

National Drought Management Authority

Baringo County

Drought Early Warning Bulletin for December 2019



A Vision 2030 Flagship Project



DECEMBER EW PHASE	Early Warning Phase Classification			
Drought Status: NORMAL <small>Shughullu ka kawata</small>	LIVELIHOOD ZONE	EW PHASE	TRENDS	
<p>Drought Situation & EW Phase Classification Drought Phase: Normal- Stable</p> <p>Biophysical Indicators</p> <ul style="list-style-type: none"> Most biophysical indicators are within the expected seasonal ranges. Above average rainfall was received in the month of December 2019. The Vegetation Condition Index values for Baringo County are above normal and stable. The Water levels in most water sources are normal at (90%-100%) <p>Socio Economic Indicators (Impact Indicators)</p> <p>Production indicators:</p> <ul style="list-style-type: none"> The forage condition is good in both quality and quantity and expected to remain stable with the on-going rains. Livestock body condition is fair to good in all livelihood zones. Milk production is slightly above the normal seasonal ranges and on an increasing trend. No Drought related Livestock deaths reported in all Livelihood zones. <p>Access indicators</p> <ul style="list-style-type: none"> Terms of trade are currently above normal seasonal ranges due to improving livestock body condition. Distances to water sources for households currently are below normal seasonal ranges and stable due to recharge of most of surface water sources. <p>Utilization indicators:</p> <ul style="list-style-type: none"> The number of under-five children at risk of malnutrition was 11.3%, a decrease as compared 14.6% in the previous month. Copping strategy index for households is still within normal ranges. 	PASTORAL	NORMAL	STABLE	
	AGRO PASTORAL	NORMAL	STABLE	
	IRRIGATED CROP	NORMAL	STABLE	
	COUNTY	NORMAL	STABLE	
	Biophysical Indicators	Value for the month Baringo	LTA-Monthly Baringo	Normal Kenya % ranges
	Average rainfall MM (%)	108.2	42.1	80-120
	VCI-3month	86.29	58	35-50
	% Of water in the water pan	90%-100%		50-60
	Production indicators	Value	Normal ranges	
	Livestock Migration Pattern	Normal	Normal	
	Livestock Body Condition	4-5	3-4	
	Milk Production (Ltr /HH/Month)	1.7	1.8	
	Livestock deaths (for drought)	No deaths	No death	
	Access Indicators	Value	Normal ranges	
	Terms of Trade (ToT)	66	>63	
Milk Consumption (Ltr)	1.6	>=1.7		
Water for Households-trekking distance (km)	3.1	0-4		
Crops area planted for the season (%) (November 2019)	(Maize) 2,500(Beans)	LTA (40,046Ha) LTA (20,028Ha)		
Utilization indicators	Value	Normal ranges		
At Risk (%)	11.3%	<15		
CSI	15.16	>19.0		

<ul style="list-style-type: none"> Short rains harvests Short dry spell Reduced milk yields Increased HH Food Stocks Land preparation 	<ul style="list-style-type: none"> Planting/Weeding Long rains High Calving Rate Milk Yields Increase 	<ul style="list-style-type: none"> Long rains harvests A long dry spell Land preparation Increased HH Food Stocks Kidding (Sept) 	<ul style="list-style-type: none"> Short rains Planting/weeding 								
Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec

1. CLIMATIC CONDITIONS

1.1 RAINFALL PERFORMANCE

1.2 AMOUNT OF RAINFALL AND SPATIAL DISTRIBUTION

- During the month of December, 85.5 mm, 8.9mm and 13.8mm of rainfall was received in the 1st, 2nd and 3rd dekad respectively
- The amounts received were above the LTA during the first dekad and below the LTA during the second and third dekad for this period.
- Both temporal and spatial distribution was fair across all the sub-counties.

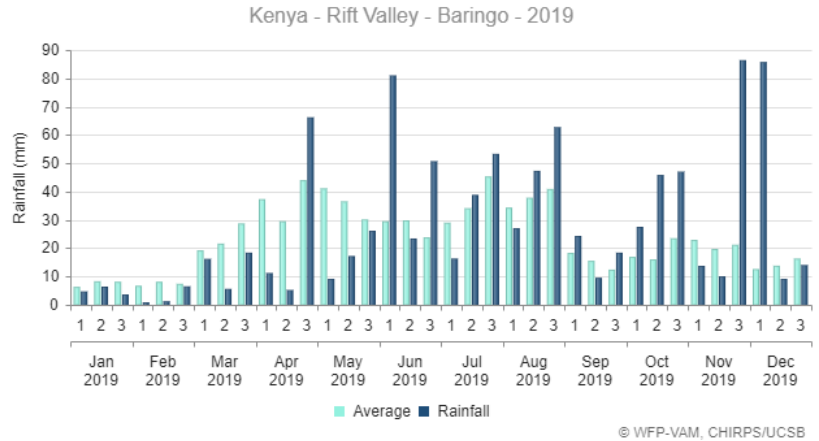


Fig. 1. Rainfall performance

2. IMPACTS ON VEGETATION AND WATER

2.1.1 VEGETATION CONDITION INDEX (VCI)

The vegetation condition in the County was above normal and improved as compared to the previous month as shown in the table below.

COUNTY	Sub County	VCI as at 28 th November 2019	VCI as at 28 th December 2019	
BARINGO	County	80.11	86.29	The county vegetation greenness is above normal, with all its sub counties in above normal vegetation greenness. The county experienced above normal rains during the month that has impacted positively the vegetation condition for the county.
	Central	85	83.91	
	Eldama	75.17	75.15	
	Mogotio	82.57	91.3	
	North	77.06	80.15	
	Tiaty	79.99	89.9	

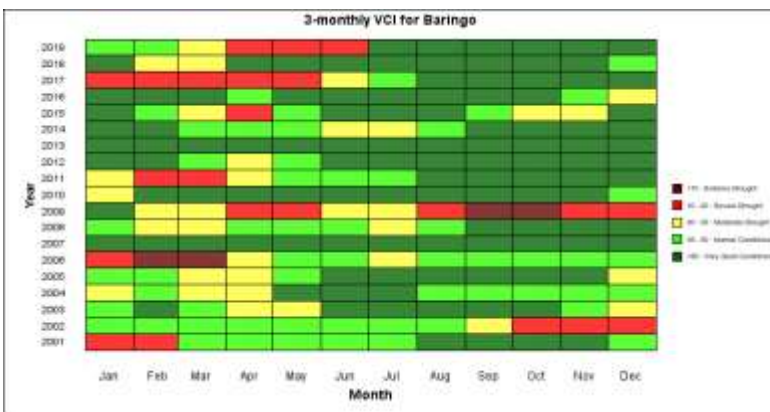


Table.1. Source BOKU

The vegetation condition index for Baringo County was at 86.29 which was normal vegetation greenness as compared to the LTA. In comparison to the previous month the current vegetation cover has improved slightly in quantity and quality. The situation is expected to decline due to the cessation of OND rains

Fig 2. VCI

The vegetation condition is stable and expected to deteriorate throughout the county due to the end of OND rains.

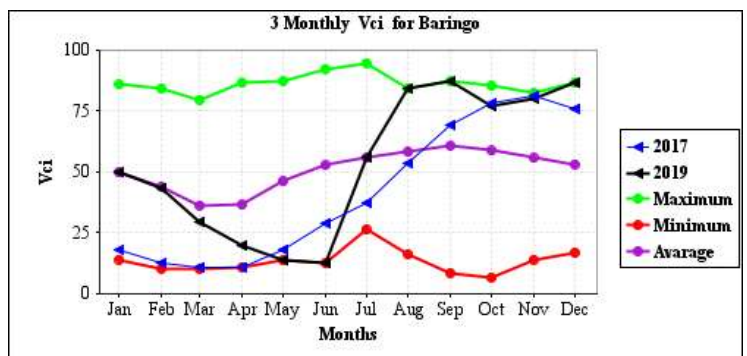


Fig.3.VCI trend

2.1.2 Pasture

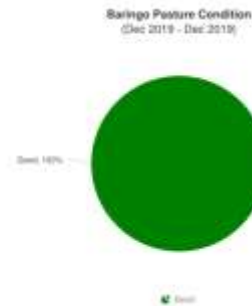


Fig.4.Pasture Condition

- The pasture condition is good both in quantity and quality across all livelihood Zones these conditions are normal at this time of the year.
- The current pasture is expected to last for three to four months across all livelihood zones.

2.1.3 Browse

- The browse condition is good in quantity and quality across all livelihood zones; the condition is normal as compared to seasonal ranges for this time of the year.
- The available browse is expected to last for four to five months in pastoral and agro pastoral livelihood Zones and six months in irrigated cropping livelihood zone.

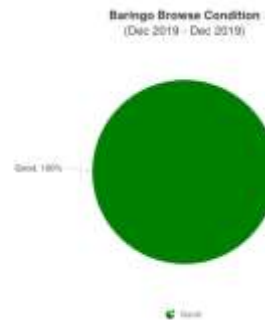


Fig.5. Browse Condition

2.2 WATER RESOURCE

2.2.1 Source

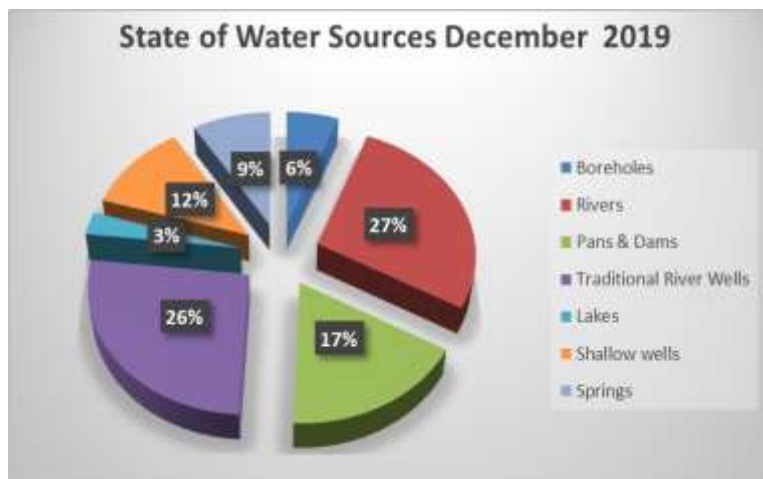


Fig.6 State of water Sources

- The main water sources for both livestock and human consumption across all livelihoods were Rivers, traditional river wells and water pans.
- Most water pans and dams were at 90% to 100% of their full capacity.
- Water quality and quantity across pastoral and agro-pastoral livelihoods is good, which is normal for this time of the year.
- The current water sources are expected to last for four months in irrigated farming livelihood zone
- In pastoral and agro pastoral livelihood zones, the water is likely to last for three months.

1.3.2 Household access and Utilization

- The average household trekking distance to water sources was 3.1km, which was stable as compared to the previous month at 4km.
- The distances are below the LTA by 28 percent.
- Irrigated cropping zone recorded the least trekking distance of 0.8km while Agro pastoral livelihood recorded the highest average of 5.3 km.
- This decrease in distances is attributed to recharge of water sources across all livelihoods.

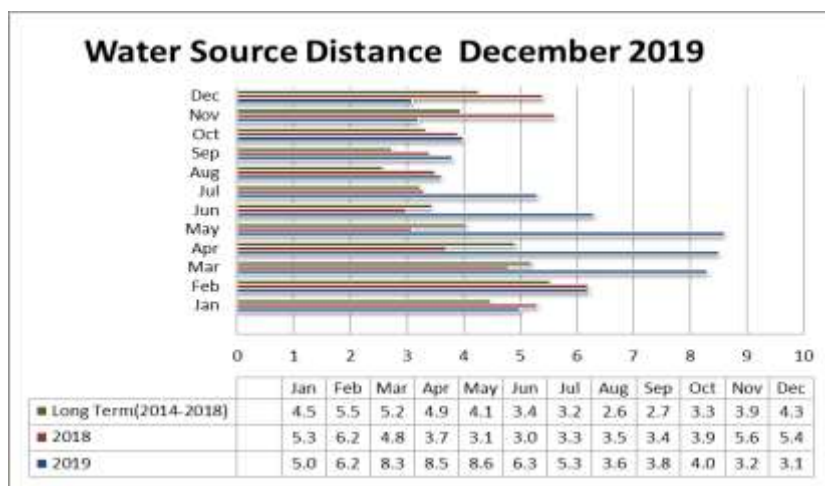


Fig.7. Water Source Trekking Distances

2.2.3 Livestock access

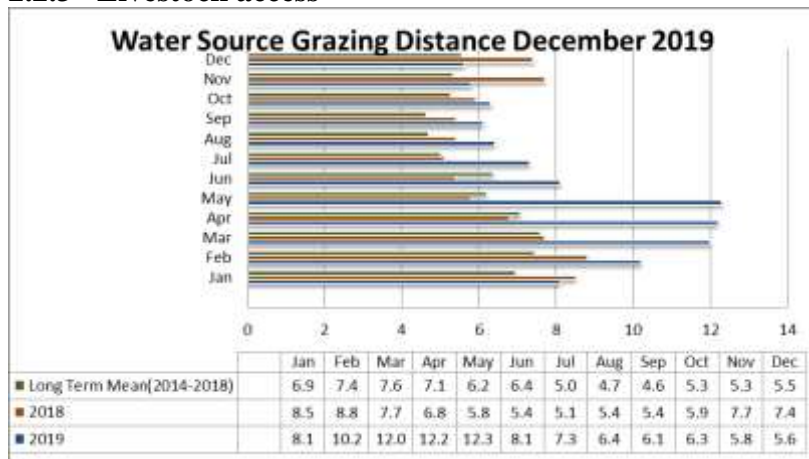


Fig.8. Water Source Grazing Distance

- There was a slight decrease in return distance for livestock from grazing zones to water points from 5.8Km the previous month to 5.6Km currently.
- The Agro pastoral livelihood zone covered the longest average distance of 5.7 km while irrigated livelihood zone covered the shortest average distance of 1.6 km.
- The situation is attributed to regenerated pastures and water availability at the traditional grazing zones across all livelihood zones.

3.0.0 PRODUCTION INDICATORS

3.1 Livestock Production

3.1.1 Livestock Body Condition

- The proportion of households interviewed during the month that reported good and fair livestock body condition were 81% and 19% respectively.
- This fair to good body condition is occasioned by availability of enough pasture, browse and water across livelihood zones.
- The situation is likely to remain steady with the on-going short rains.

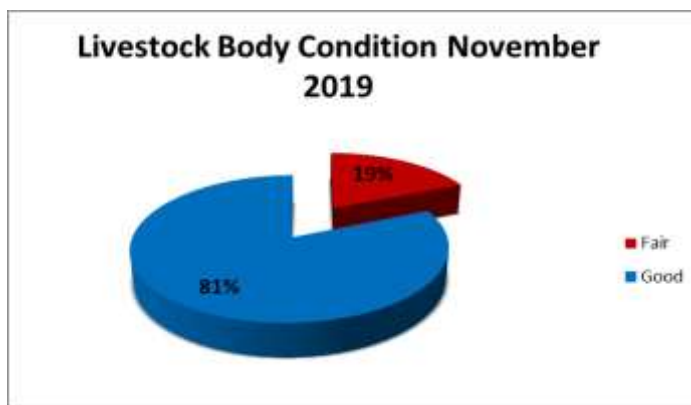


Fig.9. Livestock body condition

3.1.2 Livestock Diseases

- Cases of CCP and CBP were reported in all livelihoods, which is normal. The livestock department has concluded livestock vaccinations and treatment of these cases. There were no major livestock disease outbreaks in the county during the month.

3.1.3 Milk Production

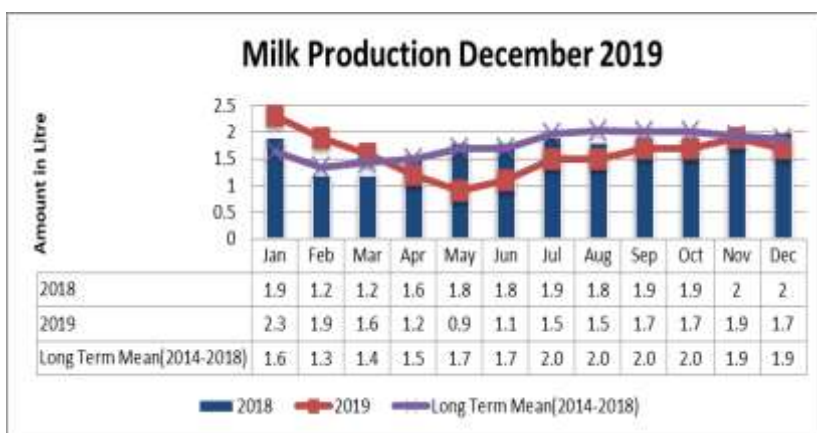


Fig.10. Milk Production

- The average milk produced per household per day was at 1.7 litres a decrease of 10 percent compared to the previous month at 1.9 litres.
- The decrease was attributed to the displacement of households in irrigated livelihood zone due to floods.
- The amount is below the long-term average by 10 percent.
- The milk was mainly from cattle and goats.
- Irrigated livelihood zone had an average of 2 litres while Agro pastoral had the least at 1 litre.

RAIN FED CROP PRODUCTION.

3.2.1 Stage and Condition of food Crops

- Currently most farmers in the irrigated livelihood zone have planted short term crops such as green grams and cowpeas in the agro pastoral livelihood zone.

4.0.0 MARKET PERFORMANCE

4.1.0 LIVESTOCK MARKETING

4.1.1 Cattle Prices.

- The average price for medium-sized cattle was at Ksh.20278 a slight decrease of five percent as compared to the previous month at Ksh. 21,352
- The price was above the long-term average by 47 percent.
- Irrigated livelihood zones posted the highest prices of Ksh. 20,333 while Agro Pastoral livelihood zone recorded the least average price of Ksh.15, 000.
- The slight decrease in prices was attributed to increased livestock numbers as farmers sell to get cash during the festive season across all livelihood zones.

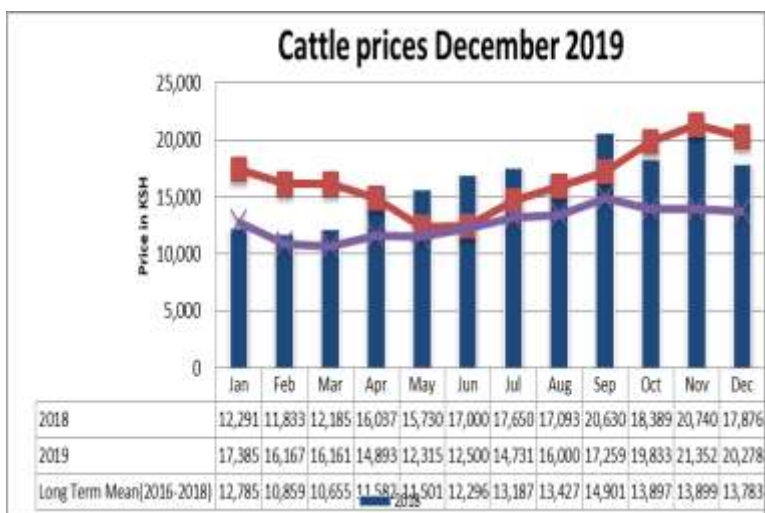


Fig.11. Cattle Prices

4.1.2 Goat Prices.



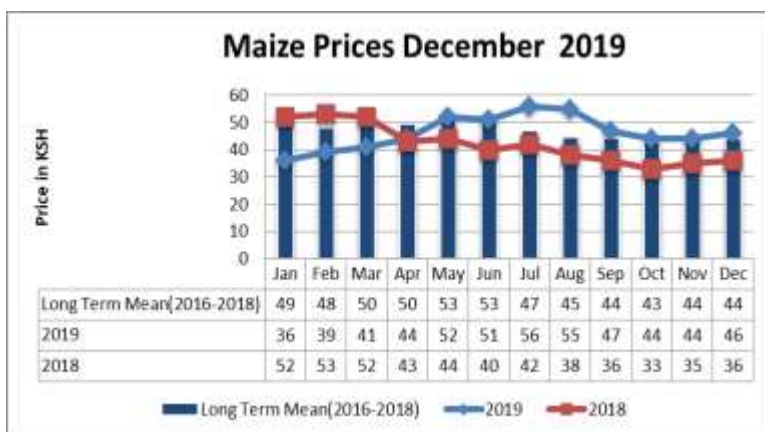
- The average price of a medium size goat was relatively stable at Ksh.2, 987 as compared to the previous month at Ksh. 3,044.
- This goat price was above the LTA by 14 percent.
- The prices were highest in irrigated cropping livelihood Zone at Ksh. 3,367 and lowest in Agro Pastoral livelihood zone at Ksh.2, 000.
- The better prices were as a result of good livestock body conditions.

Fig.12. Goat Prices

4.2.0. CROP PRICES

4.2.1 Maize

- The current average price for kilogram maize was stable as compared to the previous month at Ksh. 46.
- The price was slightly above the long-term average at this time of the year by four percent.
- Pastoral livelihood Zone recorded the highest price of Ksh.47 per Kg while irrigated Livelihood Zone recorded the lowest of Ksh.30 per Kg.



- This can be attributed by the decrease of stocks at household levels and increased stocks at local retailers.

4.2.2 Posho (Maize Meal)

Fig.13. Maize Prices



- The price per a kilogram of Posho was at Ksh.55 from Ksh. 50 a decrease of 10 percent as compared to the previous month.
- These prices are attributed increasing maize prices and availability of stocks those held by the retailers.
- The price was above the long-term average by 8 percent.

Fig.14.posho prices

4.2.3 Beans Prices

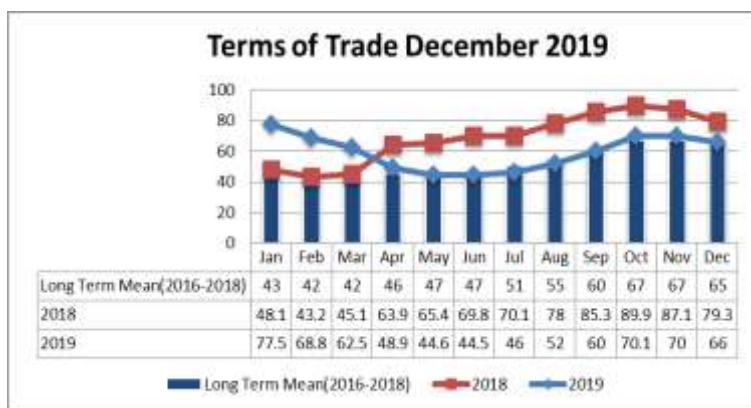
- The average price per kilogram for beans increased by six percent at Kshs.108 in comparison to the previous month.
- The price was attributed to decreasing stocks at household across livelihood zones.
- The current prices are slightly above the long-term average by three percent.
- Pastoral Livelihood Zone recorded the highest average prices of Ksh.123 while



Fig.15. Beans Prices

the irrigated recorded the least prices of Ksh.80.

4.3.0 Livestock Price Ratio/Terms of Trade



- The terms of trade reduced slightly as compared to the previous month at 66; this was attributed marginal decrease in the livestock prices and increasing maize prices.
- The current terms of trade stable in comparison to the long-term average.
- Irrigated cropping livelihood zone had the highest terms of trade of 93.7 while Agro pastoral livelihood Zone had the least at 52.2.

Fig.16. Terms of Trade

5.0.0 FOOD CONSUMPTION AND NUTRITION STATUS

5.1 Milk Consumption

- The average milk consumption per household per day was at 1.3 litres; which was a decrease of 18 percent compared to the previous month.
- The milk consumption was highest in the pastoral Livelihood zone at 1.5 litres and lowest in the Agro Pastoral livelihood zone at 0.7 litres.
- The amount consumed was below the long-term mean by 24 percent.

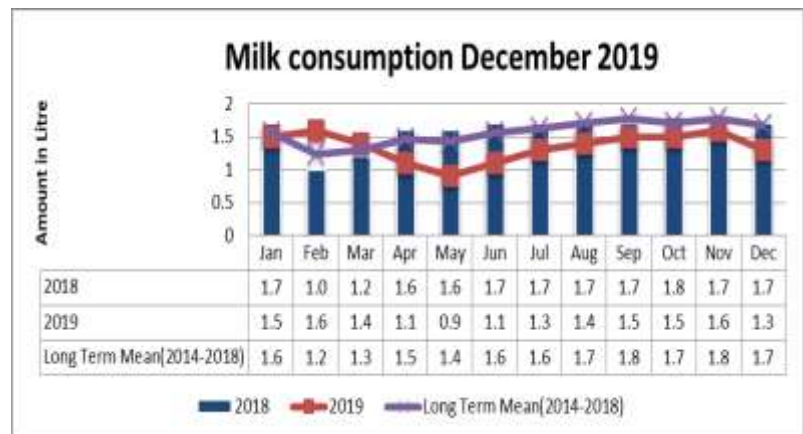


Fig.17. Milk Consumption

5.2 Food Consumption Score

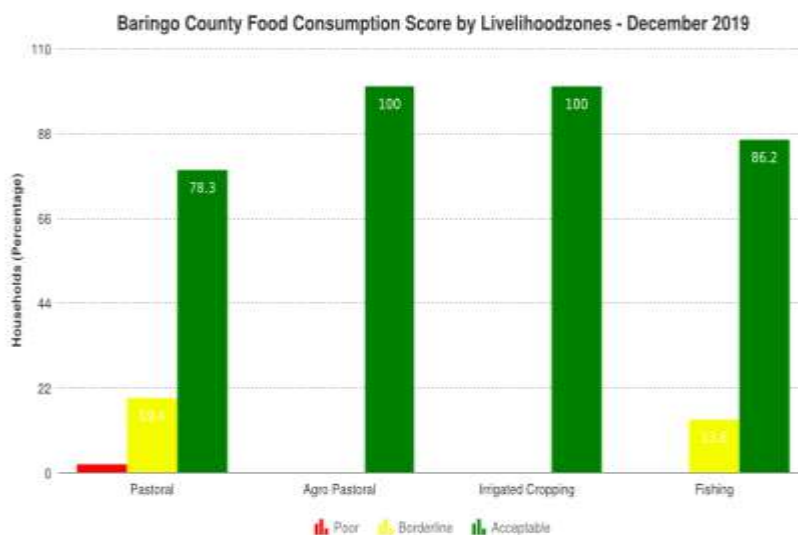


Fig. 18. Food Consumption Score

attributed to availability of leafy vegetables and better purchasing power across all livelihood zones.

- Only one percent of the households reported poor food consumption and were in the pastoral livelihood zone.
- The proportion of households with borderline food consumption was 19.4 in pastoral, 3.6 in Agro Pastoral and 15.8 fishing livelihood zones.
- The current FCS has improved compared to the previous month.
- Generally, a proportion of 1, 15 and 84 percent of the households across the livelihoods have, poor, borderline and acceptable food consumption score respectively.

- Food security situation across all livelihood zones has improved as compared to the previous month; this is

5.3.1 Health and Nutrition Status

- There was an improvement in the nutrition status of the sampled children under five years of age with proportion at risk of malnutrition being 11.3%, as compared to the previous month at 14.6%, the situation is attributed better consumption at household level and stable households' purchasing power across livelihoods.
- Kapenguria, Komolion and Ribko wards in the pastoral livelihood zones recorded highest levels of malnutrition at 26.7%, 20.8% and 17.5% respectively.

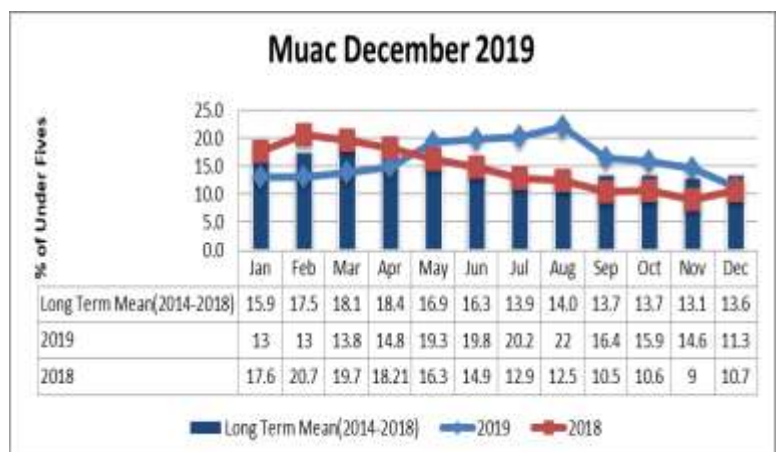


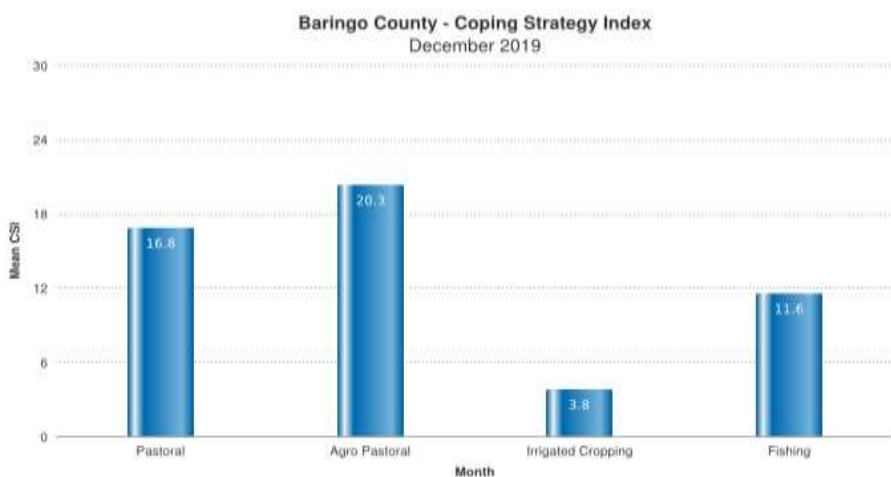
Fig.19. Muac

5.3.2 Health

- During the reporting period the commonly reported illnesses were malaria and diarrhoea across livelihood zones. Occasioned by increased stagnant water bodies and poor hygiene practices at Household Level.
- No other major human disease incidences were reported during the month.

5.4.0 COPING STRATEGIES

Coping Strategy Index



- The average coping strategy index was 15.16 a slight increase compared to last month at 15.01.
- Households in Agro Pastoral livelihood zone employed most coping strategies at 20.3 followed by Pastoral at 16.8. The irrigated zones employed least coping mechanisms at 3.8.
- The increase in the coping strategies was due to households being affected by the floods

livelihood zones.

across all

Fig.20. Coping Strategy Index

6.0 CURRENT INTERVENTION MEASURES.

6.1 NON-FOOD INTERVENTIONS

National Drought Management Authority

NDMA coordinated and supported multi-stakeholder flood risk assessment in the county to ascertain the extent of damages caused by the ongoing flash floods and prepared detailed flood risk assessment report for possible intervention. Also took part on the East pokot farmers field organized by the Christian Impact Mission

Baringo County Government

- Integrated outreaches and mass screening-Tiaty subcounties-63 sites, BN-8, BS-8 and Mogotio 8 sites
- Sub-county coordination meetings done in East-pokot on 14th Nov, Tiaty was be done on 27th November
- Monitoring of outreaches done in November for Tiaty and December for BN, BS and Mogotio
- SQUAEC survey Done in Tiaty sub counties from 23th-30th November to assess IMAM coverage
- Nutrition Commodities support supervision and Monitoring in 12 health facilities in the month of November
- Monthly nutrition commodity prepositioning
- Implementation of Malezi bora week's activities which includes vitamin A Supplementation
- Malaria support supervision
- Routine disease surveillance for livestock
- Promotion of pasture establishment and conservation
- Farmers sensitization of Agroforestry, perennial crop farming like fruits and early maturing crops such as beans,
- General sensitization on how to reduce post-harvest losses and aflatoxin

Kenya Red Cross Society

The rapid flood risk assessment conducted jointly with NDMA, County Government of Baringo reveal that communities affected by floods had diverse needs both on short-term and long-term. Due to limited resources available to support all, KRCS conducted internal verification exercise in order to select the most vulnerable households per village so that whatever is available should go to neediest families.

The selection criteria focused on the following vulnerable households

- Person with disability who were completely displaced
- Elderly who were completely displaced
- Widow/widowers were completely displaced
- Pregnant and lactating women
- Child headed families
- None shelter beneficiaries
- Household who does not work or own business and most vulnerable
- Above all vulnerable household who haven't receive support for KRCS

1. Distribution of Non-Food Items (NFIs)

After verification of households in all sub counties, few available NFIs were divided and distributed. Below is a summary of HHs reached per sub-county;

- Baringo South 372 HHs
- Mogotio 14HHs
- Eladama Ravine 79 HHs
- Baringo North 16 HHs
- Rongai (Nakuru County) 23HHs

2. Distribution of Dignity Kits

On 21st Dec 2019, sampled of 10 dignity kits was distributed during donor visit (UNFPA). Health talks were given out on proper usage of sanitary towels. On 23rd Dec 2019 other remaining adolescent girls and women of reproductive age were given in Ndepes ECD and Longewan Dispensary. Total of 25 dignity kits given out. The process involves targeting, registration and finally distribution of the kits.

World Vision Kenya

- 300 beneficiaries were supported with cash transfer (150 tirioko; 100 Kisanana 50 in Bartabwa)
- Construction of masonry water tank at Esageri School to support children living with disability who suffer a lot during drought emergencies completed.
- Equipping of Atiar, Maregut, Koiserat and Ayatya BHs completed and residents receiving clean, safe portable water.
- 100 families supported with one sheep each in kamar

7.0 Emerging Issues

7.1 Insecurity/Conflict/Human Displacement

	Wild Animal	Areas Reported	Livestock
1.	Baboons	Ribko, Akoret, Kolloa, Ng'oron	Shoats
2.	Lynx	Akoret, Ribko, Kolloa	Shoats
3.	Hyena	Ribko, Akoret, Komolion	Shoats
4	Wild Dogs	Ng'ambo, Kiserian, Komolion	Sheep

- Human-wildlife conflicts where a number of livestock were killed as highlighted in the Table.
- Incidences of flooding have been reported in the areas of Ngambo, Labos, Tulongoi, Eldume (Mukutani Ndogo), Kimoliot, Kabunyony, Bondeni, Shauri,

Shaabab and Kambi Turkana, Kakabul in Kolowa, Lokis and Ngaina, Sirwe, Lomanira, Rosoga, Kapchelukuny/Kures, Kisanana, Olkowe, along Kerio Valley, Kipsaraman and Kabartonjo. Approximately 493 Households have so far been affected.

7.2 Migration

- There have been no cases of livestock migrations reported during the month in the county; however, most livestock are still at the traditional wet season grazing zones.

7.3 FOOD SECURITY PROGNOSIS

The good rains received since the early months of the year coupled with above normal amounts in the first dekad of December have consistently had a positive impact on forage and water availability; with good effects on the livestock body condition, milk availability and overall livestock sale prices. Factors that contributed significantly to improved household incomes and purchasing power. Equally the on-going crop harvests, availability of local vegetables and milk will likely improve household dietary diversity and the nutritional security. The on-going safety net initiatives by the National; County government and all non state actors targeting pockets of the vulnerable and at high-risk households should be sustained across livelihoods in the affected livelihood zones.

The Current food and nutritional security situation will be bolstered further given the prevailing positive weather conditions in the County. Community members will need to exercise great care and safety precautions given the current massive rains and related flooding that may result into destruction of roads and loss access to essential services and death has been reported in Mogotio. The on-going lifeline messages on floods early warning by the National, County government and all non-state actors targeting pocket of the vulnerable and at high-risk households should be sustained across livelihoods in the affected livelihood zones.

Baringo being a high risk Malaria and Rift Valley Fever Prone County the Ministry of Health and Livestock should take the necessary preventive measures of alerting the identified key hotspots on the likely Outbreak of these diseases that in the past have caused loss of life in the County. Mainly through awareness creation and prepositioning of the necessary medical supplies to manage outbreaks. The desert locust invasion been reported in Mandera, Wajir, Marsabit and Isiolo need to monitored very closely and sector like Agri and livestock need to preposition adequate preventive and control measures to contain the situation in case of any cases reported,

8.0 RECOMMENDATIONS

8.1.1. General Recommendations:

- Strengthening sector specific drought preparedness and resilience building initiatives at Sub-County and community level.
- Regular County and Sub- County drought coordination, monitoring and reporting meetings with emphasis on the nature of on-going interventions partnerships and resources gaps
- Need to carry out rapid assessment to ascertain the impact of current heavy rains that resulted flash floods in most parts of the county
- Keenly monitor the desert locust invasion been reported in northern part of the country to avert crop and vegetation losses

8.2.0 Proposed Recommendations

8.2.1. Water Sector

- Construction of climate proofed strategic water sources in under-provided areas to ensure optimum coverage through construction of mega Dams taking advantages surface water runoff, water supplies systems, Drilling and equipping of boreholes, constructions of dams
- Capacity building of community water management committees as well as formation of water user associations.

- Rehabilitate existing water sources; water harvesting, construction of underground cisterns
- Sensitization of communities on Sanitation and hygiene, Water management/Resources based Conflict resolution and management committees
- Pre-positioning of fast moving spare parts for strategic borehole along migratory routes and areas of convergence during drought
- Construct contingency boreholes for use only in drought
Pre-positioning of water storage facilities targeting vulnerable schools and communities

8.2.2. Nutrition and Health

- Initiate and roll out IMAM surge model and link with early warning information
- Intensify Nutrition Surveillance and service provision in the hard to reach areas to support case findings through nutrition and health outreaches through partnership with stakeholders
- Strengthen the technical and human resource capacity for health care workforce in health and nutrition service delivery through technical trainings.
- Intensify disease surveillance especially in areas where there is upsurge in Malaria cases
- Support hygiene and sanitation health campaigns (health promotion)

8.2.3. Education

- Equip schools with roof catchments and covered storage tanks and cisterns
- Pipeline extension to schools that are neighboring permanent water source e.g. boreholes and river intakes
- Training of board of management on basic O&M of water supply systems and roof water harvesting system for sustainability

8.2.4. Livestock and Veterinary sector

- Infrastructure development in feeder and main livestock markets
- Improvement of livestock market information system
- Promote production and storage of hay as well as strengthening of capacity on use of crop residue as forage
- Community sensitization on need for commercial off-take
- Carry out routine disease surveillance and vaccination over notifiable diseases to ensure normal livestock market operations especially for rift valley fever
- Provide for strategic disease control infrastructure, and promote inter-county and cross border disease surveillance and control mechanisms

8.2.5. Agriculture Sector

- Support development of integrated water and soil conservation infrastructure for crop production
- Support cultivation of drought tolerant and early maturing crops
- Promote Water Harvesting for household food security- Farm ponds and equipping existing ones and irrigation schemes
- Support development of risk management institutions such as cereal banks
- Support strategic post-harvest management of crops
- Enhance surveillance and sensitize farmers on threats posed by aflatoxin which claimed three (3) human lives on the eve of christmas

REFERENCE TABLES

Table 3: Drought Phase Classification

Normal	Alert	Alarm	Emergency
All environmental Agricultural and pastoral indicators are within the seasonal ranges	Meteorological drought indicators move outside seasonal ranges	Environmental and at least two production indicators are outside Long term seasonal ranges	All Environmental, Metrological and Production indicators are outside normal ranges.
Recovery:			
The drought phase must have reached at least Alarm stage. Recovery starts after the end of drought as signaled by the environmental indicators returning to seasonal norms; local economies starting to recover			

Table 4: Standardized Precipitation Index (SPI)

Color	SPI Values	Metrological Drought Category
	> +1.5 or more	Wet Conditions
	0 to +1.5	No drought
	-0.1 to -0.99	Mild drought
	-1 to -1.99	Severe drought
	<-2 and less	Extreme drought

Table 5: Vegetation Condition Index Values (VCI)

Color	VCI values 3-monthly average	Agricultural Drought Category
	≥50	Wet
	35 to 50	No agricultural drought
	21 to 34	Moderate agricultural drought
	10 to 20	Severe agricultural drought
	<10	Extreme agricultural drought

Table 6: Livestock Body Condition

Level	Classification	Characteristics (this describes majority of the herd and not individual isolated Stock)
1	Normal	Very Fat Tail buried and in fat
		Fat, Blocky. Bone over back not visible
		Very Good Smooth with fat over back and tail head
		Good smooth appearance
2	Moderate	Moderate. Neither fat nor thin
3	Stressed	Borderline fore-ribs not visible. 12th & 13th ribs visible
4	Critical	Thin fore ribs visible
5	Emaciated	Very thin no fat, bones visible
		Emaciated, little muscle left

Definition of Early Warning Phases

The EW phases are defined as follow:

NORMAL: The normal phase occurs when **biophysical drought indicators (VCI and SPI) show no unusual fluctuations** hence remain within the expected ranges for the time of the year in a given livelihood zone, division or county

ALERT: The alert phase is when either the **vegetation condition index or the standard precipitation index (biophysical indicators) show unusual fluctuations below expected seasonal ranges** within the whole county/sub-county or livelihood zones.

ALARM: The alarm phase occurs when both **biophysical and at least three production indicators fluctuate outside expected seasonal ranges** affecting the local economy. The production indicators to be considered are livestock body condition, crop condition, milk production, and livestock migration and livestock mortality rate.

If **access indicators** (impact on market, access to food and water) move outside the normal range, the status remains at “alarm” but with a worsening trend. Proposed access indicators include ToT, price of cereals, availability of cereals and legumes, and milk consumption. The trend will be further worsening when also welfare indicators (MUAC and CSI) start moving outside the normal ranges.

EMERGENCY: In the emergency phase, **all indicators are outside of normal ranges**; local production systems have collapsed within the dominant economy. The emergency phase affects asset status and purchasing power to extent that seriously threatens food security. As a result, coping strategy index, malnutrition (MUAC) and livestock mortality rates move above emergency thresholds

RECOVERY: Environmental indicators returning to seasonal norms. The drought phase must have reached at least Alarm stage. Recovery starts after the end of drought as signaled by the environmental indicators returning to seasonal norms while production indicators are still outside the normal seasonal range but local economies start to recover. The status changes to normal once the bio physical and production indicators are back to normal range.