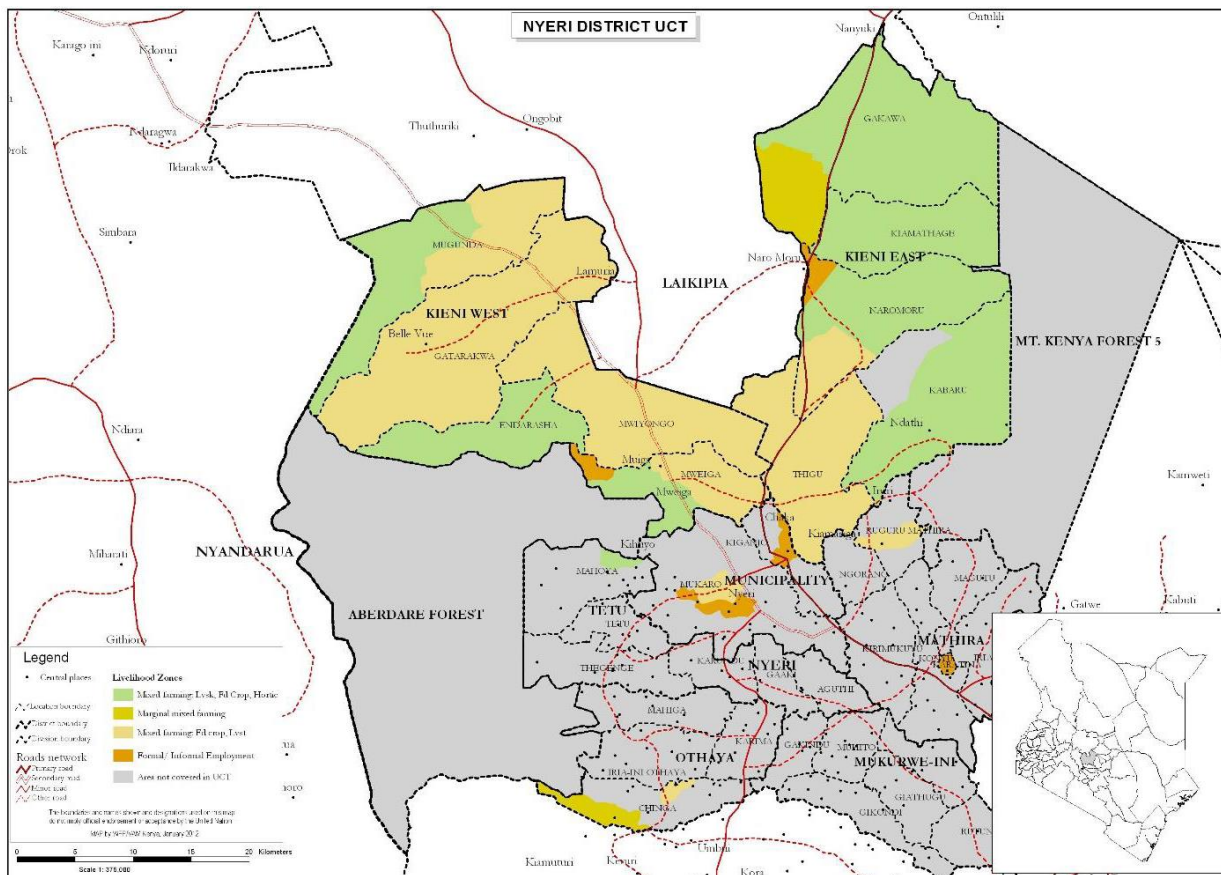


NYERI COUNTY (KIENI)

2018 SHORT RAINS FOOD SECURITY ASSESSMENT REPORT



**A Joint Report by Kenya Food Security Steering Group (KFSSG) and
Nyeri County Steering Group (CSG)**

February 2019

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EXECUTIVE SUMMARY

The 2019 short rains food security assessment was conducted jointly by the Kenya Food Security Steering Group (KFSSG) and Nyeri (Kieni) County Steering Group (CSG). The exercise covered all the livelihood zones in Kieni East and West Sub Counties. The assessment was conducted from 18th to 22nd February 2019 using a multi-sectoral approach. Primary sources of data involved key informant interviews and focus group discussions. The main objective of the 2019 short rains assessment (SRA) was to develop an objective, evidence-based and transparent food security situation analysis in the County following the short rains season of 2018 considering the cumulative effects of previous seasons, and to provide recommendations for possible response options based on the situation analysis.

The households in the mixed farming (MF) livelihood zone are able to meet essential food and non-food needs without engaging in unusual, unsustainable strategies to access food and income, including any reliance on humanitarian assistance while those in the marginal mixed farming (MMF) livelihood zone have minimally adequate food consumption but are unable to afford some essential non-food expenditures without engaging in irreversible coping strategies. Currently the population falling within the poor food consumption category is 2.5 percent while 38 percent are having borderline food consumption scores. The rest of the population has acceptable food consumption scores. The statistics are an improvement of a worsening situation from the food security situation recorded in February 2018 when eight percent had borderline and 54 percent acceptable food consumption scores. In comparison to the long rains season of 2018 when the proportion of households with poor, borderline and acceptable food consumption scores was 1.1, 8.0 and 90.9 percent respectively hence the food security situation has worsened.

Currently, the terms of trade are favourable to households keeping livestock since they are able to purchase 126 kilograms of maize with the sale of one medium-sized sheep as compared to 131 kilograms during the previous season. However, fall army worm (FAW) and millipede infestation has negatively impacted on families living in the mixed farming zone while livestock productivity in Mururu and Burguret area in Kieni East has been affected by outbreak of Foot and Mouth Disease (FMD). In addition, water availability and accessibility for both domestic and livestock has declined especially in the marginal mixed farming zone where most of the open water sources have dried up.

The main drivers of food and nutrition security in the county are mainly rainfall performance as well as crop pests and diseases. Majority of the population depends on rainfall for both crop and fodder production. With the poor performance of the short rains, widespread crop failure is expected in both MF and MMF livelihood zones. The state of pasture in the marginal mixed farming livelihood zone is poor because large track of pasture has been damaged by frost. Households in both livelihood zones are expected to continue accessing staple foods from the markets.

The marginal mixed farming (MMF) livelihood zone of the county is currently classified in the Stressed phase (IPC Phase 2) while the mixed farming (MF) zone is in the Minimal phase (IPC Phase1).

1.0; INTRODUCTION

1.1 County Background

Kieni (East and West constituencies) is located in Northern Nyeri County and lies on the leeward side of Mt. Kenya. The county borders Laikipia County to the North, Nyandarua County to the West (Aberdare Forest), Kirinyaga County (and Mt. Kenya Forest) to the East and Murang'a County to the South. Kieni covers an estimated 1990.3 square kilometers out of which only 1,026 square kilometres are suitable for crop and livestock production. The total population is 175,812 persons according to the Kenya National Bureau of Statistics 2016. There are three main livelihood zones namely marginal mixed farming, mixed farming and non formal employment accounting for 43, 34 and 16 percent of the total population.

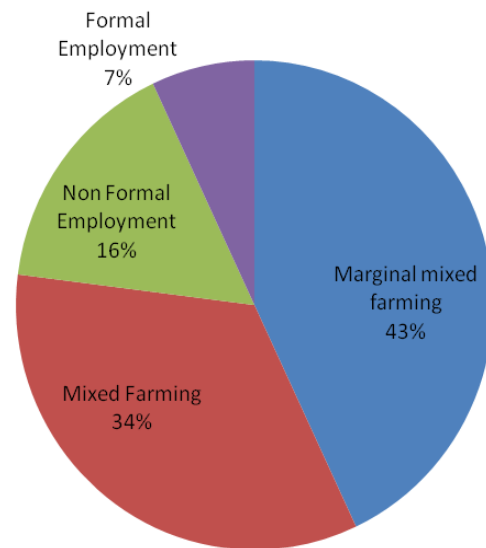


Figure 1. livelihood distribution

1.2 Methodology and approach

The main objective of the short rains assessment was to develop an objective, evidence-based and transparent food security situation analysis following the short rains season of 2018 and taking into consideration the cumulative effects of previous three seasons, and to provide actionable recommendations for possible response options based on the situation analysis. The assessment was conducted from 18th to 22nd February 2019 using a multi-sectoral approach. Primary data sources of data involved key informant interviews, focus group discussions and checklist administration by county sector heads while secondary data sources included NDMA early warning bulletins among others. Initial briefings by the county steering group (CSG) also provided valuable information. The field data was collated, reviewed and triangulated to produce a food security assessment report, which was presented before the CSG for validation and approval.

2.0: DRIVERS OF FOOD AND NUTRITION SECURITY IN THE COUNTY

2.1 Rainfall Performance

The onset of the rain season was timely in the third dekad of October but was followed by a prolonged dry spell. The region generally received moderate rains. Eastern parts of Kieni West and Western parts of Kieni East sub counties received enhanced rains ranging from 111 - 125 percent of normal while few isolated areas received 126 - 140 percent of normal rains. Only a small region in the extreme east of Kieni

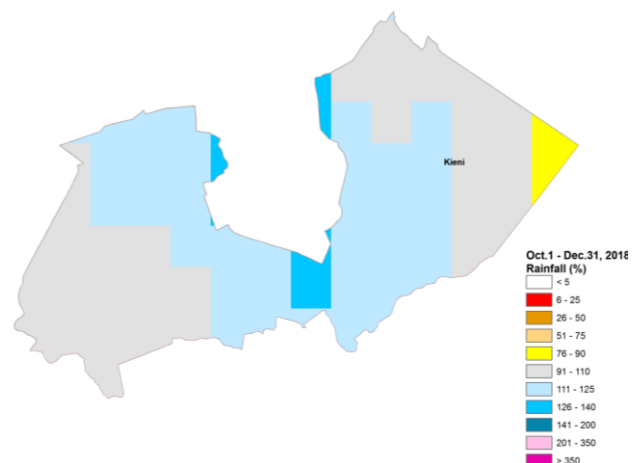


Figure 2: Rainfall performance

East received 76 - 90 percent of normal rains. The rest of the region received 91 -110 percent of normal rains. Spatial distribution was uneven while temporal distribution was poor. Cessation was early in the third dekad of December compared to first dekad of January normally. The rainfall performance in the region had a positive impact in recharging the open water sources partially but was inadequate for crop production and forage regeneration.

2.2 Other shocks and hazards

Other hazards encountered in Kieni during the period under review included fall army worm (FAW) and millipede infestation as well as massive attack of potatoes by the potato cyst nematode.

3.0 IMPACTS OF DRIVERS ON FOOD AND NUTRITION SECURITY

3.1 Availability

Availability is defined as the physical presence of a commodity at a certain place in a given time. In food security, it is one of the pillars and refers to the physical presence of food commodities in the market or household level, cross border imports, pasture and browse, stocks as well as expected or actual harvests.

3.1.1 Crops Production

The region is short rains dependent for crop production and the season accounts for over 50 percent of the total crop yields. Crop production contributes about five and 37 percent to cash income in the marginal mixed and mixed farming livelihood zones respectively. In the marginal mixed farming zone, maize contributes about 60 percent to food while beans contribute about 20 percent. In the mixed farming livelihood zone, maize contributes 40 percent to food and one percent to cash income while beans contribute two percent to cash income and 20 percent to food. Irish potatoes contribute 22 percent to cash income and 15 percent to food income while cabbages contribute 32 percent to cash income and 15 percent to food in the same livelihood zone.

Table 1: Rain fed production

Crop	Area planted during 2018 short rains season (Ha)	Long term average area planted during the Short rains season (Ha)	2018 Short rains season production (90 kg bags)	Long term average production during the Short rains season (90 kg bags)
Maize	3100	4494	3100	22470
Beans	3150	3400	6300	31500
Irish potatoes	4800	5100	240000	612000

Area put under maize was 31 percent below the long-term average (LTA) which was attributed to the fact that many farmers did not replant after the earlier crop failed to germinate or wilted due to the prolonged dry spell that came after the onset of the rainy season. Consequently, production is expected to be 86 percent below LTA. Area under beans was 93 percent of the LTA while area under irish potatoes was six percent below the LTA. The huge drop in the

acreage under irish potatoes was attributed to a moratorium on cultivation in the forest and low availability of potato seeds.

Production for both maize and beans is expected to be 14 and 20 percent of the LTA respectively attributed to various factors. The early planted seeds did not receive enough moisture necessary to allow germination, which led to rotting of seeds and wilting of the crops at the early stages of growth. Also, the rains were erratic and ceased early at the critical stages growth for both maize and beans. In the mixed farming zones of Kieni East, frost also affected maize and Napier grass production significantly. Although the area under cultivation reduced in both MF and MMF livelihood zones, the marginal mixed farming livelihood zone was more affected as crops suffered from severe moisture stress at the germination stage. Irish production was 39 percent of LTA attributed to the poor rainfall performance, reduced acreage and lack of certified seeds. Most farms in the marginal mixed farming livelihood zone left the lands fallow after failure of initial rains. The high cost of inputs due to inadequate supply of subsidized fertilizer and fall army worm (FAW) infestation on maize, millipedes on beans and potato cyst nematode in potatoes also contributed to the poor crop performance. Generally, there was widespread rainfed crop failure across the region.

Table 2. Irrigated Production

Crop	Area planted during 2018 Short rains season (Ha)	Long Term Average area planted during the Short rains season (Ha)	2018 Short rains season production (90 kg bags) Projected/Actual	Long Term Average production during the Short rains season (90 g bags)
Cabbages & kales	185	605	16444	53776
Carrots	67	110	13400	22000

Area under cabbages and kales reduced by 69 percent of the short-term average (STA) attributed to the poor performance of the rains and lack of adequate water for irrigation. In addition, the suspension on cultivation in the forest also affected the total yields for both cabbages and kales. Poor market prices of vegetables further discouraged farmers leading to decline in area under cultivation. Area under carrots yield reduced by 39 percent of the STA attributed to erratic rains.

3.1.2 Main Cereal Stocks

Table 3: Stocks held in the county (90 kg bags)

Commodity	Maize		Rice		Sorghum		Millet	
	Current	LTA	Current	LTA	Current	LTA	Current	LTA
Farmers	0	600	0	0	0	0	0	0
Traders	2050	5025	26	140	8	50	0	0
Millers	85	600	0	0	5	0	0	0
Food /aid/NCPB	0	0	0	0	0	0	0	0
Total	2135	6225	26	140	13	50	0	0

Currently, there are no household stocks, which can be attributed to three consecutive failed seasons. Traders and millers have lower stocks compared to LTA attributed to low demand and hence below normal trade volumes. Households are relying on the markets for all their food stuffs while normally, household stocks would last for 1 - 2 months

3.1.3 Livestock Production

Kieni depends greatly on livestock as a source of livelihood with over 70 percent of households keeping livestock mainly as a source of income. Major livestock species reared include cattle, sheep, goats (meat) and local poultry. Out of the 3-major species, cattle are most preferred especially in the mixed farming zones, where they are mainly kept for milk production. Over 70 percent of the cattle kept are crosses, with pure breeds being kept only by few farmers who are practicing intensive dairy farming. Livestock keeping in Kieni accounts for about 30 percent of these households' incomes.

With diminishing land parcels, diversification to other livestock types such as rearing of dairy goats and improved local poultry is gaining popularity. However, sheep remain the highest in population particularly in the marginal mixed farming zone followed by meat goats. Other livestock species that have been embraced in recent years are pigs and modern bee keeping. Important to note is that a big number of animals slaughtered in Kieni are sourced from the neighboring counties like Laikipia, Samburu and Isiolo and supplemented with few culls and fattened bulls from the area.

Pasture and browse situation

Table 4; Pasture and forage condition as per the Livelihood zones

Livelihood zone	Pasture					Browse				
	Condition		How long to last (Months)		Factors Limiting access	Condition		How long to last (Months)		Factors Limiting access
	Current	Normal	Current	Normal		Current	Normal	Current	Normal	
Marginal Mixed farming	Poor	Good	Less than 1 month	1.5-2months	None	Good-Fair	Good	1month	1 month	None
Mixed Farming	Fair	Good	1month	1.5-2 months		Good-Fair	Good	1 month	1 month	None

Pasture condition in terms of quantity is fair in the mixed farming area and poor in the Marginal mixed farming livelihood zone. This is slightly below normal at this time of the year. Browse situation is good to fair across all livelihood zones. However, the situation is expected to deteriorate as we move towards March. Currently, the quality of both pasture and browse is fair to poor. Pasture is expected to last for a maximum of one month in both the mixed farming and marginal mixed farming livelihood zones compared to a normal of 1 - 1.5 months, while browse is expected to last for one month which is normal. Over 90 percent of napier grass has been destroyed by frost across the two livelihood zones particularly in Gatuanyaga, Thegu and Munyu in Kieni East and the whole of Mugunda ward in Kieni West while maize which also serves as

fodder for livestock performed poorly. Generally, the feed reserve situation is below normal in terms of quantity and quality.

Livestock Productivity

Livestock body condition

The cattle body condition is ranging from good to fair in the MF and Fair to Poor in the MMF. This can be attributed to the current situation of pastures and other feed sources whereby the quality and quantities are not good. Sheep and goats are in good to fair good body condition in the two livelihood zones. However, this situation is expected to deteriorate as the available pastures have been greatly affected by frost damage and competition arising from the presence of livestock that have migrated to the area from neighboring counties. It is expected that livestock body condition will deteriorate further as trekking distances increase and forage scarcity intensifies. This will impact negatively on livestock production and consequently on food security and overall household incomes.

Tropical Livestock Units

The average Tropical Livestock Units (TLU) in the mixed farming zone is 2.0 compared to 2.5 normally while in the marginal mixed farming area households own an average of 3.5 TLU. Poultry remains an important enterprise particularly to households in the MMF livelihood zone where it forms a substantial part of their income. Most households are currently keeping between 10 and 20 local birds.

Birth rate

Currently, the birth rates are normal, but the calving interval is expected to become longer as body condition, feed quality and quantities declines.

Milk Production and consumption

Currently, the milk production in most households in the marginal mixed farming zones is 1.5 litres as compared to a normal of 2.5 litres. While in the mixed farming livelihood zone, milk production averages 2.5 litres compared to the normal 3 litres at this time of the year. The decline in milk production is attributed to poor quality of the available pastures and fodder. The trend of milk production is gradually declining as the available pastures continue to diminish.

Migration

There are herds of about 800 animals that migrated into Kieni East Sub County during the dry spell and are currently grazing around Naromoru area. In both livelihood zones, roadside grazing is also on the rise indicating that pasture scarcity at farm level is increasing.

Mortalities and Livestock diseases

No disease outbreaks have been reported recently, but with immigrating herds it is expected that disease incidences may arise. The veterinary department is on high alert to avert any cases that may arise. Other common livestock diseases in the sub counties include East Coast Fever (ECF), eye infections and New Castle Disease (NCD) in fowls. No unusual mortalities have been reported in either of the two sub counties except for the normal deaths especially of the young stock that easily succumb to ECF which is prevalent in areas close to the forest as a result of wildlife sharing pastures with livestock.

Water for Livestock

The current water sources for livestock are rivers, streams, water pans and dams. Water volumes in these sources are poor as most of them were not fully recharged. There was low ground water recharge. The current return trekking distance ranges from 1 - 2.5 km in the mixed farming zones as compared to a normal 1.0 - 2 km. While in the marginal mixed farming areas, return trekking distance is between 1.5 and 4.0 km as compared to a normal of 1.0 to 4 km. The trekking distance is expected to increase in the month of March, but should the long rains set in on time the situation is likely to improve. Currently, the watering frequency is once a day for cattle which is normal at this time of the year. However, quality of the water is wanting and may negatively impacting on milk production as animals drink less. It is also expected that water volumes in most watering points will drop further or even dry up.

3.1.4 Impact on availability

The current season has impacted negatively in terms of food availability. Farmers are expecting about 14 percent and 20 percent of LTA for maize and beans respectively. There are no household stocks for maize and the pasture regeneration has been fair, thereby affecting livestock body condition. As a result, household milk availability and consumption has decreased across the livelihood zones.

3.2 Access

3.2.1 Market operations

The major markets that serve the two livelihood zones are Kiawara and Mweiga in the marginal mixed farming zone and Chaka and Naromoru in the mixed farming livelihood zone. There are no designated livestock markets in the two livelihood zones and therefore livestock trade is done at farm gate level.

There were no market disruptions during the period under review. Since there are no food stocks, over 90 percent of the households are sourcing their foodstuffs from the markets. The most traded commodities currently are maize, beans and wheat. However, there is a shortage of vegetables compared to normal times attributed to poor production in the small-scale irrigation farms in the river valleys. Although the prices of these foodstuffs are currently stable, an increase in price is expected due to the increasing demand.

The market survey showed that cereals like maize were being sourced from Nyahururu market in Nyandarua County while some pulses and legumes (sorghum, millet and greens grams) were sourced from Tharaka Nithi and Meru counties. About 90 percent of the produce was sourced from outside the county while 10 percent were sourced locally, which could be attributed to the consecutive failed seasons

Market Prices

Sheep Prices

Sheep prices have been on an upward trend for most of 2018. The prices increased in October and stabilized for November and December, attributed to the good livestock body condition and high demand for the December festivities. However, the price dropped by 13 percent in January as compared to that of December 2018 attributed to less demand and oversupply in the markets as farmers disposed off the livestock to get school fees. The current price is of Ksh.4407 is still above the LTA by 17 percent (Figure3). The price is projected to reduce in the next month due to pasture and water scarcity, which are likely to negatively affect livestock body condition.

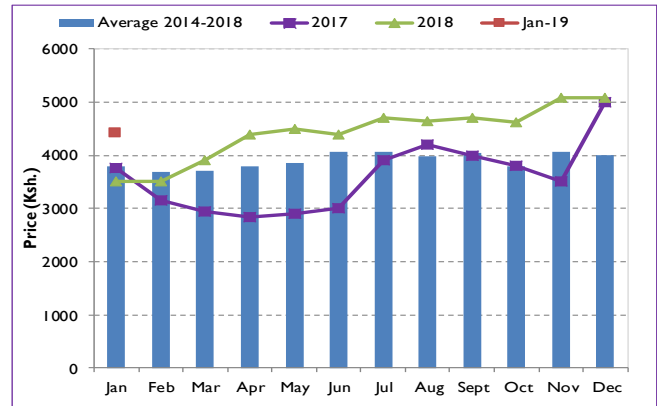


Figure 3: Trends in sheep prices

Maize Prices

Maize prices have been on a downward trend for the better part of 2018 attributed to better production in other parts of the country and distribution leading to lower prices. The prices increased in December and January attributed to low to moderate supply in the markets. The current price is 19 percent below the LTA and 39 percent below that of same period in 2018 (Figure 4). The price is projected to continue increasing as the lean season progresses and the demand for the cereals increase.

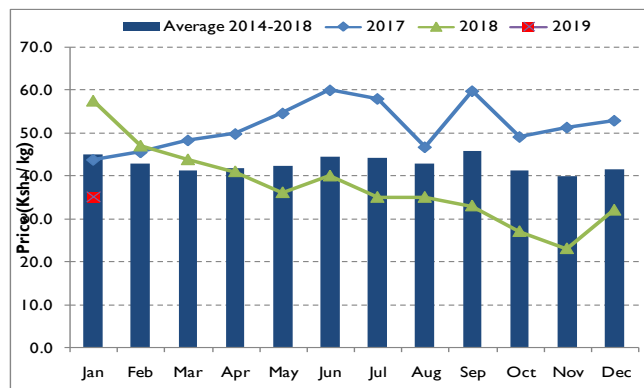


Figure 4; Trends in maize prices

3.2.2 Terms of Trade

The terms of trade have been on an increasing trend until November 2018 from when they declined attributed to a drop in sheep prices. Currently, proceeds from the sale of a medium size sheep can purchase 126 kilograms of maize. Although declining, the current terms of trade are still favourable and 26 percent above the LTA and also 33 percent above that of same time in 2018 (Figure 5). With the projected drop in sheep prices and rise in maize prices, the terms of

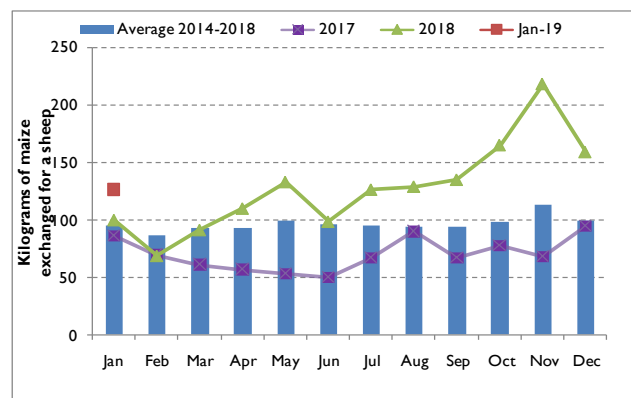


Figure 5; Trends in terms of trade

trade are expected to drop further, compromising the households' purchasing power.

3.2.3 Income sources

There are various sources of income in the county. In the marginal mixed farming livelihood zone, sale of livestock and livestock products, sale of poultry and poultry products and petty trade accounts for the majority of the household income currently. In the mixed farming zone, Sale of food crops and cash crops (kales, cabbages, tomatoes, and onions), livestock and livestock products as well as small businesses are the major contributors to cash.

3.2.4 Water access and availability

Kieni generally relies on rivers, boreholes and waterpans as the major water sources for domestic use (Figure 6). The proportion of households currently relying on the major sources is shown in figure 6 alongside. The rainfall performance impacted positively in recharging the open water sources as well as the shallow wells. However, the recharge varied from 20-30 percent for pans and dams to 40-50 percent for the rivers. Currently, many of the rivers are having minimum flows while most of the water pans have dried up. The sources are the normal ones at this time of the year, only that the variation has been brought about by early drying of pans and minimal flows in the rivers.

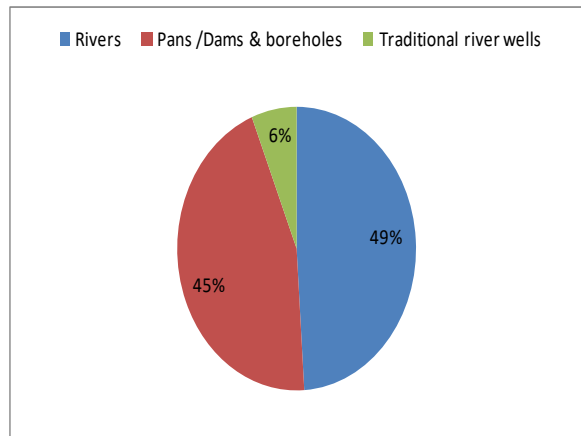


Figure 6: Proportion of water sources

Areas with low water points Thegu, Narumoru burguret, Mere, Rongai and Honi in Kieni East and Kamatongu, Ngoro Theru, Honi village, Labura, Endarasha town, Mahiga, Lachuta, Kienjero, Muthangira, Kiawara and some parts of Lamuria in Kieni West. The low water point concentration has been attributed to rapid population increase, water rationing for piped schemes, drying of water pans and breakdown of piped schemes. The water in these areas is expected to last for 1- 2 months.

Some Boreholes in Kieni east Kieni west are not operational due to high cost of fuel and electricity bills.

The currently operational rivers are Narumoru, Thegu, Honi, Burguret, Ngarengiro and Mere while the dry ones include Karuthigito and Kamariki in Kieni west and Nairobi River in Kieni East.

There are various reasons behind the non-operation of these water sources. The Rivers were poorly recharged while over abstraction and uneconomical methods of irrigation have added wastage of the scarce water resources. Destruction of forest covers and by extension catchment areas as well as cultivation on riparian and riverbanks have also led to drying up of these rivers. There is lack of fuel for the genset operated boreholes while others have been vandalized. There are also recently drilled boreholes which are yet to be equipped. The water pans have dried as a

result of poor recharge as a result of siltation and poor design as well as accelerated evaporation of water as a result of the above average diurnal temperatures.

Distance to water sources

The current distances to water sources have increased from the normal two kilometres to three kilometers in the mixed farming and normal three to the current six in the marginal mixed farming zones attributed to drying up of some dams and rivers and most of boreholes are not operational. The affected areas are Kienjero as a result of drying up of Kienjero water pan, Chaka (drying of Nairobi River), Lamuria (drying up of Ruthigito stream) and Lusoi where the water pan has dried up. Distance to water sources is 2-3km in MF zones and 3-6km in MMF zones.

Areas with exceptionally long distances of 6-8 kilometres to water sources include Embaringo, Watuka and Kabati in the marginal mixed farming zones and Gakanga and Charity in the mixed farming zones of Gatarakwa ward, Gaturiri, Luisoi, Thungari, Maragima in the marginal mixed zones and Rongai in mixed farming zones in Thegu Ward. Kamariki, Lamuria, Ruirii in the marginal mixed farming zones as well as Nairutia and Kamiruri in the mixed farming zone of Mugunda ward also experienced long distances to water sources. Finally, in Githima in the marginal mixed farming zone and Kahurura as well as Gathiuru in the mixed farming zone of Gakawa Ward also experienced distances of 6-8 kilometres.

Waiting time at the source

The waiting time at the source is minimal at the open water sources is minimal, which is normal. At the boreholes, and piped schemes, waiting time has increased from the normal 10-20 minutes to the current 20-30 minutes. However, some areas in the marginal mixed farming zones experienced the longest waiting times of 30 minutes to one hour. The areas affected are areas with high concentration of livestock and humans as well as alternative water sources where households are sourcing their water.

Cost of water and consumption

The cost of water at the boreholes and piped schemes has increased the normal Ksh 5 to the current Ksh.10 in the mixed zone and from the normal Ksh.5 to the current 20 in the marginal mixed farming zone. Distances far from the water sources are experiencing the highest costs of up to Ksh. 50 as vendors come in to bridge the gap.

The current water consumption is 15-20 litres per person per day (lpppd) compared to the normal 30-40 in both mixed farming and marginal mixed farming livelihood zones. This is due to increased distances to water sources, increased cost at the source as well as the ongoing rationing at some piped schemes. Some rivers have also dried up while the rest are having minimal flows. Reduced water consumption has a direct negative impact on utilization at a personal level.

3.2.5 Food Consumption

Milk consumption

The current milk consumption by households in the mixed farming zone is one litre compared to the normal two while in the marginal mixed farming zone average household consumption is 0.5 litres compared to the normal one litre. Most milk is from cattle. The mixed farming livelihood zone is producing the most milk where part of the milk is sold to cooperatives.

Reduction in milk consumption has compromised household food security as it is a rich source of proteins, which are vital for children and the elderly. The current price of milk is Ksh. 29-30 in mixed farming and Ksh.30-31 in the marginal mixed farming zones. The prices were largely determined by the processors. These prices are below the normal ones at this time of the year.

Cash received from the sale of milk in the households' supplements other sources of income thus providing cash for other expenses related to food security. According to NDMA early warning bulletins 59.5 percent of the households were having an acceptable food consumption score, 38 percent having borderline food consumption scores while the rest had poor food consumption scores. In comparison with the previous season, the food security situation has worsened as 90.9 percent and 8 percent had acceptable and borderline food consumption scores respectively. Currently adults are consuming 2-3 meals per day in the mixed farming zone while in the marginal mixed farming zone, meal consumption is 1-3 meals. Children are consuming 2-3 meals with snacks in between the meals, which is normal.

3.2.6 Coping strategy

Different households are using different strategies to cope with food gaps. Among the strategies currently being employed are skipping of meals and giving preference to children during meal times. There is also an increase in petty trade in both livelihood zones. According to NDMA early warning bulletins, the coping strategy index for January 2019 was 4.1 compared to 3.91 for the same period in 2018. The shift is an indication of a worsening situation, though still within the long-term average. The coping strategies being employed are the normal consumption-based strategies.

3.3 Utilization

3.3.1 Morbidity and mortality patterns

The most prevalent diseases during the period under review were upper respiratory tract infections (URTI), diarrhoea and diseases of the skin for the under-fives while general population, upper respiratory tract infections (URTI) and diseases of the skin were the most prevalent (Figure 7). Arthritis among the general population was also emerging as a major ailment though not captured among the top three prevalent diseases. There was a decline in morbidity patterns for the under-fives the cases of URTI and diarrhoea for the period July –

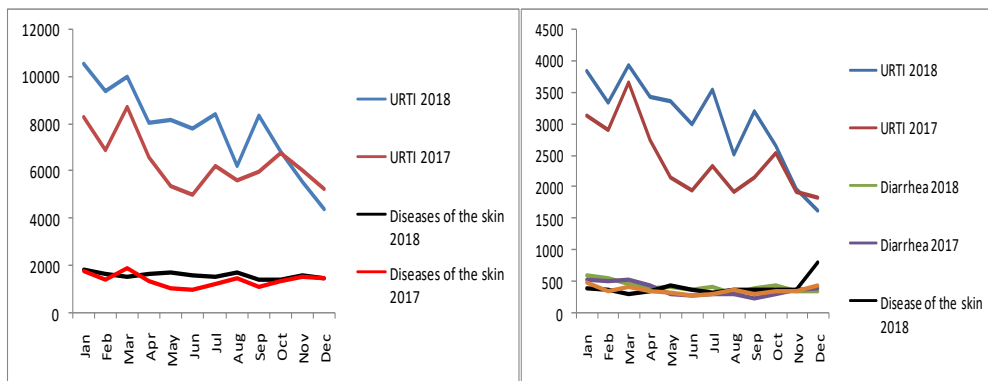


Figure7: Morbidity trends for General population (L) and under fives (R)

December 2018 compared to the same period in 2017 attributed to concerted efforts by health stakeholders which involved sensitization on hygiene and handwashing at the critical times. There was

a slight rise in the cases of diseases of the skin attributed to the prevailing dusty and dry weather condition. For the general population, there was a decline in morbidity trend for both diseases attributed to Malezi bora initiatives by the stakeholders. The community was able to seek health services from both public and private health centres. They preferred to seek medical care in private facilities due to drug stock outs and long waiting time in public facilities. The distance to health facility varies, with the longest recorded distance of 5-8 kilometres to the nearest health facility.

3.3.2 Immunization and Vitamin A supplementation

The percentage of fully immunized child (FIC) improved by 14 percent for the period July-December 2018 compared to the same period in 2017. This was attributed to increased awareness and Malezi Bora activities in the county. The specific antigen coverage are: OPV 1 (90.8 percent in 2017, compared to 82.1 percent in 2018), OPV 3 (84 percent in 2017 compared to 79.2 percent in 2018), and measles (84.3 percent in 2017 compared to 83 percent in 2018). The OPV and measles coverage in 2018 decreased attributed to stock out of measles vaccine coupled with nurses' strike.

Vitamin A coverage increased from 46 percent for the period July-December 2017 to 86 percent for the same period in 2018 attributed to malezi bora activities conducted in October 2018 in early childhood development centres (ECDE).

3.3.3 Nutritional status and dietary diversity

Majority of the households in the mixed farming zones are consuming 2-3 meals composed of 3-4 food groups while in the marginal mixed zones, meal frequency is 1-3 meals comprising of 2-4 food groups. The foods commonly taken include ugali, cabbages, beans and other pulses as well as potatoes. Children are breastfed between 1-3 months and then introduced to complimentary feeds against the normal breast feeding which is six months exclusively. Most children stop breastfeeding one year old when the normal should be about two years. The mothers allege that they do not have enough energy to continue with the breastfeeding. Foods introduced are pumpkins and Pawpaw which mainly provide vitamins and have low nutritive value. The feeding of the under fives is not normal during this time of the year (2-3) meals per day. The normal meals are 4-6 times in a day, and mostly they feed from the family pot.

Majority of households use open water sources as they are free. These sources are sometimes contaminated and therefore pose danger for human consumption unless treated at the household level. Due to poor sanitation and hygiene, a number of households' members have been infested by jiggers majority being children, elderly, mentally challenged. As a result of the current situation, scarcity of water has severely increased the jigger cases and urgent intervention

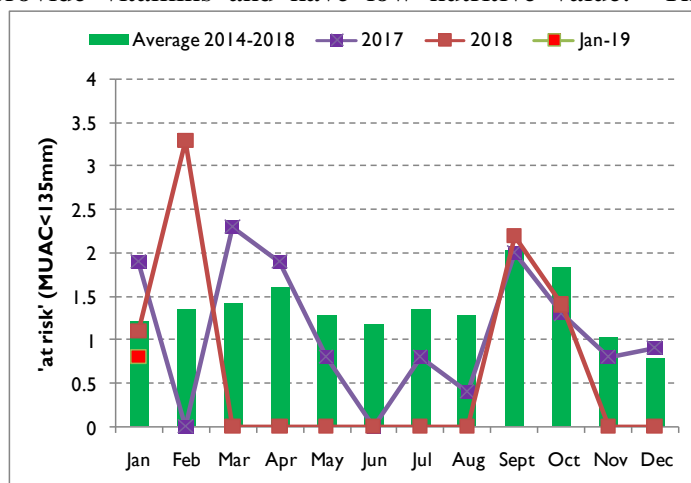


Figure 8: Percentage of children at risk

is required.

According to NDMA January 2019 early warning bulletin, the proportion of children at risk of malnutrition was 0.8 percent, which is above the long-term average of zero (Figure 8).

The most probable cause of malnutrition in the two livelihood zones is food insecurity and constraints in caring behaviour. The intake of adequate diet is not observed for both adults as well as children. The early cessation of breastfeeding could be another factor contributing to malnutrition. However, the cases of malnutrition are relatively low.

3.3.4 Sanitation and Hygiene

The water table in the region is relatively near the surface and therefore during the rainy season seepage from sanitary facilities finds its way into the water sources. The situation predisposes the households to risk of water and sanitation related illnesses, actual illnesses leading to loss of work hours due to these illnesses as well as loss of economic gain while seeking treatment. However, corrective measures have been taken and include the following;

The Health department is collaborating with other stakeholders to provide aqua tabs and aqua guards to households for treatment of drinking and cooking water. Mass health education on water treatment is also being undertaken at the household level as well as advocating for formation of water and Sanitation Company that will be treating water from a central area.

Latrine coverage is 98 percent across the region. Hand washing at the critical times is generally practiced while upstream contamination is generally by immigrants coming with livestock into the region. Water treatment methods being undertaken involve the use of chemicals as well as boiling.

3.4 Trends of key food security indicators

Table 5: Trends of key food security indicators

Indicator	Long rains assessment, August 2018		Short rains assessment, Feb 2019	
	Percent of maize stocks held by households (agro-pastoral)	0		0
Livestock body condition	Goat	Good	Goat	Good
	Sheep	Good	Sheep	Good
	Cattle	Good	Cattle	Marginal Mixed Farming
Water consumption (litres per person per day)	30-40		15-20	
Price of maize (per kg)	35.2		35/kg	
Price of sheep	4600		4417	
Terms of trade (pastoral zone)	131		126	
Coping strategy index	3.95		4.1	

Indicator	Long rains assessment, August 2018		Short rains assessment, Feb 2019	
	Food consumption score (percentage)	Acceptable	90.9	Acceptable
Borderline		9.1	Borderline	38
Poor		0	Poor	2.5
Proportion of children at risk of malnutrition (MUAC <135mm)	0		0.8	

4.0 CROSS CUTTING ISSUES

4.1 Education

There are 111 ECDE centers, 105 public primary schools and 59 public secondary schools in Kieni East and West Sub Counties.

4.1.1 Access (Enrolment)

The total enrollment of term III 2018 for ECDE was 2217 boys and 2065 girls making a total of 4282 pupils. In term I of 2019, public ECDE centers had a total enrollment of 2342 boy and 2068 girls making a total of 4410 pupils. Therefore, there was a dropout rate of 144 pupils. Enrollment of boys increased by 5.64percent and that of girls was largely unchanged. Total enrollment increment was three percent.

The decrease in enrollment was as a result of the presence of private ECDE centers neighboring the homesteads and lack of free primary education (FPE) in public ECDE centers. The total enrolment for public primary schools for term III 2018 was 15,481 and 14,453 girls making a total of 29,934 pupils. In term I of 2019 the total enrolment was 14891 boys and 13846 girls making a total of 28,737 pupils. Therefore, there was dropout of 1197 pupils. Boy's enrolment dropped by 3.2 percent and that of girls dropped by 4.2 percent so cumulatively enrollment in primary school dropped by 3.4percent. The drop out was attributed to domestic chores, lack of interest by parents on education as well as rising poverty levels at the households.

The enrolment for public secondary schools in term III 2018 was 7266 boys and 8334 girls making a total of 15600 students. In term I 2019 the total enrolment was 7653 boys and 8915 girls making a total of 16568 students. Therefore, there was an increase in enrolment by 974 students. Boy's enrolment rose by 5.3 percent while that of girls rose by 6.9 percent. Cumulatively, secondary school enrolment rose by 6.21percent.

These were as a result of government policy of 100 percent transition from primary school to secondary schools, provision of textbooks at the ratio of 1:1. Free secondary Education and transfers from boarding schools because of the levies.

4.1.2 Participation (Attendance)

In all levels the attendance rate has been consistent due to the free primary education (FPE), free secondary education (FSE), the home-grown School feeding program (HGSMP) and the government policy on 100 percent transition from primary and secondary schools. The few

variations in attendance in ECDE and primary schools is a result of private academies, relocation/migration, drought and child labor

4.1.3 School feeding

In Kiambu East and West there are 51 schools under the home-grown school feeding programme and community meals feeding programme. A total of 12572 pupils (6505 boys and 5907) are benefiting from these programme. This programme had led to increased access, participation and retention in the benefiting schools. Currently the programme is not operational since the government did not disburse funds for purchase of food commodities for term one 2019 as expected.

4.1.5 Inter-sector links

Normally, all the schools in Kiambu East and West sub-counties have adequate water from rivers, boreholes and piped water. In terms of hygiene all the schools have adequate functional latrines with access to hand washing facilities. However, some requires rehabilitation in terms of construction of new ones, replacing broken doors, repainting and cementing.

The schools require assistance in terms of food, tuition, drought mitigation provision of water and other physical facilities, which will go a long way in uplifting the education standards in these sub-counties.

5.0 FOOD SECURITY PROGNOSIS

5.1 Prognosis Assumptions

- According to Kenya Meteorological Department MAM 2019 forecast, enhanced rainfall is expected over the Western sector and Highlands East of the Rift Valley including Nairobi area during March-May 2019 “Long-Rains” Season.
- According to Kenya Meteorological Department MAM 2019 forecast, the seasonal rainfall is expected to peak during the months of April and May
- According to Famine Early Warning Systems Network, rangeland conditions are expected to deteriorate in the marginal zones accelerated by the above average daytime temperatures until the onset of the long rains.
- Based on the water department water situation report, water availability is expected to reduce further through end of February and March and majority of the households will trek for longer distances in search of the commodity. It will however increase with the early onset of the long rains towards the end of March.

5.2 Food Security Outlook

5.2.1 Outlook for March April May

The marginal mixed and mixed farming zones are expected to have an unstable stable food security situation. Water availability and accessibility has been severely affected and more so in the marginal mixed farming livelihood zone. Therefore, consumption is expected to remain at the current consumption in litres per person per day. The situation is however expected to improve with the coming of the long rains in April. Livestock production is expected to reduce further as forage conditions deteriorate and in migration continues and increases the competition for the

already scarce forage and water. However, the trend is expected to change with the coming of the long rains. No changes are expected in market operations and the terms of trade are likely to decline but remain favourable as maize prices increase while the price of sheep falls. Majority of households are expected to continue accessing food stuffs from the markets. The nutrition status of the children under five is expected to remain relatively stable across the livelihood zones with no change mortality rates for both children under five and the general population. The households are expected to employ the normal consumption-based coping mechanism and livelihood strategies to bridge any food gaps that may arise. Food security situation is expected to remain in the Stressed (IPC Phase 2) in the marginal mixed farming livelihood zones for the next 2 - 3 months and non/ Minimal (IPC Phase 1) in the mixed farming zone.

5.2.2 Outlook for June July August

The onset of the long rains in April is expected to improve pasture and browse. The in migrated livestock is expected to move out of the county. The regeneration of pasture, which in turn is expected to improve the livestock body condition and productivity will lead to more milk availability and consumption at the household level. The overall result is an improvement in the nutrition status of the children under five across the livelihood zones. The sale of excess milk is likely to increase to household income leading to more disposable income for other food security related expenses. With no market disruptions expected and the terms of trade are expected to remain favourable, households are expected to continue accessing foodstuffs from the markets. There are no significant changes expected in the mortality rates for both children under five and the general population within this period. Majority of the households will be in non/Minimal (IPC Phase 1)

6.0 CONCLUSION AND INTERVENTIONS

6.1 Conclusion

6.1.1 Phase classification

The food security situation in the county is currently on a declining trend. The marginal mixed farming livelihood zone is more affected in terms of severity when compared to the mixed farming livelihood zone. The indicative food security phase classification for the marginal mixed farming zone as well as a section of the mixed farming livelihood zones is stressed (phase 2), an indication that even with any humanitarian assistance, household groups have minimally adequate food consumption but are unable to afford some essential nonfood expenditures without engaging in irreversible coping strategies. Therefore, the action is required for disaster risk reduction and to protect livelihoods. The rest of the mixed farming livelihood zone is livelihood zone is in phase 1 (Non/Minimal) food insecurity phase.

6.1.2 Summary of the findings

The onset of the 2018 short rains were late and the cessation was early. Spatial distribution was uneven while temporal distribution was poor. The temporal distribution was characterized by dry spells in between the dekads. They were also torrential and erratic in nature. There has been near total crop failure in the farms. There are no household stocks as a result of successive failed seasons. The markets are moderately provisioned although traded volumes are moderate in both mixed farming and marginal mixed farming livelihood zones. Stocks held by traders are also below the LTA. The current terms of trade are stable and favourable, and above the LTA. However, due to the presence of a substantial percentage of the population being casuals, the

favourable terms of trade do not necessarily imply an enhancement in the households' purchasing power. The problem has been compounded by the ongoing layoffs by the commercial farms due to water shortages. Pasture is on a declining trend and worst in the marginal mixed farming livelihood zone although the lithe crop residue is supplementing livestock feeds. The available pasture is expected to be depleted within a month. Water for both livestock and domestic use has been severely negatively affected as a majority of the open water sources have dried the situation has been aggravated by broken down boreholes. As a result, distances have increased as households look for alternative sources, which in turn has resulted in reduced water consumption and increased costs of the commodity especially water for domestic use. The marginal mixed farming livelihood zone is more affected in comparison to the mixed farming livelihood zone. The nutritional status for children below five years is however stable and below the LTA.

6.1.3:Sub County/Ward Ranking

Table 6: Sub County Ranking

Ward ranking	Rank	Main food security threat
Mugunda	1	<ul style="list-style-type: none"> • 90percent crop failure • Frost bit • Poor body conditions • In migration of livestock • Resource based conflict • Poor pastures conditions • Drying up of water sources and increased distances to alternative sources
Endarasha/Mwiyogo	2	<ul style="list-style-type: none"> • 90 percent crop failure (Mwiyogo and Muthuini) • Fair livestock body conditions • Drying up of water sources and increased distances to alternative sources • In migration of livestock • Resource based conflict • Poor pastures conditions • Human wildlife conflict
Thegu	4	<ul style="list-style-type: none"> • 70 percent crop failure • 100 percent crop failure (Thungari, Lusoi and Gaturiri) • Fair-poor body conditions • Frost bit • Drying up of water sources and increased distances to alternative sources (Honi River and Gathurugai river). • In migration of livestock • Resource based conflict • Poor pastures conditions • Human wildlife conflict

Gatarakwa	3	<ul style="list-style-type: none"> • 70 percent crop failure • Fair-poor body conditions • Frost bit • Poor pastures conditions • Human wildlife conflict
Gakawa	5	<ul style="list-style-type: none"> • 70 percent crop failure • Millipedes • Frost bit • Invasive weed • Fall army worm • fair pastures • In migration of livestock • Resource based conflict • Fair-poor pastures conditions • Human wildlife conflict
Mweiga	6	<ul style="list-style-type: none"> • Rivers flow below baseline • 70 percent crop failure • Fair-poor pastures conditions • Fair-poor body conditions • Frost bit • Human wildlife conflict
Naromoru/Kiamathaga	7	<ul style="list-style-type: none"> • Frost bit • 70 percent crop failure • In migration of livestock • Resource based conflict • Fall army worm • Millipedes infestation • Potato cyst nematode pest
Kabaru	8	<ul style="list-style-type: none"> • Human wildlife conflict • In migration of livestock • Resource based conflict • 50 percent crop failure

6.2 Interventions

6.2.1 Ongoing food interventions

Currently, there are no ongoing food interventions in the two sub counties.

6.2.2 Ongoing non-food interventions

Table 7: Ongoing non-food interventions

Intervention	Objective	Specific Location	Activity target	Cost	No. of beneficiaries	Time Frame	Implementation stakeholders
Agriculture							
Kenya climate Smart agriculture Project	Increase productivity Build farmers resilience to climate change	Gakawa, Thegu, Kabaru and Naromoru, Gatarakwa, Endarsha, Mugunda, Mweiga	Sensitization 1		3000	2018-2023	County Government National Government Other development partners
Upper Tana natural management project	Natural resource management, Livelihood improvement, income generation	All wards	Capacity building		5000	2018-2023	CG National Government IFAD
Livestock							
Support to 13 groups with Breeding stock for	-To give farmers alternative income	Naromoru, Munyu, Kamburai	Increased milk and livestock productivity Reduced poverty		8.7M	240 households 2018-2019	DALF/ County Government

livelihood diversification (under Dairy goat, poultry, bee keeping, pigs and dairy cow) and income generation	sources through livelihood diversification	ni Kiamathaga and Thegu in Kieni East	through increased incomes. -Improved nutrition from consumption of livestock products				
Support to milk cooperatives with milk coolers to reduce on post-production losses	Reduce post production losses	Waraza coop in Kieni East and Mweiga Coop in Kieni West –	Enhance incomes from milk sales derived from the extra money paid for chilling	14.4M	3300	June 2018- Jan 2019	County Government / National govt
Subsidized A.I services	To improve the current breeds	All wards in the 2 Sub counties	Improved milk production from better breeds thus higher household incomes	0.6M	All dairy farmers – 2000 dairy cattle	Continuous	County government
Disease surveillance	To reduce livestock mortalities and other losses associated with disease management	All wards	Maintain healthy herds for optimum production thus enhanced food security		All livestock keepers	Continuous	DALD County Government
Improved Pasture establishment (30 acres of Rhodes grass)	To cushion farmers during times of drought through bulk production	AMS Naromoru Kieni East	Improved milk production and incomes	1.85M	237 persons	June 2018- April 2019	County Government & UTaNR P, Farmers
Capacity building on better management practices and dry season	To equip farmers with relevant animal husbandry skills for	All wards in the 2 sub counties	Increased milk, meat and egg production and incomes	Farmer initiative/ County govern	Livestock keeping households	Continuous	County Government, Farmers, UTaNR P

feeding. Through group trainings and demos	improved productivity			ment	(1200)		
Health and Nutrition							
Nutrition Assessment and screening	To identify those who are at risk of malnutrition	Mugunda , Gatarakwa, lower parts of Endarasha, Gakawa, Thegu, Burguret	under-fives	0.2M	23,718	March 2019	County Government, NDMA
House hold Water treatment	To reduce water borne diseases	"	General population	0.2M	10,000	March 2019	County Government, NDMA
Elimination of jiggers	To reduce jigger infestation	"	Under-fives and general population	0.2M	150	April 2019	County Government, NDMA
Procure nutrition commodities (supplements)	To reduce the severity of malnutrition and to save lives	"	under-fives	1M	250	April 2019	County Government, NDMA
Water							
Surveying, drilling and equipping of borehole and pans	Provision of adequate portable water for both livestock and domestic use	Karundas Thungari		8M	500 600	2 years	CGN
Surveying, drilling and equipping of boreholes and pans		Mureru Kaaga		8M	1,800 7000	2 years	CGN

Surveying, drilling and equipping of borehole		Gitwe		4M	650	2 years	CGN
Surveying, drilling and equipping of borehole and pans		Kimahuri		4 M	1,500	2 years	CGN

6.3 Recommended Interventions

6.3.1: Recommended food interventions

Table 8: Recommended food interventions

Sub county/ Ward	Range of Population in need	Proposed mode of intervention
Mugunda	30-35percent	GFD/CFA
Endarasha/Mwiyogo	25-30percent	GFD/CFA
Thegu	25--30percent	GFD/CFA
Gatarakwa	15-20percent	GFD/CFA
Gakawa	15-20percent	GFD/CFA
Mweiga	5-10percent	GFD/CFA
Naromoru/Kiamathaga	5-10percent	GFD/CFA
Kabaru	3-5percent	GFD/CFA

Table 9: Recommended non- food interventions

Sub-county	Intervention	Location	No. of targeted beneficiaries	Proposed Implementers	Required Resources	Available Resources	Time frame
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Agriculture							
Kieni East and West	Laying of Soil conservation Structure	Gakawa Thegu Kabaru Naromoru Gatarakwa Endarsha, Mugunda, Mweiga	3000	County Government National Government NDMA	2M	Technical officers	2018-2019
Kieni east and west	Soil fertility management	Gakawa Thegu Kabaru Naromoru Gatarakwa Endarsha Mugunda Mweiga	3000	County Government	3M	Technical officers	2018-2019
Kieni East/ Kieni West	Procurement of early maturing bean seeds	Gakawa Thegu Kabaru Naromoru Gatarakwa Endarsha Mugunda Mweiga	1000	County Government National Government NDMA	2.5M	Technical officers	2018-2019
Livestock							
Kieni East	Support 5 groups with bee keeping starter kits	Ndiriti Aguthi in Naromoru Kiamathaga Ward	50 households	SIVAP & DALF/ County Government	1M	Personnel Transport	Mar 2019- Mar 2020
Kieni East & West	Upscale support (8) to groups with improved local poultry chicks (500 chicks per group)	All 8 wards in both Kieni East and West with emphasis on Ndiriti Aguthi in Kieni East where the SIVAP project will be covering	250 households	SIVAP & DALF/ County Govt	1.2M	Personnel Transport	Mar 2019- Mar 2020
Kieni East and West	Upscale on improved pasture/fodder establishment through support of farmers in all wards of to establish 80 acres of Boma Rhodes, Brachiaria and fodder sorghum	All 8 wards in Kieni East and West	400 households	DALF/ County Govt Upper Tana	3.1M	- Ksh.480,000 from CGN - Personnel - Transport - Land - Community labor	Mar 2019- Mar 2020

Kieni East and West	Establish 50 acres of Lucerne (25 farmers per ward to do ¼ acre each)	All 8 wards in Kieni East and West	200 households	DALF/ County Govt	517,000	-Land - Community labor	Mar 2019- Mar 2020
All wards but emphasis on the hot spots	Up scaling on Preventive Vaccination against FMD, CCPP and NCD in local poultry.	All 8 wards in Kieni East and West	10,000 heads of cattle, 10,000 shoats and 20,000 local birds	DALF- County Govt/ KVA	2,141,000	- Personnel - Transport	Continuous
All wards but emphasis on the hot spots	Provision of drought pellets and mineral supplements (UMMB) to vulnerable livestock	All wards in Kieni East and West with emphasis on the hotspots of Naromoru, Mugunda, Thegu, Gakawa and Gatarakwa wards	5000 animals	NDMA and DALF/ County govt	15,000,000	- Personnel	March – June 2019
Water and Sanitation							
Kieni East and West	Desilting of Kianjeru, Lusoi, Kiboya, Nyumba Tatu, Mikumbuni and Ndambuki dam.	Kiboya Lamuria Lusoi Kahurura	2500	CGN NDMA NIB stakeholders	24M	NONE	FEB- APRIL 2019
Kieni East and West	Supply of diesel for strategic boreholes. (Ngonde Gatei, Kamuhiuria, GatuambakariC Cheni, Karera, Muthuini, Labora, ruirii, New city, Kabati borehole	Karundas Kakuret Rongai Mahiga Kanyangia Karemeno Kabati	2000	CGN NDMA NIB stakeholders	3M	NONE	FEB- APRIL 2019
Kieni East and West	Supply of water using tankers for domestic and livestock at strategic points for incoming pastoralist for temporary use.	Migratory routes	3000H/H	CGN NDMA NIB stakeholders	5M	NONE	FEB- APRIL 2019

Kieni East and West	Provision of water treatment tablets (aqua tabs)	All wards	52,000	CGN NDMA NIB stakeholders	2M	NONE	FEB-APRIL 2019
Kieni west	Spring protection – Muthangira springs Fencing, construction of elevated 10M ³ tank, construction of water troughs	Muthangira	2,500	CGN NDMA NIB stakeholders	1.5M	NONE	FEB-July 2019
Kieni East	Equipping Ebenezer boreholes with pump and solar panels.	Gathiuru/Kimahuri	2800	CGN NDMA NIB stakeholders	4M	NONE	FEB-July 2019
Kieni East	Provision of pipes for lower Warazo water project	Lower Warazo Jet	2,000	CGN TWSB NIB stakeholders	2M	NONE	FEB-July 2019
Kieni East and West	Encourage water harvesting methods and storage increase	All locations	30,000H/H	CGN NDMA	3M	NONE	FEB-Dec 2019
Kieni East and West	Sensitization of use of improved irrigation methods and modern water harvesting	All locations	30,000H/H	CGN TWSB NIB Other stakeholders	2M	NONE	FEB-Dec 2019
Health and Nutrition							
Sub-county	Intervention	Location	No. of targeted beneficiaries	Proposed Implementers	Required Resources	Available Resources	Time frame
Kieni East & West	Nutrition survey	All wars	12462	Health, NDMA	Human Equipments	Human resource	July 2018

					Allowances		
Elimination of jiggers	To reduce jigger infestation	"	Under-fives and general population	125,000	150	April 2019	Health, NDMA
Education							
Kieni East Kieni West	Water tankering	In Kieni East and west sub-counties	13 schools (6 secondary schools and 7 primary schools= 3500 learners)	MOE/county government	Ksh 10,000 /tank x 13 schools =Ksh 130,000/ week x 3 weeks= ksh390,000	Storage tanks	Immediately
	Purchase of plastic tanks	Kieni west	448 learners in two secondary schools	MOE/county government	Ksh 80,000/plastic tank x 2 =Ksh 160,000		Immediately
	Register anticipated nomadic families children in schools	Kieni east and Kieni west	60 children	County government and sub county directors of education	Stationery ; pens/pencils Ksh 20 x 60 children= Ksh 1200		