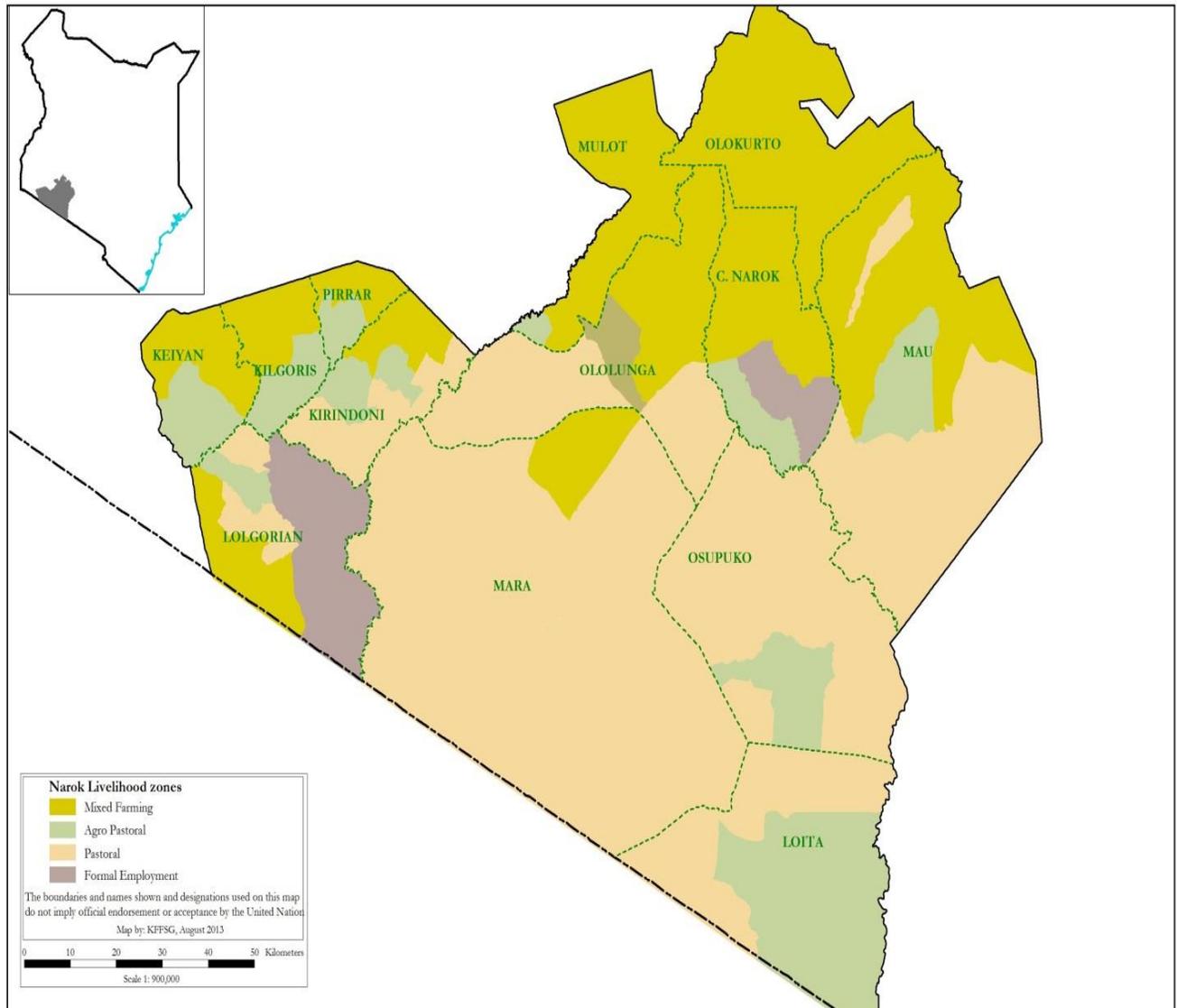


NAROK COUNTY

2018 SHORT RAINS FOOD SECURITY ASSESSMENT REPORT



A Joint Report of Kenya Food Security Steering Group¹ and Narok County Steering Group

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Executive Summary

Narok County is classified in the Minimal Food Insecurity Phase (Phase 1) of the Integrated Food Security Phase (IPC). The main hazard contributing to food insecurity in the County is late onset, poor temporal and spatial distribution and early cessation of short rains. Destruction of Mau water tower remains a challenge as it affects water flows along all major rivers. Human wildlife conflicts in Ewaso Ngiro have led to destruction of crops. Stocks held by farmers are higher than normal due to accumulation of carryover stocks from long rains harvest. Pastoralists are relying on market purchases for food commodities. The average County maize price in the month of January stood at Ksh. 39 per Kg, about 22 percent below the long term average (LTA) of Ksh. 50 per Kg. The highest prices were recorded in pastoral livelihood zone at Kshs 55 per kg while the lowest was recorded in the agro-pastoral livelihood zone at an average price of Kshs 30 per kg. A medium-sized goat was selling between Ksh. 3,500-5000, which is above the LTA of 3,417 due to good body condition. Milk production reduced by 50 percent (2-3 litres normally to 0.5-2 litres) in pastoral livelihood zones, 30 percent (from 2-4 to 1-3 litres) in agro pastoral zones and 40 percent (from 6-8 to 2-5 litres) in the mixed farming zones when compared to LTA due to declining pasture and browse condition. Milk consumption has remained stable in the pastoral and agro pastoral livelihood zones while it declined by 40 percent in the mixed farming livelihood zone. The average milk price was Ksh. 30-40 per litre which compares with the LTA. Livestock body condition for cattle in the Pastoral zone is fair. However, all other livestock species were in good body condition. Domestic water consumption for households in the Mixed farming and Agro-pastoral zones consuming between 30-40 litres per person per day. Pastoralists are consuming between 15-20 litres per person per day. The average return trekking distances from grazing area to watering points has increased slightly from 1-5 km to 2-8 km for agro pastoral livelihood zones. Currently there is little migration of livestock into or out of the County. Foot and Mouth Disease, Contagious Caprine Pleuropneumonia and Contagious Bovine Pleuropneumonia and Lumpy Skin disease has been reported. Mortality rates are within the normal ranges. A total of 32.1 percent of children under one year were fully immunized (FIC) between Jan and December 2018 compared to 46.6 percent (13,252 children) in a similar period 2017 (DHIS). The leading three common diseases among under-fives are upper respiratory tract infections (URTIs), diarrhoea and malaria whose cases have increased compared to the same period of 2017. The factors to be monitored include post harvest losses and wastage for maize, continuous livestock disease surveillance and treatment of cases that may be reported. The Long rains season is the most reliable in most parts of the County and it will influence the outcome of food security. Conflicts that may arise due to depletion of common resource especially in Mau forest area as a result of continuous destruction of the catchment area that has negative impacts downstream as there is already reduced water flows impacting on crop irrigation and water for livestock.

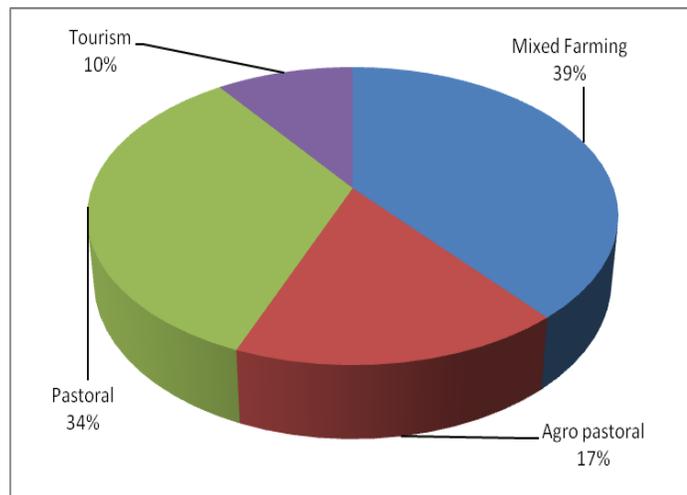
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1.0 INTRODUCTION

1.1 County Background

Narok County covers an approximate area of 17,933 square kilometres with a total population of 1,077,719 people (KNBS, Projected 2016). The county is divided into six sub-counties which include: Narok North, Narok South, Trans Mara West, Trans Mara East, Narok East and Narok West. There are four livelihood zones in the county namely: Pastoral, Agro pastoral, mixed farming, and tourism/trade/business. Figure 1 shows the proportion of population in the four livelihood zones.



1.2 Objectives and Approach

The main objective of rapid Short Rains Food Security assessment was to develop an objective, evidence-based and transparent food security situation analysis following the short rains season of October to December (OND) 2018, taking into account the cumulative effect of previous seasons and thereafter provide immediate and medium term recommendations for possible response options for stakeholders based on actual situation analysis. Primary data was collected during the field visits at the County through conduction of community and market interviews. The sectoral technical members at the County level provided technical reports for reference. More secondary data was collected from the early warning system and used to provide trends for the different food security indicators in the various sectors.

2.0 DRIVERS OF FOOD AND NUTRITION SECURITY IN THE COUNTY

2.1 Rainfall Performance

The onset of the short rains season was late in the first dekad of December. There was minor interlivelihood variation in rainfall amount received during the month with areas in the pastoral livelihood zone receiving moderate rains compared to the mixed farming and agro-pastoral livelihood zones which recorded moderate to heavy downpours. Figure 2. A total of 165.85 mm between October and December, 2018 compared to the long term average of 163mm. Temporal distribution was poor. Most of the mixed farming areas received spatial

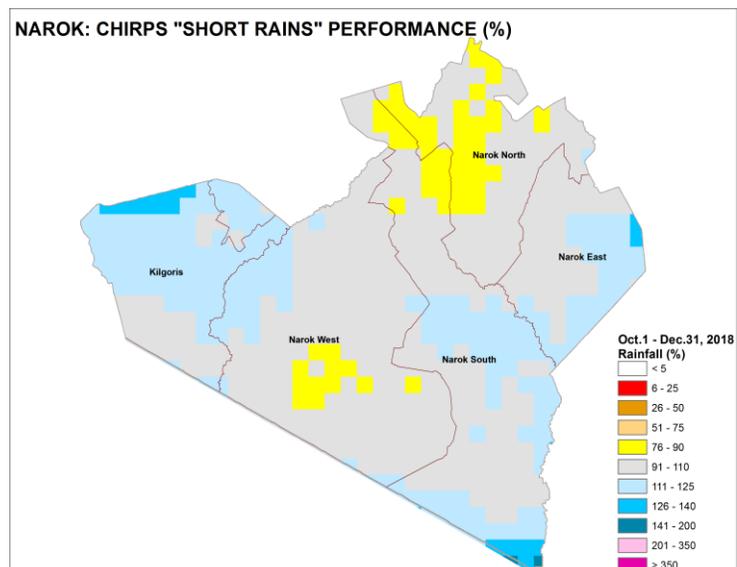


Figure 2: Rainfall Performance

distribution, agro-pastoral zones received 90-110 percent of normal rainfall while the pastoral zones received between 75-90 percent of normal rains. Areas that received depressed rains in the pastoral zone include, Ololulunga, Mulot, Olkurto and Mara. The short rains ceased normally in the last dekad of December. Rainfall performance was below the expected seasonal range.

2.2 Current Shock and Hazards

The main hazards contributing to food insecurity in the county include poor temporal distribution of rain especially in October and November. Most crops in the farms wilted due to moisture stress as a result of delayed onset of the short rains season. The areas affected include Transmara East, Narok South and parts of Kilgoris sub-counties. Fall army worm (FAW) and MLND was controlled especially by doing surveillance and use of pesticides. Some of the crops were used as livestock feed in December 2018. There are high day time temperatures of 30-32 degrees Celsius, dust storms and hazy conditions. Continuous destruction of Mau forest is having negative effects on water levels as seen in declining water volumes of Ngare Narok, Amalo, Ewaso Nyiro and Mara River.

3.0 IMPACTS OF DRIVERS ON FOOD AND NUTRITION SECURITY

3.1 Availability

3.1.1 Crop Production

Rain fed crop production

Crop production is significant in the mixed farming and agro-pastoral livelihood zones. Maize and Beans contribute 60 and 20 percent to food and 70 and five percent to income respectively in both mixed farming and agro-pastoral livelihood zones. Main crops planted in the County include beans, sorghum, maize, wheat and potatoes in Narok North, Kilgoris and Emurua Dikirr sub-counties. The area under production of Irish potato, maize and beans was 75, 95 and 99 percent of LTA (Table 1). The decline was attributed to delayed and erratic rainfall and the prolonged dry spell as well as inadequate Irish potato seed. Production of beans, maize and Irish potato declined by 13, 25 and 41 percent of the LTA attributed to inadequate rainfall. The areas affected include Transmara East, Narok South and parts of Transmara West sub-counties. There were reported cases of MLND and the FAW infestation though pest and disease control measures were put in place.

Table 1: Co Comparison of the current area planted and current production with LTA

Crop	Area planted during 2018 Short rains season (Ha)	Long Term Average (5 year) area planted during the Short rains season (Ha)	2018 Short rains season production (90 kg bags)	Long Term Average (5 year) production during the Short rains season (90 g bags)
1. Maize	30,935	32,535	660,325	881,185
2.Irish potato (MT)	5,880	7,872	40,425	68,085
3.Beans	13,310	13,449	118,475	135,495

Irrigated crop production

The main crops produced through irrigation are maize, tomatoes and kales as in the Table 2. The area under tomato, maize and kales was 35, 44 and 50 percent of LTA respectively. The reduction was due to damage of irrigation infrastructure by floods during long rain season. The

floods caused siltation of the intake and cut off some of the pipelines which negatively affected the *Mosiro* irrigation scheme. Production of maize, tomatoes and kales was 26, 40 and 41 percent of the LTA respectively. Irrigation was carried out in the pastoral and agro-pastoral zones where both men and women were involved in raising the crops under irrigation while more women than men were involved in harvesting of the crops. Farmers have embraced the irrigation of tomatoes due to anticipated good returns resulting from sustained demand for products by consumers.

Table 2: Comparison of the current area planted and current production with LTA

Crop	Area planted during the 2018 Short rains season (ha)	Long Term Average (3 years) area planted during Short rains season (ha)	2018 Short rains season production (90 kg bags/MT)	Long Term Average (3 years) production during 2018 Short rains season (90 kg bags/MT)
1. Tomatoes	225	735	816 tons	2044 tons
2. Kales	15	30	80 tons	195 tons
3. Maize	40	90	400bags	1520bags

Cereal stock

Maize stocks held by millers, traders and farmers are 66, 118 and 162 percent above the LTA respectively attributed to farmers having carryover stocks from the long rains and that harvesting for the short rain crop is incomplete. Maize stocks are held by farmers across all livelihood zones while rice, millet and sorghum is held by traders within Narok town (Table 3). The key staple foods are maize (*posho*), Irish potatoes and beans in the mixed and agro-pastoral livelihood zones while maize, sorghum and millet are significant in the pastoral livelihood zones. Households in the mixed farming and agro-pastoral livelihood zones tend to hold more stocks per household in a normal year as compared to those found in pastoral zones that depend on weekly recharge of stocks held during market days. The stocks currently held will last for more than three months.

Table 3: Grain stocks held in the County

	Maize		Rice		Sorghum		Millet	
	Current	LTA	Current	LTA	Current	LTA	Current	LTA
Farmers	361,530	99,906	0	10	16,802	9,000	0	0
Traders	174,845	80,194	15,510	5,000	17,350	9,500	5,000	4,000
Millers	11,800	7,117	0	0	0	0	0	0
NCPB	60,090	58,318	1,152	0	0	0	0	0
Total	608,265	245,535	16,662	5,010	34,152	18,500	5,000	4,000

3.1.2 Livestock Production

The major livestock species reared in the county are cattle, goats, and sheep. Livestock contributes to 85 percent of household income in the pastoral livelihood, while in the agro-pastoral and mixed farming they contribute 66 and 40 percent of household income respectively.

Pasture and browse condition

The pasture quantity and quality in mixed farming and agro-pastoral livelihood zones were fair (Table 4). In the pastoral livelihood zone, pasture conditions ranged from fair to poor. The delayed onset of the short rains season contributed to the deteriorating pasture and browse situation in pastoral zones of Mosiro, Ntuka, Mara, Emarti, Elangata Enterit and Mararianda of Narok South, Narok West and Narok East Sub counties which was poor both in quality and

quantity. Pasture is expected to last 1-2 months while browse is expected to last 2-3 months across all livestock zones. Most parts of Narok South, Narok West, Narok North and Trans Mara East and West have improved pastures such as Napier and Rhodes grasses which supplement the natural grasses, while some mixed farming and agro pastoral zones like Ololulunga, Nkareta, Nturumeti have wheat, barley and maize straws and have embraced conservation initiatives (baling and storage) to supplement livestock feeding. Pastoral zones such as Mara and Siana wards (Narok West Sub County) depend majorly on natural pastures and experience high competition with wildlife. The main factors limiting access to pastures were competition with wild life, crops encroachment to pasture land, steep slopes, thorny thicketed bushes and tsetse fly infestation (in Mosiro, Naikarra, Siana, Mara and Kimintet).

Table 4: Pasture and Browse condition

Livelihood zone	Pasture condition		How long to last (Months)		Browse condition		How long to last (Months)	
	Current	Normally	Current	Normally	Current	Normally	Current	Normally
Agro pastoral	Fair	fair	1.5	1-2	good	Good	3	3
Mixed farming	Fair	good	2	2-3	good	Good	3	3
Pastoral	poor	fair	1	1-2	fair	Good	2	3

Livestock body condition

The cattle body condition in the County ranged from fair to good, while for sheep and goats remained good across all the livelihood zones (Table 5). The improved body condition was attributed to forage availability coupled with enhanced water access due to onset of the short rains season. The current livestock body condition is normal at this time of the year. Farmers in agro pastoral and mixed farming have improved pasture and have conserved pasture and cereal straws thus no notable variation. However, the body condition for cattle is expected to deteriorate if the dry spell progressively persists with declining forage especially in the pastoral zones.

Table 5: Body condition of Livestock

Livelihood zone	Cattle		Sheep		Goat	
	Current	Normally	Current	Normally	Current	Normally
Agro pastoral	Fair- good	Good	Good	Good	Good	Good
Mixed farming	Good	Good	Good	Good	Good	Good
Pastoral	Fair	Fair	Good	Good	Good	Good

Milk production, consumption and prices

The average milk production per household/day reduced by 50 percent (2-3 litres normally to 0.5-2 litres) in pastoral livelihood zones, 30 percent (from 2-4 to 1-3 litres) in agro pastoral zones and 40 percent (from 6-8 to 2-5 litres) in the mixed farming zones when compared to LTA. The decline was as a result of declining pasture and browse condition. Milk consumption has remained stable in the pastoral and agro pastoral livelihood zones while it declined by 40 percent in the mixed farming livelihood zone. This decline is attributed to sales for purchase of other household commodities, deterioration of pastures/browse and reduction of TLUs. Milk price increased by 25 percent in pastoral livelihood zones but remained stable in the other livelihood zones (Table 6). The increase of price was attributed to decline in production due to reducing levels of pastures, browse and water and increase of milk sales by the households in order to meet other household needs.

Table 6: Milk Availability and Consumption across livelihood zone

Livelihood zone	Milk Production (Litres)/Household		Milk consumption (Litres) per Household		Prices (Ksh)/Litre	
	Current	LTA	Current	LTA	Current	LTA
Agro pastoral	1-3	2-4	1-3	3	40	40
Mixed farming	2-5	6-8	2-3	5	30	30
Pastoral	0.5-2	2-3	0.5-2	2	50-60	40

Tropical Livestock Units (TLUs) and Birth Rate

The average livestock units held per household varies dependent on the livelihood zone and the socio-economic status of the household. Medium income household hold more livestock units compared to the poor households (Table 7). In general average livestock units held per household for all livelihood zones and across all social classes are lower than the normal average numbers. The declining tropical livestock units was attributed to diminishing land sizes due to land demarcations and diversification from keeping too many indigenous breeds to fewer improved breeds. There was also a tendency in pastoral and agro pastoral livelihood zones by the farmers/pastoralists to divert from keeping large herds of cattle to small stock (sheep and goats) probably because of their tolerance to dry spells after having previous experiences of cattle losses during droughts. Another contributing factor in reduction of TLUs was increased sale of livestock by household over time to enable households to cater for increased costs of living especially school fees, consumption and medical needs. The birth rates for all livestock species across all the livelihoods zones are normal. This is because livestock did not experience any weather related stresses and conceptions rates were not disrupted.

Table 7: Tropical Livestock Units (TLUs)

Livelihood zone	Poor income households		Medium income households	
	Current	Normal	Current	Normal
Agro pastoral	6	7	20	21
Mixed farming	4	5	6	7
Pastoral	7	7	20	21

Livestock Migration

There were no significant livestock migrations except some internal movements to cereal farms (wheat, barley and maize) after harvest to feed on straws. Some areas of the county such as Ololulunga, Nkareta, Keekonyokie wards and upper parts of Narok North and East have harvested cereals and livestock from lowlands areas of Mosiro ward moved to those areas. In pastoral livelihood zone of Kiribwet (Trans Mara East), an abnormal early migration of cattle has been observed as some households had moved their livestock towards Mau and Chepalungu forest (Bomet County).

Livestock Diseases and Mortalities

Foot and Mouth Disease (FMD) at Olchoro, Nturumeti, Ololulunga, Mara, Lemek and Lolgorian, Contagious Caprine Pleuropneumonia (CCPP) and Contagious Bovine Pleuropneumonia (CBPP) in area of Mosiro, Mara and Naikarra, Lumpy Skin disease (LSD) in Oletukat, Kiribwet and Nturumeti and sporadic cases of PPR across the county were reported across the county. Mortality rates were within normal ranges.

Water for Livestock

The main water sources for livestock use are permanent rivers, streams, water pans, dams and boreholes. The main reason for variation in duration to last gradual siltation especially in pans and dams across all the livelihood zones. It was attributed to low water retention capacity by different soil types and high evaporation rates, poor recharge of water sources, high livestock concentration depending on one water source and competition with wild animals also have an effect on duration of water sources in most pastoral areas. Mixed farming zones have constructed shallow wells at household level and most do not get water from far sources. Average return trekking distance was 4-7 kilometres in agro pastoral zone and 5-10 kilometres in the pastoral zones which was above normal while it ranges between 0.5–2 kilometres in the mixed farming zones which is within the normal range (Table 8). Watering frequency is once to twice for cattle, sheep and goats across all the livelihood zones.

Table 8: Water for livestock

Livelihood zone	Sources		Return average distances (km)		Expected duration to last (months)		Limiting factors
	Current	Normal	Current	Normal	Current	Normal	
Agro pastoral	Boreholes, wells, rivers, springs, pans, dams	Boreholes, wells, rivers, springs, pans, dams	4-7	3-6	2	3-4	none
Mixed farming	Streams, wells, rivers, springs, pans, dams	Streams, wells, rivers, springs, pans, dams	0.5-2	2-4	2	3-4	none
Pastoral	Boreholes, wells, rivers, springs, pans, dams	Boreholes, wells, rivers, springs, pans, dams	5-10	4-8	1	2-3	Human - wild life conflicts

The water in shallow wells, pans and seasonal rivers is expected to last for 1–2 months compared to a normal of 2–4 months. The main reason for variation in duration to last is gradual siltation especially in shallow wells and pans across all the livelihood zones. It is also attributed to low water retention capacity by different soil types coupled with high evaporation rates, high livestock concentration depending on one water source and competition with wild animals. River Enkare Narok, Ewaso Nyiro and River Amalo are almost drying up as a result of upstream abstraction of water for irrigation and continued Mau forest catchment destruction.

3.2 Access

3.2.1 Markets Operations

The major livestock and food stuff markets in the county include Suswa and Ntulele (Narok East), Ewaso Nyiro and Tipis (Narok North), Olulunga and Naroosura (Narok South); Mulot and Aiton (Narok); Olmelili and Dikir (West Trans-Mara East) and Kilgoris and Ogwedi (Transmara West). There were no disruptions market disruptions reported across the county despite reported cases of livestock diseases, their levels did not reach threshold to warrant market disruptions or closures. The common staple foods and cash crops were available in the market within the County. The main food stuff observed in the markets were maize, beans, rice, potatoes, tomatoes, vegetables (cabbages and kales). Pastoral livelihood zones depend on markets for food commodities. The price of an average size sheep and goats varied from 3,500 to 7,000 while the price of cattle ranges from Ksh. 18,000 to 40,000. The variations were caused by the varying

body conditions with animals from the mixed farming livelihood zones being heavier and therefore fetching higher prices.

Maize price

The average County maize price in the month of January stood at Ksh. 39 per Kg, which was about 22 percent below the long term average of Ksh. 50 per kg as illustrated in Figure 3. The highest prices were recorded in pastoral livelihood zone at Ksh. 55 per kg while the lowest was recorded in the agro-pastoral livelihood zone at an average price of Ksh. 30 per kg. The main source of maize was local production mainly from Mau and Ololulunga. The supply of maize is expected increase once harvesting is complete bringing prices down.

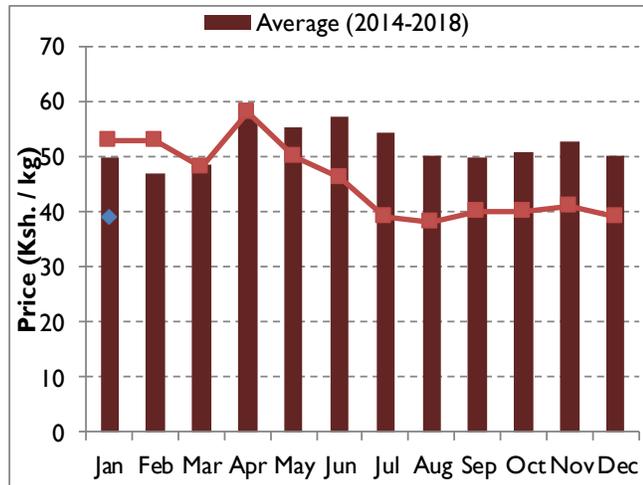


Figure 3: Maize prices

Goat price

The average County farm gate price for a medium-sized goat was Ksh. 3,950. The current price is 16 percent above the long term average of 3,417 in the month of January attributed to good body condition. The increase in price was attributed to good body condition in small stocks and availability of browse in the mixed farming and agro-pastoral livelihood zones (Figure 4). The highest price was recorded in the mixed farming livelihood zone at Kshs 4,300 per head while the lowest price was recorded in the pastoral livelihood zone at Kshs 3,500 per head. The average goat price was above the normal range. Goat prices are expected to stabilize due to available browse resulting in good body condition across all livelihood zones.

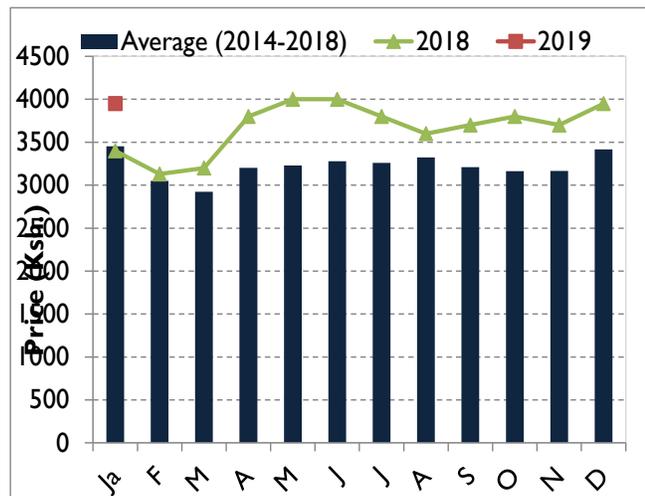


Figure 4: Goat prices in Narok County

3.2.2 Terms of trade

The terms of trade (ToT) are favorable to livestock keepers. Households are able to purchase 103 kilograms of maize with the sale of one medium-sized goat. Normally, households would access about 68 kilograms of maize with the sale of a goat as indicated in figure 5. The increase in ToTs is due to increasing goat prices and decrease in maize prices. Terms of Trade are expected to remain above LTA.

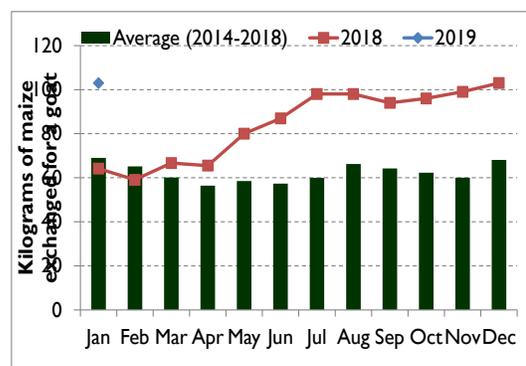


Figure 5: Terms of Trade in Narok County.

3.2.3 Income Sources

The current main source of income in the pastoral zone was sale of livestock while the mixed farming and agro-pastoral zones have an advantage of selling livestock and farm produce. Sale of horticulture produce was the main source of income to small scale farmers engaged in irrigation schemes along the riverine such as Narosura scheme. The income sources are normal at this time of the year although more farmers are engaging in onion farming, which have higher returns and more income at household level.

3.2.4 Water Access and Availability

Major water sources

The major sources for domestic water in the County are rivers, pans, dams and boreholes. Piped water was the main source in major urban areas (Table 9). The major permanent rivers in the county include Enkare Narok, Ewaso Nyiro, Siyiapei, Enkare Ngoso and Amalo which are currently experiencing declining flow of water following the below normal 2018 short rains. The general water situation in most livelihood zones was that the major rivers flow was far below normal while the pans/dams are at 50 percent full with some isolated cases reported as having dried especially in the pastoral areas of Oletukat (Narok East) and Kiribwet (Trans Mara East). Boreholes are still experiencing normal water levels. The decline in flow of water in major rivers was attributed to encroachment of major water catchment areas especially the Mau and the intense irrigation activities for horticultural crop production along the rivers basins. The drying of pans was attributed to small design capacities, siltation and low water recharge levels during the Short rains which were below normal.

Table 9: Water sources

Ward/ Livelihood zone	Water Source	No. of Normal Operational	No. of Current Operational Sources	Projected Duration	Normal Duration of water	% Recha rged by the Rains	Locality of Non- operational Water Sources
Pastoral	Rivers	3	3	Permanent	All year	40%	None
	Water Pans	253	186	2-3 Months	6 months	50%	Spread across LH zone
	Boreholes	5	5	12 Months	12 Months	80%	None

Agro pastoral	Rivers	3	3	permanent	All year	40%	
	Water Pans	65	58	2-3 Months	4 months	50%	Nkoben, katakala oletukat , and kiribwet
	Boreholes	23	13	12 Months	12 Months	80%	Narok hospital, Naisoya, sheep and goat and mwamba
Mixed Farming	Rivers	2	2	Permanent	All year	40%	None
	Water Pans	47	35	2-3 Months	4 months	50%	Spread across LH zone
	Boreholes	5	3	12 Months	12 Months	80%	Kikuyani ,oloimutai and Nairegie Enkare

The main reasons behind the non –operational water sources are mismanagement due to collapse of managements committees, break downs and dilapidated infrastructure. Most of the water sources especially dams, water pans and boreholes need rehabilitation to enable them attain their maximum efficiency. Most of the small towns rely entirely on water vendors as they lack permanent water supplies. Currently there no main villages relying on water vendors as main water sources within the villages had water available though it was declining with time. The proportion of households using protected water was about 40 percent, the highest number was in big towns like Narok where there was convectional water supplies (piped). In the rural areas there are limited piped water systems. Water treatment among households in the county stood at about 10 percent. Lack of knowledge on how to utilize water chemical hinders treatment of water at the house hold level. The main method of water treatment boiling and sometimes use of water tabs such as water guard. Other households have resulted to buying large bottles of mineral water for drinking purposes. Analysis for water on pans, dams and rivers was not usually done except for bore holes.

Table 10: Access to Domestic Water

Livelihood zone	Return Distance to Water for Domestic Use (Km)		Cost of Water at Source (Ksh. Per 20litres)		Waiting Time at Water Source (Minutes)		Average Water Consumption (Litres/person/day)	
	Normal	Current	Normal	Current	Normal	Current	Normal	Current
Agro Pastoral	1-5	2- 8	3	5	1-3	1-3	40	30
Mixed Farming	0.2 – 1	0.2 – 1	3	5	1-3	1-3	40	30
Pastoral	1 – 7	1 – 10	5	15	1- 40	1-50	25	15

Average return distance to water sources in the mixed livelihood zone range from 1-2 km while in the agro-pastoral zone, return distance average 3-5 km. Return distances in the pastoral zone range from 1-10 km (Table 10). Distances to water sources in pastoral areas have increased by 30 percent attributed to drying up of pans and seasonal rivers which are relied upon by the pastoralist thus reducing the water coverage area. This has resulted to people walking longer

distance to fetch water mostly for livestock and domestic use especially from the remaining operational water sources especially boreholes and permanent rivers. Areas like Mosiro, Suswa, Oletukat (Narok East), Kiribwet (Trans Mara East), Mara and Siana (Narok West) are the most affected. This was due to the below normal short rains which did not recharge the water storage facilities to full capacity. It also was attributed to siltation and the high evaporation rates experienced in the pastoral areas. In mixed farming livelihood zones such as Nairgie Enkare, Melili, Chepalungu, Olchorro and Olkurto the distances were normal as most people relied on shallow wells and small water ponds within the households. These areas also experience high rainfall which was conducive for roof water harvesting.

Waiting time at the source

Waiting time at most water sources was normal and ranges between one to three minutes in agro pastoral and mixed farming livelihood zones but expected to increase if there will be delay in the onset of the long rains as households will start crowding at one watering points. In pastoral areas, waiting time increased slightly for watering of livestock as the livestock accessing water in available water sources has increased.

Cost of Water

The cost of water in urban areas was slightly above normal in all the livelihood zones although it varied with the type of water supply system. For a gravity fed system the prices were Ksh. 3-5 per 20 litres Jerri can while for energy powered system for example diesel or electric, the prices ranged from Ksh. 5-30 per 20 litre Jerri can. The increased cost was to cover the extra cost of fuels and electricity which resulted to low water usage per person per day.

Water Consumption

The average water consumption has declined when compared to the previous season. Households in the mixed farming zone consumed 30 litres (a decline of 25 percent), while in agro-pastoral zone, consumption was 30 litres per person per day (a decline of 25 percent). In the pastoral livelihood zone water consumption stood at 25 litres per person per day (a decline of 40 percent). The decline in water consumption rates occurred due to the little recharge to water storage facilities due to the low rains experienced during the short rains. In major towns water was rationed due to scarcity. Water quality in the open waters sources such as rivers, pans /dams and pond was poor as they are heavily polluted. Open defecation and spraying of chemicals are some of the pollutants affecting water quality in the county. Due to this six cases of cholera were reported at Oletukat (Narok North) in the month of January 2019 whereby the affected were treated and discharged. To address this, some pans/dams which have been constructed recently have in co-operated erection of sanitation facilities such as toilets and bathrooms.

3.2.5 Food Consumption

About 92 percent and eight percent of the households fell within the acceptable and borderline food consumption score categories respectively for January 2018 (Figure 6). The poor food consumption

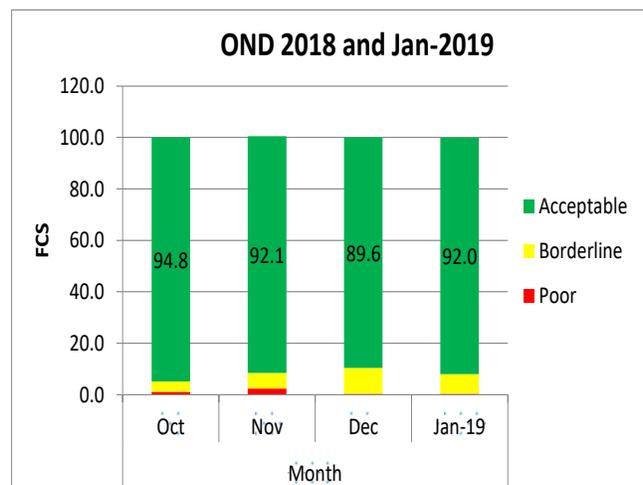


Figure 6: Food Consumption Score, Narok County

score implies households are not consuming a balanced diet and rarely consuming food rich in protein. Borderline implied that households consumed staples and vegetables every day accompanied by oil and pulses a few times in a week. The acceptable implied that households are consumed staples, protein (milk and meat) and vegetables every day and frequently accompanied by pulses. In pastoral livelihood zone, 94 percent have acceptable FCS while 22 percent in agro-pastoral have borderline FCS.

3.2.6 Coping Mechanisms

The mean Coping Strategy Index for the county in January 2019 remained stable with the Pastoral, Agro-pastoral and Mixed farming recording 5.4, 0.2 and 3.7 percent respectively. The index implies that about 3.1 percent of the population is engaging in consumption-related coping strategies, figure 7. The coping strategies are normal at this time of the year.

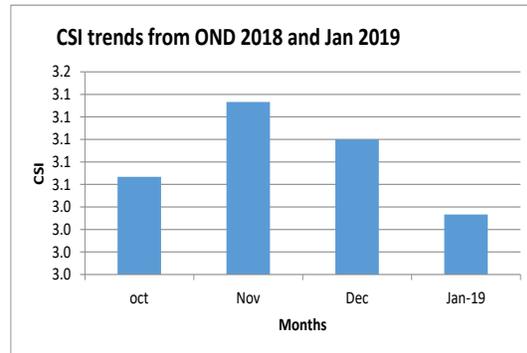


Figure 7: Average CSI, Narok County

3.3 Utilization

3.3.1 Morbidity and Mortality Patterns

The three most common diseases among under-fives and the general population are upper respiratory tract infections (URTIs), malaria and diarrhoea (Figure 8 and 9). There was massive increase in cases of URTI, Diarrhoea and Malaria for both under five and general population compared to 2018 attributed to on the job training conducted to facility staffs by the Sub county nutrition and TB team supported by Amref. It was also attributed to improved reporting rates from the DHIS.

Population increase of cases could be attributed to health education scale up through facilities,

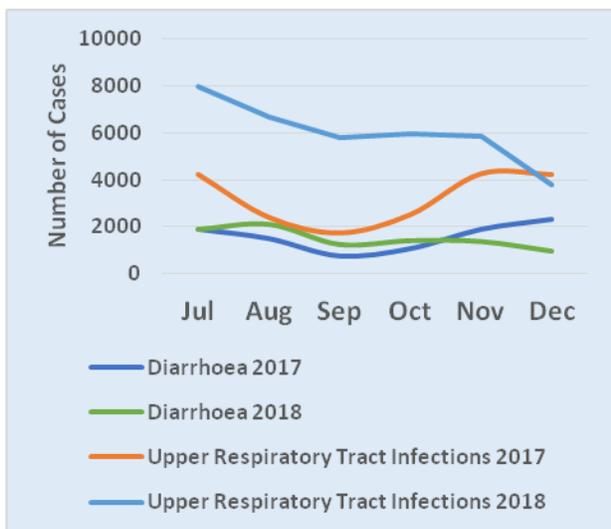


Figure 8: Morbidity trends for under-fives Narok County

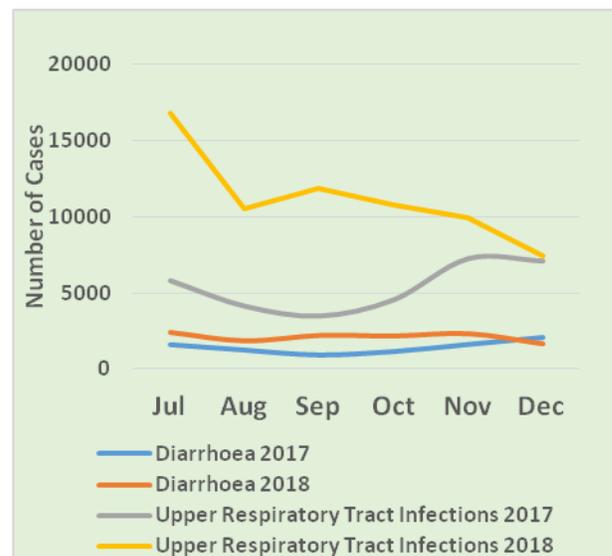


Figure 9: Morbidity trends for general population Narok County

and community units; additionally, 37 villages in Narok South were declared ODF free in 2016 – 2017. Trends from the DHIS data was corroborated by results from community interviews that indicated, URTI, diarrhoea and malaria among the common ailments suffered during this period both for the general population and under-fives.

3.3.2 Immunization and Vitamin A supplementation

A total of 32.1 percent of children under one year were fully immunized (FIC) between Jan and December 2018 compared to 46.6 percent (13,252 children) in a similar period 2017 (DHIS). A total of 11014 children (53.5 percent) aged less than one year and 45932 children (26 percent) aged between one and five years received Vitamin A between Jan to July 2018. The number increased compared to a similar period of 2017 where 27 percent (1372 children) and (3641 children) 10 percent aged less than one year and between 1-5 years respectively were covered. The increase in vitamin A coverage for children between one and five years was due to improved documentation at the health facility level as well *Malezi Bora* campaigns and outreaches in Narok South, East and Transmara East supported by NDMA, although coverage was still way below the national target of 80 percent. SMART survey conducted in January 2018 indicated that vitamin A coverage for children aged 6-11 months once supplementation is 63.6 percent and 12-59 months twice supplementation is 49.2 percent.

3.3.3 Nutrition Status and Dietary Diversity

The percentages of children less than five years of age who are at risk of malnutrition as indicated by the Mid-Upper Arm Circumference (MUAC) remained below the LTA by seven percent and about the same level with January 2018, figure 10. The pastoral and the agro-pastoral livelihood zones recorded the highest number of children at risk of malnutrition at eight percent compared to mixed farming livelihood zone which recorded no child under risk of malnutrition. The dietary diversity in mixed farming livelihood zone was stable due to increase in milk consumption. The current rate of malnutrition is below the normal range. Meal frequency was reported to be two meals in pastoral livelihood to three meals in mixed farming. Meal composition includes for under-fives madida (ugali) porridge, diluted milk with water in pastoral, and tea in mixed farming zone ugali, rice, beans, porridge mashed potatoes, mashed beans with bananas, tomatoes and on rare occasions vegetables. This situation was normal at this time of the year. The general population is also forced to consume the same meals as the under-fives. Exclusive breastfeeding was rarely practiced. In pastoral livelihood zone most mothers introduce either porridge or milk mixed with herbs. In mixed farming livelihood 35–40 percent during the health facility and community interview practice exclusive breast feeding, attributed to tradition as well as food scarcity according to the community members. The SAM and GAM rates were reported as 1.1 and 6.8 percent in January 2018 (Table 11).

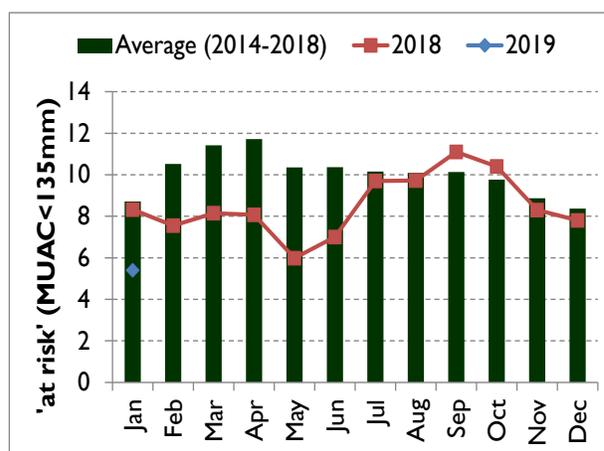


Figure 10: Proportion of children at risk of malnutrition (MUAC), Narok County

Table 11: Nutrition status from SMART Survey, January 2018

SMART survey January 2018	%	Remarks
GAM: Weight for Height	6.8 % (4.8 - 9.5 95% C.I.)	Poor
SAM: Weight for Height	1.1 % (0.4 - 3.2 95% C.I.)	Poor
Stunting: Global stunting	27.2 % (23.1 - 31.8 95% C.I.)	Medium prevalence
Severe stunting	7.7 % (5.5 - 10.6% C.I.)	Medium prevalence
Global underweight for Age	18.9 % (15.5 - 22.7 95% C.I.)	Medium prevalence
Severe underweight	2.6 % (1.5 - 4.6% 95% C.I.)	Medium prevalence

Both Selective Feeding Program and Outpatient Therapeutic Program admissions significantly increased between July and December 2018 attributed to on job training conducted by senior county nutrition officer on quality of report writing and dispensing of nutrition commodities and training on LMIS supported UNICEF and Amref (Table 12 and 13).

Table 12: Selective Feeding Admission Trends (SFP)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	328	226	448	627	510	672	338	199	74	111	151	112
2017	142	128	165	243	189	231	147	69	36	60	115	75
2016	330	270	287	130	116	140	184	128	218	312	179	84
2015	264	257	214	218	90	130	112	117	109	102	113	124
2014	113	211	251	206	187	134	122	114	117	114	117	120

Table 13: Selective Feeding Data Admission Trends (OTP)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2018	204	144	202	404	292	233	103	156	36	68	90	81
2017	123	60	89	138	230	61	72	39	23	38	48	69
2016	162	198	152	130	117	60	124	111	96	125	84	70
2015	138	158	102	111	117	123	125	106	108	112	98	112
2014	198	138	145	152	117	158	130	128	145	113	164	193

3.3.2 Hygiene and Sanitation

All household are aware of good hygiene practices with about a half washing hands after visiting toilet and before cooking. About 79 percent wash hands with soap. However, 13 percent did not wash hands before eating while two percent did not wash hands in all four critical times. Between 20-40 percent of households used protected water sources. Water treatment was mainly by use of water guard/alum where about 5-10 percent of households in agro-pastoral and 20 percent in mixed farming zones treat water. SMART survey conducted in January 2018 showed that latrine coverage stood at 49 percent with 48 percent relieving themselves in the bush which could have led to contamination of water sources hence cases of water borne diseases, though cases have reduced during the period. Cases of diarrhoea increased by 7,884, while that of Malaria increased by 6,831. There were 40 cholera cases that were reported in Narok North, 119 in Narok South and 13 in Narok East.

3.4 Trends of key food security indicators

The county was classified in the stressed phase (Phase 2) of the Integrated Food Security Phase Classification (IPC) during the long rains assessment of July 2018 but has moved to the minimal

phase (IPC Phase 1) in the current assessment. The performance of food security indicators comparing the long rains and short rains seasons are shown in Table 14.

Table 14: Food Security Trends in Narok County

Indicator	Long rains assessment, July 2018	Short rains assessment, February 2019
Percent of maize stocks held all actors	29 percent of LTA	148 percent above LTA
Livestock body condition	Good for all LZ	Good for sheep and goats across all livelihood zones. Fair -good for cattle in AP, Fair in Pastoral, Good in MF.
Water consumption (litres per person per day)	MF=30-40lpppd AP=20-30 P=20-30	MF=30 lpppd AP=30 P=15
Price of maize (per kg)	39	39
Return trekking distances (Km)	MF=0.2-2 AP=5 P=6	MF=0.2-1 AP=2-8 P=1-10
Terms of trade (pastoral zone)	98.4	103
Coping strategy index	3.5	P=5.4, AP=0.2, MF=3.7 Average =3.1
Food consumption score (Poor, Borderline, Acceptable)	65 percent in acceptable across all LZ	0:8:92 92 percent in acceptable

3.5 Education

3.5.1 Access (Enrolment)

There was an increase of 10,370 children (7,777 boys, 2,613 girls) at the end of Term I in ECD enrolment within the county (Table 15). The increase was majorly attributed to the ECD teachers being paid by County Government, parental initiative by provision of food for school going children and construction of new classrooms hence child friendly environment. Primary school enrolment was 37,954 pupils (10,993 boys, 26,961 girls) the increase was due to provision of relief food by government, registration of new schools and plenty of food due to improved weather condition. Secondary schools enrolment increased by 11,822 in Term I due to free day secondary school and transition infrastructure grants from the government. There was a linkage on increased enrolment where food provision is done at the school level.

Table 6: Enrolment

Enrolment	Term III 2018			Term I 2019		
	Boys	Girls	Total	Boys	Girls	Total
ECD	26,758	28,761	55,519	34,535	31,374	65,909
Primary	134,064	107,379	241,443	145,057	134,340	279,397
Secondary	18,176	17,935	36,111	25,463	22,470	47,933

3.5.2 Participation

General attendance of pupils across the county was about 80 percent of the enrolment with boys having higher attendance than girl. Absenteeism for girls was attributed to household chores, cultural beliefs against girl child education and early marriage. Boys' attendance was also

affecting by household tasks which include herding of livestock and engaging in income generating activities.

3.5.3 Retention (Drop out)

There were few cases of drop out as captured in the table 16 below. Daily absenteeism was also experienced from time to time across all levels. Drop out of girls from school is normally associated with early pregnancies, cultural practices and believes and lack of school fees. Boys on the other hand drop out in search of money through motor bike riding, lack of food in schools and negative attitude of parents towards education. The main reasons for drop out and absenteeism in school for ECD centres, primary and secondary schools were lack of food in school (delay in delivery of food) and long distance between schools for pupils to trek long distance.

Table 16: Drop Out

Student drop out from school.	End of Term II 2018		End of Term III 2018	
	Boys	Girls	Boys	Girls
ECD	12	80	54	70
Primary	52	99	51	108
Secondary	53	139	48	130

3.5.4 School Meals Programme

A total of 149 public primary schools are under the Home Grown School Meals Programme (HGSMP) supported by the Government of Kenya (GoK) and World Food Programme (WFP) as shown in Table 17. The food basket includes maize, beans, vegetable oil and salt. The Homegrown School Meals Programme is the only programme in all public primary schools in the county. This programme has contributed to an increased and sustained enrolment in all public primary schools within the county by attracting children to school, improving learners' attendance and boosting their retention rate while in class. Thus, when food security and nutrition status at school level was maintained, there was a positive correlation with school attendance. Water and firewood shortages remained the challenges experienced in the programme leading to pupils missing meals occasionally. Occasional delay in disbursement of HGSFP fund to Primary schools which delayed the procurement processes has constrained the provision of meals to pupils.

Table 17: School meal feeding programme.

Sub-County	HGSMP		
	No. of Schools with school feeding	Boys	Girls
Narok West	33	3,500	2,518
Narok South	21	1,724	1,326
Transmara West	42	3,706	3,660
Transmara East	0	0	0
Narok N/E	53	12,892	11,261
Subtotal	149	21,822	18,765

4.0 FOOD SECURITY PROGNOSIS

4.1 Prognosis Assumptions

Narok County food security prognosis for the next six months is based on the following assumptions:

- The onset of the Long rains will be timely and performance will be good in terms both spatially and temporal distribution.
- The fall army worm will be managed in good time to save crops
- The County is not likely to experience influx of livestock from neighbouring counties
- Maize surplus in the county is likely to be offloaded into the markets.
- Farm inputs including certified seed stock, fertilizers and tractor services are likely to be availed in good time and subsidized by the both County and National Governments.

4.2 Food Security Outlook

March to May: Food security situation is expected to remain stable and off season rains experienced in January led to regeneration of pasture and recharge of water sources. Livestock will continue to fetch good market prices due to good body condition as a result of availability of forage. Water consumption is likely to increase from April when the Long Rains sets in.

June to August: Should the Long rains perform well, which is the main season for the County, food security will stabilize as most households consuming 2-3 meals in day with more food preferences. Livestock body condition will improve due to availability of pasture and browse, hence fetch better prices. The number of children at risk of malnutrition is likely to reduce as households will be able to have more dietary diversity as more food items will be available.

5.0 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

5.1.1 Phase classification

The County is classified in the Minimal Food Insecurity Phase (Phase 1) of the Integrated Food Security Phase (IPC). All livelihood zones have shown some improvement from the previous assessment when it was previously classified under stressed phase. Though there are few pockets experiencing food insecurity, the County is expected to remain stable. A number of factors that need to be monitored include availability of maize especially reduction of post harvest losses and wastage, continuous livestock disease surveillance. The Long rains are the most reliable season in most parts of the County and it will influence the outcome of food security in the remaining part of the year. Environmental conservation needs to be enhanced around Mau forest to mitigate against drying of rivers and loss of irrigation water downstream.

5.1.2 Summary of the findings

The main drivers to food insecurity in Narok County include limiting amount of water to support livestock and crop production as well as domestic use. Farm inputs remain high with small scale farmers straining to acquire them. Cases of diarrhoea were reported. About half of the population that use open defecation could have led to increased cases of diarrhoea. Nutrition status of children under five years is likely to stabilize below emergency threshold. Households are

expected to consume the minimum recommended amount of 15 litres per person per across the County. The current good body condition of shoats is likely to be sustained until the next rainy season. Cattle body condition may deteriorate especially in the Pastoral areas. There is need to provide food for ECD classes to encourage retention and reduce dropout rates that are due to parents not affording to provide food for their school going children.

5.1.3 Sub-County Food Security Ranking

Table 15: Sub-County Food Security Ranking (Worst to best)

Sub County	Food security rank (1-10)	Main food security threat (if any)
Very Good (9-10)	Good (7-8)	Fair (5-6) Poor (3-4) Very Poor (<2)
Transmara East	1	-Low rainfall -Crop pest and diseases-FAW, MLND -High malnutrition rates - Crop failure -Inadequate market structures - Early marriages-
Narok East	2	- Poor rainfall distribution -Poor pastures -Immigration from Kajiado, -Invasive weed species- depleting pastures - Poor sanitation issues -Malnutrition is high -Cholera outbreak -Presence of livestock diseases -Poor access to market -Human wildlife conflicts
Narok South	3	-Diseases - High malnutrition rates -Pastures in poor condition - Inadequate water quality - Poor toilet coverage - Mau forest destruction -Wildlife conflicts -Most part is pastoral, poor pasture, few opportunities for diversification.
Narok West	4	- Livestock diseases - wildlife conflict
Narok North	5	Good market infrastructure, high toilet coverage, fair rains, better toilet coverage
Transmara West	6	Fair weather, good rains....

5.2 Ongoing Interventions

Food interventions.

Intervention	Objective	Specific Location	Activity target	Cost	No. of beneficiaries	Implementation Time Frame	Implementation stakeholders
Health and Nutrition							
Infant and young child nutrition (IYCN)	Help adopt proper feeding habits	All County	Children	20 M	5,000 Infants	Ongoing	County Government of Narok and MOH
Iron and Folic acid supplementation among pregnant women	Help to reduce risk of iron deficiency and anaemia in pregnant women	All County	Pregnant women	20 M	4,000 pregnant mothers	Ongoing	MOH, County Government
Livestock Sector.							
Livestock Food Fortification	To prevent diseases, strengthen immune system and improve productivity and cognitive development	All Wards	Livestock	300 M	45% of the population.	Ongoing	MOALF and Relevant line ministries
Capacity building on beef and dairy value chain.	To equip farmers with skills and competencies for improved beef and dairy	All county	Farmers	30 M	60% of the population.	Ongoing	MOALF and partners staff

	production.						
Tsetse and Trypanosomiasis control and eradication	To prevent and control tsetse infection.	Mara, Siana, Mosiro, Naikara and Kimintet Wards.	Crop control	6 M	60% of the population.	Ongoing	MOALF and their staff

Non-Food interventions.

Intervention	Objective	Specific Location	Activity target	Cost	No. of beneficiaries	Implementation Time Frame	Implementation stakeholders
Agriculture Sector.							
Capacity building on the right crop(Right seedling to use)	To maximize on available seasonal reason	All sub counties	Empower farmers	3 M	3000 farmers	1 year	Agric Department, Stakeholders
Fertilizer subsidy	Help improve crop production	All sub counties	Boost production	2.1 M	25,000 farmers	2 years	Government of Kenya
Piloting on crop insurance	Help empower farmers	All sub counties		1 M	50 farmers already trained	1 year	Government of Kenya
Livestock Sector.							
Vaccination of goats ,sheep cattle and disease surveillance.	Early detection of diseases and their control and to maintain	All Wards	Healthy livestock	10 M	100000 farmers	3 years	County Government of Narok

	a healthy livestock herd.						
Subsidized A.I services	Improved breeds for increased productivity	All wards		8 M	50000 farmers	2 years	Dept of Veterinary / County government and farmer
Health and Nutrition.							
Management of acute malnutrition (IMAM)	Improved health	County wide	Children health	20 M	200000	MOH and County Government	Ongoing
Education Sector							
Improved Sanitation facilities	To prevent spread of diseases in schools and community.	All schools	School children	3 M	All Schools	2 years	MOE and County Government
Provision of plastic tanks to schools (1,000 learners)	To enhance rain water harvesting and water storage	All Schools	School children	10 M	All Schools	2 years	MOE and County Government

Recommended Interventions

Food interventions

Intervention	Objective	Specific Location	Activity target	Cost	No. of beneficiaries	Implementation Time Frame	Implementation stakeholders
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Education Sector							
HGSM to be expanded to cover all primary schools.	To enhance access, participation and retention in primary schools	All Counties	All pupils	15 M	100000	1 year	MOE and County Government
Provision of water tanks to schools (1,000 learners)	To enhance rain water harvesting and water storage	Narok East, Narok South, Transmara East.	All pupils	5 M	100000	1 year	MOE and County Government
Livestock Sector.							
Pasture improvement, establishment, conservation and construction of strategic feed reserves	Improve pasture production for improved productivity	All County	Increase livestock production	10 M	5000 households	2 years	MOAL&F Community, relevant stakeholders, Development partners
Breed improvement	Improved breeds for increased productivity	All county	Increase livestock production	3 M	3500 households	2 years	MOAL&F and partners
Water sector.							
Construction of water supplies in major towns	Help in water catchment and water availability	Ewaso Nyiro,Mulot and Sogoo	Constant water supply	60 M	9000	1 year	CG, GOK ,and PARTNERS

Health and Nutrition.								
Vitamin supplementation	A	Support healthy bones	County Wide	Boost health	20 M	200000	3 years	MOH, UNICEF, RED CROSS County Government.
Zinc Supplementation		Aid in reduction congenital malformation and boost immune system.	County Wide	Boost health	25 M	200000	3 years	MOH, UNICEF, RED CROSS County Government.

Non-Food interventions

Intervention	Objective	Specific Location	Activity target	Cost	No. of beneficiaries	Implementation Time Frame	Implementation stakeholders
Agriculture Sector							
Proper management of on-farm storage and value	Increase of far produce storage	All County	Improvement of storage facilities	6.23 M	4500	2 years	Department of Agriculture
Provision of drought tolerant planting material	Improve crop production	All County	Boost crop production	5 M	10,000	2 years	Government of Kenya
County Cereal strategic Reserves	Improve storage of crops	All County	Crop production	10 M	10000	1 year	Department of Agriculture
Livestock Sector							

Enhanced disease surveillance and control, vector control and treatments	Help in reducing of spread of diseases.	County wide	Livestock disease prevention	8 M	County wide.	1 year	MOALF and partners
Reseeding of denuded areas (rangeland management)	Increase nutrient value in the areas	Eleng'ata enterit, Ntuka, Mosiro, Koyaki, Ongata Naado, Ewaso ng'iro	Improve crops production	50 M	5000 households	3 years	MOAL&F and partners
Development of market infrastructure- sale yards, holding grounds, market information and linkages to markets	Provision of information to farmers of better markets	County wide	Increase crop marketing	20 M	5000 households	1 Year	MOAL&F, livestock marketing councils and the community

Health and Nutrition.

School Nutrition program	Empower students on the benefits of nutrition	All County	Nutrition value to students	10 M	2000 schools	2 years	MOH, UNICEF, RED CROSS County Government.
CHVs trainings on Nutrition	Empower community on the benefits of nutrition	All County	Community	10 M	10000	3 years	MOH, UNICEF, RED CROSS County Government.

Water Sector.

Water pan construction .	Increase the water coverage and reduce trekking distances to water points	Oletukat Mosiro Emarti	Pan excavation	15,000,000	2400 people 45000 livestock	1 month per pan	CG,GOK AND PARTNERS
Drilling and equipping of boreholes	To increase water coverage and reduce distances to water points	Strategic areas mostly on livestock corridors	Borehole drilling	25,000,000	20,000,000 livestock	6 weeks per borehole	CG,GOK.AND PARTNERS
Protection of water catchment area such as Mau forest.	Conservation of water towers	Strategic areas in Mau forest	Tree planting	500 M	200,000	3 months	CG,GOK,and PARTNERS
Procurement of plastic tanks to institutions	Roof water harvesting	30 institutions	Tank procurement	2,400,000	15,000 pupils	2 months including delivery.	COG,GOK,and PARTNERS
Construction of sewerage systems	To check on sanitation	Kilgoris	Disposal of wastes	1.5B	100,000	1 year	CG.GOK,PARTNERS
Education Sector.							
Community sensitization on benefit of Education	Empower the community to know the importance of Education to students.	All county	Capacity building	5 M	10000	1 year	MOE, County Government and NGOs

Provision of plastic tanks to schools (1,000 learners)	To enhance rain water harvesting and water storage	Narok East, Narok South, Transmara East.	Water catchment	5 M	10000	1 year	MOE and County Government and Caritas.
Opening of new schools	To reduce on trekking distance coverage by students	Narok East and Narok South.	More schools	100 M	50000	2 years	MOE and County Government
Improvement of infrastructure development.	To provide suitable learning environment to learners	All county	Suitable learning environment	100 M	100000	3 years	MOE and County Government