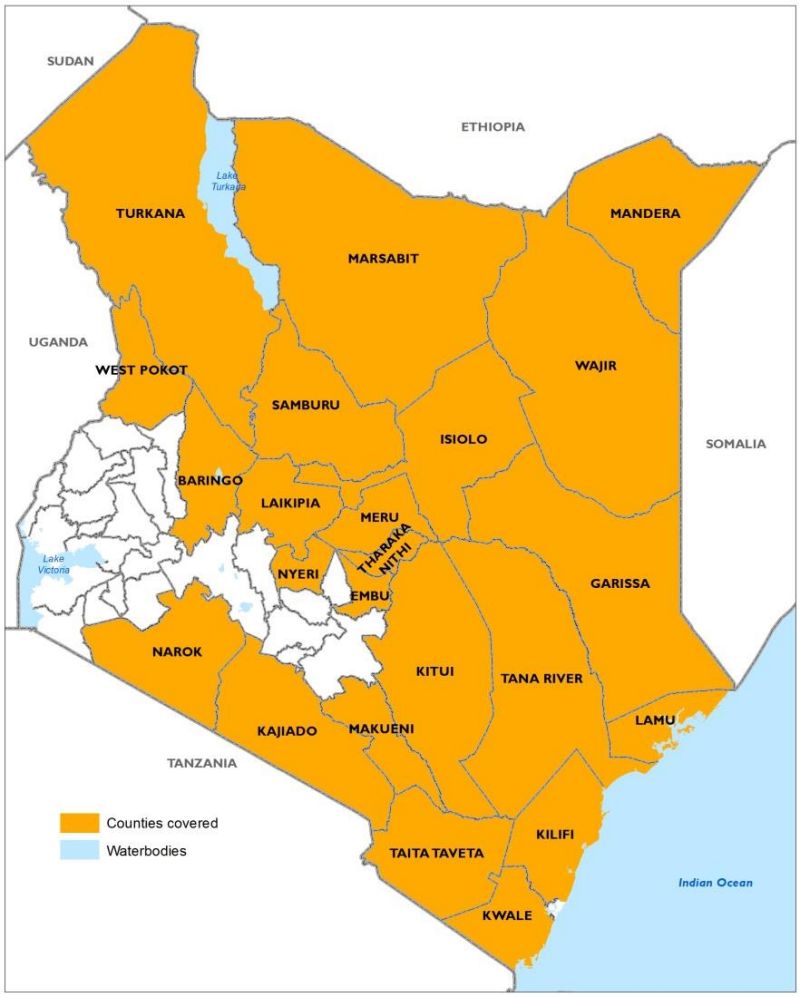
# Government of Kenya

# THE 2016 SHORT RAINS SEASON ASSESSMENT REPORT

## Kenya Food Security Steering Group (KFSSG)




Collaborative report of the Kenya Food Security Steering Group (KFSSG): Ministries of Devolution and Planning, Agriculture, Livestock and Fisheries, Water and Irrigation, Health, and Education, Science and Technology, National Drought Management Authority (NDMA), WFP, FEWS NET, FAO, UNICEF, World Vision, ACF, and Arid and Semi-Arid Lands (ASAL) County Steering Groups (CSGs): with financial support from the Government of Kenya (NDMA), WFP and partners.

**February 2017**

**Table of Contents**

## Executive Summary

### Introduction

The 2016 short rains assessment was conducted from 16th – 27th January 2017 and led by the Kenya Food Security Steering Group (KFSSG). The KFSSG is a multi-sectoral and multi-agency body which brings together relevant government sectors, UN agencies and technically qualified NGOs under the leadership of the National Drought Management Authority (NDMA), co-chaired by the World Food Programme (WFP). The KFSSG carries out the assessments in partnership with the County Steering Groups (CSGs), which are also multi-sectoral and multi-agency bodies, and whose membership includes local leaders. The assessment reports are therefore the definitive statement on food security in arid and semi-arid counties, endorsed by all KFSSG and CSG members.

### Objectives

The overall objective of the assessment was to analyse the impact of the 2016 short rains on food and nutrition security, taking into account the cumulative effects of previous seasons and other shocks and hazards. In particular, the assessment explored the impact of the season on food availability, access and utilization by looking at the contributing factors and outcomes, and at how each sector has been affected. The ultimate goal is to advise on appropriate response mechanisms by the sectors, which include agriculture, livestock, water, health and nutrition, education, peace and security, and markets and trade. The recommended interventions are presented in this report.

### Methodological Approach

The seasonal assessments cover the 23 counties classified as arid and semi-arid, which are generally the most food insecure and exhibit high levels of vulnerability.

The unit of analysis is the livelihood zone, with the main livelihoods being pastoralism, agro-pastoralism, mixed farming, marginal mixed farming and some irrigated cropping. The assessments use the Integrated Food Security Phase Classification (IPC), which is a global standard for classifying the severity of food insecurity and ensures that best practice is being applied. A standard methodology also allows comparisons to be made across areas and over time. Although nutrition elements are integrated within the IPC food insecurity analysis, currently the IPC does not incorporate a full nutrition situation overview in terms of considering malnutrition caused by other factors than food insecurity. As a result, IPC Acute Malnutrition Classification was also undertaken to understand both food and non-food causes of malnutrition.

The data is collected by joint teams of officers from the national and county governments. During this short rains assessment, these teams have:

- Used data collected from 2,700 households in 90 sentinel sites using questionnaires
- Interviewed a minimum of six informants in each sample site visited: two community interviews, two key informants, and two markets interviews.
- Observed field conditions
- Reviewed secondary data, such as on vegetation condition, livestock and crop prices, and nutrition- both from SMART Surveys and from secondary sources.

In each county the findings are consolidated in a report that is presented to the CSG for review and approval. The county reports are then synthesised to produce a national report.

## Drivers of Food and Nutrition Insecurity

### Rainfall performance

The onset of the October to December short rains was delayed in most parts of the country, being two to four weeks late in most pastoral and marginal agricultural areas. In terms of cumulative amounts, the rains were largely below average. Most parts of the north-west pastoral areas and the coastal strip received 25 – 50 percent of normal rainfall, with the eastern and southern parts of the country receiving 50 – 90 percent of normal rainfall (Figure 1.1). In all areas, the temporal and spatial distribution was very poor. The rains also ceased earlier than usual in the first week of December, rather than the middle to end of the month. Effectively, the short rains had the shortest time period in recent years (having started late and ended early). For a few areas, such as parts of the coast, this was the third consecutive poor season.

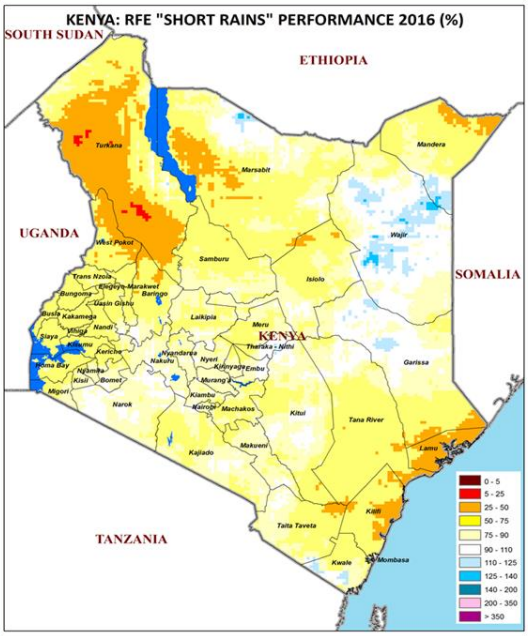



Figure 1.1: Short Rains Season (Oct – Dec 2016) Rainfall Anomalies

There are two further complicating factors this season: first, that the very poor conditions at the coast will affect not just the populations of these counties but those from other ASAL counties as well, since the coast is traditionally a fall-back area in times of drought. Second, the regional nature of this drought means that cross-border migration may be problematic.

Other drivers of food insecurity include crop pests and diseases, conflict and insecurity, hotter than usual land surface temperatures and the cumulative effects of previous poor rainy seasons.

### Summary of key findings

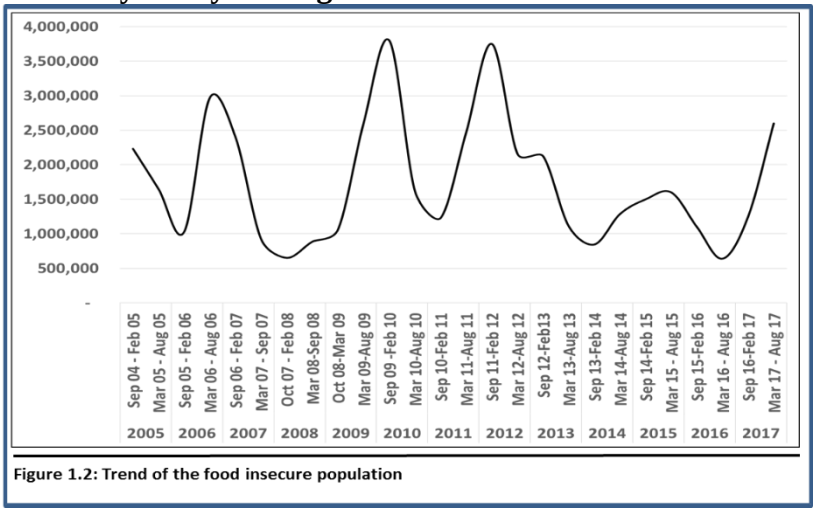



Figure 1.2: Trend of the food insecure population

The short rains assessment has established that approximately 2.6 million Kenyans are facing acute food insecurity and require urgent humanitarian assistance. This is a significant increase on the last long rains season when approximately 1.3 million people were acutely food insecure (Figure 1.2). About 2.2 million of the 2.6 million are facing Crisis (IPC Phase 3) food security outcomes.

Conditions in pastoral areas are drier than usual for the time of year, given the poor performance of the 2016 short rains, the extended dry period that followed between July and October, and the prevailing and unusually high land surface temperatures. Pasture and browse

conditions in most pastoral areas range from fair to poor, while in isolated cases the little forage that regenerated during the short rains has been quickly depleted. The average return trekking distances to water sources are now 10 – 20 km, compared with five to 10 km normally, though these vary from region to region. Some areas have exceptionally high return distances of more than 30 km, including Marsabit (parts of North Horr and Loyangalani), Mandera (Shimbir Fatuma, Burmayo and Guticha-Jiko), Garissa (Balambala, Saka and Lagdera), and West Pokot (Nyangaita). Waiting times at water points have also lengthened while the frequency of watering has reduced.

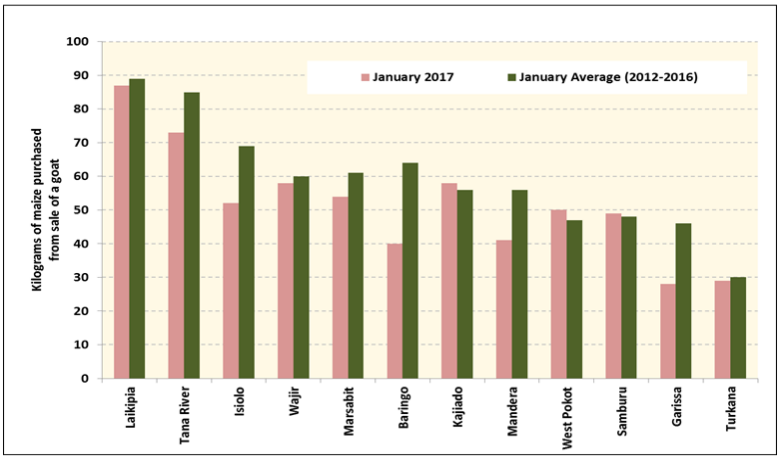


Figure 1.3: Cereals to livestock terms of trade

Given the above, livestock productivity continues to fall, with household milk production and consumption, and livestock prices, all registering atypically low levels. Milk production and consumption are now less than one litre per household per day, following poor rates of conception and consequently poor calving, kidding, and lambing. Inadequate feed and long trekking distances have also lowered the yields of lactating herds. Household milk consumption has significantly reduced, with most resorting to powdered milk or purchasing packet milk from the shops. Due to the low supply of milk against constant demand, its price has increased and ranges from KSh. 60 – 100, compared with the normal price of KSh. 40 – 60. The combination of falling livestock prices, rising staple food prices and low incomes are reducing households' purchasing power (Figure 1.3). The livestock-to-cereals terms of trade (ToT), which measures how many kilograms of maize a household can purchase from the sale of a goat, is unfavourable in most pastoral areas and now 11 – 40 percent below normal. The abnormal out-migration of livestock from near homesteads to dry season grazing areas has also limited the numbers available to households for sale, further limiting access to income from livestock sales. Up to about 70 - 80 percent of livestock have migrated in search of forage and water, with atypical migration routes being pursued (Figure 1.4). Due to massive outmigration, in the backdrop of diminishing forage and water resources, competition for these resources is intensifying, with conflicts potentially occurring in certain areas, and likely to increase before the next rains.

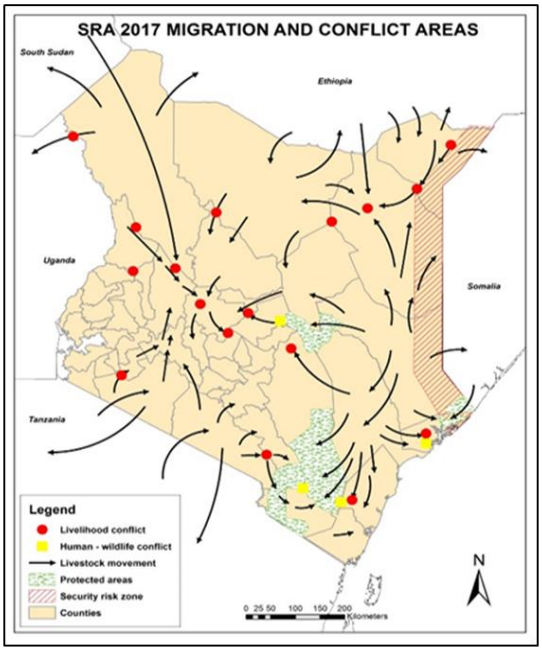


Figure 1.4: Migration routes and conflict areas

Household food availability in the south-eastern and coastal marginal agriculture areas has also reduced due to the near-total crop failure in coastal areas and up to 70 percent below-average production in the south-eastern marginal

agricultural areas. The poor season means that the opportunities for casual farm labour such as harvesting are few. Many households are seeing a fall in income, and as staple food prices rise, consumption is reduced.

**Categories of the food insecure population**

Figure 1.5 shows the IPC categories in January 2017, at the time of the assessment, and projected up to April 2017.

**Population in Crisis (IPC Phase 3)**

Parts of the pastoral areas of Turkana, Marsabit, West Pokot, Baringo, Wajir, Mandera, Tana River and Garissa, and parts of the coastal marginal agricultural areas of Kilifi and Lamu, are experiencing Crisis (IPC Phase 3) food security outcomes. Households in this category are marginally able to meet their minimum food needs but only by more rapidly depleting their assets and thus undermining their food consumption. The depletion of forage and water is particularly severe in areas where the long rains season of 2016 was also poor, such as parts of the south-east and coast. Close to 70 – 80 percent of livestock have migrated towards dry season grazing areas leading to a marked decline in household access to milk and livestock products, and income from livestock sales. The body condition of the remaining 20 – 30 percent of livestock is poor to emaciated, with livestock prices up to 30 – 40 percent below average. Livestock marketing is atypically low, with very few buyers and sellers transacting. Low demand and falling prices mean that the incomes of most households are falling. At the same time, staple food prices are up to 20 percent above their five-year average. When combined with low incomes, this has reduced household purchasing power by up to 30 percent.

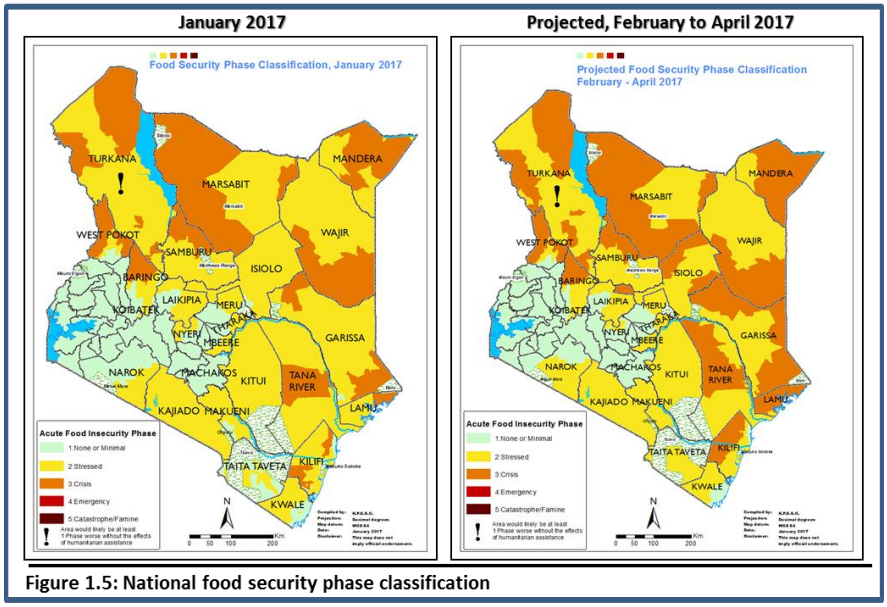


Figure 1.5: National food security phase classification

In coastal marginal agriculture areas, households in Crisis have experienced poor cropping conditions for the third consecutive season, with near-total crop failure from the short rains. This has caused a significant decline in the usual opportunities for on-farm labour, leading to a fall in household income. Lower incomes and rising food prices are reducing households' purchasing power in the markets on which they have been, and will continue to be, depending for a longer period than usual. Low livestock holdings compound the problem, since households are unable to generate alternative income from livestock sales. Severe deficits of forage and water have contributed to livestock mortality of up to five percent, mainly in cattle.

Household food consumption across the areas in Crisis has been greatly undermined by reduced purchasing power and the depletion of stocks from families' own production. As a result, close to 50 percent of these households had poor dietary intake, with meal frequencies of one meal a day. In the absence of humanitarian assistance, food security will decline further, since the next

rainy season is already projected to be poor and minimal recovery is expected. The projections for food security outcomes up to April 2017 (Figure 1.4) are that many households are likely to remain in Crisis, and that more may join them (IPC Phase 3).

**Population in Stressed (IPC Phase 2)**
Households in Stressed (IPC Phase 2) are able to afford minimally adequate food consumption but are unable to afford essential non-food expenditures without engaging in irreversible coping strategies. These households are mostly found in the south-eastern and coastal marginal agricultural areas, as well as some pastoral and agro-pastoral areas of Narok, Kajiado, Laikipia, Kieni, Baringo and West Pokot counties. These areas received 50 – 90 percent of normal rainfall, but the temporal and spatial distribution was very poor and the season ended early. As a result, crop production fell by up to 70 percent below the five-year average.

The south-eastern marginal agricultural areas rely on the short rains which accounts for up to 65 percent of total annual crop production. This effectively means that no major harvest is expected from these areas until February 2018. Retail maize prices are currently 10 – 20 percent above average and are still rising due to low supply and sustained high demand. Most households are using various strategies to bridge the food and income gap, including skipping meals, reducing portion sizes, purchasing on credit, and even labour out-migration in search of wage-earning opportunities.

For those in pastoral areas, the poor recovery of forage and water and long trekking distances of 10-15 km have reduced livestock productivity. In these areas approximately 60 percent of livestock have migrated. Household milk production and consumption have declined and range from one to two litres per day. Falling livestock prices have reduced household incomes, and with staple food prices on an upward trend, household purchasing power has been eroded. Households have intensified their use of coping mechanisms to support food consumption, but are unable to meet their essential non-food needs adequately. On average, about 70 percent of households in these areas have an acceptable food consumption score, with meal frequencies of one to two meals per day which is normal for the season. Meals mainly comprise three to four of the typical food groups: cereals, pulses, oil, meat, and milk.

**Nutrition IPC Classification[1]**

The findings of the IPC for Acute Malnutrition conducted in February 2017 are as follows:

| Category | Threshold | Counties |
|---|---|---|
| Very Critical | GAM WHZ ≥30 percent | Parts of Turkana (Turkana North), Marsabit (North Horr) and Mandera counties |
| Critical | GAM WHZ 15.0 - 29.9 percent | Baringo (East Pokot), Turkana (Turkana South, West and Central) and Isiolo counties |
| Serious | GAM WHZ 10.0 -14.9 percent | Tana River county |
| Alert | GAM WHZ ≥ 5 to 9.9 percent | Tharaka Nithi county |
| Acceptable | GAM WHZ <5 percent and GAM by MUAC <6 percent | Kitui, Kilifi, Meru North, Mbeere, Kajiado and Kwale counties |

Compared with August 2016, the nutrition situation has improved in Turkana South but deteriorated in Turkana North, Isiolo, Mandera and Marsabit (Figure 1.6). It is expected to

[1] GAM WHZ: Global Acute Malnutrition by Weight for Height: MUAC- Mid Upper Arm Circumference: MAM- Moderate Acute Malnutrition: SAM- Severe Acute Malnutrition

worsen across all arid and semi-arid counties until April 2017 as the dry spell continues and household food access and availability further reduce. The worsening nutritional status is largely the result of poor dietary intake and the high incidence of disease. This is compounded by the chronic challenges of these areas, such as limited access to quality health services, poor water, sanitation and hygiene, and inappropriate child care and feeding practices, which increase vulnerability to acute malnutrition.

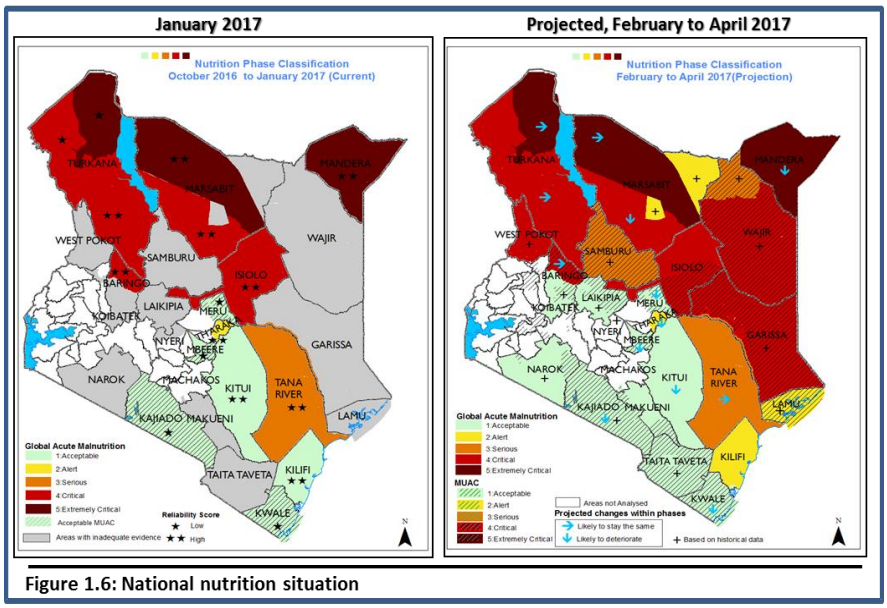


Figure 1.6: National nutrition situation

A total of 343,559 children in arid and semi-arid counties require treatment for acute malnutrition (MAM - 268,549 and SAM – 75,010), as well as 37,223 pregnant and lactating women. This is an increase from August 2016 when the equivalent figures were 294,330 (MAM-233,700 and SAM 60,600) and 29,500 pregnant and lactating women. The current caseloads were calculated using the revised projected population for 2016. Various nutrition interventions targeting acute and chronic malnutrition are underway in all counties and should be scaled up if the worst possible malnutrition outcomes are to be avoided in the next three to six months.

**2016 long rains crop production and the prospects for the short rains crop production**

According to the State Department of Agriculture (SDA) Food Situation report for December 2016, the national food security outlook remains stable, despite the worsening conditions in most ASAL counties and the coastal strip. In some ASAL counties and major production zones, farmers still hold stocks of various commodities from the last season's harvest. Despite the 2016 long rains being mostly average to above average in the medium and high rainfall areas, the onset was late and the spatial and temporal distribution was poor. As a result, the long rains crop harvest, especially for maize, was largely below average, with production estimates of 2.6 million metric tons, which is about 10 percent below average. The long rains are key for crop production in these areas, accounting for close to 65 percent of total annual production.

The poor short rains of 2016 have led to a substantial drop in production. According to the SDA, maize production is likely to fall by up to 70 percent below average to around 0.15 million metric tons. The short rains assessment found a near-total maize crop failure in the coastal marginal agriculture areas, while in the south-eastern marginal agriculture areas production was up to 70 percent below normal. The shortfall in the agro-pastoral areas of Baringo, Kajiado, Narok, West Pokot and Laikipia was slightly lower at up to 60 percent below normal.

There is a shortage of grains around the region, mainly attributed to below-average rainfall in 2016 in Tanzania and Uganda which reduced the surplus available for export to Kenya. According to the East Africa Cross Border Trade Bulletin for January 2017, produced by the

Market Analysis Subgroup of the Food Security and Nutrition Working Group, Uganda's maize exports to Kenya declined by more than 50 percent between October and December 2016. This was attributed to below-average June-August and October-December harvests, the acquisition or storage of maize by traders in anticipation of higher prices from the middle of the year, and lower price differentials with Kenyan markets.

**Food price trends**

Analysis of food price trends in the major urban markets of Nairobi, Mombasa, Kisumu and Eldoret reveals that wholesale maize prices are gradually increasing. In January 2017 they were eight to 18 percent above their five-year averages. FEWS NET estimates that prices will continue rising and will be between 10 – 25 percent above average in most of these markets by the middle of 2017. The increase is expected to be more pronounced in the marginal agricultural markets where household stocks are depleted following the failed short rains season.

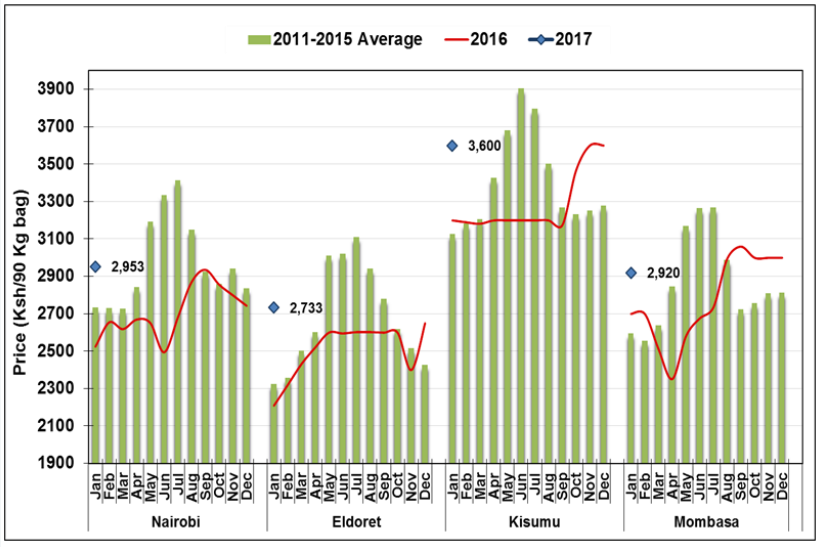



**Figure 1.7: Maize price trends in major urban markets**

**Food Security Prognosis, February – July 2017**

*Pastoral areas*

In all pastoral areas, food security is likely to continue worsening. The remaining forage and water will be depleted faster than usual given high land surface temperatures. Longer trekking distances to watering points will further worsen livestock body condition and result in lower livestock prices. Unusual livestock migration will reduce access to livestock and livestock products, and with reduced dietary intake, malnutrition will rise. With most households relying on markets for food, the drop in livestock prices and the increase in staple food prices will erode household purchasing power still further, undermining food consumption.

Areas currently experiencing Crisis (IPC Phase 3) food security outcomes will continue in that state until April, while additional areas may join them. With severe deficits of water and forage in some areas, especially northern parts of Marsabit, northern and eastern parts of Turkana, parts of Garissa (Ladgera, Balambala, Modogashe, Sankuri, Dadaab, Warsame, Sangole and parts of Ijara), Tana River (Chifiri, Titila, Hakoka, Wayu, Bura and Ass Kone), and northern parts of West Pokot and Baringo, the likelihood of increased livestock mortality is high, if interventions are not expedited.

The onset of the long rains in late March 2017, which are projected to be normal to below normal, will bring some reprieve. Rainfall will recharge water sources and result in some regeneration of pasture and browse. As livestock move back to wet season grazing areas near homesteads, access to livestock and livestock products will increase. Livestock body condition will improve, resulting in higher livestock prices. However, while demand for livestock will

rise, especially between April and June, few pastoralists will sell as they endeavour to rebuild their herds. As milk and local vegetables become available, dietary diversification will improve. Most households are expected to be in Stressed (IPC Phase 2) between May and June, although some households in localized areas, especially in Marsabit, Turkana, Mandera and parts of Garissa, will remain in Crisis (IPC Phase 3). However, if the long rains are significantly below average, it's unlikely that recovery from the current food insecurity outcomes will occur, and Crisis outcomes might continue throughout, with some households likely to experience Emergency (IPC Phase 4) outcomes.

With normal-below normal long rains, improvements in rangeland conditions and livestock productivity between April and June are expected to be short-lived, as recovery will be below average. Forage and water are likely to become depleted faster than usual given the prevailing high land surface temperatures. As a result, livestock movement to dry season grazing areas will happen earlier than usual in June and July. Household food consumption will then deteriorate again, with more households likely to slide back to Crisis by August 2017.

*Marginal agricultural areas*
In the south-eastern and coastal marginal agricultural areas, household food security is also expected to decline. The lack of household food stocks will increase market demand where supply is already low, leading to an increase in staple food prices. This will coincide with a sustained fall in household income as the opportunities for agricultural labour decline. Low household income will constrain access to food until April. Most households are expected to remain in Stressed (IPC Phase 2), with the exception of localized parts of Kilifi (parts of Ganze, Kaloleni, and Malindi) and Lamu (eastern parts) that will remain in Crisis (IPC Phase 3).

The onset of the long rains is expected to provide some reprieve, but mainly in water and forage for livestock. The long rains season is not the main season for crop production in these areas, and is therefore unlikely to result in significant improvements in food security. Most households will remain in Stressed (IPC Phase 2) until July 2017.
The key factors to monitor over the next six months include:

- Likelihood of increased conflict over rangeland resources
- Staple food prices
- Likelihood of increased livestock mortality before the onset of the long rains
- Unfolding refugee situations in Daadab and Kakuma camps
- Impacts of programmes and interventions.

## Options for response

The table below contains response options by sector. In addition to the immediate interventions required, the medium to long-term interventions that will build community resilience, as anchored in the Ending Drought Emergencies Common Programme Framework, need to be stepped up.

### Proposed Interventions by Sector

| Sector | Proposed interventions | Cost in Ksh. (M) | Cost in US. Dollar (M) |
|---|---|---|---|
| **Agriculture** | Supply of farm inputs; promotion of irrigation; conservation agriculture; promotion of drought-tolerant crops; capacity-building on best agricultural practices; promotion of post-harvest management; increasing mechanized agriculture; promotion of high value crops; provision of subsidies. | 750.5 | 7.5 |

| Sector | Proposed interventions | Cost in Ksh. (M) | Cost in US. Dollar (M) |
|---|---|---|---|
| **Livestock** | Pasture & fodder establishment & conservation; up-scaling of livestock offtake and destocking programmes; early warning and climate change capacity building; continuous vaccination and disease surveillance. | 3,642 | 36.42 |
| **Health and nutrition** | Micro-nutrient supplementation and deworming; maternal, infant and young child nutrition (MIYCN) interventions; scale up High Impact Nutrition Interventions (HINI); conduct nutrition surveillance; enhance integrated disease surveillance; provide water treatment chemicals; strengthen community health strategies. | 246 | 2.46 |
| **Water** | Design and construction of multi-purpose dams and water pans; water trucking; repair and maintenance of strategic water pans boreholes and water supplies; provide water tanks and storage facilities; fuel subsidy for high yielding boreholes; purchase of generator sets, pumps and spare parts for boreholes. | 2,714 | 27.14 |
| **Education** | Food for fees for secondary school students; school meals programmes; provision of water tanks. | 694 | 6.94 |
| **Food assistance** | Build resilience to future shocks through asset creation and safety net programmes; food commodities and cash including associated costs for 2.6 million food insecure people in need of assistance for the next six months (March 2017 - August 2017). | 133 | 1.33 |
| **Peace and security** | Establish and support peace and conflict resolution mechanisms among pastoral and farming communities and form peace committees. | 250 | 2.5 |
| **Total** | | **7,679** | **76.79** |

## 1.0 Introduction

### 1.1 Assessment Coverage and Objectives

The assessment of the 2016 short rains season took place between 16th and 27th January 2017. It was coordinated and conducted by the Kenya Food Security Steering Group (KFSSG) and the County Steering Groups (CSG) in the 23 arid and semi-arid counties. These cover close to 80 percent of the country and have diverse livelihood zones (Figure 1.8). The 23 counties are divided into the following clusters:

i. **Pastoral North West:** Marsabit, Samburu and Turkana
ii. **Pastoral North East:** Isiolo, Garissa, Tana River, Wajir and Mandera
iii. **Agro Pastoral:** Baringo, Laikipia, West Pokot, Kajiado, Narok and Nyeri (Kieni)
iv. **Coastal Marginal:** Kwale, Kilifi, Lamu and Taita Taveta.
v. **Southeast marginal agricultural counties:** Kitui, Makueni, Meru (Meru North), Embu (Mbeere) and Tharaka Nithi (Tharaka).

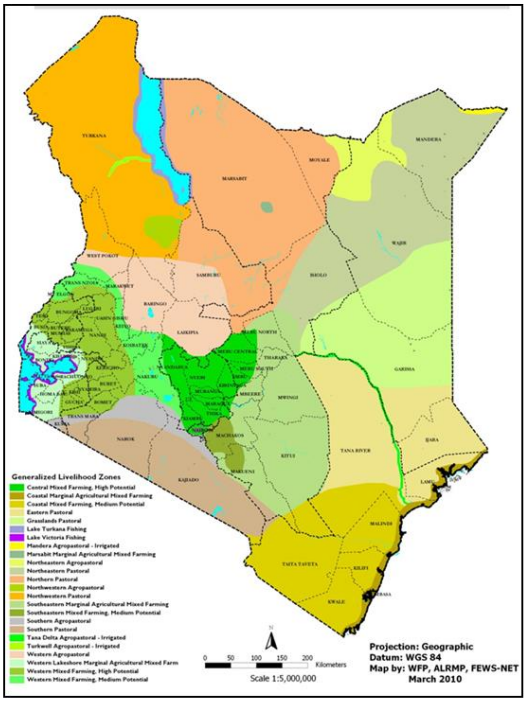


Figure 1.8: Kenya Livelihood Zones

The overall objective of the assessment was to develop an objective, evidence-based and transparent food and nutrition security situation analysis, taking into account the cumulative effect of previous seasons, in order to inform the government and relevant stakeholders on the status of food security across arid and semi-arid areas. The assessment also aimed to identify areas with high severity of food insecurity and recommend appropriate response options, whether short or long term.

Specific objectives were to:

- Ascertain at the livelihood level the quality and quantity of the 2016 October to December short rains and assess their impact on all key sectors including crop agriculture, livestock, water, health and nutrition, education, peace and security, and markets and trade.
- Establish the impacts of other compounding factors on household food security, such as conflict, crop pest and disease, food prices and floods.
- Establish required non-food interventions, with particular emphasis on programmes that promote preparedness and build household resilience.
- Assess potential food needs and the options for appropriate transfer modalities, including asset creation, cash and vouchers, safety nets and general food distribution.

## 1.2 Assessment Approach

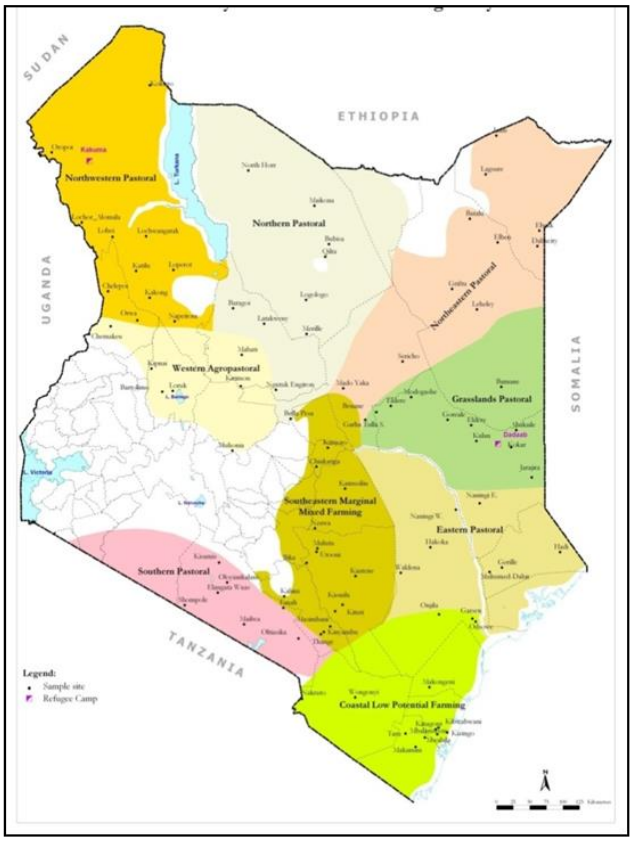



**Figure 1.9: Sentinel sites for food security outcome monitoring**

The overall assessment processes and methodologies were coordinated and developed by the KFSSG. First, secondary data for all assessed counties was collected, analysed and collated into briefing packs. This included livelihood zone baseline data, drought monitoring information, nutrition surveillance data, price data and satellite imagery. Thereafter, the KFSSG organized a one-week training workshop for the assessment teams. During the workshop, the teams refined sectoral indicators and interview guides and were taken through the entire assessment process, including agro-climatic information analysis, sampling methods and field data collection techniques, Integrated Food Security Phase Classification (IPC), estimation of the population in need of immediate relief assistance, and report writing. In addition, food security outcome monitoring indicators were collected from 2,700 households in 90 sentinel sites (Figure 1.9).

Once in the counties, each assessment team conducted a minimum of two community, two key informant and two market interviews in each sample site. Visual inspection techniques were used during transects drives to obtain qualitative information. The field data was collated, reviewed, analysed and triangulated to verify its validity. The NDMA drought monitoring bulletins, nutrition SMART survey reports and secondary data, and the FEWSNET/NDMA/WFP monthly Food Security Updates provided important additional information.

The assessment adopted a multi-sectoral and multi-agency approach covering the Agriculture, Livestock, Markets, Health and Nutrition, Water and Sanitation, and Food Assistance Sectors. While the analytical framework is generally the sustainable livelihoods framework, with the livelihood zones being the unit of analysis, the required outcome is a detailed understanding of the changes in food security and identification of populations affected and in need of multi-sectoral assistance, particularly in the immediate and medium term. The results from sampled areas, along with outcomes of discussions with the CSGs and secondary data analysis, were used to draw inferences for areas not visited but situated in similar livelihood zones. The findings and recommendations were provided at both the county and sub-county levels for planning purposes. The Food Security Integrated Phase Classification (IPC Version 2.0) was used to classify the severity of food insecurity in different livelihood zones.

## 2.0 Food and Nutrition Security Analysis by Livelihood Cluster

### 2.1 The Pastoral North West Livelihood Cluster

#### 2.1.1 Cluster background

The cluster consists of Turkana, Marsabit and Samburu counties and covers an area of 173,772 square kilometres with a projected population of 1,683,369 persons (KNBS, 2016). It has three main livelihood zones: pastoral all-species (69 percent of the population), agro-pastoral (24 percent) and fishing/formal employment/business/petty trade (seven percent), as shown in Figure 2.1.

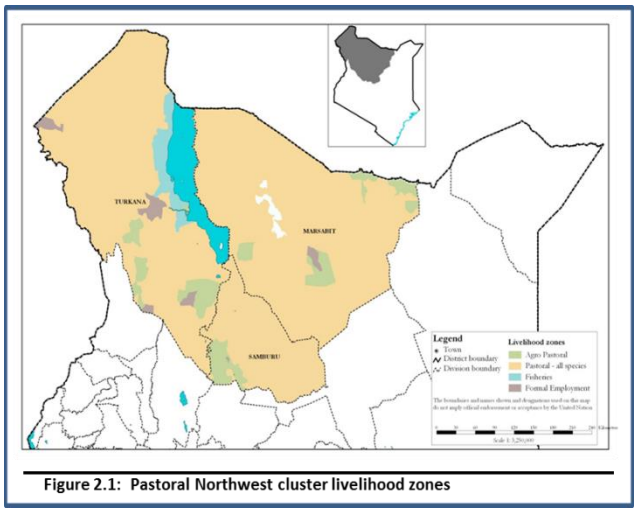


Figure 2.1: Pastoral Northwest cluster livelihood zones

#### 2.1.2 Current drivers of food insecurity

The current drivers of food insecurity are the poor performance of the short rains season, resource-based conflict, mass migration of livestock, high food commodity prices, and low supplies in livestock markets.

**Rainfall performance**

The onset was late across the cluster, being first to second dekads of November instead of second to third dekad of October normally. Turkana, had a false start, with all dekads receiving less than 10 mm of rainfall. Rainfall amounts were between 50 – 75 percent of normal in most parts. However, 25 – 50 percent of normal rainfall was received in most parts of Turkana County (Figure 1.1). Both temporal and spatial distributions were poor, with cessation being the third dekad of November compared to the third dekad of December normally across the cluster.

**Other shocks and hazards**

Cattle rustling occurred across the cluster. In Samburu it occurred in Samburu North in Marti, Nachola and Ngorishe; Behai in Laisamis sub-county and Dabel along Wajir/Marsabit border in Marsabit county resulting to five human deaths. Cattle rusting was also reported in Kainuk areas in Turkana County resulted to forage and water inaccessibility. Human-wildlife conflicts were also reported in Kirimon in Samburu County.

#### 2.1.3 Current food security situation

The food security classification of counties in the cluster varies. While majority of households were classified in Stressed (IPC Phase 2), across the cluster, northern parts of Samburu, North Horr and Laisamis in Marsabit as well as Turkana North (Todonyang and Nadapal), and Turkana East (Kapedo and Lomelo) were in Crisis (IPC Phase 3). The food security situation has deteriorated over the last six months. The terms of trade remained within the LTA except in Marsabit, where the sale of a goat buys 54 kg of maize rather than the normal 61 kg. The nutrition status of children was Critical or Very Critical in Marsabit and Turkana, but were Serious in Samburu. Water consumption was 520 litres per person per day against a normal range of 15 – 40 litres per person per day. Average household milk production dropped significantly to 0 - 1 litre per day, compared with the LTA of 2 - 3 litres per day. In Marsabit, milk was available in only ten percent of households. In December 2016, 25 percent and 35 percent of households in Turkana had poor and borderline food consumption compared with 26 percent and 42 percent of households at the same time in 2015. The equivalent figures for

Samburu and Marsabit were one and 16 percent in December 2016 compared with one and nine percent in 2015. In the agro-pastoral zones, individuals were consuming 2 – 3 meals a day while in the pastoral zones they were consuming 1 – 2 meals consisting of cereals, legumes, milk/meat and vegetables. Households were employing consumption-based coping strategies only, but with more severity in pastoral livelihood zones.

### 2.1.4 Food security trends

| Indicator | Long Rains Assessment, July 2016 (Previous Season) | Short Rains Assessment, Feb 2017 (Current Season) |
|---|---|---|
| Food security phase | Stressed (IPC Phase 2). Except for agro pastoral livelihood in Marsabit that was in Minimal (IPC Phase 1) | Largely Stressed (IPC Phase 2), but some areas in Crisis (IPC Phase 3). |
| Maize stocks | On average 42 percent below LTA | Above LTA in Turkana and Samburu but Marsabit is 7.9 percent below LTA |
| Livestock body condition | Good to fair | Fair to poor |
| Household water consumption | Between 20 to 40 liters | Between 10-20 litres per person per day except in Marsabit and pockets of Samburu consuming 5 – 8 litres per person per day. |
| Meal frequency | 2 - 3 meals per day | Majority taking 1 – 2 meals per day, with agro pastoral areas of Samburu and Turkana consuming up to 3 meals |
| HH milk production | 1 to 4 litres across the livelihood zones | On average 0 – 1.5 lires per day |
| Terms of Trade | Favorable, up to 25 percent above LTA in the cluster. | Near LTA in Turkana and Samburu but up to 8 percent below LTA in Marsabit |
| Coping Strategy Index | In May 2016 CSI for Samburu and Marsabit county was 21 while for Turkana was 18. | Ranging Between 18 – 25 within the cluster |
| Food Consumption Score | Samburu and Marsabit households acceptable were at 61.8% in May 2016.<br>In Turkana, households with acceptable score increased 53.6%. | Deteriorating with households having acceptable in Samburu, Marsabit and Turkana at 46%, 14.5% and 40% respectively. |
| Children at risk of Malnutrition | Above Critical thresholds, with GAM levels above 15 percent, except in Samburu where the rates are below 15 percent but remains Serious | Some parts of Turkana and Marsabit deteriorated to Emergency levels, but most remain Critical, though Samburu still Serious level |

### 2.1.5 Impact of drivers on Food and Nutrition security

#### 2.1.5.1 Crop production

The main crops grown in this cluster are maize, sorghum, cowpeas and beans (mainly in Samburu and Marsabit for beans). The cluster mainly depends on the long rains for crop production, which contributes up to 80 percent of total annual food production in Samburu and Turkana. The area under maize and cowpeas fell by 32 and 44 percent respectively in Marsabit, while in Turkana no planting took place. There was total crop failure of maize and cowpeas across the cluster. The area under irrigated maize fell by 70 percent in Samburu, while that for kale, cowpea leaves, and tomatoes also declined by 68, 24 and 40 percent respectively across the cluster. Production of maize, kales, cowpea leaves and tomatoes under irrigation fell by 51, 68, 23 and 40 percent respectively compared with the LTA. Maize stocks held by traders, millers and the NCPB were 71, 45 and 65 percent respectively below the LTA while household stocks were 43 percent above the LTA, mainly in Samburu, attributed to the previous long rains harvest which was favorable. The current stocks are expected to last less than one month. Important to note, crop production mainly takes place in the agro pastoral and riverine areas.

### 2.1.5.2 Livestock Production

Livestock production contributes about 85 and 45 percent respectively to cash income in the pastoral and agro-pastoral livelihood zones. Pasture and browse conditions were fair to poor across the cluster which was not normal for the season; moreover, pasture and browse were poor and depleted in pastoral and agro-pastoral areas of Samburu (Kawop, Marti and Lesirikan), Marsabit (Oltorot, Kurkum, Golbo, Barambate and Qorqa) and parts of Turkana. Poor regeneration of rangeland vegetation and high concentration of livestock accelerated depletion. Failed maize and sorghum crops in the agro-pastoral livelihood areas are being used to supplement livestock feed. Access to forage was limited by insecurity at international borders, especially those with South Sudan, Ethiopia and Uganda, and inter-county conflicts with Baringo and West Pokot. Access to forage and water in Todonyang, Turkana, was hampered by fear of impending attacks from Ethiopian herders. Pasture was inaccessible in Koom, Buluk and on the Isiolo/Marsabit border due to conflict in October 2016 and rising tension among surrounding communities.

Livestock body condition was fair to poor across the cluster and is likely to deteriorate from February given the diminishing pasture, on-going migration and increasing distances to water. Household milk production declined from the range of 2 – 5 to 0 - 1.5 litres across the cluster. Turkana recorded zero milk production, with households relying on powdered milk that retailed for Ksh. 10 per teaspoonful. Household milk consumption was low and milk prices remained high in comparison with the LTA, ranging between Ksh. 60 – 100 per litres compared with LTA of Ksh. 40 – 60 per litre.

Tropical livestock units (TLUs) for the poor households ranged from five to 10 across the pastoral areas. The average return trekking distance to water increased due to early drying of open water sources. Some pastoral and agro-pastoral areas of Samburu, Marsabit (northern areas) and Turkana recorded the highest return trekking distances of 15 - 30 km. Watering frequency for cattle, goats and sheep was 4 – 5 days across the cluster, except in Samburu where the frequency was every two days. Camels were watered after 10 – 14 days in Marsabit (Hurri Hills and Farole).

Livestock have migrated from Samburu to ranches in Laikipia, Nyandarua and Mt. Kenya. In Marsabit, they have moved from El hadi, Dukana and Illeret to south-east Ethiopia, from Kargi, Merille and Jaldesa to Yamicha and Koom in Isiolo, and from South Horr, Ngurnit and Illaut to Baragoi and Seera in Samburu. In Turkana, migration was reported across the international borders to Uganda, which was normal for the season, but the pattern was also influenced by insecurity along the borders with Baringo and West Pokot. However, abnormal migration from Southern Sudan to Nadapal in Turkana occurred due to conflict along the borders.

No disease out-breaks were reported. Suspected cases of Foot and Mouth Disease (FMD), Lumpy Skin Disease (LSD), Sheep and Goat Pox, Contagious Caprine Pleuropneumonia (CCPP) and Contagious Bovine Pleuropneumonia (CBPP) were reported across the cluster.

Livestock mortality rates were slightly higher than normal due to increased drought stress, ranging between three and five percent. Isolated areas however recorded some higher mortality rates like Gas, Dukana, Balesa, Barambate and Qorqa in Marsabit which recorded up to 20 percent mortalities, especially for the sheep and goats that had not migrated.

### 2.1.5.3 Market Performance

The main markets in the cluster include Lodwar, Kakuma, Moyale, Marsabit, Maralal and Suguta Maramar. They were functioning normally, except two markets in Marsabit (Turbi and Sololo) which were disrupted by conflict and inaccessible to livestock traders. The main livestock sold were goats and sheep, while the food commodities included maize, beans, kales, cabbages and potatoes. The supply and traded volumes for food commodities were normal, with supply coming from areas outside the cluster such as Kitale, Nyahururu, Isiolo and Meru. However, the traded volumes for livestock were low, attributed to livestock migration, few buyers, and low demand in the terminal markets.

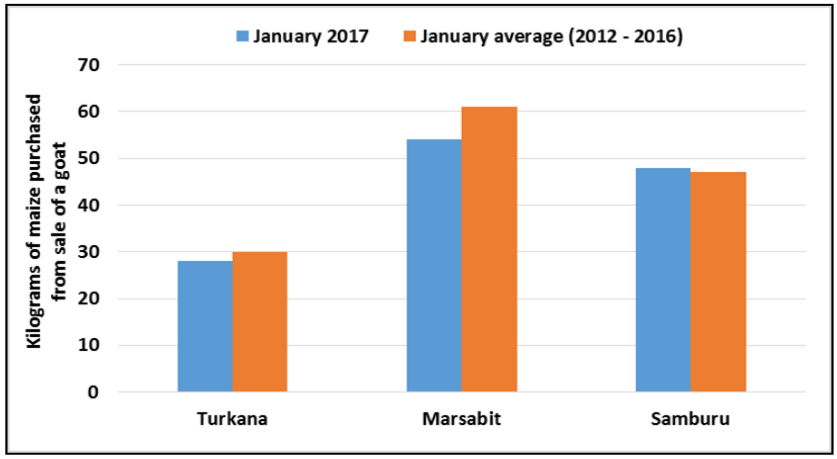



Figure 2.2: Comparative terms of trade in the cluster

**Terms of Trade**

The terms of trade (TOT) in January 2017 were unfavourable for pastoralists compared with the LTA due to falling goat prices, portending reduction in food access and consumption. The exception was Samburu, where the TOT were marginally favourable (Figure 2.2).

### 2.1.5.4 Water Availability and Access

The major water sources are boreholes, dams, pans, shallow wells, springs, Rivers Turkwell and Kerio, and Lake Turkana. Lake Turkana also provided water for both communities in Turkana and Marsabit living around the lake. Recharge of open water sources was about 30-40 percent across the cluster except in Moyale, Dukana and El-Adi in Marsabit where sources recharged between 60 – 80 percent of capacity. Around 70 – 80 percent of open sources have dried up across the cluster. Waiting time ranged between one and two hours in most areas, except for parts of Marsabit that reported two to three hours. Return distances to water sources lengthened to 5 – 10 km across the cluster compared with the normal range of 2 – 5 km. However, northern parts of Marsabit and Turkana recorded distances of up to 25 km. Average water consumption per person per day fell from 15 – 20 litres to 10 – 15 litres. Exceptions were noted in parts of Marsabit at less than four litres a day. The average cost of a 20-litre jerrican was Ksh. 2 – 5 across the cluster and Ksh. 5 – 10 in pastoral areas of Samburu. Water supplied by private vendors in some parts of Samburu averaged Ksh. 30, due to the breakdown of boreholes. In urban areas of Moyale and Marsabit, water vendors sold water at Ksh. 25 – 50 per 20-litre jerrican. However, in pastoral areas of Huri Hills, Elle Borr and Qatta Murr in Marsabit, households were paying KSh. 50 – 70 per 20 litre jerrican.

### 2.1.5.5 Food consumption

According to the Food Security Outcome Monitoring report, 25 percent and 35 percent of households in Turkana had poor and borderline food consumption scores respectively in December 2016 compared with 26 percent and 42 percent at the same time in 2015. In both Samburu and Marsabit, one and 16 percent of households had poor and borderline consumption in December 2016 compared with one and nine percent in the same period in 2015. Households were consuming 1 - 2 meals per day across the cluster compared with the normal 2 – 3 meals.

### 2.1.5.6 Coping Strategies

In Marsabit, the mean coping strategy index (CSI) in December 2016 was 25 while it was 19 in December 2015. In Turkana, the mean CSI for December 2016 was 19 compared with 25 at a similar time in 2015, implying that households were currently employing fewer, less severe consumption based coping strategies and less frequently than in December 2015. The reduction of the index in Turkana was due to scaled up interventions, which boosted household food and income. In Samburu, the mean CSI was 18 in December 2016 compared with 19 in December 2015, with the marginal decrease attributed to distribution of relief assistance by various actors during the period under review. Coping strategies used included skipping of meals, reducing portion size of meals, relied on less preferred and/or less expensive foods, borrowing food or relying on help from neighbours, friends and relatives and restricting consumption by adults so that children can feed.

### 2.1.6.7 Health and Nutrition

**Morbidity Patterns**

The common diseases were upper respiratory tract infections, diarrhoea, malaria, diseases of the skin, and pneumonia. According to a nutrition survey in January 2017, morbidity in Turkana, Laisamis and North Horr was high at 30.7, 25.2 and 43.2 percent respectively, with diarrhoea cases on the increase. The high prevalence of diarrhoea was attributed to poor hygiene practices due to water scarcity. There were no reported disease outbreaks across the cluster.

**Immunization and vitamin A supplementation**

The proportion of fully immunized children was below the 80 percent national target across the cluster except in Turkana which recorded 90 percent. Vitamin A supplementation for children aged 6 – 11 months was above the national target of 80 percent across the cluster except in Samburu where it was 69 percent. Supplementation for children aged 12-59 months was very poor across the cluster with Marsabit having the highest rate of 47.6 percent and Samburu the lowest at 36.3 percent. The decline was attributed to non-attendance at child welfare clinics after the measles vaccine at nine months and poor data management of vitamin A records.

**Nutrition status**

The nutrition SMART survey of Turkana in January 2017 revealed a Very Critical situation with Global Acute Malnutrition (GAM) at 24.1 percent. There were variations by sub-county, with 30.7 percent in Turkana North, 25.9 percent in Turkana Central, 22.9 percent in Turkana South, and 15.3 percent in Turkana West. The high GAM prevalence were attributed to high morbidity rates of 30.7 percent and poor food consumption. In Turkana North, with the highest GAM levels, 75.4 percent of households had poor and borderline food consumption scores.

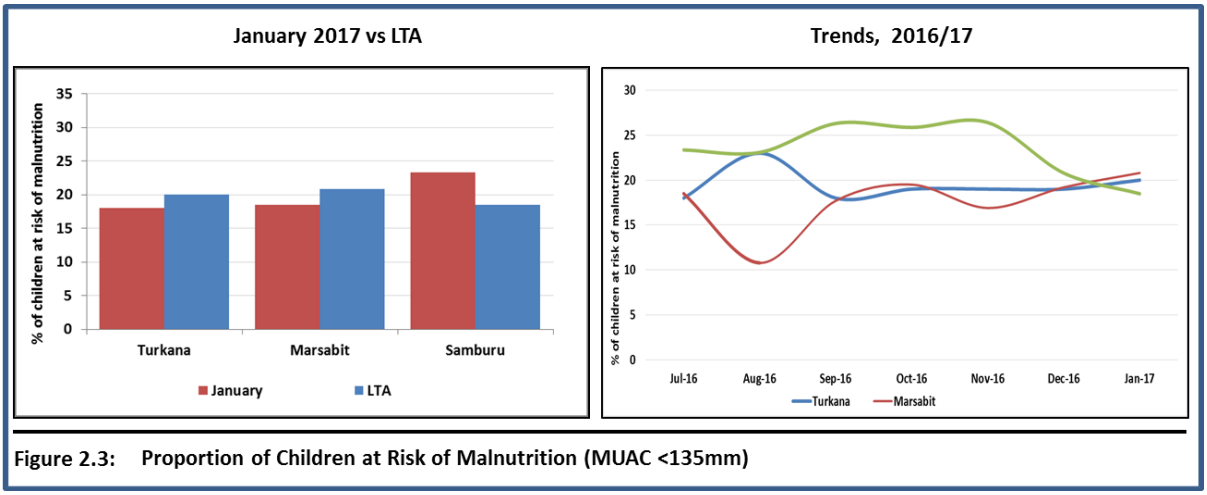



**Figure 2.3: Proportion of Children at Risk of Malnutrition (MUAC <135mm)**

Malnutrition levels in Marsabit were high, with North Horr being Very Critical at 31.5 percent and Laisamis at 22.5 percent. This was also attributed to poor food consumption: 24.1 percent and 57.8 percent of households in North Horr and Laisamis respectively had poor and borderline scores; and diseases and poor hygiene practices. In Samburu, the proportion of children at risk of malnutrition was higher than the LTA.

**Hygiene and Sanitation**

Latrine coverage still remains low. Samburu and Turkana have the lowest coverage at 28 percent and 16 percent respectively. Hand-washing at all four critical times was less than 20 percent across the cluster. Water treatment practices were also less than 20 percent mainly due to stock-outs of water treatment chemicals coupled with poor human waste disposal that has a direct bearing to the prevalence of water-related diseases such as diarrhoea. According to the 2017 nutrition SMART survey in Turkana, less than five percent of households were treating water.

### 2.1.6.8 Education

There has been a decline in both enrolment and attendance across the cluster. The drop in enrolment was attributed to migration, insecurity, and the lack of meals in schools, and in Turkana was as high as 53 percent. The Regular School Meals Programme was hampered by delays in supplies. In Turkana, only 114 schools in three sub-counties (Turkana North, Kibish, and Turkana West) were providing meals as there was a temporary pipeline break in food. Delay in disbursing funds for low-cost boarding schools for this year's capitation might lead to their closure. Most schools also experienced water shortages and depended on water trucking.

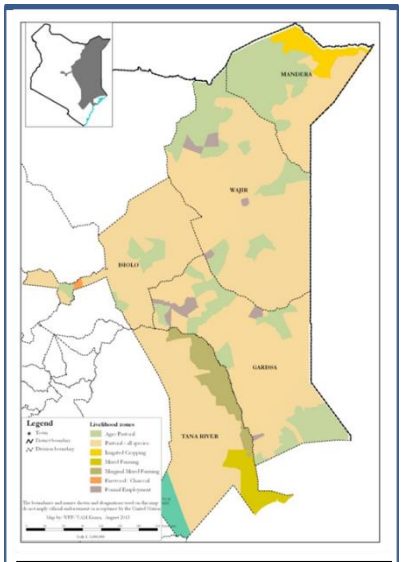



**Figure 2.4: Pastoral Northeast cluster livelihood zones**

## 2.2 The Pastoral North East Livelihood Cluster

### 2.2.1 Cluster background

The cluster consists of five counties: Mandera, Wajir, Garissa, Isiolo and Tana River. It covers an area of 165,970 square kilometres with a projected population of 1,905,014 (KNBS, 2016). The cluster has five main livelihood zones (Figure 2.4): pastoral (57 percent of the population), agro-pastoral (21

percent), marginal mixed farming (nine percent), irrigated (seven percent) and informal/formal employment/business/petty trade (six percent).

### 2.2.2 Current drivers of food insecurity

**Rainfall performance**

The onset of the short rains season was late across all counties in the cluster, ranging from third dekad of October to second dekad of November, compared to normal of second dekad of October. Most areas across all counties in the cluster received between 50-90 percent of normal rainfall with the exception of Wajir County which received between 75-110 percent of the normal rainfall. However, the mixed farming and marginal mixed farming livelihood zones in Tana River County, the north-western areas in Mandera County and the southern parts of Garissa County received between 25 - 50 percent of normal rainfall. All counties had a poor temporal and uneven spatial rainfall distribution. Rains cessed earlier than normal across all the counties in the cluster.

**Conflict and insecurity**

Conflict and insecurity were reported in parts of Mandera, Garissa and Tana River, mainly over water and pasture. Human-wildlife conflicts were reported in areas bordering Tsavo East National Park, where elephants searched for water. Insecurity in Mandera and Garissa interrupted communication and transportation of essential commodities along the border with Somalia, as well as access to dry season grazing reserves in Ijara. It led to the displacement of people from the conflict areas and the disruption of market operations which affected access to, and consumption of, food.

### 2.2.3 Current food security situation

The current food insecurity phase classification for the cluster is Stressed (IPC Phase 2), with the exception of Mandera, localized pastoral areas of Tana River, Garissa, and Wajir which are classified in Crisis (IPC Phase 3). The terms of trade were unfavourable across the cluster, compromising pastoralists' purchasing power and access to food. A total of 17 percent of people had poor and borderline food consumption. Households were consuming between two and three meals a day comprising two to four food groups, which is normal, except in Mandera and Tana River where meal frequency was one to two meals per day. Livestock body condition ranged from fair to poor in all livelihood zones with most species falling under the category of fair. The return trekking distances to watering points were normal and ranged from 5-10 km, except in localised areas of Tana River and the agro-pastoral livelihood zone of Mandera that reported return distances of 20-30 km. Water consumption was within the normal range of 10-15 litres per person per day except in the pastoral-all species zones of Garissa, Isiolo and Mandera which recorded the lowest consumption of 5-10 litres per person per day. Household milk production has plummeted across the cluster, being 1-3 litres per day across the livelihood zones instead of 2-10 litres normally. The percentage of children at risk of malnutrition (Mid-Upper Arm Circumference (MUAC) <135mm) has increased. The GAM rates for Garissa and Isiolo were high at 14.7 percent and 18.2 percent respectively.

### 2.2.4 Food security trends

| **Indicator** | **(Previous) Long Rains Assessment, July 2016** | **(Current) Short Rains Assessment, Feb 2017** |
|---|---|---|
| Food security phase | Stressed (IPC Phase 2), ) in most parts with localized areas in Minimal (IPC Phase 1) | Stressed (IPC Phase 2), but parts of Mandera, Wajir, Tana River, and Garissa in |

| | | |
|---|---|---|
| Food stocks | Household food stocks below average. The shortfall was greatest in Isiolo (97% below LTA). | Household food stocks below average. Households in Isiolo have nil stocks. |
| Livestock body condition | Fair across the livelihood zones except in Wajir, which body condition is good | Fair to poor, except in Isiolo where forage was good. |
| Household water consumption | 15-20 litres per person per day | 10-15 litres per person per day |
| Meal frequency | 2-3 meals per day | 2-3 meals per day (1-2 meals per day in Mandera and Tana River which is below normal) |
| HH milk production | 1-4 litres | 1-3 litres |
| Terms of Trade | Unfavourable in Tana River, Mandera and Isiolo<br>Favourable in Garissa and Wajir | Unfavourable across the cluster, being below average levels |
| Coping strategy index | 27 | 16 |
| Food Consumption Score (Acceptable ) | 55% of households | 83% of households |
| Proportion of children at risk of malnutrition | 12% to 22% | Malnutrition rates are above the LTA with a high proportion of children at risk in Mandera (26.3%) |

### 2.2.5 Impact of drivers on food and nutrition security

#### 2.2.5.1 Crop production

**Rain-fed crop production**

The main rain-fed crops grown during the short rains season were maize, sorghum, cowpeas and green grams. The areas under maize, sorghum, cowpeas and green grams reduced against the LTA by 36, 88, 57 and 28 percent respectively. Production of maize and sorghum fell by 42 and 49 percent respectively against the LTA. Total maize crop failure was noted in Isiolo and Wajir, attributed to the poor performance of the short rains, the reduction in acreage under cultivation, late planting, the planting of non-suitable seed varieties, crop damage by wildlife and wilting of crops due to water stress. Overall, this will reduce food availability and limit households' access to food.

**Irrigated crop production**

The main food crops grown under irrigation are maize, green grams and cowpeas. Other crops are fruits and vegetables such as tomato, banana, mango, pawpaw and onion. The area under maize, cowpeas and green grams fell by 47, 54 and 78 percent respectively against the LTA. Production of the same three crops also fell by 42, 21, and 18 percent respectively (Table 2.3). This was attributed to the poor performance of the short rains and limited water for flood-based irrigation from the River Tana. Production of banana, onion and tomato fell by 29, 24 and 7 percent respectively on the LTA. The decline in production is likely to reduce household income, food availability and dietary diversity for those depending on irrigated agriculture.

**Maize stocks**

The cluster is predominantly pastoral and communities mostly rely on markets for the supply of maize, except in the agro-pastoral livelihood zone. The maize stocks held by households, traders, millers and the NCPB were 12, 81, 68 and 15 percent respectively of the LTA. These

comparatively low stocks are attributed to the decline in production, the shift from general food distribution to cash transfers, and the non-replenishment of NCPB stocks. Transportation of maize from Ethiopia to Mandera and from the Kenyan highlands was also occasionally delayed by insecurity. The current maize stocks are estimated to last for two weeks.

### 2.2.5.2 Livestock Production

The contribution of livestock production to cash income in the pastoral and agro-pastoral livelihood zones is approximately 85 and 45 percent respectively. The pasture and browse condition was fair to poor in all the livelihood zones across the cluster which is below normal for the season. The exceptions were the pastoral livelihood zones in Mandera, Garissa and Tana River where forage was depleted due to below normal rainfall. Forage and water were accessible across the cluster except in pockets of Garissa (Boni Forest) and Isiolo (Sharp), where access was limited by insecurity.

**Pasture and browse condition**

| Livelihood Zone | Current | Normal | Duration | Factors affecting accessibility |
|---|---|---|---|---|
| Pastoral | Fair-poor | Fair | < 1 month | Resource based conflicts and insecurity |
| Agro-pastoral | Good and fair | Fair | 1-2 months | None |

Livestock body condition was fair to poor for grazers and good to fair for browsers across the cluster and the situation is expected to deteriorate further has rangeland resources become depleted and scarce.

**Livestock body condition**

| Livelihood zone | Cattle | | Sheep | | Goat | | Camel | |
|---|---|---|---|---|---|---|---|---|
| | Current | Normally | Current | Normally | Current | Normally | Current | Normally |
| Pastoral | Fair-poor | Fair | Fair-poor | Fair | Good-Fair | Good-Fair | Good-Fair | Good |
| Agro pastoral | Fair-poor | Fair | Fair-poor | Fair | Good-Fair | Good-Fair | Good-Fair | Good |

The average return trekking distance to watering points was 11-18km, higher than the LTA of 7-13 km. Current water sources are expected to last up to the onset of the long rains in agro-pastoral livelihood zones and for 1-3 months in pastoral livelihood zones, compared with the normal period of 3-4 months. Exceptional distances of 25-40 km were reported in pastoral areas of Garissa (Balambala, Saka and Lagdera) and Mandera (Shimbir Fatuma, Burmayo and Guticha-Jiko). The average watering frequency is every 2 – 3 days for cattle, goats and sheep and 4-5 days for camels.

**Water situation for livestock**

| Livelihood zone | Return trekking distances-km | | Expected duration to last (Months) | |
|---|---|---|---|---|
| | Current | Normal | Current | Normal |
| Pastoral | 15-20 | 10-15 | 1-3 | 3-4 |
| Agro pastoral | 7-15 | 5-10 | >3 | Unlimited |

Household milk production and consumption was 50 percent of normal attributed to the decline in birth rates and insufficient access to water and forage. Domestic production was supported by supplies from the market where the price per litre ranged from Ksh. 60-80 in pastoral livelihood zones and Ksh. 40-50 in agro-pastoral livelihood zones.

**Milk Production and Consumption**

| Livelihood Zone | Milk Production(Litres/Household) | | Milk Consumption(Litres/Household) | | Price in Ksh per/litres | |
|---|---|---|---|---|---|---|
| | Current | Normal | Current | Normal | Current | Normal |
| Pastoral | 0-1 | 1-2 | 0-1 | 2-3 | 60-80 | 50-120 |
| Agro-pastoral | 1-3 | 3-5 | 1-2 | 4-5 | 40-50 | 40-60 |

In all livelihood zones, TLUs ranged from 10-30 compared with the normal range of 25-60. Earlier than normal livestock migration was reported across the cluster. Intra-cluster migration was reported from Mandera to Wajir (Buna, Ingirir and Milsadhet), and from Garissa (Lagdera and Balambala) to Isiolo (Garbatulla) and Tana River. Out-migration from the cluster was reported from Mandera to Ethiopia, from Garissa to Somalia, and from Isiolo to Meru and Laikipia. No disease outbreaks were reported except suspected cases of Foot and Mouth Disease, Lumpy Skin Disease, Sheep and Goat Pox, CCPP and CBPP. Reported livestock deaths were below the alarm threshold for livestock mortality.

### 2.2.5.3 Market Performance

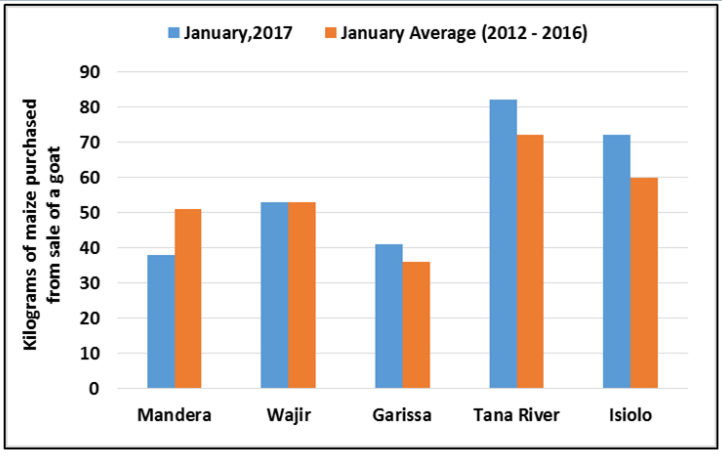



Figure 2.5: Comparative terms of trade in the cluster

The main markets include Mandera, El Wak, Wajir, Habaswein, Garissa, Dadaab, Garsen, Hola, Isiolo and Oldonyiro. All markets were functioning normally except those in Mandera where insecurity along the Kenya-Somalia border interfered with the movement of goods and livestock. The main commodities traded in the markets included agricultural and livestock products such as maize, rice, sugar beans, milk, meat, camel, cattle and goats. Food commodities were mainly supplied from markets in Moyale, Nairobi, Garissa, Isiolo and Meru, and those in Somalia and Ethiopia. The traded volumes for staple foods were normal, but those for livestock were low due to migration, the longer distances to markets from grazing areas, and low demand given poor body condition. Most households depend on markets for food commodities. The terms of trade in January 2017 were slightly above the LTA except in Mandera where they were unfavourable.

### 2.2.5.4 Water availability and access

The main sources of water for domestic use were rivers, boreholes, water pans, and shallow wells. The short rains recharged open water sources by 30-50 percent of their capacity, but due to the prevailing high land surface temperatures, more than 80 percent have dried up.

The average return distance to water sources in pastoral zones was normal at 5-10 km, except in parts of Tana River and Isiolo where distances had increased to 10-15 km. Localised areas of Tana River (Hurara, Assa, Onjila, Hara and Kone in Tana Delta, and Haroresa, Wayu, Titila, Waldena, Hakoka and Chifiri) and agro-pastoral zones of Mandera recorded long distances of 20-30 km.

Waiting time at the source ranged between 30 and 90 minutes compared with 10-30 minutes normally. The shortest waiting time was reported in the agro-pastoral livelihood zones of Garissa and the irrigated zones of Mandera (10-15 minutes), while the longest time was observed in the marginal mixed farming livelihood zones of Tana River where it increased from the normal 20-30 minutes to 1-2 hours; in some isolated locations such as Chifiri, Hakoka and Titila the waiting time was five hours. This was caused by the drying of most open water sources and high concentration at the remaining ones. The average cost of a 20 litre jerry can was normal and ranged between KShs. 2-5 at the source and KSh. 10-50 from vendors, especially in the pastoral and marginal mixed farming livelihood zones.
Average water consumption was within the normal range of 10-15 litres per person per day, except in the pastoral all-species zones of Garissa, Isiolo and Mandera which recorded the lowest consumption of 5-10 litres per person per day.

#### 2.2.5.5 Food consumption score

In December 2016, one and 16 percent of households across the cluster had a poor and borderline food consumption score respectively, compared with five and 17 percent in December 2015. Meal frequency is now one to two meals per day compared with the normal frequency of two to three meals per day. The main meals were composed of milk, pulses (beans), rice, maize, meat or vegetables.

#### 2.2.5.6 Coping strategy

The Coping Strategy Index fell from 31 in December 2015 to 16 in December 2016. Thirteen percent of households were using emergency coping strategies, six percent were employing crisis coping strategies, and 81 per cent were using stress coping strategies.

#### 2.2.5.7 Health and Nutrition

The most common diseases for both the under-fives and the general population across the cluster were diarrhea, upper respiratory tract infection, diseases of the skin and pneumonia. Malaria and dysentery were also common in Mandera during the dry spell due to the dust and poor hygiene and sanitation. The percentage of fully immunized child (FIC) for Wajir, Mandera and Isiolo in the period July to December 2016 was lower than in the same period in 2015, while it improved in Tana River and Garissa. However, the coverage was below the national target of 80 percent. The decline in Wajir, Mandera and Isiolo was attributed to high staff turnover and poor outreach services, while the improvement in Tana River and Garissa was attributed to better documentation and the availability of cold storage for the antigens.

Vitamin A supplementation of children under five ranges from 14.3-59 percent across the cluster; in Isiolo, Garissa, Tana River and Wajir coverage improved on the same period in 2015. The improvement could be attributed to supplementation carried out during *malezi bora* through Early Childhood Development Centres (ECDCs) and Islamic schools (*Dugsi*), although the coverage is still below the national target of 80 percent. This could be attributed to the vastness of the counties, long walking distance to health facilities, high staff turnover as a result of security threats, and limited support for outreach.

The percentage of children under five at risk of malnutrition (MUAC <135) was above the LTA in Isiolo and Wajir and ranged between 5.7 and 26.5 percent across the livelihood zones.

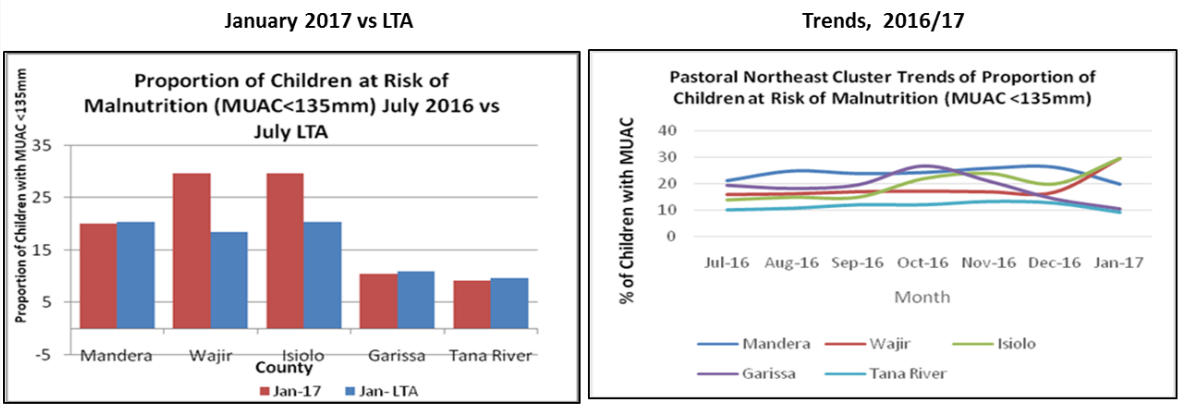



**Figure 2.6: Proportion of Children at Risk of Malnutrition (MUAC <135mm)**

Nutrition SMART surveys conducted in Isiolo and Tana River in January 2017 indicated GAM levels based on weight for height z-scores at 18.2 percent and 13.7 percent respectively. This suggests a Critical nutrition situation in Isiolo and a Serious situation in Tana River. The GAM rates in Garissa (Dadaab, Lagdera, Balambala), Mandera, Wajir (Wajir South, East, Tarbaj, Eldas, West) in June /July 2016 were 14.7, 22.6, and 13.4 percent respectively. Wajir North had 9.4 percent.

**Sanitation and Hygiene**

Most open water sources such as water pans and shallow wells are contaminated with either livestock waste or other sources of waste. Some boreholes are also highly saline and not fit for human and livestock consumption. Latrine coverage ranges between 40 and 50 percent, the highest being Isiolo with 50 percent and the lowest Wajir with 40 percent. Low coverage results in open defecation and puts households at risk of water-borne diseases thus affecting their nutritional status. The community is predominantly of the Muslim faith and water shortages bring challenges in observing hand-washing practices.

### 2.2.5.8 Education

School enrolment and attendance was affected by the lack of meals in schools, migration and conflict. Wajir reported a decline in enrolment due to migration of herders with their livestock and children, while in some schools in Tana River, children reported late and left early due to increased distances. In Isiolo, where attendance is generally stable, a primary school was closed as a result of conflict.

## 2.3 Agro-Pastoral Livelihood Cluster

### 2.3.1 Cluster Background

The cluster consists of six counties: Baringo, West Pokot, Laikipia, Kajiado, Narok and Nyeri. It covers an area of 71,471 square kilometres with a projected population of 3,983,079 (KNBS, 2016). There are six main livelihood zones: mixed farming (31 percent of the population), pastoral (27 percent), marginal mixed farming (20 percent), agro-pastoral (11 percent), formal employment / tourism / trade /business (10.7 percent), and irrigated cropping (0.7 percent). Livestock production contributes about 75 percent to income, while food 55 percent.

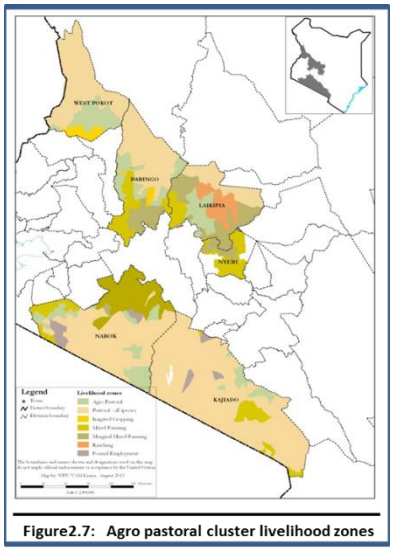



**Figure2.7: Agro pastoral cluster livelihood zones**

### 2.3.2 Current drivers of food insecurity

**Rainfall performance**

The onset of the short rains season was late across the cluster. It began in late October to early November, compared with the normal timing of early to mid-October. Rainfall was significantly depressed, with most areas receiving 50 to 75 percent of the LTA, although this was evenly distributed across the cluster. However, the northern part of West Pokot bordering Turkana received less than 50 percent of the LTA. The season ended early in November, compared with the normal cessation in the last dekad of December.

**Conflict and insecurity**

Resource-based conflict was reported in Nyeri and Laikipia related to the entry of livestock from neighbouring Isiolo, Baringo, West Pokot and Samburu which took place earlier than usual and in numbers that were larger than normal. Approximately 300 head of cattle were stolen from Mugie farm in Laikipia. More than 1,000 residents of Baringo South and Tiaty, in Nasoguro, Mukutani and Kiserian, were displaced to Mochongoi and Marigat. Other affected areas included the borders between Pokot, Marakwet and Tugen, West Pokot, Turkana and Marakwet, and Narok and Kipsigis. The major effects of the conflicts were market disruptions, inaccessible pasture and water, loss of assets, and displacement of households.

**Other shocks and hazards**

Cases of reported livestock diseases are on the increase, attributed to the ongoing livestock migration. Foot and Mouth Disease has been reported in Baringo, while others include CCPP and Peste des petits ruminants (PPR)..

### 2.3.3 Current food security situation

Most parts of the cluster are classified as Stress (IPC Phase 2), except Narok County which in Minimal (IPC Phase 1) and the pastoral livelihood zones of Baringo and West Pokot counties which are in Crisis (IPC Phase 3). The terms of trade were lower than the LTA in Baringo, West Pokot and Narok and higher than the LTA in Laikipia, Kajiado and Nyeri. The production of maize, beans and potatoes increased marginally, except in Baringo which recorded a reduction of 93 percent in maize production compared with the LTA. Households are currently consuming between one and three meals per day consisting of three to four food groups, which is normal. Pasture and browse conditions were good to fair across the cluster. The average milk availability ranges from nil to five litres compared with the normal quantity of five to eight litres, while household milk consumption ranges from 0.5 to three litres. The percentage of children at risk of malnutrition (MUAC <135mm) has fallen in Laikipia, Narok and Nyeri but risen in Baringo, West Pokot and Kajiado. The Coping Strategy Index has increased and ranges from 20 to 28, except in Laikipia and Nyeri where it fell to 4.14 and 1.6 respectively. Water consumption is 10-25 litres per person per day in Baringo, Nyeri, Kajiado, Laikipia and West Pokot, and 10-40 litres per person per day in Narok.

### 2.3.4 Food security trends

| Indicator | Long Rains Assessment, July 2016 | Short Rains Assessment, Feb 2017 |
|---|---|---|
| **Food security phase** | Minimal, except:<br>Stressed: pastoral and agro-pastoral parts of Baringo, West Pokot and Laikipia | Stressed, except:<br>Crisis: pockets of Baringo and West Pokot<br>Minimal: agro-pastoral and mixed farming pockets of Narok, Baringo and West Pokot |
| **% maize stocks at household level** | Below LTA | Above LTA |
| **Household water consumption** | 15-25 litres per person per day | 10 -30 litres per person per day |
| **Meal frequency** | 2-3 per person per day | 1-3 per person per day |

| | | |
|---|---|---|
| **Terms of trade** | All counties above LTA | Below LTA except Kajiado and Laikipia |
| **Coping strategy index** | 15<br>Positive trend | 20 – 28<br>Nyeri: 1.6<br>Laikipia: 4.14 |
| **Food consumption score** | Acceptable: 90.7% | Poor: 13%<br>Borderline: 27.5%<br>Acceptable: 61.2% |
| **Children at risk of malnutrition** | Stable and below LTA<br>Nyeri 0.8%<br>West Pokot 10.7% | Below LTA in Narok, Kajiado and Laikipia.<br>Above LTA in Baringo and West Pokot |

### 2.3.5 Impact of drivers on Food and Nutrition Security

#### 2.3.5.1 Crop Production

The cluster is mainly dependent on the long rains season for crop production. However, substantive quantities are produced during the short rains through both rain-fed and irrigated systems. Crop production contributes 30 percent to food and approximately 40 percent to cash income.

**Rain-Fed Crop Production**

The main rain-fed crops are maize, beans and Irish potatoes. A sizable quantity of wheat (149,175 bags) was also produced in Laikipia. During the short rains season, the area under both maize and beans fell by eight and 11 percent respectively compared with the LTA. The production of maize, beans and Irish potatoes also fell by 55, 50 and 47 percent respectively against the LTA. The decline in acreage under maize and beans was attributed to the shift to other crops, especially in Narok due to the presence of Maize Lethal Necrosis Disease in the south Rift, outbreaks of bean flies, and the delayed onset of the short rains. The decline in yields of maize and beans was attributed to the poor performance of the short rains, their early cessation at a stage when the crops needed more rain, delayed planting, destruction by wildlife, and total crop failure in West Pokot. The fall in Irish potato production was due to the lack of certified seeds during the season and poor rainfall.

**Irrigated Crop Production**

Irrigated farming is mainly carried out in irrigation schemes, along rivers, around water pans/ dams and in greenhouses. The main crops grown under irrigation are tomatoes, cabbages and maize. Others are kale and onions. During the short rains season the acreage and yield of tomatoes increased by 20 and 24 percent respectively compared with the short-term average (STA). This was attributed to increased production under greenhouses, particularly in Kajiado, and increased awareness about the management of the *Tuta Absoluta* pest.

The area planted under cabbages and maize fell by 40 percent and 65 percent respectively, while their corresponding yields fell by 51 percent and 38 percent against the STA. The decrease in acreage was attributed to lower volumes in rivers and water pans due to minimal recharge during the season.

**Maize stocks**

Maize stocks held by households, traders, millers and the NCPB were at 63, 61, 105 and 63 percent respectively of their LTA. The NCPB had previously sold its old stock and had not yet replenished it. The low stocks held by households and traders were attributed to poor yields across the cluster. The millers are holding relatively normal levels of stock by purchasing from the grain basket region and by importing, in order to meet their milling requirements. Total maize stocks are expected to last for five months.

### 2.3.5.2 Livestock Production

Livestock production contributes approximately 60, 40 and 30 percent to cash income in the mixed-farming, agro pastoral and pastoral livelihood zones respectively. Pasture and browse conditions were fair to poor in the mixed farming and irrigated cropping zones, but poor in the agro-pastoral and pastoral livelihood zones where they are estimated to last for 2-3 months.

Livestock body condition for all species was good to fair across the cluster but showing a deterioration that is likely to continue until the onset of the next season. Average milk availability ranged from 1.5 to 3 litres per household per day in the agro-pastoral and pastoral livelihood zones, while in the mixed farming and marginal mixed farming zones milk availability was 5-7 litres per household per day. Milk consumption ranged from one to 4 litres per household per day in the pastoral and agro-pastoral zones.

Return trekking distances to water were 2-6 km in mixed farming zones, double the normal distance, while in the agro-pastoral and pastoral zones they were 4-15 km compared with the normal distance of 3-8 km. However, in some pockets of the pastoral zone of West Pokot (Nyangaita), the return trekking distances increased to about 30 km. Longer distances have a negative effect on household milk availability. Watering frequency was once per day across the cluster which is normal for the season.

There are reports of livestock mortalities associated with drought: 932 cattle died in Barwesa, Saimo Soi and Bartabwa in Baringo North, 587 in Tiaty, and 10 in Barsemoi, Salabani, and Arabal in Baringo South, as well as 35 goats in Saimo Soi.

**Livestock migration**

In West Pokot, more than 80 percent of cattle in the north migrated to the Kenya-Uganda border while 75 percent of those from the central region migrated to Amarel and Akiriamet along the Turkana-West Pokot border. Other migration took place within the county. In Laikipia, access to pasture and browse was limited by in-migration and inter-community conflict in the mixed farming areas and by water scarcity in the pastoral and agro-pastoral areas. In Narok, livestock moved towards the upper parts of Mau in the mixed farming zone and towards the neighbouring counties of Nakuru, Kajiado, Bomet and Nairobi where pasture and water are still available. Other livestock have crossed to Tanzania. In Kajiado, an estimated 70 percent of cattle migrated from Matapato, Lenkism, Imbirikani, and Rombo to the Chyulu Hills. Cattle from Tanzania also moved into the Chyulu hills. Cattle from Kajiado West migrated towards Nakuru and Naivasha. These movements were normal in their pattern and routes but abnormal in their timing since they started earlier than usual in October-November rather than January-February, and were of high intensity.

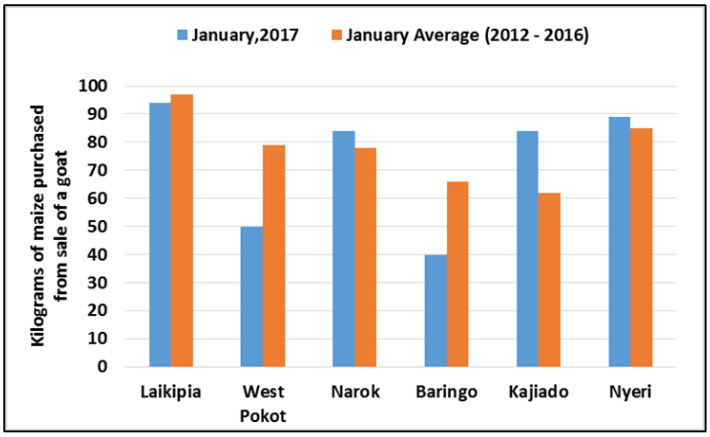


Figure 2.8: Comparative terms of trade in the cluster

### 2.3.5.3 Market Performance

Market operations in the cluster were normal. The terms of trade were unfavourable in comparison with the LTA in Laikipia, West Pokot and Baringo, but favourable in Kajiado, Narok and Nyeri (Figure 2.8). Generally, the cluster is dependent on livestock as the main source of food and income. The market price of livestock is falling as body condition

deteriorates and supply to the market increases as pastoralists destock. The terms of trade are expected to remain unfavourable until May, when an improvement in livestock body condition is expected, and until then will undermine access to food and consumption levels for pastoralists.

#### 2.3.5.4 Water Access and Availability

**Water and Sanitation**
The major water sources are rivers, streams, dams, pans, springs, shallow wells, boreholes, traditional river wells and piped water, as well as lakes. Most rivers were below base-flow or dry due to low recharge during the rains and abstraction upstream for irrigation. Most of the open water sources recharged to about 50 percent of their capacities and about 80 percent have dried up. The remaining water pans are likely to last for about two months.

Return distances to water sources, for domestic use, have shown a 50 percent increase in most of the areas across the cluster as a result of the current water shortages. Waiting time has also increased by a similar margin, except in areas where the main source is a river or pan whose waiting time is constant. Water consumption ranges between 10-25 litres in Baringo, Nyeri, Kajiado, Laikipia and West Pokot and between 10-40 litres Narok county.

#### 2.3.5.5 Food Consumption
The proportion of households with poor and borderline food consumption ranged between 20 and 38 percent in December 2016, except in West Pokot where 54 percent of households had a poor food consumption score. The meal frequency was 2-3 times a day in the pastoral zone and three times a day in the mixed farming and marginal mixed farming livelihood zones, which is normal.

#### 2.3.5.6 Coping Strategies
The mean Coping Strategy Index remained stable in Kajiado, Narok, Laikipia and Nyeri between December 2016 and January 2017. However, in Baringo and West Pokot it ranged between 14 and 19 in December 2016 and January 2017. The scores imply that households are employing less severe coping mechanisms which are mainly consumption-based, such as relying on less preferred or less expensive foods.

#### 2.3.5.7 Health and Nutrition

**Morbidity Patterns**
The top five morbidities in the general population were diseases of the respiratory system (URTI), diseases of the skin, arthritis (joint pains), urinary tract infections and diarrhea, whilst top morbidities for children under five were URTI, diarrhea, malaria, pneumonia and skin diseases. West Pokot and Kajiado reported an increase in diarrhoea and URTI among the under-fives during the July – December 2016 period.

All counties in the cluster reported reduced cases of morbidity compared with the same period last year. However, these statistics should be interpreted with caution considering that health services were disrupted in November and December by the health workers' strike. There were no reported cases of disease outbreaks within the period under review, and mortality rates were less than 2/10,000/day.

**Immunization and Vitamin A supplementation**
Immunization coverage across the cluster was comparable to the previous season in 2015, except that Narok showed a significant improvement from 31 percent in 2015 to 55 percent in

2016 attributed to enhanced reporting from health facilities and *malezi bora* activities. The coverage for Fully Immunized Children was below the national target of 80 percent in all counties except Nyeri (Kieni). This could be attributed to the health workers' strike, poor documentation, and changes to the school calendar since schools closed early. ECDCs are normally good avenues for boosting vitamin A supplementation coverage during *malezi bora* week.

**Nutrition Status and Dietary Diversity**

The proportion of children at risk of malnutrition in the cluster was below the LTA except in West Pokot and Baringo. The MUAC trends from August 2016 to January 2017 showed a stable situation and a low proportion of children at risk in Nyeri and Laikipia, but a stable trend and a high proportion of children at risk in Kajiado and Narok. In West Pokot and Baringo the proportion of children at risk was increasing.

A SMART survey conducted in Baringo East showed a GAM rate of 23.3 percent and a SAM rate of four percent. The current nutrition phase classification places Baringo East in IPC Phase 4 (Critical) and Kajiado in Phase 1 (Acceptable). Other counties in the cluster did not have sufficient data to allow classification. However, analysis of previous trends of acute malnutrition and its contributory factors suggests that West Pokot is also likely to be in IPC Phase 4 (Critical). The poor nutrition situation in Baringo East and West Pokot is attributed to poor household food consumption, with most households in Baringo East consuming an average of one to two meals per day comprising mainly tea, *ugali*, wild vegetables and porridge. In West Pokot, most mothers in the mixed farming and agro-pastoral zones spend most of their time in the farms, leaving children in the care of other children which can lead to poor infant and young child feeding practices.

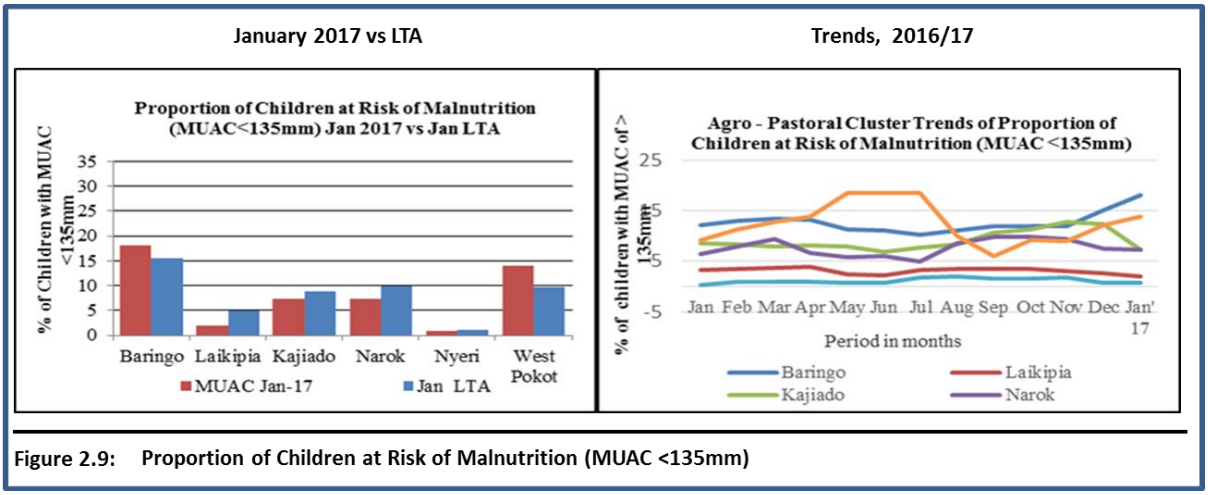



**Figure 2.9: Proportion of Children at Risk of Malnutrition (MUAC <135mm)**

**Sanitation and Hygiene**

Latrine coverage across the cluster ranges from 10 to 88 percent, with significant variations between livelihood zones. In Baringo, coverage is 10 and 55 percent in the pastoral and agro-pastoral livelihood zones respectively. Agro pastoral zone of Laikipia has the highest latrine coverage at 88 percent attributed to the creation of more community units supported by the Anglican Church of Kenya. Household water treatment is very low and the consumption of untreated water directly from the source is common.

**2.3.5.8Education**

Enrolment in both primary schools and ECDCs in Baringo remained fairly constant between 2016 and 2017 first term but in West Pokot, Laikipia, Kajiado, Narok and Nyeri it has increased. The suspension of the school meals programme in the course of 2016 was cited as

the major factor in enrolment reduction. School attendance was high in Nyeri and Narok but low in Baringo, Laikipia, Kajiado and West Pokot because pupils were pre-occupied with the search for water or food. High dropout rates were also registered in Baringo and West Pokot related to the ongoing drought stress as well as to the suspension of the school meals programme in most schools in the cluster.

## 2.4 South-eastern Marginal Agricultural Cluster

### 2.4.1 Cluster Background

The cluster consists of Tharaka Nithi, Meru (North), Kitui, Makueni and Embu (Mbeere) counties. Its projected population is 3,448,026 (KNBS, 2016) and covers an area of 46,255 square kilometres. The two major livelihood zones are mixed farming (26 percent of the population) and marginal mixed farming (65 percent of the population). The remaining nine percent rely on rain-fed cropping and formal employment.

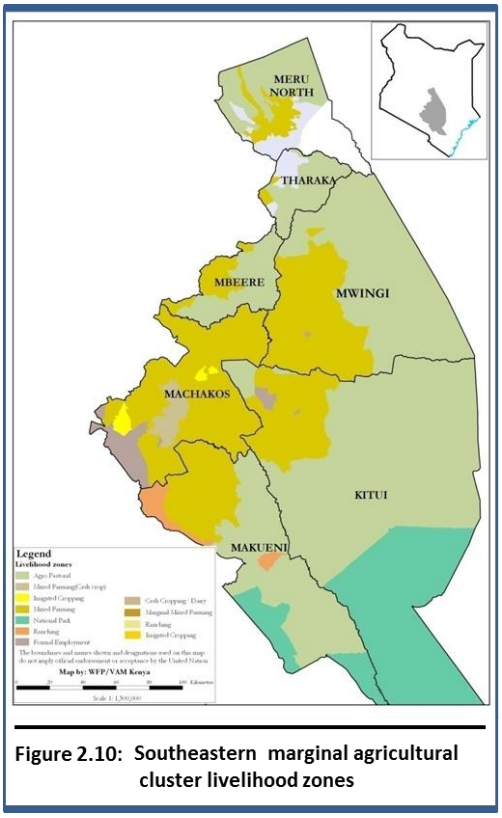



Figure 2.10: Southeastern marginal agricultural cluster livelihood zones

### 2.4.2 Current Drivers of Food Insecurity

**Rainfall performance**

In all counties in the cluster the onset of the short rains was late in the first dekad of November, compared with the normal second dekad of October. The onset was even later in Kitui in the second dekad of November. Most areas received approximately 75-90 percent of normal rainfall except Meru North and Tharaka Nithi where most areas received 50-90 percent of normal amounts. The southern parts of Embu and the northern parts of Makueni received 50-75 percent of normal rainfall while the eastern parts of Tharaka Nithi received 75-110 percent of normal rains. The temporal distribution was poor across all counties. The spatial distribution was even in Makueni, Kitui and Meru North. In Kitui and Tharaka, cessation was early in the second rather than third dekad of December.

**Conflicts/Insecurity**

Insecurity caused by cattle rustling and banditry has limited access to pasture and browse in Meru North. Human-wildlife conflicts were reported in Tigania East and West sub-counties involving elephants from Imenti Forest. In Mwingi North sub-county of Kitui, there was resource-based conflict between farmers and pastoralist from Tana River and Garissa.

**Other shocks and hazards**

Embu and Tharaka experienced over 80 percent crop failure in their marginal mixed farming livelihood zones. Kachoroni of Gatunga Ward in Tharaka Nithi reported accelerated depletion of pasture caused by an increased incidence of termites.

### 2.4.3 Current Food Security Situation

The current food security phase classification for the cluster is Stressed (IPC Phase 2). The terms of trade range between 54 and 110 kg, with high purchasing power among households in Embu and low purchasing power among households in Tharaka. Households were on

average consuming one to two meals per day in the marginal mixed farming livelihood zones compared with the normal three meals per day. In the mixed farming zones, households were consuming two to three meals per day compared with the normal three. Water consumption was stable at 14 – 35 litres per person per day. Household milk production dropped from half a litre to one litre with a corresponding reduction in milk consumption. The proportion of children at risk of malnutrition based on MUAC ranged between 5.6 percent in Embu to 28 percent in Meru North, and has been on an upward trend since October 2016. Households in the cluster employed consumption-based coping strategies.

### 2.4.4 Food Security Trends

| Indicator | LRA July 2016 | SRA Feb 2017 |
|---|---|---|
| **Food security phase** | Minimal (IPC Phase 1)<br>Pastoral: Stressed (IPC Phase 2) | Stressed (IPC Phase 2) |
| **Household food stocks (90 kg bags)** | 374,796 | 101,944 below LTA and previous season. |
| **Livestock body condition** | Good | Good to fair |
| **Household water consumption** | Comparable | 15 – 25 litres per person per day |
| **Terms of trade** | 103-138 kg (June 2016) | 54 - 110 kg |
| **Coping strategy index** | 13 (May 2016) | 14 – 29 |
| **Food consumption score; MF and MMF livelihood zone** | Acceptable: 91.1%<br>Borderline: 7.9%<br>Poor: 1% | Acceptable: 60.8%<br>Borderline: 22%<br>Poor: 15% |
| **Children at risk of malnutrition** | 4.4% – 6.8 %<br>Meru North 15.2% | 5% - 13.3%<br>Meru North 28% |

### 2.4.5 Impact of Drivers on Food and Nutrition Security

#### 2.4.5.1 Crop Production

The cluster is mainly dependent on the short rains season which accounts for about 60 percent of annual crop production. The main crops grown in the cluster are maize, cowpeas and green grams. Other important crops are pigeon peas, beans, sorghum, mangoes and oranges.

**Rain-fed crop production**

There was a significant increase in the area under beans, cowpeas and green grams by 36, 12 and 18 percent respectively over the LTA. However, the area under maize increased only marginally by two percent. The late onset of the rains and their poor temporal distribution resulted in poor germination of dry-planted crops which forced farmers to replant too late in the season. The production of maize, green grams, cowpeas and beans fell by 23, 39, 47 and 13 percent respectively on the LTA due to inadequate rainfall received over the growing period.

**Irrigated crop performance**

Irrigation is mainly carried out in small-scale schemes and greenhouses. The main crops grown include tomatoes, watermelon, green maize, kale and bananas. The acreage generally increased: tomatoes, watermelon and kale increased by 43, 85 and 30 percent respectively on the LTA, while that for green maize remained constant. The production of tomatoes fell marginally by three percent, while for kale it increased by 36 percent and for green maize by two percent. The production of watermelon quadrupled.

**Maize Stocks**

Overall, maize stocks held by the various institutions in the cluster were 45 percent of the LTA. Household stocks were 35 percent of the LTA, attributed to limited carry-over from the long

rains season and the poor short rains crop. Stocks held by traders and millers fell by 61 and 59 percent respectively due to falling supplies from within the cluster; stocks are being sourced outside the cluster, mainly from the North Rift. The NCPB stocks were very low at 18 percent of the LTA due to the lack of local production and were all held in Meru North.

### 2.4.5.2 Livestock Production

Livestock production contributes 30 percent and 50 percent to cash income in the mixed farming and marginal mixed farming livelihood zones respectively. Pasture and browse conditions are good to fair across the cluster except in the marginal mixed farming livelihood zone of Makueni where pasture is depleted. Crop residues were being used as supplementary livestock feed and are expected to last for 1-2 months. There was unrestricted access to water and forage except in the marginal mixed farming zone of Ukasi in Kitui, where access was constrained by the fear of inter-communal conflict with neighbouring Tana River and Garissa.

Livestock body condition is good in all species, except that cattle body condition is only fair in Embu, Tharaka, Makueni and Kitui and expected to deteriorate. Household milk production is 0.5-3 litres per day, compared with the normal range of 2-3 litres per day. However in Meru, milk production is 3-6 litres compared with the normal 8 litres. Milk prices were Ksh. 50 -80 across the cluster, representing an abnormal 30 percent increase. Embu registered the lowest milk price of Ksh 35 and Tharaka Nithi the highest milk price of Ksh 80. Average household daily milk consumption is one litre.

### Migration trends

In Embu, migration was within the county from the marginal mixed farming livelihood zone. Pastoralists from Tana River and Garissa had moved into Kitui, while livestock from Laikipia had moved into Mount Kenya Forest in Meru, and those from Kajiado had moved into the Nguu area of Makueni. There was also internal migration within Meru North of livestock from the lower zones towards the farmlands..

### 2.4.5.3 Market Performance

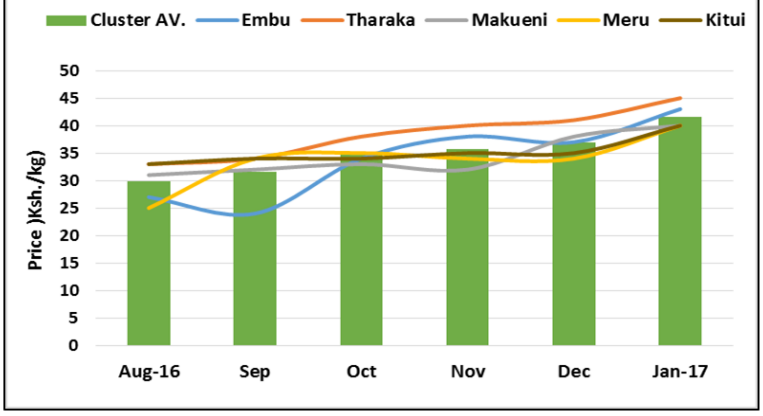



Figure 2.11: Comparative maize price trends in the cluster

Market operations were normal except along the Kitui/Tana River border (Kavaani) and the Meru/Isiolo border (Kinna and Timau) where conflict flare-ups over pasture and water led to the temporary closure of markets. The main food commodities sold were maize, beans, green grams, millet and sorghum, while the major livestock traded were goats, sheep, cattle and poultry. Traded volumes of livestock were higher than normal as households tried to destock to minimize losses from drought. The principal source of green gram supplies was local production, while maize was sourced from outside the cluster, mainly from Loitokitok, Busia and Kitale. The poor status of most secondary and tertiary roads linking remote villages to urban centres causes a slight increase in the price of food crops thus affecting access and consumption. A general increase in the price of maize was observed in January across the cluster and this trend is expected to persist until the long rains harvest in July (Figure 2.11).

#### 2.4.5.4 Water Availability and Access

The main sources of water are rivers, boreholes, dams, piped water, springs, water pans and shallow wells. Open water sources recharged to between 40 and 60 percent of their capacity, except in the marginal mixed farming livelihood zone of Kitui and the mixed farming coffee/dairy livelihood zone of Makueni where recharge was 30 and 60-80 percent respectively. The low level of recharge has reduced access to water. Water in open sources is projected to last for one month. The average return distance to water is 2-5 km, slightly longer than the normal 0.5 – 4 km. Exceptional distances of 5 – 10 km were noted in the marginal mixed farming livelihood zones of Kitui, Makueni and Meru North, and in the mixed farming crop/livestock livelihood zone of Makueni.

The cost of water remained within the normal range of Ksh. 2-5 per 20 litre jerrican, with the exception of the mixed farming, marginal mixed farming and rain-fed cropping livelihood zones of Tharaka where it was Ksh 10 -30, and the mixed farming and marginal mixed farming livelihood zones of Embu where it was Ksh 20 and Ksh. 10 respectively.

#### 2.4.5.5 Food consumption

In December 2016, two percent and 10 percent of households across the cluster had poor and borderline food consumption scores respectively, compared with one percent and 10 percent in December 2015. The current meal frequency is two to three meals per day, compared with the normal frequency of three to four meals per day.

#### 2.4.5.6 Coping Strategies

In December 2016, 85 percent of households were not employing coping strategies frequently, an improvement on the situation in December 2015. The most commonly employed strategies were reducing the number of meals eaten by adults and engaging in casual labour.

#### 2.4.5.7 Health and Nutrition

**Morbidity and mortality patterns**

The most prevalent diseases among children under five are upper respiratory tract infections (URTIs), diarrhea, intestinal worms, pneumonia and skin diseases. The major diseases among the general population are URTI, hypertension, arthritis, skin diseases, and urinary tract infections. The reported cases of diarrhea among the under-fives were lower in 2016 than in 2015; Tharaka reported the largest fall of 23 percent. This was a result of under reporting because of the health workers' strike that started in November and was ongoing at the time of data collection.

**Immunization Coverage**

Fully Immunized Child (FIC) coverage of those under one year ranged from 54 to 83 percent with the exception of Makueni which surpassed the national target of 80 percent.

**Vitamin A Supplementation Coverage**

Routine Vitamin A supplementation coverage for children aged six to 59 months remained below the national target of 80 percent. The decline in coverage was attributed to documentation gaps across the counties. Other contributory factors were the disruption to health services and the change to the school calendar, since schools are used to reach more children under the *malezi bora* programme.

**Nutrition Status and Dietary Diversity**

The percentage of children under five at risk of malnutrition (MUAC < 135mm) remained stable. In January 2017, three counties had MUAC rates below the LTA while in Tharaka and Kitui they were stable. The GAM rate in Kitui and Tharaka was 2.6 and 5 percent respectively.

The cluster is currently classified in Phase 1 (Acceptable: less than five percent) of the nutrition IPC, except Tharaka which is in Phase 2 (Alert). The situation is projected to remain the same.

**Dietary diversity**
The current meal frequency is two to three meals per day compared with the normal three to four meals per day. This can be attributed to diminishing food stocks and limited sources of income. The meals had low dietary diversity of 3-5 food groups consisting of cereals, pulses, vegetables, dairy products and fruits.

**Sanitation and Hygiene**
Good hygiene practices such as hand-washing at the critical times remained a challenge; less than 20 percent of households are practising these, resulting in an increased prevalence of water-borne diseases. Water treatment methods also remained low at 60 percent, while latrine coverage was between 80 and 90 percent. The cost of water and longer distances to water sources are expected to compromise good hygiene practices still further.

### 2.4.5.8 Education
Increased enrolment was recorded in all counties in both primary schools and ECDCs. The transition rates from the previous year were higher from ECDC to primary and from primary to secondary. Cases of insecurity in Kitui caused the closure of four schools in Ngomeni and Nguni wards of Mwingi. The government-supported Home Grown School Meals Programme (HGSMP) is being implemented across the cluster; however children were going without meals as the government was yet to disburse funds. HGSMP coverage needs to increase, but meanwhile schools in affected areas should be considered for the Expanded School Meals Programme (ESMP). Most schools were experiencing water shortages. In this cluster only a few schools have adequate water tanks for either storage or rainwater harvesting. It is therefore imperative that schools be equipped with these facilities before the onset of the long rains.

## 2.5 Coastal Marginal Agricultural Cluster

### 2.5.1 Cluster Background
The cluster consists of Kwale, Kilifi, Taita Taveta and Lamu counties (Figure 2.12) and covers an estimated area of 47,861 square kilometres with a projected population of 2,406,491 (KNBS, 2016). It has three major livelihood zones: mixed farming (60 percent of the population), trade/business/ formal employment/casual labour (21 percent) and marginal mixed farming (11 percent).

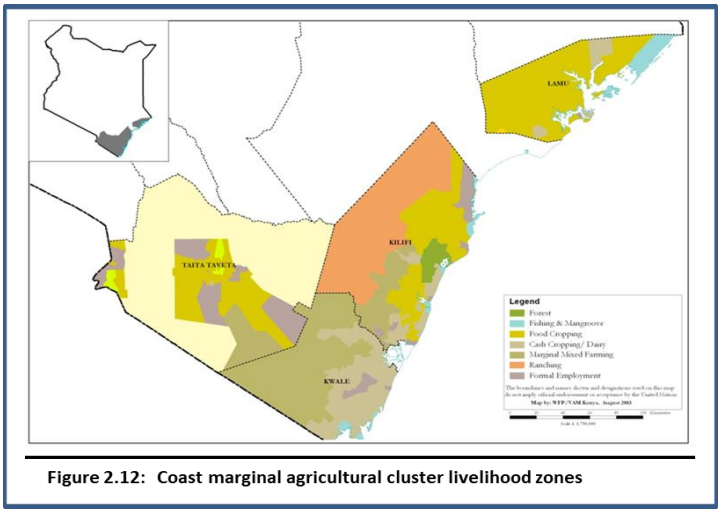


Figure 2.12: Coast marginal agricultural cluster livelihood zones

### 2.5.2 Current Drivers of Food Insecurity

**Rainfall Performance**
The onset of the short rains was late across all counties in the cluster. The normal onset is the first dekad of October but it was late by 2-5 dekads. The larger part of the cluster received 50 – 90 percent of normal rainfall while most of Lamu and eastern Kilifi received 25 – 50 percent. Isolated areas such as parts of Lunga Lunga sub-county in Kwale and western Taveta and Voi

sub-counties in Taita Taveta received 90 – 125 percent of normal rainfall. The temporal distribution was poor and the spatial distribution was uneven. In Lamu and Kilifi, cessation was early by three and two dekads respectively, but was normal in Taita Taveta and Kwale.

The main factors affecting food security are the poor performance of the long rains, crop failure, high food prices, insecurity, in-migration of livestock from outside the cluster, resource based and human-wildlife conflict, and livestock deaths in Lamu.

### 2.5.3 Current food security situation

The current food security phase classification for the cluster is Stressed (IPC Phase 2), except for Lamu East sub-county and pockets of Kilifi County such as Ganze (Bamba, Ganze and Sokoke), Kaloleni (Kayafungo and Mwanamwinga) and Magarini (Marafa, Adu and Garashi) that are in Crisis (IPC Phase 3).

Household milk production ranged between 0.5 and 2 litres per day in the mixed farming, marginal mixed farming and mixed farming/livestock livelihood zones, which is below the normal 1-5 litres; in the cash cropping/dairy zone it was 5-8 litres compared with the normal 7-8 litres. The percentage of children at risk of malnutrition as measured by MUAC <135mm rose above the LTA for the period. Kilifi recorded the highest rate of 12.8 percent in January 2017 compared with 4.9 percent in December 2016. The rate in Lamu was stable and below the LTA at 4.2 percent. The Coping Strategy Index was 22 in December 2016 compared with 18 during the same period in 2015, an indication that households were still employing normal consumption-based coping strategies such as reducing ration sizes, reducing the number of meals, and skipping meals. Water consumption ranged between 10 and 30 litres per person per day (lpppd) across the cluster, with the exception of Lamu where it fell to 5 lpppd compared with the normal 20 lpppd.

### 2.5.4 Food security trends

**Food Security Trends**

| Indicator | Long rains assessment, July 2016 | Short rains assessment, Feb 2017 |
|---|---|---|
| **Food insecurity phase** | Stressed: Lamu, the marginal mixed farming, mixed farming and ranching livelihood zones in Kilifi, and the livestock farming livelihood zone in Kwale<br>Minimal: mixed farming, cash cropping and dairy livelihood zones in Kilifi, mixed farming livelihood zone in Kwale, and all zones in Taita Taveta | Stressed: all except Lamu East and parts of Kilifi classified under Crisis |
| **% of maize stocks held by households** | 25 -75 percent of LTA | 11 percent of LTA |
| **Livestock body condition** | Fair to good across the cluster | Fair to poor for cattle and good to fair for small stock |
| **Water consumption (litres per person per day)** | 5 - 30 | 15-20 in Taita Taveta and Kwale (normal)<br>6-10 in the pastoral zones of Kilifi and Lamu (compared with the normal 15-20) |
| **Meal frequency** | 2 -3 meals per day | 1 – 2 meals per day |
| **Terms of trade** | | ToT ranges between 76 and 116 kg and is above the LTA except in Lamu |
| **Coping Strategy Index** | 18 (May 2016) | 22 |

| Indicator | Long rains assessment, July 2016 | Short rains assessment, Feb 2017 |
|---|---|---|
| **Food Consumption Score** | Poor: 6.3%<br>Borderline: 26.2%<br>Acceptable: 67.4%<br>(May 2016) | Poor: 20%<br>Borderline: 46%<br>Acceptable: 34% |
| **MUAC** | Average 5.0% except in Taita Taveta (2.9%) | Stable: Kilifi and Kwale 5%; Lamu and Taita Taveta below 5% |

### 2.5.5 Impact of drivers on food and nutrition security

#### 2.5.5.1 Crop Production

**Rain-fed cropping**

Crop production contributes between 10 and 20 percent of cash income in the cluster and is mainly dependent on the long rains, except Taita Taveta and parts of Kilifi that are more dependent on the short rains. Maize, cowpea and cassava production reduced by 96, 68 and 93 percent respectively on the LTA due to a decline in area planted, but the most important limiting factor was inadequate rainfall.

The major crops cultivated under irrigation are bananas, french beans and green maize. In isolated areas other vegetable crops include tomatoes, watermelon and amaranthus. The area under banana production increased by 17 percent in the short rains season while french beans production in Taita Taveta was stable. Maize production reduced by 31 percent while amaranthus production reduced significantly by about 56 percent. The decline in acreage and production for some of these crops is attributed to inadequate water for irrigation.

Total available maize stocks were 53 percent of the LTA. Households stocks are 10 percent of the LTA, attributed to poor yields across the cluster. However, the traders and millers are holding above-average stocks (117 and 167 percent respectively), the former having stocked up from high rainfall areas and imported maize for speculative purposes, and the latter to supply their milling requirements.

**2.5.5.2 Livestock Production**

Livestock production contributes 45 percent to cash income in the mixed farming livelihood zone and 20 percent to cash income in the marginal/mixed farming and agro-pastoral livelihood zones. Pasture and browse are normally good at this time of year, but pasture is currently fair to poor and projected to last for 1-2 months, while browse is fair to good and projected to last for 1-3 months. The livestock body condition of cattle and sheep is fair to poor and below normal in the mixed farming areas, and is expected to worsen when the available forage diminishes, especially in the livestock farming zone. The body condition of goats is good and normal across all livelihood zones.

The average milk production per household is 0.5-1 litre compared with the normal 1-2 litres in the marginal mixed farming livelihood zones. Household milk consumption is also 0.5-1 litre compared with the normal two litres. The mixed farming zones of Kilifi and Taita Taveta have higher milk production and consumption at 2-3 and 1-2 litres respectively. Milk prices have increased by 25-100 percent across all livelihood zones compared with normal.

Birth rates are below normal compared with the same time last year which is attributed to the shortage of forage and below optimal body condition for all types of livestock. Cases of calf deaths and abortions due to drought were reported across the livelihood zones. The average TLUs are between 4 and 6, 4 and 8, and 3 and 6 in the mixed farming, marginal mixed farming and agro-pastoral livelihood zones respectively. The ranching zone has the highest TLU at 14,

but this is below normal. The decline in TLUs reflects the impact of the below-normal short rains on productivity. The average return trekking distances to water are higher than average and likely to increase as water sources deplete further (Table 8).

**Water for livestock**

| Livelihood zone | Sources | | Return trekking distance | | Expected duration to last | | Watering Frequency | |
|---|---|---|---|---|---|---|---|---|
| | Current | Normal | Current | Normal | Current | Normal | Current | Normal |
| **Mixed farming** | Pans, Boreholes, | Rivers, Pans, Boreholes, | 2-5 | 1-4 | 1-2 | 2-3 | Daily | Daily |
| **Marginal Mixed farming** | Pans, Piped water, Boreholes | Pans, Piped water, Boreholes | 5-15 | 3-5 | 1-1.5 | 2-3 | 1-2 days | Once per day |
| **Agro-pastoral** | Steams, Pans, Bores, Ponds Piped water | Steams, Pans, Bores, Ponds Piped water | 0.5-2 | 0.5-1 | 2-3 | 3-4 | Daily | Normal |

No livestock disease outbreaks were reported. Suspected cases of Foot and Mouth Disease, Lumpy Skin Disease, Sheep and Goat Pox, CCPP and CBPP were reported across the cluster. Mortality cases were high in the ranching and marginal mixed farming areas with 14,744 cattle deaths in Kilifi. Drought-related livestock deaths were also reported in Lamu (1,155 cattle and 1,057 sheep and goats) but are below the alarm threshold for livestock mortality. Livestock migration may lead to disease outbreaks, which is prompting the county governments to intensify disease surveillance.

**Migration Routes**

There is currently intensified migration of livestock in search of pasture and water. In some cases this is to high-risk areas such as the Boni Forest, in spite of heavy tsetse fly infestation and security risks, indicating the desperate measures people are taking to save livestock during the current drought.

**Migration Routes**

| County | Species | Migration Within County | | Out - migration | In -migration | Reason For Migration |
|---|---|---|---|---|---|---|
| | | FROM | TO | | | |
| **Taita Taveta** | Cattle Goats Sheep Donkeys | Kishushe | Voi | | Kajiado, Tana River | Pasture and water |
| **Kwale** | Cattle Sheep Goats | Kinango | Mkongani, Matuga, | | | Pasture and water |
| **Kilifi** | Cattle Goats Camels | Bamba, Kaloleni, Rabai | Kaloleni, Rabai | Mombasa (Mwakirunge) | Tana River, Garrissa | Pasture and water |
| **Lamu** | Cattle Sheep Goats | Hindi Bargoni | Milimani, Mangai, Basu, Mararani | Garissa (Hulugho) | Tana River Garissa, Somalia | Pasture and water, Avoid contact |

## Conflict and Insecurity

Conflicts in the cluster are mostly between crop farmers, livestock keepers and wildlife over forage and water.

**Conflict areas**

| County | Type Of Conflict | Impacts | Hotspots | Mitigations | Conflict Level |
|---|---|---|---|---|---|
| **Taita Taveta** | Human -Wildlife | Crop destruction | Tsavo borders | - | Minor |
| **Kilifi** | Human -Wildlife | Loss of Livestock | Lutsangani | - | Minor |
| | Livelihood | Tensions | Adu, Chakama | Peace Resolutions | Minor |
| **Lamu** | Human -Wildlife | Injuries to Man | Mkunumbi | | |
| | Livelihood | Tensions | Bahari, Widho, Lumshi | Peace missions | Moderate |
| | Security Risk | Tension | Basuba Mangai, Kiangwe, Milimani Mararani | Security Operation area | Moderate |

### 2.5.5.3 Market Performance

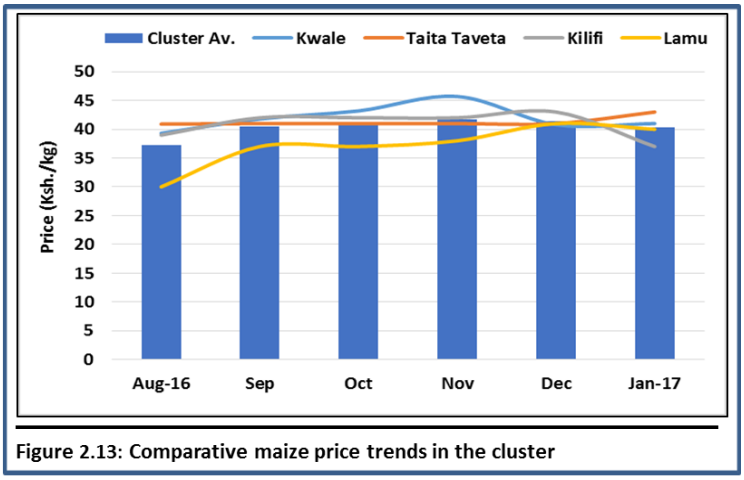



Figure 2.13: Comparative maize price trends in the cluster

The main markets in the cluster include Kilifi, Malindi, Mtwapa, Kaloleni, Bamba, Vitengeni, Baricho, Gotani, Samburu, Kinango, Vigurungani, Mwakijembe, Taru, Mwangulu, Wundanyi, Mwatate, Voi, Chumvini and Taveta. They were accessible and well-provisioned with food commodities. Cross-border trade is ongoing along the Kenya-Tanzania border in Taita Taveta and Kwale. In Kilifi and Lamu, the poor road network led to an increase in the price of commodities. The price of maize was comparable to the cluster mean and ranged from Ksh 37 in Kilifi to Ksh 43 in Taita Taveta. In Kilifi, the volume of cattle in the market in Bamba was above normal and the animals brought for sale were emaciated, resulting in low prices.

### 2.5.5.4 Water Access and Availability

The main sources of water in the cluster are boreholes, piped lines, rivers/streams, dams, water pans, shallow wells and springs, and these are the normal sources. The recharge to open water sources was 30-50 percent in Kilifi and Lamu, and 60-90 percent in Taita Taveta and Kwale. Water in the remaining open sources was expected to last until early February. In the mixed farming (food crops and livestock) and horticulture dairy livelihood zones of Taita Taveta, more than 90 percent of pans have dried due to low recharge and prevailing high surface temperatures. Across Kwale however, water is expected to last until the long rains season.

Average distances to water sources were 1-5 km and normal, with lower distances of less than 0.5 km in parts of Taita Taveta. However, in localized parts of the cluster, distances increased from the normal 3-4 km to 10-15 km due to water rationing in piped schemes and the drying of water pans.

Waiting times at water sources increased from the normal 5-10 minutes to 10-40 minutes across the livelihood zones. Some locations in the marginal mixed farming and ranching zones of

Kilifi and in the livestock zone of Taita Taveta, where livestock were concentrated, recorded the highest waiting times that had increased from the normal 15-30 minutes to between one and six hours.

The cost of water across the livelihood zones was within the normal range of Ksh. 2-5 (the normal maintenance fee for boreholes). However, the cost from vendors was Ksh. 10-50 in Kilifi and Lamu and Ksh. 20-100 in the mixed farming food crop livestock zone of Taita Taveta, depending on the mode of transport chosen. Household water consumption was within the normal range of 15-20 lpppd in the livestock zones of Taita Taveta and Kwale but reduced in the mixed farming food crops zones of the former. With the exception of the cash cropping/dairy zone of Kilifi, all other livelihood zones in Kilifi and Lamu recorded the lowest household water consumption of 6-10 lpppd compared with the normal 15-20 lpppd. This was attributed to long distances, long waiting times, and the high cost from vendors for those who cannot access water at the source.

#### 2.5.5.5 Food Consumption

In December 2016, 20 percent and 46 percent of households had poor and borderline food consumption scores respectively, compared with eight percent and 34 percent in December 2015. The deterioration is due to reduced food availability and access caused by poor crop production and high food prices. The current meal frequency across the cluster is two to three meals per day compared with the normal three to four meals per day.

#### 2.5.5.6 Coping Strategies

The Coping Strategy Index slightly increased from 16 in December 2015 to 22 in December 2016, implying that more households had difficulty meeting their food needs and were using coping strategies. Approximately three percent of households in the cluster were not adopting coping strategies while 23 percent were employing stress coping strategies. The most common strategies were reducing the size of meals, buying food on credit, and reducing the number of meals.

#### 2.5.5.7 Health and Nutrition

**Morbidity Patterns**

The most prevalent diseases for children below five years were upper respiratory tract infections (URTI), diarrhea, skin infections, pneumonia, and malaria. Diarrheal diseases among children under five increased in 2016 compared with 2015, which was attributed to water shortages in the cluster.

**Immunization and Vitamin A Supplementation**

The proportion of fully immunized children between June and December 2016 was relatively stable compared with the same period in 2015. Vitamin A coverage, with the exception of Kwale, is below the national target of 80 percent. This is attributed to inadequate support for integrated outreach in remote areas.

**Nutrition Status and Dietary Diversity**

The proportion of children at risk of malnutrition (MUAC <135mm) indicates a stable trend. The January 2017 prevalence is comparable to the LTA, with the lowest rate in Taita Taveta. According to the November 2016 SMART survey, the GAM rate for Kilifi was 4.6 percent. The current IPC for acute malnutrition for Kilifi and Kwale is Phase 1 (Acceptable). However, there was insufficient data to classify Lamu and Taita Taveta. The projected situation through

April 2017 for Kilifi and Lamu is Phase 2 (Alert) while Kwale and Taita Taveta will remain in Phase 1.

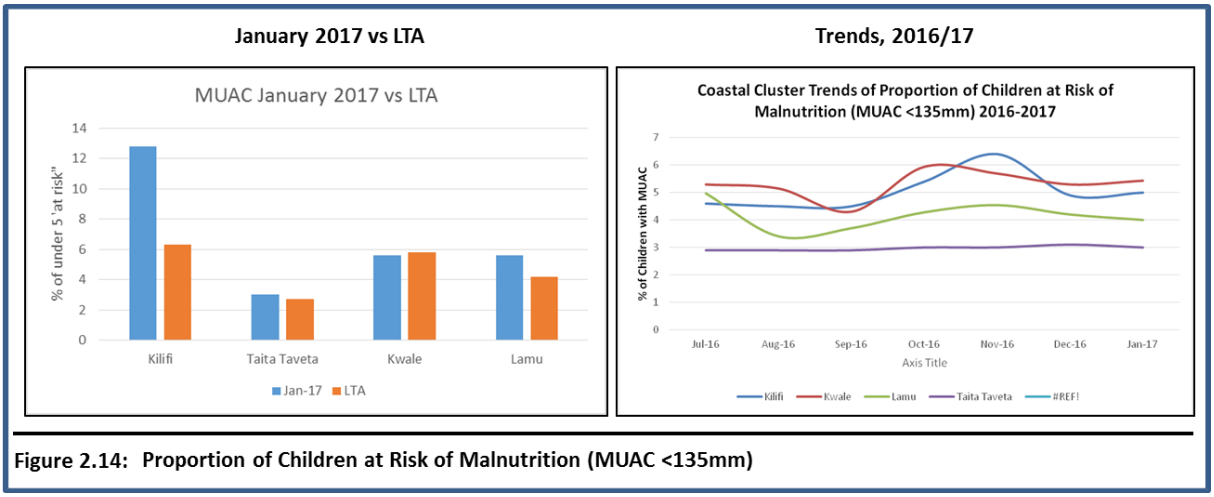



**Figure 2.14: Proportion of Children at Risk of Malnutrition (MUAC <135mm)**

## Sanitation and Hygiene

Average latrine coverage is 53 percent, although open defecation in Kilifi ranges from 50 to less than 10 percent. Household water treatment practices were generally low across the cluster with approximately 5 - 10 percent of households boiling water. Food handling and hygiene practices, such as washing hands before cooking and covering food, are generally practised in all livelihood zones but at a low rate of 20-30 percent. Across all livelihood zones, household garbage disposal is in a pit. More than 75 percent of people in the agro-pastoral livelihood zones rely on open water sources, and since surveys indicate low water treatment practices, the likelihood of contamination is high.

## 3.0 Food Security Prognosis

### 3.1 Prognosis Assumptions

The food security outcomes in the next six months (September 2016 to February 2017) will be determined by several factors. This section summarizes the assumptions being made.

- According to the Climate Prediction Centre forecasts, the March – May long rains are expected to have an erratic onset and be below average to near average in cumulative amounts.
- Maize prices are set to gradually increase from February and remain above the LTA through July, due to the expected below-average short rains harvest in February as well as increased demand from households given depleted household stocks.
- Rangeland resources are set to deteriorate further and become depleted within the next one to two months given hotter than normal land surface temperatures.
- Households are expected to atypically intensify their coping strategies (such as expanding the search for alternative casual labour opportunities, increased reliance on remittances, and collecting and selling bush products) during the periods of February to April and June to August when income-earning opportunities and household livestock productivity will be low.
- Livestock migration will remain abnormal as rangeland conditions deteriorate.
- Resource-related conflict and human-wildlife conflict are likely to escalate as water and forage dwindle, causing livestock and wild animals to encroach private ranches, crop farms and water supplies. This may result in the closure of markets and health facilities and disruption to livelihood activities.

### 3.2 Food Security Prognosis, February – July 2017

***Pastoral areas***

Food security is likely to deteriorate across all pastoral areas. Rangeland resources regenerated poorly and will be depleted faster than normal given the high land surface temperatures. The resulting longer distances to watering points will lead to poor and even emaciated livestock body condition and result in lower livestock prices. With most households relying on markets for food, the drop in livestock prices against the increase in staple food prices will erode household purchasing power still further, limiting food consumption. Consumption of livestock and livestock products will reduce with livestock moving away from homesteads. With reduced dietary intake, malnutrition cases will rise.

The areas currently in Crisis (IPC Phase 3) will continue in that state until April, while additional areas may join them. With severe water and forage deficits in some pastoral areas, especially northern parts of Marsabit, northern and eastern parts of Turkana, parts of Garissa (Ladgera, Balambala, Modogashe, Sankuri, Dadaab, Warsame, Sangole and parts of Ijara), Tana River (Chifiri, Titila, Hakoka, Wayu, Bura and Ass Kone), and northern parts of West Pokot and Baringo, the likelihood of increased livestock mortality is high.

The onset of the long rains in late March 2017, projected to be normal-to-below normal, is likely to bring some reprieve. The rains will recharge water sources and result in some regeneration of pasture and browse. Livestock movement back to wet season grazing areas, nearer homesteads, will provide households with much-needed livestock and livestock products. Livestock body condition will improve and strengthen livestock prices. Although demand for livestock will increase again, especially during April to June, few pastoralists will

be willing to sell as they endeavour to rebuild their herds. A more diversified diet is expected as the availability of local vegetables and milk improves.

Most households are expected to be in Stressed (IPC Phase 2) between May and June, although localized areas of Marsabit, Mandera and Garissa will have households still in Crisis (IPC Phase 3). However, improvements in rangeland conditions and livestock productivity are expected to be short-lived. Prevailing high land surface temperatures coupled with increased pressure on rangeland resources will result in faster than normal depletion. As a result, migration of livestock to dry season grazing areas will happen earlier than normal, from June/July. Household food consumption will deteriorate again from July onwards, with more households likely to slide back into Crisis (IPC Phase 3) from August 2017.

***Marginal agricultural areas***

Household food security is also expected to decline in the south-eastern and coastal marginal agricultural areas following two consecutive poor cropping seasons. Depleted household food stocks will increase pressure on markets where supplies will be low. Staple food prices are expected to rise and coincide with a fall in household incomes as the usual agricultural wage-earning opportunities will be limited. Typically, households would be engaged in activities such as harvesting of the short rains crop, the sale of own production and the preparation of land for the long rains crop. However, due to the failed 2016 short rains and the forecast of below-average long rains, these income sources will be extremely limited. Low household income will constrain access to food until April.

Most households are expected to remain in Stressed (IPC Phase 2), with the exception of localized parts of Kilifi (parts of Ganze, Kaloleni, and Malindi) and Lamu (eastern parts) being in Crisis (IPC Phase 3). These areas have had three consecutive failed cropping seasons, and households here are experiencing an extreme loss of income and food from their own sources. In addition, atypically low livestock holdings due to drought-related deaths and slaughter mean that alternative income from livestock is not available. The onset of the long rains is expected to provide some reprieve, but mainly with water and forage for livestock. The long rains season is not the main season for crop production in these areas, and as such, it is unlikely to result in significant improvements in household food availability. Most households in these areas will therefore remain Stressed (IPC Phase 2) until July 2017.

The key factors to monitor over the next six months include:

- Likelihood of increased conflict over rangeland resources.
- Staple food prices.
- Likelihood of increased livestock mortality before the onset of the long rains.
- Unfolding refugee situations in the Daadab and Kakuma camps.
- Impacts of programmes and interventions.

## 4.0 Proposed Sectoral Interventions

### 4.1 Agriculture Sector: Priority Interventions March 2017 – August 2017

| Intervention | County | Cost in Ksh (M) |
|---|---|---|
| **Agriculture** | | |
| Supply of farm inputs (seeds, fertilizers to farmers on the schemes and group-irrigated farms) | Turkana, Samburu, West Pokot, Narok, Nyeri, Baringo, Laikipia, Meru North, Isiolo, Kitui, Makueni, Narok, Meru, Embu, Kitui, Lamu, Taita Taveta | 300.5 |
| Promoting irrigation, setting up and equipping irrigation schemes | Baringo, West Pokot, Nyeri Isiolo, Turkana, Kilifi | 450 |
| **TOTAL** | | **750.5** |

### 4.2 Livestock Sector: Priority Interventions March 2017 – August 2017

| Intervention | County | Cost in Ksh (M) |
|---|---|---|
| Scale up livestock offtake and destocking programmes | Isiolo, Mandera, Wajir, Tana River, Garissa, Turkana, Samburu, Marsabit, Taita Taveta, Kilifi, Makueni, Kitui, Meru, Baringo, West Pokot, Laikipia | 2,326 |
| Livestock feeds, fodder production, conservation and utilization campaigns | Samburu, Taita Taveta, Kilifi, Kwale, Mandera, Tana River, Wajir, Isiolo, Garissa, Turkana and Marsabit, Makueni, Kitui, Meru, Baringo, West Pokot, Laikipia | 950 |
| Livestock disease surveillance/ vaccination/supplementary feeding | Mandera, Isiolo, Wajir, Tana River, Turkana, Marsabit Samburu,Isiolo, Kilifi and Lamu, Makueni, Kitui, Baringo, West Pokot, Laikipia, Narok, Nyeri | 366 |
| **TOTAL** | | **3,642** |

### 4.3 Water Sector: Priority Interventions March 2017 – August 2017

| Intervention | County | Cost in Ksh (M) |
|---|---|---|
| Design and construction of multi-purpose dams and water pans; water trucking; repair and maintenance of strategic water pans, boreholes and water supplies; provide water tanks and storage facilities; fuel subsidy for high yielding boreholes; purchase of generator sets, pumps and spare parts for boreholes | Isiolo, Mandera, Wajir, Tana River, Garissa, Marsabit, Samburu, Turkana, Kilifi, Kwale, Taita Taveta, Lamu, Baringo, West Pokot, Tharaka Nithi, Meru North, Kajiado, Kitui, Makueni, Mbeere and Nyeri | 2,714 |
| **TOTAL** | | **2,714** |

### 4.4 Health and Nutrition Sector: Priority Interventions March 2017 – August 2017

| Intervention | County | Cost in Ksh (M) |
|---|---|---|
| Scale up nutrition services and outreach for hard-to-reach sites | Garissa, Wajir, Mandera, Tana River, Isiolo, Kwale, Lamu, Taita Taveta, Kilifi Embu, Mbeere, Nyeri, Tharaka, Baringo, West Pokot, Kajiado and Narok | 144 |
| Scale up HINI/IMAM/IYCN interventions | Garissa, Isiolo, Tana River, Mandera, Wajir, Turkana, Samburu, Marsabit, Kwale, Lamu, Taita Taveta, Embu, Mbeere, Nyeri, Kitui, Tharaka, Baringo, West Pokot, Kajiado and Narok | 102 |
| **TOTAL** | | **246** |

## 4.5 Education Sector: Priority Interventions March 2017 – August 2017

| Intervention | County | Cost in Ksh (M) |
|---|---|---|
| School meals programme | Kilifi, Laikipia, Narok, Garissa, Nyeri, West Pokot, Tana River, Isiolo | 576 |
| Provision of water tanks | Kilifi, Lamu | 101 |
| Food for fees | Lamu, Garissa, Mandera | 17 |
| **TOTAL** | | **694** |

## 4.6 Peace and Security Sector: Priority Interventions March 2017 – August 2017

| Intervention | County | Cost in Ksh (M) |
|---|---|---|
| Peace building initiatives to resolve conflict over resources | Samburu, Turkana, Mandera, Garissa, Tana River, Laikipia, West Pokot and Baringo | 90 |
| Monitoring of potential conflict locations and support to response | Samburu, Turkana, Mandera, Garissa, Tana River, Laikipia, West Pokot and Baringo | 160 |
| **TOTAL** | | **250** |

## 4.7 Food Assistance Sector: Priority Interventions March 2017 – August 2017

| County | 2016 projected county population | Population in need of assistance after the 2016 LRA | March 2017 – August 2017 | |
|---|---|---|---|---|
| | | | % of population in need of food assistance | Number of people requiring food assistance |
| Turkana | 1,083,653 | 161,200 | 25 | 276,200 |
| Wajir | 458,900 | 101,800 | 32 | 146,100 |
| Mandera | 711,117 | 92,700 | 28 | 202,300 |
| Garissa | 431,950 | 83,900 | 29 | 123,400 |
| Marsabit | 315,936 | 77,000 | 44 | 139,700 |
| Samburu | 283,780 | 79,700 | 44 | 123,700 |
| Laikipia | 505,712 | 0 | 11 | 54,600 |
| West Pokot | 649,418 | 33,200 | 15 | 97,000 |
| Tana River | 303,047 | 53,900 | 44 | 134,100 |
| Isiolo | 155,465 | 48,600 | 54 | 83,900 |
| Kajiado | 870,721 | 0 | 6 | 48,300 |
| Baringo | 703,697 | 18,900 | 10 | 73,900 |
| Narok | 1,077,719 | 0 | 4 | 41,700 |
| **Sub-total, Pastoral** | **7,551,115** | **750,900** | **20** | **1,544,900** |
| Makueni | 959,022 | 82,100 | 17 | 165,400 |
| Kwale | 820,199 | 73,600 | 25 | 207,100 |
| Kilifi | 1,399,975 | 98,400 | 14 | 200,500 |
| Kitui | 1,097,687 | 87,300 | 16 | 180,200 |
| Taita Taveta | 358,173 | 40,400 | 17 | 61,900 |
| Embu (Mbeere) | 219,220 | 26,400 | 20 | 43,800 |
| Tharaka-Nithi (Tharaka) | 396,115 | 0 | 5 | 21,200 |
| Meru (North) | 775,982 | 31,000 | 10 | 77,600 |
| Nyeri (Kieni) | 175,812 | 25,400 | 25 | 44,000 |
| Lamu | 128,144 | 39,100 | 40 | 51,300 |
| **Sub-total, Marginal Agricultural** | **6,330,329** | **503,700** | **16** | **1,053,000** |
| **Total** | **13,881,444** | **1,254,600** | **18** | **2,597,900** |