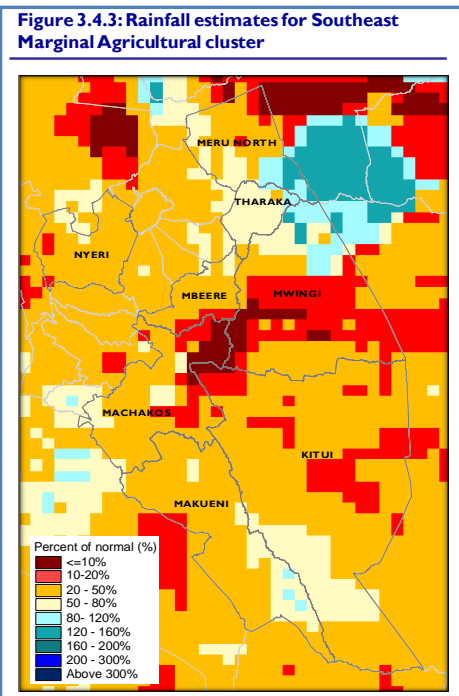
### 3.4.4 Food Security Trends

In general, food security situation in most parts of the cluster improved after an average to above average 2009 short rains and 2010 long rains harvests. However the situation is likely to reverse rapidly after the near total crop failure during the 2010 short rains season. The short rains season is the main season for households and account for up to 70 percent of annual output. However, due to poor harvest, household food stocks are rapidly diminishing and are likely to last for the next two months instead of the normal four to five months. In addition to low household food stocks, rising cereal prices, and heightened demand for cash for the long rains crop production are likely to cause significant food consumption shortfalls, leading to high food insecurity, especially for the poor and very poor households, until August 2011 if long rains performance is good.

### 3.4.5 Current Shocks and Hazards

#### 3.4.5.1 Rainfall

The onset of the short rains was delayed by 1-4 weeks, across the cluster. The overall amount of rainfall received ranged between 20-50 percent of normal except in some pockets of Mwingi that received 80-120 percent of normal rains as shown in figure 3.4.3. The rains were poorly distributed in time and space and ceased earlier than normal in most areas during the first and second week of November 2010, with exception of some part in Meru North where some off season showers were received in January 2011.



### **3.4.5.2 Other shocks and Hazards**

Other shocks and hazards that have affected food security within the cluster include crop pests that led to loss of 30-80 percent of maize in Kitui and Machakos; and maize trade bans due to aflatoxin infected maize, that has kept maize prices lower than average.

### **3.4.6 Impact of Shocks and Hazards**

#### **3.4.6.1 Crop Production**

The poor rains experienced in the season negatively affected crop production. Most areas experienced below normal cropped areas and subsequently realized depressed harvests. The marginal mixed farming zones of all the districts were most affected by the poor rains which resulted into much below normal yields averaging 10-15 percent of normal. In some parts of the mixed farming livelihood zones, 40-45 percent of normal short rains maize was harvested. Due to the poor yields household food stocks are unlikely to last more than three months.

#### **3.4.6.2 Livestock Production**

The pasture and browse condition was good to fair across the cluster, but rapidly declining due to prevailing dry spell. Available pasture and browse was projected to last the next one to two months. At the same time, distances to water sources were increasing and averaged 3-5 kilometres compared to the normal of 1-3 kilometres. The good availability of pasture and water was depicted in in-migration of livestock into Machakos from Kajiado, and into Mbeere from Meru South. However, livestock productivity was fair. Livestock body condition ranged between fair to good while milk availability at household level ranged from 1-2 litres and 3-5 litres in the marginal and mixed farming zones respectively, which was below normal. As a result milk price increased by up to 100 percent from Ksh. 25 to Ksh. 50 per litre. The most significant livestock diseases reported across the cluster were New Castle Disease and Coccidiosis in poultry that resulted into the death of 80 percent of poultry in Mbeere, Tharaka and Mwingi.

#### **3.4.6.3 Water and Sanitation**

The poor performance of the short rains resulted into 10-40 percent recharge of temporal water sources leading to early drying of pans and dams. The open water sources were expected to dry by end of February 2011. As a result, distances to water sources increased from 3-7 kilometers to 10-13 kilometers with the exception of Machakos where distances increased from 1-3 kilometers to 3-5 kilometers. The cost of water also increased from Ksh. 2-3 up to eight shillings in parts of Machakos and Kitui, while in parts of Mwingi, a 20 liters was selling for up to Ksh. 20. Nevertheless, only a slight increase in water consumption was reported in Kitui, Machakos, Mwingi and Makueni from about 20 liters per person per day to 15 liters. In Tharaka water consumption was normal at 20 liters per person per day.

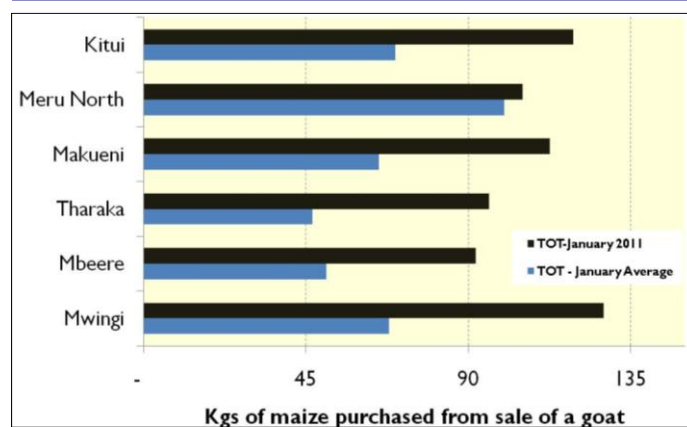
#### **3.4.6.4 Market performance**

Overall, markets operated normally without any disruption. However, traders reported low trade volumes due to low purchasing power, especially among crop dependent households. Most of the food commodities traded was sourced outside the district except for mangoes, which is quite unusual at for January when harvest of the short rains crop commence.

Maize prices ranged from Ksh. 15 in Machakos to Ksh. 25 per kilogram in Mbeere district and were up to 20 percent below average. However, maize prices are likely to increase when households exhaust their stocks and increase reliance on markets. Meanwhile, Livestock prices were generally above average, though on a downward trend. Declining livestock price was being driven by deteriorating body condition and increased supply in the market as households demand for cash, for schools fees increased. A mature goat was selling for 1,500-2,500, which is 30-70 percent above average.

Terms of trade were favorable for majority of households that are able to purchase 1-1.3 ninety kilogram bags of maize from sale of a goat. In general, terms of trade were 50-75 percent above average with the exception of Meru North where it was only five percent above average. Figure 3.4.4 illustrates generally favorable terms of trade within the cluster. However, due to low livestock holding, only a few households were able to benefit from improved purchasing capacities.

**Figure 3.4.4: Comparative terms of trade in southeast marginal agricultural cluster**



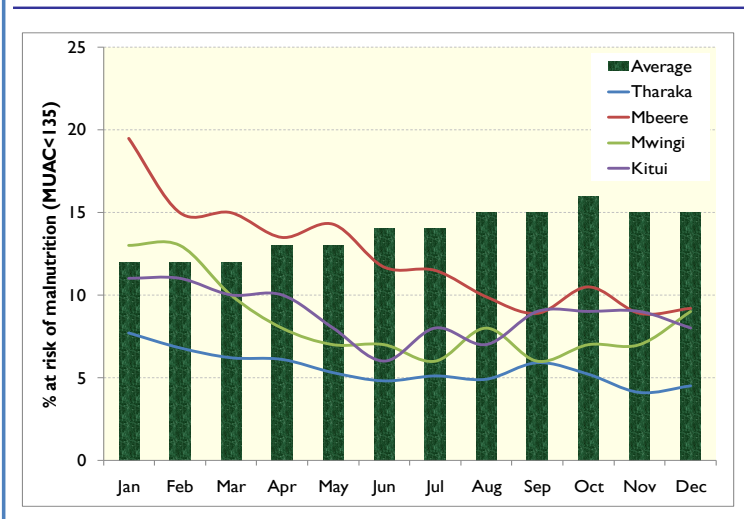
### 3.4.6.5 Health and Nutrition

The leading causes of morbidity in the cluster for the general population were malaria, URTI, skin diseases, diarrhea and worm infestation, which were within normal range. There were no reported outbreaks of epidemic prone diseases. Crude mortality rates and under five mortality rates were below the threshold of 0.5 deaths/10,000 per day depicting a normal situation, except in Makueni where the crude mortality rate was 0.84/10,000/day, which though high, had reduced from 0.96/10,000/day in 2009, after a cholera outbreak that had earlier occurred in the district was controlled.

Immunization coverage was below the national target of 80 percent and there was a general decline in the fully immunized coverage, across the cluster. Vitamin-A supplementation coverage which is a key morbidity and mortality prevention measure, varied across the cluster. In Kitui, Machakos, Meru North coverage was above the national target of 80 percent while in Mbeere and Mwingi, coverage was significantly lower than target (39 and 59 percent respectively).

The nutrition status of children under five years in the cluster was improving, though marginally, with an exception of Mwingi where nutrition status was deteriorating. The proportion of children at risk of malnutrition was below the long term average for the cluster. Figure 3.4.5 shows the trends of proportion of children at risk of malnutrition within the cluster. The notable stability in nutrition status was attributed to availability and access to food following successive good harvests and the ongoing feeding programmes. The dietary diversity was within seasonal norm across the cluster and most households were consuming an average of 2-3 meals compared to 3-4 meals, normally. The meals mainly consisted of cereals, pulses and occasionally vegetables.

**Figure 3.4.5: Trends of under five year olds at risk of malnutrition in Southeast Marginal Agricultural cluster**



### 3.4.6.6 Education

Though attendance rates were high, reaching 90 percent in many schools, absenteeism was also prevalent, particularly in schools without the school feeding programmes. In Machakos the school feeding program coverage reduced from 48 to 32 percent resulting into more cases of transfers to schools with the schools meals programme. High dropout rates of up to 20 percent were also reported in the cluster, mainly attributed to children in upper classes leaving school to search for casual labor opportunities. The income from child labor was used to supplement food consumed by households. Low transition rates, averaging 62 percent, reported across the cluster were attributed to reduced household income from crop production, due to poor harvests. Thus households were unable to raise enough cash for school fees.

### 3.4.6.7 Coping strategies

The coping mechanisms applied by majority of households included charcoal burning, selling firewood, borrowing food, reduced number and size of meals; and purchase of food on credit. The CSI ranged between 0.05-0.12 and was 70-88 percent below the critical level of 0.4, implying majority of households were not employing severe coping mechanisms. Increased intensity of charcoal burning as a coping mechanism was however reported in Kitui district.

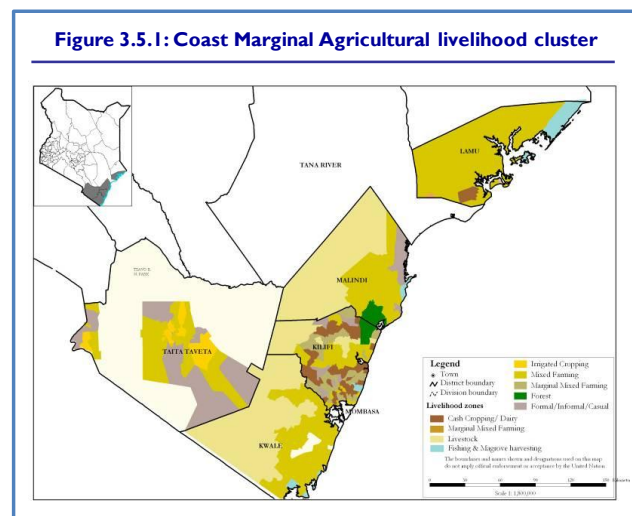
### 3.4.8 Food Security Prognosis

The food security situation is likely to worsen in the next two to three months when limited household food stocks get exhausted; and when terms of trade decline. Though the cluster is mainly short rains dependent, the situation is expected to stabilize in August 2011 if the long rains performance is good. Poor performance of the rains will however lead to further deterioration of the food security situation until February 2012 when harvests from the 2011 short rains will be expected.

## 3.5 The Coastal Marginal Agricultural Livelihood Cluster

### 3.5.1 Cluster Background

The Coast Marginal Agricultural cluster consists of Malindi, Kilifi, Taita Taveta, Kwale and Lamu districts. The cluster covers an area of 47,860 square kilometers and has an estimated population of 2,128,349 people. The five larger districts have been subdivided into thirteen smaller districts. There are seven livelihood zones in the cluster as shown in figure 3.5.1. Sixty one percent of the population is in mixed farming zone; 18 percent are in the formal employment/casual labor/business zone; eight percent are in marginal mixed farming zone; and eight percent are in livestock farming zone.

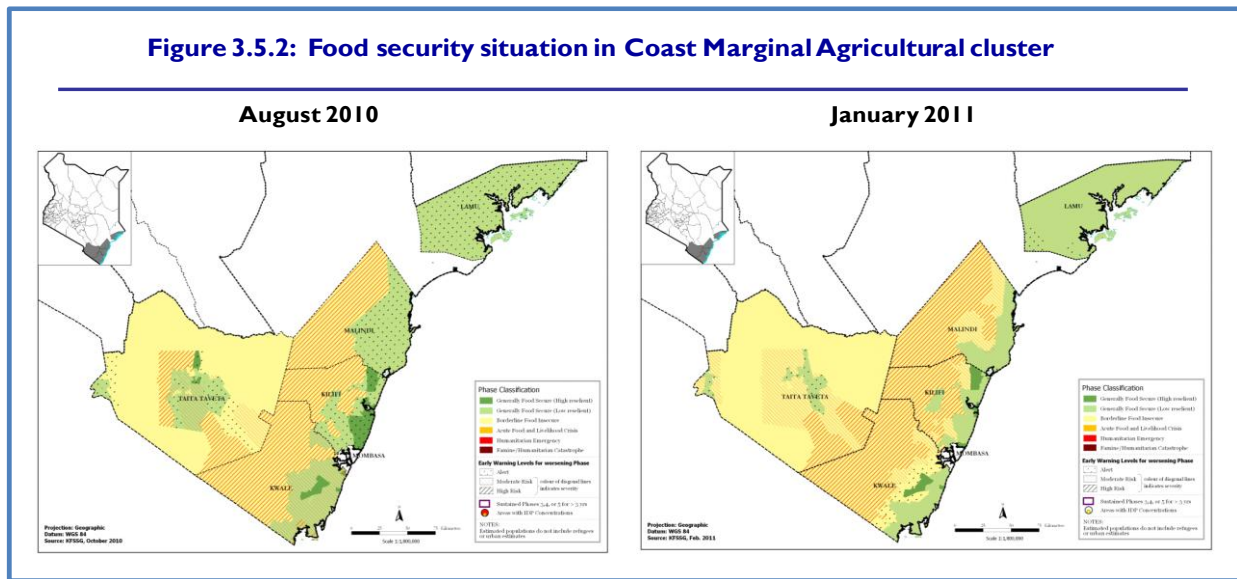


### 3.5.2 Factors Affecting Food Security

The main factors affecting food security in this cluster include, low adoption of modern agricultural technologies; chronic poverty; poor road network that hinder efficiency of market operations; over reliance on maize as staple food, despite unsuitable agro-ecological conditions; high post harvest losses; frequent human and wildlife conflicts; low investment in irrigation infrastructure; and widespread land degradation.

### 3.5.3 Overall Food Security Situation

Most areas of cluster are in Borderline Food Insecure phase with moderate to high risk of sliding into Acute Food and Livelihood Crisis. However, the fishing and mangrove harvesting as well as the mixed farming livelihood zones along the coastal strip remain in Generally Food Secure, Low Resilience phase. Figure 3.5.2 shows the food security situation in January 2011 compared to the situation in August 2010.



### 3.5.4 Food Security Trends

The food security situation is declining in most parts of the cluster after poor performance of the short rains. As a result, food security situation has deteriorated from GFS to BFI phase in areas along the coastal strip. In addition, heightened post harvest losses have added onto the decline to food security situation, after generally above average long rains harvests. Majority of households have depleted their food stocks and are relying on market purchases as the main source of food. The food security situation is likely to continue declining in most areas for the next three months. In the marginal mixed farming and livestock zones, the decline to food security situation is likely to accelerate from March, particularly if the upcoming long rains perform poorly. The influx of livestock and settlement of pastoralists into the cluster are likely to accelerate the depletion of pasture and water; may lead to an increase in livestock disease outbreaks; and may triggers conflicts over resources, resulting into high food insecurity.

### 3.5.5 Current Shocks and Hazards

#### 3.5.5.1 Rainfall

The onset of short rains delayed across the cluster. The amount of rainfall received ranged from 20-50 percent of the normal in most areas with the exception of parts of Kilifi, Kwale, Malindi and Lamu which received 80-160 percent of normal rains. Marginal agricultural areas of central and northeastern mixed farming livelihood zone of Lamu received 160-200 percent of normal while southwestern part of Kwale, hilly masses of Wundanyi, Wongonyi and Sagalla received up to 300 percent of normal. However, rains were exceptionally poor in localized parts of Malindi and Taita Taveta where only 10-20 percent of normal rains were received. Generally, the rains were poorly distributed temporally and spatially and ceased earlier than usual except in Malindi where cessation was normal, in the fourth week of December.



### **3.5.5.2 Other Shocks and Hazards**

The other shocks and hazards affecting food security in the cluster included human and wildlife conflicts, especially in areas around Shimba Hills in Kwale; and Tsavo national park in Taveta, particularly in Sagalla, Kasigau, Tausa, Kishushe, Mbulia, Mwakitau and Chunga Unga. During the season, elephants destroyed over 60 acres of maize crop in Kwale, which illustrates the negative impact of wildlife that leads to conflicts.

### **3.5.6 Impacts of Shocks and Hazards**

#### **3.5.6.1 Crop Production**

In general, the short rains crop performance was poor in most parts of the cluster, especially in the marginal mixed farming livelihood zone, due to poor distribution of the rains. The ranching and most parts of the food cropping and marginal mixed farming livelihood zones of Kilifi and Taita Taveta districts experienced near total crop failure. At the same time, crop yields were depressed in irrigated areas, due to insufficient water for irrigation. Other factors that contributed to poor crop performance included the use of inappropriate seed; poor soil fertility due to land degradation and poor agricultural management practices; inadequate water harvesting practices; and late delivery of farm inputs. In Mpeketoni, Witu and Hindi areas of Lamu, there was late delivery of maize seeds and fertilizers from the National Accelerated Agricultural Inputs Access Programme (NAAIAP) which led to late planting and poor crop performance, due to water stress.

Overall, household stocks are minimal and only 10 percent of the households have stocks which may last for one month. The bulk of food stocks are held by traders and in the National Cereals and Produce Board (NCPB) stores within the cluster. Approximately 316,965 ninety kilogram bags of maize are available within the cluster.

#### **3.5.6.2 Livestock Production**

The pasture and browse condition was fair in 70 percent of the cluster and was likely to last 1-2 months, until end of March 2011. In some parts of Taita Taveta and Lamu pasture and browse condition was good and likely to last for four months, until onset of long rains. Livestock trekking distances between pastures and water ranged between 3-8 kilometers. Longer distances of up to 15 kilometers were recorded in Kilifi and Malindi districts. Normally livestock trekking distances average 1-4 kilometers. Livestock body condition was rated as good to fair across the cluster and milk production was low as households consumed 1-2 liters compared to a normal of 3-4 liters. Prevailing milk prices ranged between Ksh. 40-60 per liter, compared to normal of Ksh. 25-30. The main livestock disease outbreaks reported included FMD in Lamu and Newcastle disease in Lamu, Kilifi and Kwale districts. Poultry mortalities due to Newcastle Disease were estimated at 70-90 percent. Livestock migrations have occurred into the cluster from Ijara and Garissa, through Tana River; and from Kajiado, into Taita Taveta and Kwale.

#### **3.5.6.3 Water and Sanitation**

The main sources of water in the cluster are boreholes, shallow wells, pans-dams, rivers and piped water supplies. Springs are also a major source of water in Taita Taveta. The poor performance of the short rains resulted into 20-40 percent recharge of temporal water sources. Hence some of the water sources dried while others were likely to last for one to two months. Distances to water sources increased in most parts of the cluster from 2-3 kilometers to 7-10 kilometers. The cost of water also increased from Ksh. 2-3 to Ksh. 5-20. At the same time, water consumption decreased from an average of 15-20 liters per person per day to 5-10 liters.

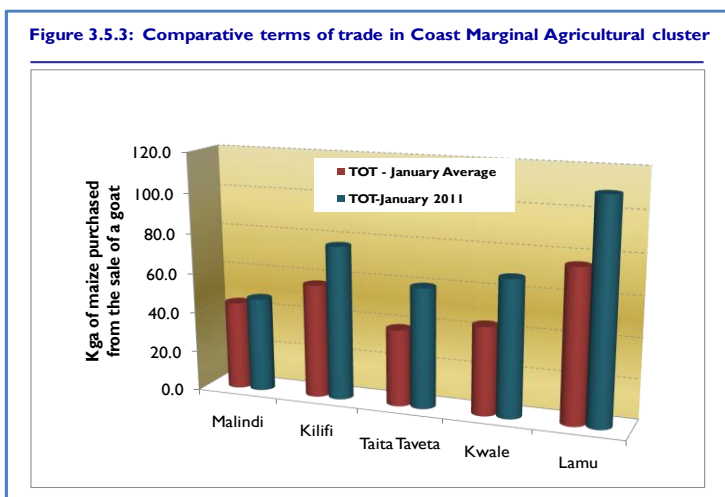
### 3.5.6.4 Market Performance

Households in the cluster obtain up to 60 percent of food they consume from the market. In general, market operations were normal throughout the cluster. In addition, markets were adequately provisioned with food commodities like maize grains, maize flour, rice, cooking oil and sugar. While livestock traded in the markets were sourced from within the cluster, trade was dominated by brokers who constituted 70 percent of the buyers and sellers. Majority of the buyers come from outside the cluster.

Maize prices ranged between Ksh. 20-23 per kilogram, except in Lamu where a kilogram was selling for Ksh. 15. Maize prices were 10-20 percent below normal in Taita Taveta and Lamu, but 5-10 percent above average in Malindi, Kwale and Kilifi. The prices were likely to increase due to unusually high demand caused by poor short rains harvests. Goat prices ranged between Ksh. 1,000-2,000 and were 10-20 percent above average in Lamu and Malindi. Goat prices were 40-60 percent above average in Taita Taveta, Kilifi and Kwale. However, prices were on a downward trend due to increased market supply as households endeavored to raise cash for school fees, and due to deteriorating body conditions as grazing resources depleted.

The terms of trade were favorable across the cluster as depicted in figure 3.5.3. In January 2011, the terms of trade were 35-55 percent above average in Kilifi, Taita Taveta and Kwale, depicting improved food access. In general, households were able to purchase 50-75 kilograms of maize from the sale of a goat compared to the normal of 40-55 kilograms. Increasing maize prices *vis-a-vis* declining livestock prices may undermine further improvements to terms of trade within the cluster.

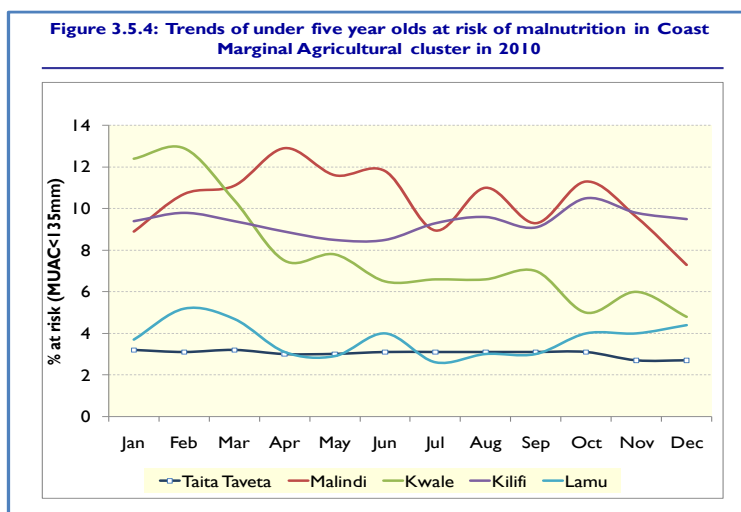
Figure 3.5.3: Comparative terms of trade in Coast Marginal Agricultural cluster



### 3.5.6.5 Health and Nutrition

The leading causes of morbidity in the coastal region, for both under fives and the general population, were upper respiratory tract infections, malaria, diarrhea and skin diseases. However, disease incidences were within normal range and no disease outbreaks were reported. Crude mortality rates (CMR) and under five mortality rates were below the threshold of 2/10,000/day, depicting a normal situation. Immunization and vitamin-A supplementation coverage were below World Health Organization (WHO) threshold of 80 percent, in the entire cluster. As figure 3.5.4 shows, the nutrition status of children under five years was stable and improving in January 2011 across the cluster.

Figure 3.5.4: Trends of under five year olds at risk of malnutrition in Coast Marginal Agricultural cluster in 2010



The proportion of children at risk of malnutrition as measured using Mid Upper Arm Circumference (MUAC<135mm) either reduced or was stable in most areas of the cluster. The highest proportion of children at risk of malnutrition (9.5 percent) was recorded in Kilifi while the lowest (2.7 percent) in Taita Taveta. Across the cluster, dietary diversity was tending towards below normal with most households consuming 2-3 food groups in the marginal and mixed farming zones, food and cash cropping and fishing livelihood zones. The diets mainly consisted of maize, beans and cowpeas, vegetable, oils and sugar and sometimes omena (fish). In the ranching and livestock livelihood zones, dietary diversity was lower at 1-2 food groups, which partly explain the relatively higher malnutrition rates in those areas. Most households in the entire region were consuming 1-2 meals per day compared to a normal of 2-3.

#### **3.5.6.6 Education**

All the schools within the cluster reported improved enrolment in 2011 compared to the previous year's enrolment, which is attributed in part; to ongoing school meals programme (SMP) and free primary education (FPE). However, the recorded enrolment rate of 60.9 percent was below the national average of 72.6 percent. In this region not all schools are included in the school meals programme, since the districts are semi arid. School attendance recorded marked improvement, across the cluster. The highest attendance rates were recorded in Taita Taveta district at 88 and 79 percent for boys and girls respectively. The high attendance rate was attributed to expanded SMP especially after the doubling of beneficiary numbers.

#### **3.5.6.7 Coping Strategies**

The coping strategies that were being employed by households in this cluster included charcoal burning, selling firewood, skipping of meals and out migration in search of labor. The Coping Strategy Index (CSI) ranged between 0.07-0.2, which is 50-80 percent below the critical threshold of 0.4, indicating absence of severe coping mechanisms. However, the situation is worsening as demonstrated by an increase in the proportion of households engaging in charcoal burning, particularly in Kilifi and Kwale.

#### **3.5.7 Food security prognosis**

The evolution of food security situation in the cluster exhibit mixed signals. While the food security situation is likely to worsen gradually in most areas, the situation may deteriorate more rapidly in Kwale, Kilifi and marginal mixed farming zone in Taita Taveta where household food stocks have diminished, forage is quickly depleting and terms of trade are unfavourable. A respite to worsening food security situation is not expected until July 2011 after the long rains harvests, assuming that the long rains perform well. Poor performance of the long rains is likely to result into high food insecurity for majority of households, in the second half of 2011.

### **4.0 Conclusion**

The poor performance of the 2010 short rains in most of the north and northeast pastoral is the second consecutive below normal rainfall season in areas that were just starting to recover after prolonged 2007-2009 drought. The affected households are facing significant food deficits because they are unable to access livestock products or participate effectively in livestock markets, due to extended livestock migrations. Meanwhile, marginal agricultural farmers in the southeast and coastal lowlands have lost up to 80 percent of the short rains crop. The short rains season is the principal season contributing to 70 percent of annual output. Therefore, affected households are likely to experience significant food shortages much earlier than usual, when available food stocks deplete. The situation is likely to be compounded by increasing food prices and conflict and may not relent until after May 2011, if the long rains perform well. Consequently, urgent cross sectoral interventions will be necessary to forestall a further decline in food security and prevent the decimation of livelihoods.

## 5.0 Proposed Emergency Sectoral Interventions

### 4.1 Agriculture Sector – Priority Interventions, March – August 2011

The poor choice of agricultural enterprises, low agricultural diversification, high pre and post harvest losses and low investment in irrigated agriculture are identified as the major factors contributing to high food insecurity. In addition, environmental degradation and low adoption of recommended agricultural technologies are identified as underlying causes to food insecurity. Significant contribution of agriculture to food security is contingent on the implementation of appropriate strategies that aim to promote farming as a business and those that enhance the judicious use of natural resources during production. Among the recommended interventions include the following:

	INTERVENTION	DISTRICT	COST (KSH.)
1.	Promote water harvesting, soil conservation and agro-forestry.	Kwale, Lamu, Kilifi, Taita Taveta, Malindi, Samburu and Turkana.	50M
2.	Timely provision of drought tolerant certified seeds and fertilizer for the upcoming long rains season.	Kwale, Lamu, Kilifi, Taita Taveta, Malindi, Tharaka, Mwingi, Machakos, Kitui, Baringo, Koibatek, Kajiado, Trans Mara, Nyeri (Kieni), Narok, Mandera, Ijara, Samburu, Moyale, Marsabit and Turkana.	100M
3.	Capacity building on GAP and post harvest management.	Kilifi, Kwale, Lamu, Makueni, Machakos, Laikipia and Kajiado.	150M
4.	Construction of community based storage facilities.	Tharaka, Mbeere, Trans Mara, Narok, Laikipia, Meru North and Machakos.	150M
5.	Provision of green house and micro-irrigation kits.	Mbeere, Mwingi, Machakos, Makueni, Kwale, Kilifi, Mbeere, Kitui and Laikipia.	50M
6.	Promote fruits processing and value addition.	Lamu, Malindi, Kwale, Kilifi, Taita Taveta, Machakos, Makueni, Kitui and Mwingi.	100M
7.	Construction and expansion of irrigation infrastructure.	Garissa, Isiolo, Ijara, Tana River, Meru North, Turkana, Marsabit, Machakos, Kitui and Mwingi.	150M
8.	Promotion of Conservation Agriculture.	Kwale, Lamu, Kilifi, Taita Taveta, Malindi, Tharaka, Mwingi, Machakos, Kitui, Baringo, Koibatek, Kajiado, Trans Mara, Nyeri (Kieni), Narok, Mandera, Ijara, Samburu, Moyale, Marsabit and Turkana.	40M
<b>Total</b>			<b>790M</b>

#### 4.2 Livestock Sector – Priority Interventions, March – August 2011

The assessments noted the high risk of widespread livestock mortality when key grazing resources of water, pasture and browse deplete. The KFSSG also takes cognizance of the fact that it requires more than five years for households to recover from the loss of livestock, particularly cattle, after a drought. While interventions that aim at diversifying pastoral livelihoods are proposed, in the immediate term, the following interventions are necessary, to avert the decimation of livestock while at the same time addressing high food insecurity:

	INTERVENTIONS	DISTRICTS	COST (KSH.)
1.	Disease surveillance and vaccinations.	Narok, Moyale, Marsabit, Turkana, Samburu, Garissa, Wajir, Ijara, Tharaka, Laikipia, Meru North, Taita Taveta, Malindi, Tana River, Mbeere, West Pokot, Mandera, Baringo, Isiolo, Kieni and Kitui.	200M
2.	Livestock treatments.	Ijara, Baringo, Meru North, wajir, Garissa, Isiolo, Mandera, Turkana, West Pokot, Marsabit and Moyale.	100M
3.	Hay and feeds supplements.	Narok, Moyale, Marsabit, Turkana, Samburu, Garissa, Wajir, Ijara, Meru North, Kajiado, Kitui, Machakos, Mandera and West Pokot.	500M
4.	Livestock off-take.	Narok, Moyale, Marsabit, Samburu, Garissa, Wajir, Meru North, Kajiado, Kitui, Machakos, Mandera, Laikipia and Ijara.	400M
5.	Kenya Meat Commission purchase of livestock.	Narok, Moyale, Marsabit, Turkana, Samburu, Garissa, Wajir, Ijara, Meru North, Kajiado, Kitui, Machakos, Mandera and West Pokot.	300M
<b>Total</b>			<b>1.5 B</b>

#### 4.3 Water Sector – Priority Interventions, March – August 2011

The KFSSG's 2010 SRA identified widespread acute water shortage as immediate effect of the poor performance of the short rains. Most of the temporal water sources have dried up and alternative sources are situated far from settlements. The need to truck water to affected households is high. Thus, the number of operational water bowsers need to be increased, in worst affected districts. While new bowsers can be acquired, those that are broken down need urgent repairs. The ability of households to pay for water has also been affected and thus fuel subsidy will be necessary to run boreholes. De-silting of pans and dams before onset of the long rains will improve water availability. Urgent interventions required for circumventing outbreaks of water borne diseases and deaths include the following:

	INTERVENTION	DISTRICT	COST (KSH.)
1.	Rehabilitation of boreholes, dams and pans; and repair of water supplies.	Narok, Kieni, Baringo, Kajiado, Laikipia, West Pokot, Lamu, Marsabit, Moyale, Samburu, Turkana, Kitui, Tharaka, Makueni, Garissa, Ijara, Isiolo, Mandera, Wajir, Trans Mara, Lamu, Kilifi, Kwale, Mbeere and Mwingi.	416M
2.	Water trucking.	Narok, Baringo, Kajiado, West Pokot, Lamu, Kilifi, Taita Taveta, Kwale, Marsabit, Moyale, Samburu, Turkana, Machakos, Makueni, Mbeere, Garissa, Ijara, Isiolo, Mandera, Tana River and Wajir.	140M
3.	Purchase and distribution of plastic tanks.	Narok, Kieni, Kajiado, West Pokot, Malindi, Lamu, Kwale, Marsabit, Moyale, Wajir, Ijara and Narok.	85M
4.	Water quality surveillance and treatment chemicals.	West Pokot, Kilifi, Malindi, Kwale, Garissa, Ijara, Tana River, Laikipia and Samburu.	24M
5.	Drilling of emergency boreholes and fuel subsidy.	Moyale, Turkana, Machakos, Meru North, Garissa, Ijara, Wajir, West Pokot, Taita Taveta, Marsabit, Samburu, Makueni, Garissa and Mandera.	225M
<b>Total</b>			<b>890M</b>

#### 4.4 Market Sector – Priority Interventions, March – August 2011

The extended migration of livestock and increased purchase of food on credit were identified as among the factors that hinder efficient market operations. Poor market integration and high transaction costs are identified as underlying factors that affect food security. At the same time, the assessments noted that poor market access was constraining benefits of favorable terms of trade, while significant household incomes was lost in the marginal agricultural areas due to trade bans triggered by aflatoxin infection of maize. To enhance market access for the highly food insecure pastoralists and marginal agricultural farmers, the following interventions should be considered:

	INTERVENTION	DISTRICT	COST (KSH.)
1.	Market infrastructure development – information technology, storage and cooling facilities' development;	Narok, Kieni, Baringo, Kajiado, Laikipia, West Pokot, Lamu, Marsabit, Moyale, Samburu, Turkana, Kitui, Tharaka, Makueni, Garissa, Ijara, Isiolo, Mandera, Wajir, Trans Mara, Lamu, Kilifi, Kwale, Mbeere and Mwingi.	231M
2.	Transportation facilitation for livestock to markets.	Garissa and Marsabit.	27M
3.	Development of cereal banking and strengthening of supply chains for inputs and outputs.	Narok, Kieni, Baringo, Kajiado, Laikipia, West Pokot, Lamu, Marsabit, Moyale, Samburu, Turkana, Kitui, Tharaka, Makueni, Garissa, Ijara, Isiolo, Mandera, Wajir, Trans Mara, Lamu, Kilifi, Kwale, Mbeere and Mwingi.	90M
4.	Capacity building on post harvest management and provision of storage equipment; and capacity strengthening on value addition.	Narok, Kieni, Laikipia, Lamu, Kitui, Tharaka, Makueni, Isiolo, Trans Mara, Lamu, Kilifi, Kwale, Mbeere and Mwingi.	53M
<b>Total</b>			<b>401M</b>

#### 4.5 Education Sector – Priority Interventions, March – August 2011

The current food security situation has disrupted school enrollment, attendance and transition rates, in many places. Households either migrated with children or withdrew children from school (to herd livestock or engage in casual labor to supplement household incomes). In some instances, households were unable to raise requisite school fees. Some schools lacked water needed to prepare food, leading to poor school attendance. To reduce disruptions in education and ensure that education contributes to development of human capital that is necessary for escaping the poverty trap and eliminating hunger, the following interventions are proposed:

	INTERVENTION	DISTRICT	COST (KSH.)
1.	Expansion of Home Grown School Meals Programme	Mwingi, Kitui, Makueni, Machakos, Tharaka, Mbeere, Kieni, Narok, Kajiado, Kwale Kilifi, Malindi and Meru North.	650 M
2.	Water trucking to schools	Marsabit, Wajir, Isiolo, Mandera, Moyale, Turkana, Garissa and Ijara.	10 M
3.	Advocacy Campaigns against Child Labor and Early Marriages	Kwale, Kilifi, Malindi, Kajiado and Narok.	10 M
4.	Provision of Water tanks for Rain water harvesting	Narok, Kajiado, Isiolo, Mandera, Mwingi, Kitui and Meru North.	15 M
5.	Health Education Campaign & De-worming	Malindi, Tana River, Kwale, Kilifi, Isiolo, Taita Taveta and Garissa.	5 M
<b>Total</b>			<b>690 M</b>

#### 4.6 Health and Nutrition Sector – Priority Interventions, March – August 2011

The rising trends of percentage of children at risk of malnutrition in most districts suggests rapidly deteriorating food security situation. MUAC rates are up to 20 percent above average in most of the pastoral districts and are continuing to rise as the situation worsens. High malnutrition rates increases the risk of child mortality and also result in poor child development, which ultimately affect the quality of human capital in the nation. To curb the rising levels of malnutrition and prevent heightened child mortality while supporting care givers, who are currently unable to effectively provide for the children, the following interventions are recommended:

	<b>INTERVENTION</b>	<b>DISTRICT</b>	<b>COST (KSH.)</b>
1.	Scale-up integrated management of acute malnutrition through provision of therapeutic feeds.	Mandera, Wajir, Moyale, Marsabit, Isiolo, Turkana, Baringo, West Pokot, Garissa, Tana River, Samburu and Kajiado.	250 M
2.	Accelerated integrated mobile outreach services to increase access to health and nutrition services.	Turkana, West Pokot, Marsabit, Samburu, Isiolo, Moyale, Wajir, Mandera, Garissa, Ijara, Baringo and Tana River.	100 M
3.	Promotion and protection of infant and young child feeding practices including health education.	All ASAL districts.	80 M
4.	Blanket supplementary feeding to all children under two years and pregnant and lactating women.	Marsabit, Moyale, Wajir, Mandera and Isiolo.	300M
5.	Procurement and distribution of additional drugs and long lasting insecticide treated nets (LLITNs).	Mandera, Turkana, Wajir, Garissa, Marsabit, Moyale, Baringo, Isiolo, Samburu, West Pokot, Tana River, Ijara & Malindi	75 M
6.	Micronutrient supplementation for children and mothers at community and facility level and De-worming.	All ASAL districts	120 M
7.	Accelerated disease, water safety and nutrition surveillance	All ASAL districts	20 M
	<b>Total</b>		<b>945 M</b>

#### 4.6 Food Sector – Priority Interventions, March – August 2011

While implementation of non food interventions is necessary to cushion affected households from sliding further into high food insecurity status, food intervention is required to address the immediate food needs of affected households. Majority of the affected households are experiencing significant food consumption deficits and have started to apply undesirable coping strategies, in an attempt to fill mounting food gaps. The table below shows the number and location of the population in need of urgent food intervention:

District	Total District Population	March 2011 – August 2011	
		% in Need	Number of people requiring food assistance
Turkana	539,264	36	200,700
Wajir	619,220	33	205,300
Mandera	337,800	39	132,500
Garissa	411,728	28	116,800
Marsabit	187,367	66	124,000
Samburu	223,947	30	67,800
Laikipia	399,227	35	54,700
West Pokot	512,690	13	67,900
Tana River	240,075	26	61,400
Isiolo	143,294	59	84,000
Kajiado	687,312	12	71,600
Baringo	389,329	25	96,200
Moyale	103,799	37	38,000
Ijara	92,663	34	31,200
Narok	576,388	2	13,500
Koibatek	166,232	17	29,000
<b>Subtotal Pastoral Districts</b>	<b>5,630,335</b>	<b>24</b>	<b>1,394,600</b>
Makueni	884,527	14	121,000
Kwale	649,931	21	135,300
Mwingi	384,948	31	119,700
Kilifi	709,221	11	74,600
Kitui	627,761	30	186,400
Taita Taveta	284,657	20	57,900
Malindi	400,514	11	43,900
Mbeere	219,220	29	63,000
Tharaka	130,098	23	31,000
Machakos	1,098,584	11	116,500
Meru North	775,982	10	75,000
Kieni	324,659	9	30,300
<b>Subtotal Marginal Agricultural Districts</b>	<b>6,490,102</b>	<b>16</b>	<b>1,054,600</b>
<b>Total</b>	<b>12,120,437</b>	<b>20</b>	<b>2,469,200</b>