

National Drought Management Authority
LAMU COUNTY
DROUGHT EARLY WARNING BULLETIN FOR FEBRUARY 2019



A Vision 2030 Flagship Project



February 2019: EW PHASE

Drought Status: ALERT



Maandalizi ya mapema

Drought Situation & EW Phase Classification

Biophysical Indicators

- The County received poor off season rainfall during the Month under review.
- The vegetation condition Index (VCI-3Month) was showing a decrease of 18 percent compared to previous month.
- The VCI indicated normal vegetation greenness. However the overall drought phase in the county was at Alert in February, 2019.
- Forage condition was fair to poor across all livelihoods zones during the month.

Socio Economic Indicators

Production indicators

- All livestock species exhibited fair to good body condition.
- Maize crop is at land preparation stage in mixed farming zone.
- Milk production increased compared to previous month of January, 2019.

Access indicators

- Terms of trade were favorable to crop farmers than livestock herds in mixed and pastoral livelihood zones respectively.
- Water access for both human and livestock was fair and stable in all the livelihood zones except in Fishing and Agr-pastoral zones.
- Milk consumption increased and is higher than the long term Average.

Utilization indicators

- The proportion of children at risk of malnutrition cases increased slightly and above the normal range as indicated by percent of mid upper arm Circumference (MUAC).
- The average coping strategy decreased compared to previous month.

Early Warning (EW) Phase Classification

Livelihood Zone	Phase	Trend
Agro pastoral/Fishing	Alert	Worsening
Mixed farming/Irrigated cropping	Normal	Worsening
Fisheries /Mangroves	Alert	Worsening
Farming/Casual Labour	Alert	Worsening
Agro pastoral	Normal	Worsening
County	Alert	Worsening
Biophysical Indicators	Value	Normal Range/Value
Rainfall (% of Normal)	< 4	40 -80
VCI-3Month	50.25	<35
Forage condition	Good to fair	Good
Production indicators	Value	Normal
Crop Condition(specify crop)Maize	Good	Good
Livestock Body Condition	Good to fair	Good
Milk Production	3	>3 Litres
Livestock Migration Pattern	Normal	Normal
Livestock deaths (from drought)	No death	No death
Access Indicators	Value	Normal
Terms of Trade (ToT)	99	84
Milk Consumption	2.0	>2litres
Return distance to water sources (HH).	3.6	<5 Km
Cost of water at source (20 litres)	5-10	<5Kshs
Utilization indicators	Value	Normal
Nutrition Status, MUAC (% at risk of malnutrition)	4.9%	>5%
Coping Strategy Index (CSI)	9.32	<0.95

Seasonal Calendar

<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

1.0 CLIMATIC CONDITIONS

1.1 Rainfall performance

- Insignificant off season rainfall was received during the month under review, with low intensity compared to the previous months.
- The current NDVI value is slightly above the historical NDVI values.

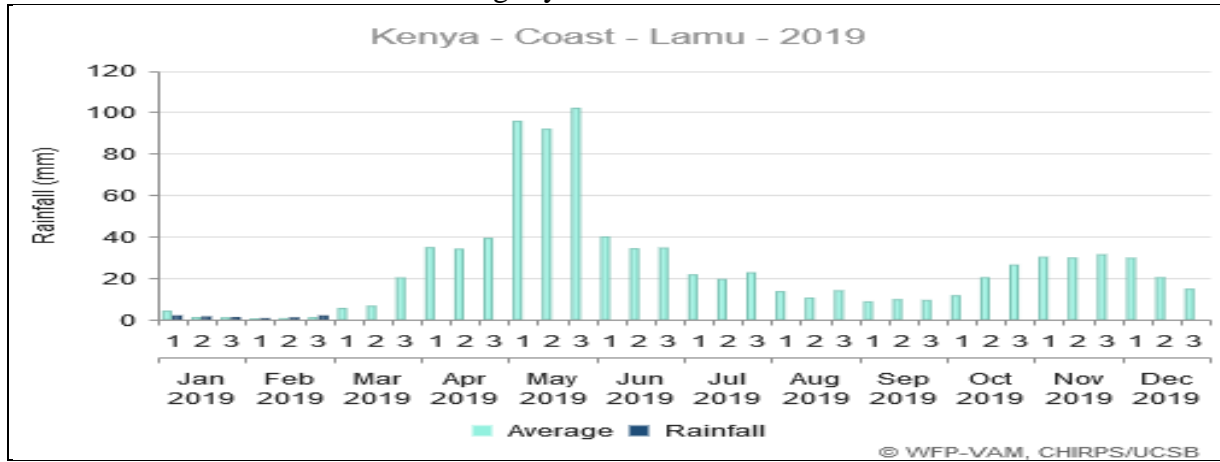


Figure 1: Rainfall Satellite data. (Source: WFP-VAM, CHIRPS/UCSB)

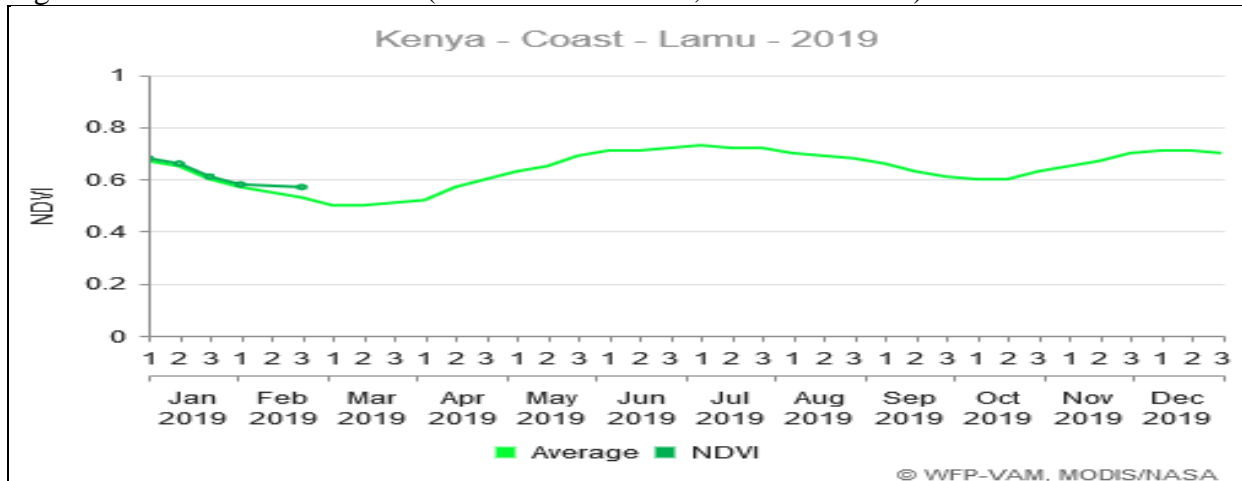


Figure 1: NDVI data.{Source: wfp-Vam}

1.2 Amount of rainfall and spatial distribution

- According to VAM WFP rainfall data, the County received a total of 2.8 mm of rainfall in the Month of February, 2019 during the 1st, 2nd and 3rd dekad.
- These was a decrease of 71 percent rainfall compared to previous month; however this was below the long term average of 1.6mm for the three dekad as in figure 1 above.
- This 2.8mm of rainfall was lower than the amount of 3.1 mm received in same period of the previous year.
- The rainfall received was uneven with poor, both in spatial and temporal distribution in all parts of the livelihood zones of the county.

1.3 Other hazards.

- No hazards report during the month under review.

2.0 VEGETATION CONDITION

2.1 Vegetation Condition Index (VCI)

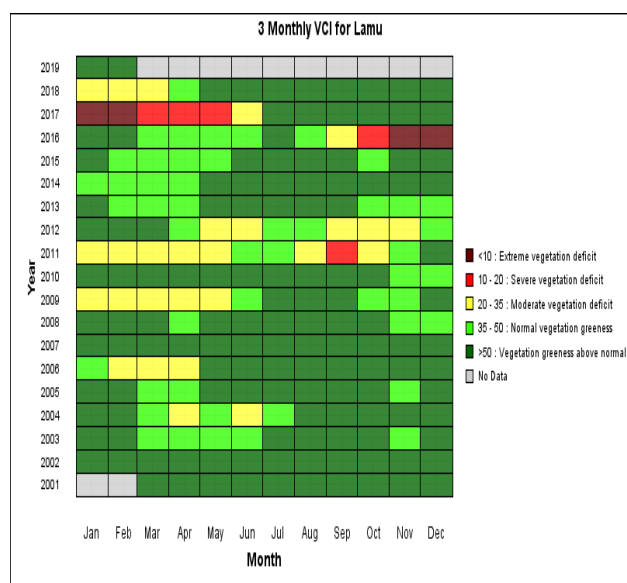
- The vegetation condition index for the month of February 2019 decreased by 18percent compared to the previous month. This was due to low precipitation received during the Month.
- The vegetation condition index for the month of February, 2019 was 50.25 compared to 61.07 in the previous month.
- The VCI indicated vegetation normal greenness in the County.
- The VCI-3Months is above the long-term average and the previous year as shown in the figures 2, 3 and table1 below.

Table 1:February 2019 VCI (3M)

ADMINISTRATIVE UNITS	Vegetation greenness	
	VCI-3Month as at 28 th January 2019	VCI-3Month as at 25 th February 2019
County	61.07	50.25
Lamu East	65.13	53.75
Lamu West	58.72	48.24

Figures below show three Months Vegetation Condition Index (VCI) matrixes for Lamu County

{Source: Boku University, Austria }



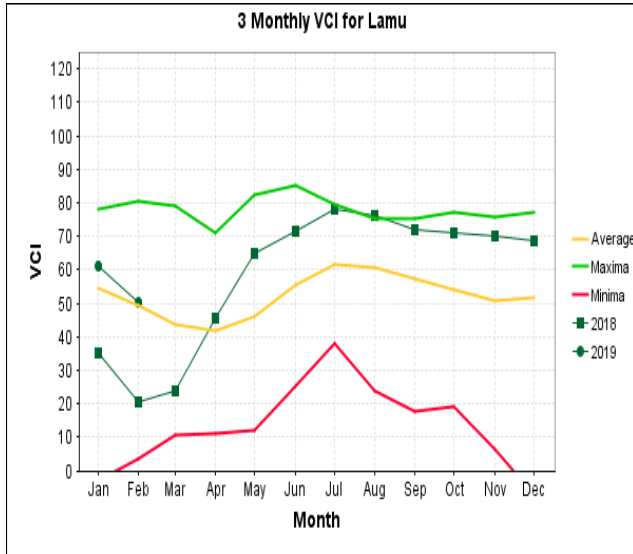


Figure 2: VCI-Lamu county

Figure 3: VCI-Lamu county

OBSERVATIONS-Pasture and Browse condition

2.1.2 Pasture

Pasture condition was fair to poor across all livelihood zones both in quality and quantity 60 percent of Community members interviewed stated that pasture was fair while 40 percent indicated that pasture was poor but with worsening trend as in figure 5. Pasture condition by livelihood zones; Agro pastoral is fair, mixed farming is fair and fishing/mangrove was poor as well. The available pasture is expected to last between one to two months due to the presence of in-migrant livestock from neighbouring counties. The current pasture situation is within the normal range.

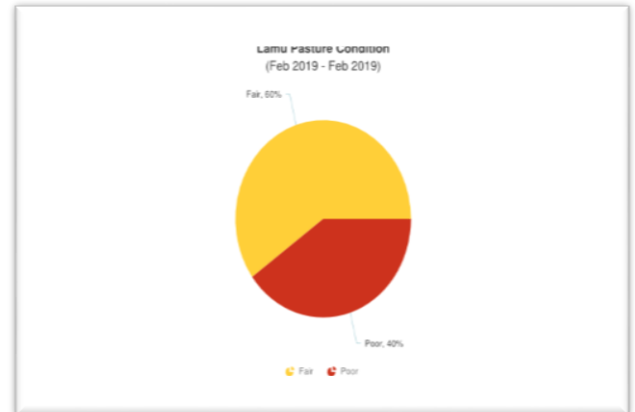


Figure 5: Pasture condition

2.1.3 Browse

The quantity and quality of browse was good to fair across all livelihood zones in the County. Community members interviewed indicated; 80 percent of the respondents stated that browse was fair to poor while on deteriorating trend due to poor seasonal rains and high rate of transpiration as in figure 6.

Browse condition by livelihood zones; Agro pastoral and mixed farming was good while fishing/ mangrove was poor. The browse is expected to last than one to two months.

The current browse condition is normal range compare to previous year.

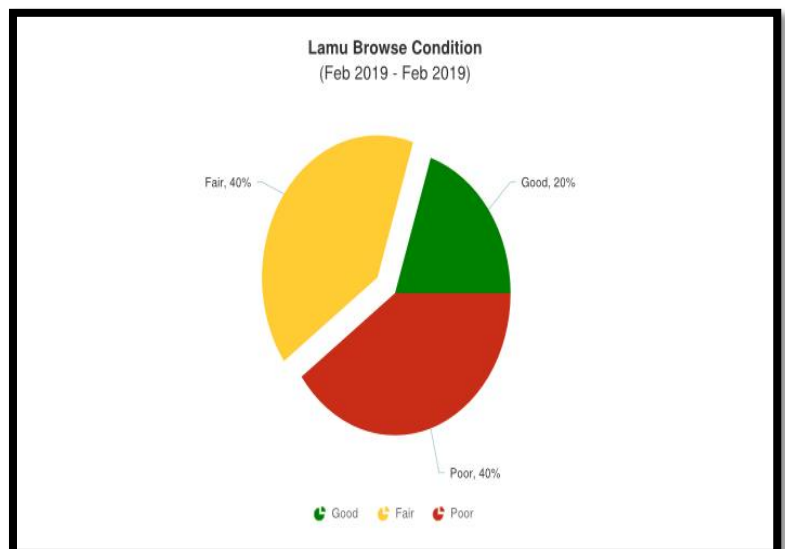


Figure 6: Browse conditions

2.2.0 HYDROLOGICAL DROUGHT

2.2.1 Water Sources and Availability

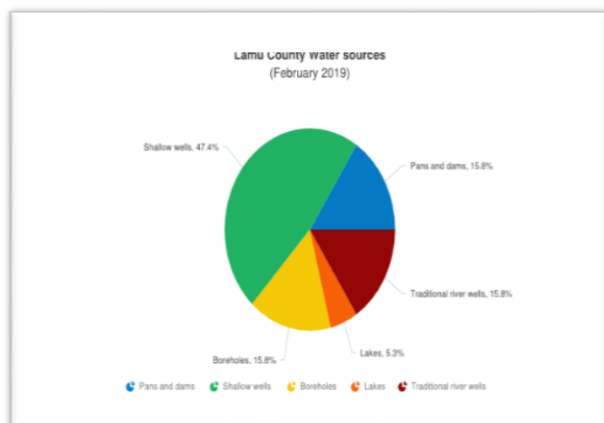


Figure7: Main sources of water

The state and condition of water sources in the County was fair to good across most livelihood zones except for Bahari ward where the rains performed poorly. However, the current water situation remained the same compared to previous month. The main water sources in the month of February, 2019; Pans and dams 15.8percent, shallow wells-47.4percent, Boreholes 15.8percent, Traditional water wells 15.8percent, Lakes 5.3percent respectively as in figure 7 .

2.2.2 Household access and Utilization

Average Household return distance was 3.6Km in February, which was an increase compared to previous month. This was due to below average rainfall received which led to decrease in water levels. Household return water distances per livelihood zone were as follows: the Agro pastoral 3.8Km, Fishing & Mangrove Harvesting 2.1Km and for Mixed Farming Zone it was 1.8Km and irrigated farming 1.1Km respectively. The 2014-2018 average household water distances for January was 3.5Kilometres which was lower than the current average household watering distance for February 2019 as in figure 8. The average household water consumption per person per day is at 15-20 litres in all livelihood zones. Water costs at source are 3-5Kshs in town/village centres for 20 litre Jerrican.

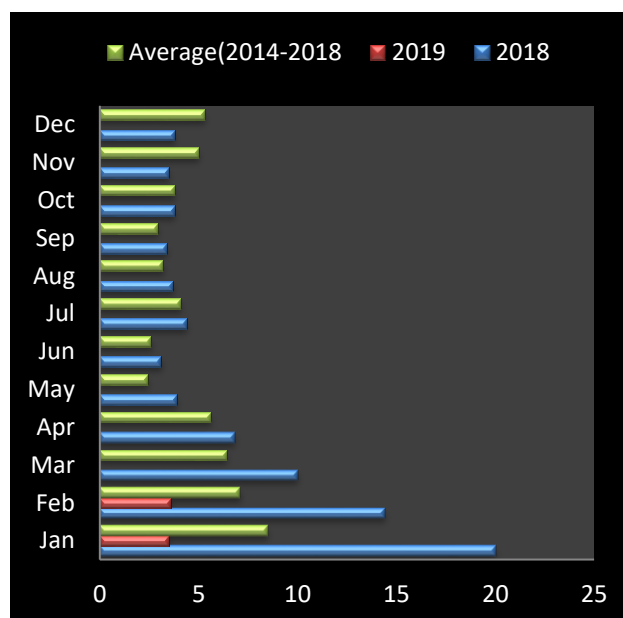
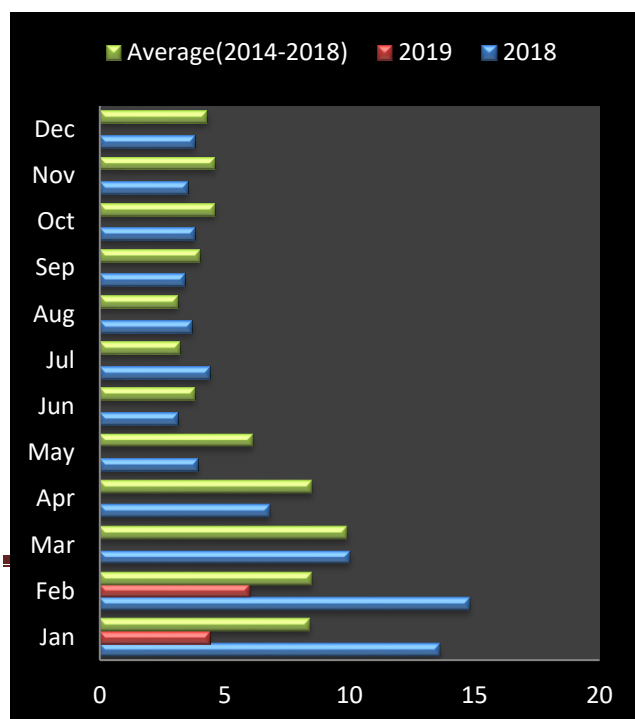


Figure 8: Household water distances-Kms



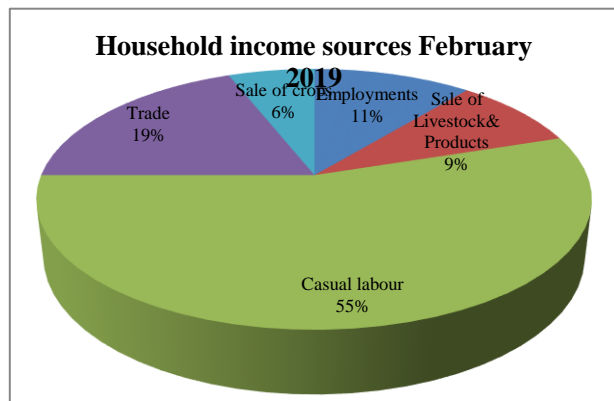
2.2.3 Livestock access to Water

Livestock average distance to water source from grazing areas increased to 5.9km compared to the previous month of 4.4Km as in figure 9. Grazing return water distances per livelihood zone were as follows: the Agro pastoral 5.9Km, Fishing & Mangrove Harvesting 4.3Km and for Mixed Farming Zone it was 2.1Km and irrigated farming 2.9Km respectively. The increase of grazing water distance compared to last month was due to decrease of water level in grazing areas. Watering frequencies

for livestock species was same. Most of the livestock species were watered daily due to high recharge levels of the open water sources. The current average grazing distance for February,2019 was 5.9Kilometers lower than the long-term average of 8.5 Kilometres.

Figure 9: Grazing distances -Km

2.2.4 Household Income



The main household income for the month of February was distributed as as follows: Casual labour 55 percent, trade 19 percent, Employment 11 percent, Sale of ;livestock and products 9 percent and Sale respectively as in figure 10 below.

However, casual labour and employment decreased by three and one percent respectively, compared to the previous month of January 2019. However livestock and its products were stable.

Figure 10: Household sources of income

2.4 Implication to Food Security;

- Fishing and Mangrove livelihood zones have increased water salinity due to less recharge of the shallow wells in the Islands.
- The distances to water sources have had a negative impact on the livestock body condition of animals and household hygiene standards.
- Crop production was depressed due to low off season rainfall performance, resultant to low amounts of moisture. This implies that food supplies will decline and therefore reduced income for crop farmers and possible increase in commodity’s market prices.

3.0 PRODUCTION INDICATORS

3.1.0 Livestock Production

3.1.1 Livestock Migration Patterns

- There were cases of livestock in migration, however, the livestock that in-migrated from neighbouring counties in previous months are still present.

3.1.2 Livestock Body Condition

- The livestock body condition was good to fair for all for species across livelihood zones. This is attributed to decreased quality and quantity of pasture and browse due to low off season precipitation.
- In comparison to similar periods during previous years, the body condition of all species was good and this is attributed to good to fair forage condition in all the livelihood zones except in the Islands. However, due to pasture deteriorating the body conditions are expected to worsen further.

3.1.3 Livestock Diseases

- There were few cases of livestock diseases reported (foot and mouth diseases)during this month in areas of Koreni, affecting cattles.

3.1.4 Milk Production

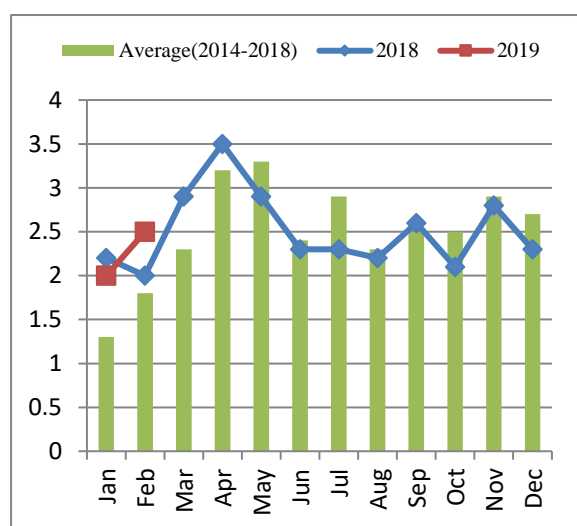


Figure 11: Milk production

Milk production increased from 2.0 litres in January, 2019 to 2.5 litres in February, 2019. The increase was attributed to in-migration. This was higher than the long-term average of 1.2 litres in February, 2019 as in figure 11. Milk productions were distributed as follows: Mixed farming Produced 1.6 litres, Fishing 1.3 litres, and Irrigated 1.5 litres while the Agro pastoral Zone produced average of 2.4 litres. Milk prices are retailing at an average price of Kshs.50-100 per Litre across the livelihood zones which is the normal milk price at these period of the year. The change of the household milk production recorded is due to in-migration of livestock from neighbouring counties.

3.2 Rain fed crop production

3.2.1 Stage and condition of food crop

- The main crops grown are Maize, Cowpeas, Green grams and Simsim in the County.
- Crop farmers are preparing their farms for the long rains.
- Under rain fed agricultural production the area planted with maize, cow peas and green grams declined by 40 percent compared to the long-term averages, while seasonal yields of the said crops declined by 40 percent respectively compared to the long-term averages.

3.2.2. Crop Harvest

- Few Crop farmers are harvesting Simsim in mixed farming zone.

3.2.3 Implications on Food Security;

- The fair body condition of livestock species especially cattle across the livelihood zones decreased the prices resulting to lower income for livestock farmers.

- Crop yields under rain fed reduce among the crop farmers as the entire short rains season performance has been below normal. This will result in food shortage locally and will trigger higher commodity prices.

4.0 MARKET PERFORMANCE

4.1 Livestock marketing

4.1.1 Cattle Prices

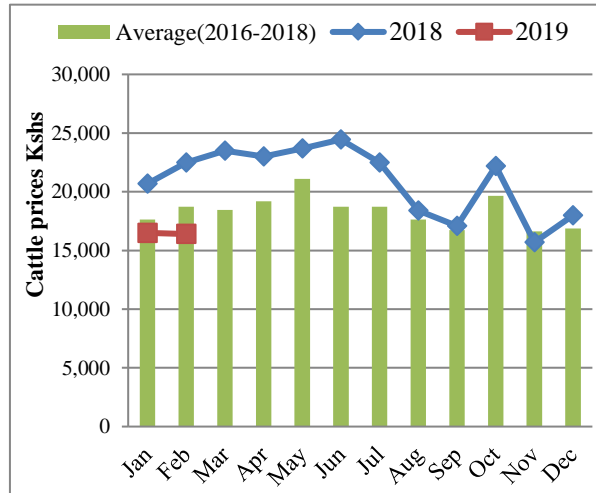


Figure 12: Cattle prices

Average cattle market price in the month of February decreased by two percent compared to previous month as in figure 12. This decrease in price could be attributed to low demand and the below average rainfall performance. The cattle average market prices were distributed as follows: Faza Kshs 13,000, Witu Kshs 16,500, Kiunga Kshs 15,000, Mswakini 17,800 and Mokowe Kshs 17,000. The average market cattle price for the month of February was Kshs.

16,375 which was lower than the long-term average price of Kshs.18, 700 and lower than the similar period last year.

4.1.2 Small Ruminants Prices

4.1.3 Goat Prices

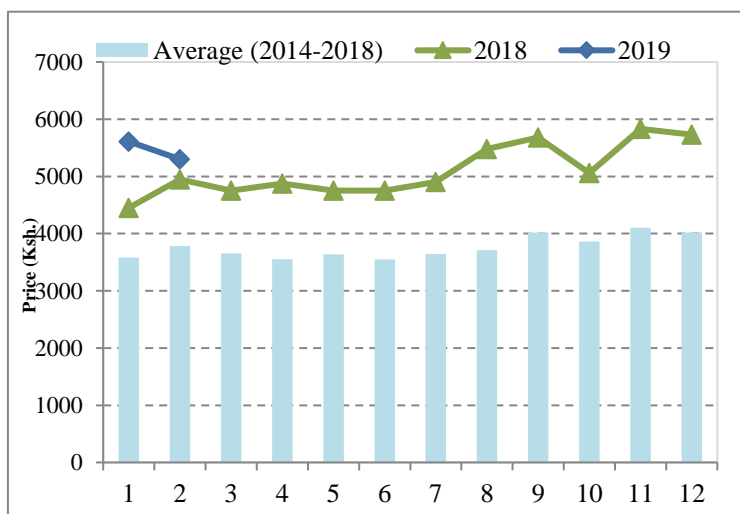


Figure 13: Goat prices

Goat prices decreased by 5 percent in February(Kshs-5311) compared to previous month of January (Kshs5570). This price was higher than the long term average by 22percent and the price recorded in previous year at a similar time and following seasonal trends as shown in figure13. This decrease in price of goats could be attributed to low market demand. The goat average market prices were distributed as follows: Mpeketoni Kshs 4,000, Witu Kshs 5,000, Kiunga Kshs 7,500 and Mokowe Kshs 5,000.

4.2 Crop prices

4.2.1 Maize price

In February 2019, Maize prices increased from kshs 53 to 54(2%), this was higher than the long term average of kshs 39. The increase was due to low harvest during the short rains coupled with high demand as shown in figure 14. The prices were distributed as follows: Hindi centre

NDMA Lamu February 2019 Drought Early Wa

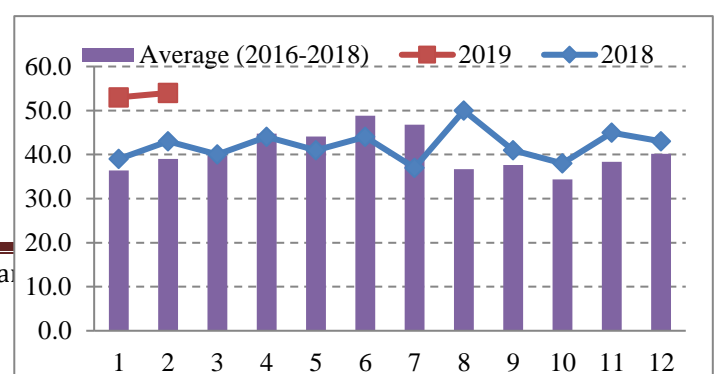


Figure 14: Maize prices

Kshs 48, Patte Kshs 30, Witu Kshs 40, Mpeketoni Kshs 20 and Kiunga Kshs 100 respectively. However, price ranges is determined by commodity supply in different markets.

4.2.2 Beans prices

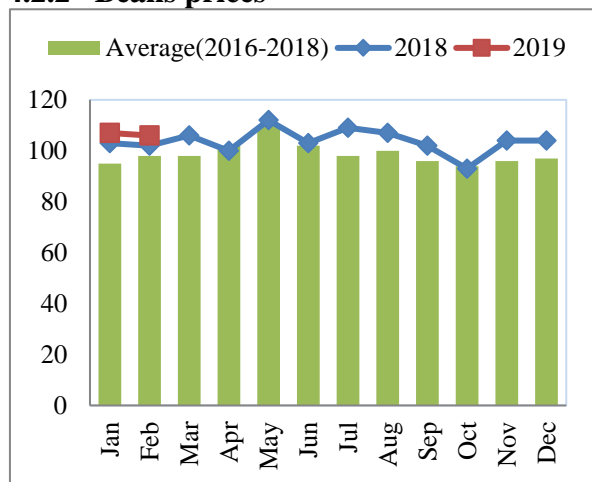


Figure 15: Beans prices

Average price of Kilogram of beans was Kshs 105 in February 2019, Slight decreased compared to the previous month of Kshs 106 as in the figure 15 below. The decline in price was attributed to lower demand. The beans price was distributed as follows: Mswakini /Hindi centre Kshs 130, Patte Kshs 100 and Witu Kshs 100, Mpeketoni Kshs 70 and Kiunga Kshs 120. However, price ranges is determined by commodity supply in the different markets. The long-term average price of beans was Kshs 98 which is lower compared to the current beans price for the month of February, 2019.

4.3 Livestock Price ratio/Terms of Trade

The terms of trade (TOT) of February (99Kgs) decreased by 8 percent compared to previous

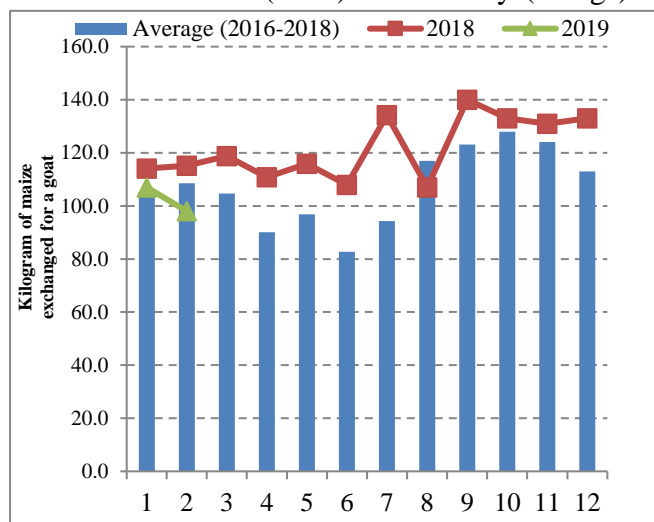


Figure 16: Terms of Trade

month of January (107Kgs) as in figure 16 alongside. This was lower than the long term average by 10 percent. Sale of a medium goat in February 2019 would cost a household about 99 kg of maize. This showed the exchange ratio decreased in favour of crop farmers when compared to goat sellers. However, this was determined by supply in the different markets. The ToT was 115.1 Kilograms in Lamu West and 75 Kilograms in Lamu East. The ToT for February was lower than the long term average of 109 Kilograms.

4.4 Implication on food security;

- Maize prices slightly increased due to poor short rains harvest coupled with low supply in the markets.
- Farmers are able to sell livestock at fair prices, hence stable food security at household level.
- The Terms of Trade was favorable to crop farmers than livestock sellers.

5.0 FOOD CONSUMPTION AND NUTRITION STATUS

5.1 Milk for Household Consumption

Average milk Consumption was 1.2 litre in the month of February 2019, which was slight increased compared to previous month as in figure 17. Milk consumption was distributed as follows; Agro pastoral 2 litres, Mixed farming 1.7, Irrigated cropping 1.5 litres and fishing below one litre.

Increased in milk consumption level is as a result of production of the commodity. February long term average milk consumption was lower than the current average and previous year.

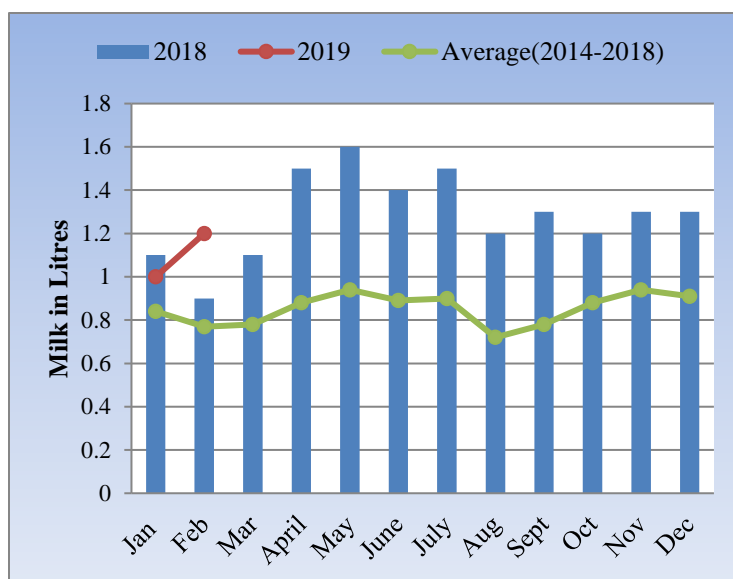


Figure 17: Milk consumption

5.2 Health and Nutrition status

5.2.1 MUAC

The proportion of children under five at risk of malnutrition with Mid Upper Arm Circumference below 135mm increased to 4.9 percent compared to previous month of January,2019.The proportion of children under five with severe category was 0.3percent percent in the month under review indicating slight decrease in the number of children with severe category.This was attributed to increased of milk production and consumption at household level. The rates of malnutrition cases reduced in Agro pastoral and Mixed farming Zones of Witu, Hindi and Mpeketoni areas. This figure of 4.9 percent MUAC for February 2019 was the same as compared to long term average as in figure 18.

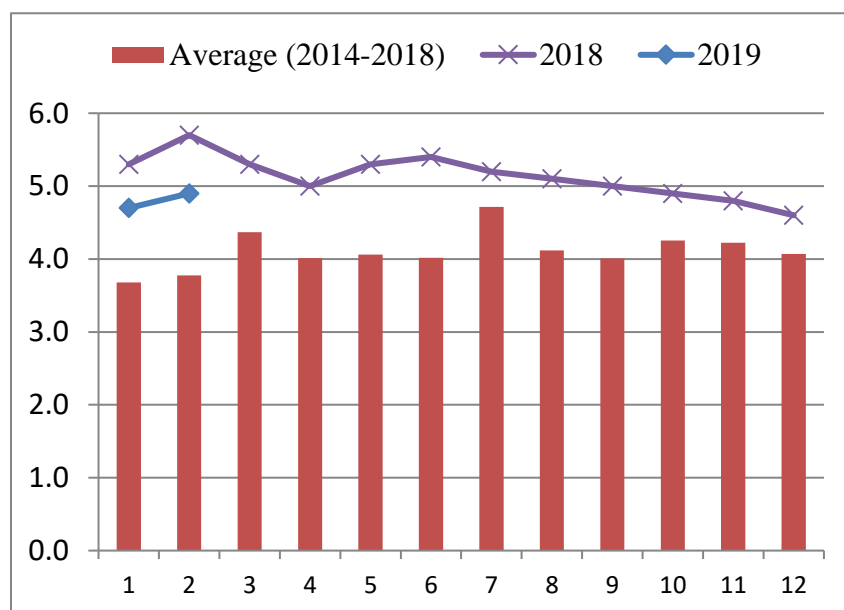


Figure 18: MUAC

5.2.2 Health

There were no cases of major disease outbreak both for children and general population in the County.

5.3 Food consumption score

Acceptable food consumption was noted in Agro pastoral and Mixed farming zone with 98.3 and 43.3 percent of households respectively, owing to availability of food in the markets; however households have low purchasing power, thus consuming two-three meals per day with 3-4 food groups. Households' percentage with poor food consumption increased from 11.7 to 21.7 percent at mixed farming and increased borderline food consumption of 93.3percent was noted in fishing /Mangrove livelihood zones.

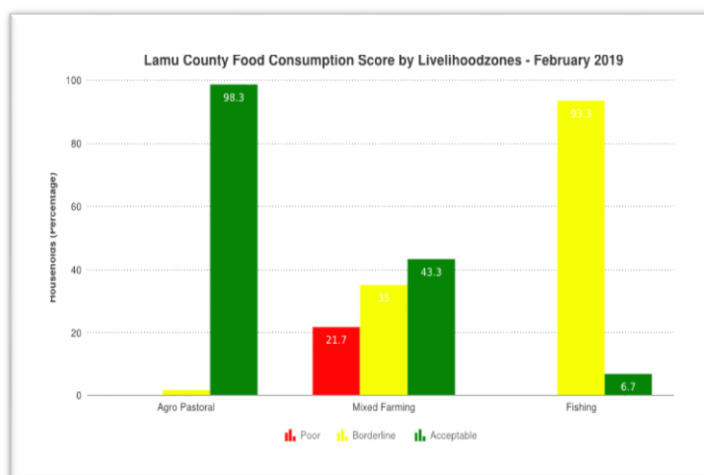


Figure 19: Food consumption score

5.4 Coping strategy index

The mean coping strategy Index in the Month of February decreased by 5percent (9.32) compared previous month in January (9.78) 2019, indicating increased coping strategies at household level. Agro pastoral Zone had CSI of 5.3; Mixed Farming livelihood zone had 7.5 while Fishing Livelihood zone had the highest copying strategy index of 20.9 as figure 20 below. Common coping strategies employed by food insecure households in the month of February were; Reduction in the number of meals, Purchase on credit/remittances from relatives, Borrow food from friends or relatives, and Opting for less preferred or less expensive food.

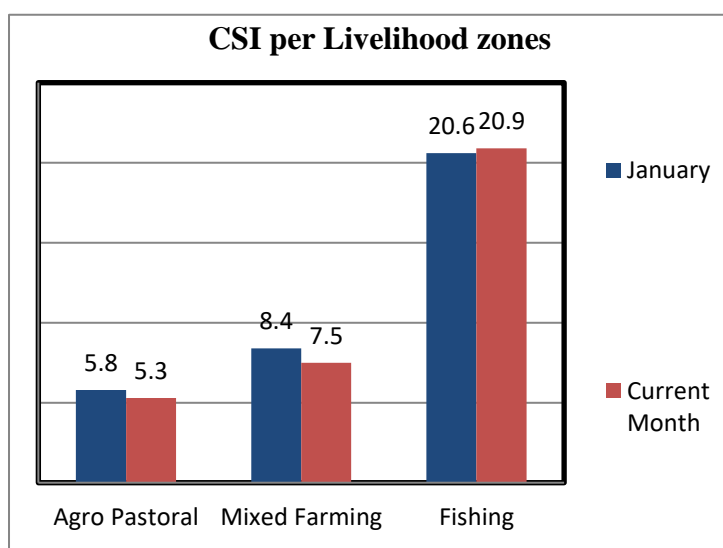


Figure 20: coping strategy index

5.5 Implication on Food Security

- Low milk consumption at household levels across all the Livelihood zones could lead to decreased dietary diversity and hence negative impact on food insecurity.
- Both food consumption and coping strategy increased at mixed farming and fishing livelihood zones, hence negative impact on food security.

6.0 CURRENT INTERVENTION MEASURES (ACTION)

6.1 Food and Non-food interventions

6.2 Drought Response Interventions.

- **NDMA** Lamu is carrying out construction of Nagelle integrated drought resilience water (Dam) project, currently at tendering stage.
- Cash transfer by the Social protection department to 3,000 households for older persons, Orphans and people with disabilities respectively for the entire county. The cash transfer will improve the purchasing power of the households to access food of their preferences.

7.0 EMERGING ISSUES

7.1 Insecurity

- No insecurity incident reported during the month under review.

7.2 Migration

- There were no abnormal cases of human migration during the month.

7.3 Food security prognosis

- The long rains season (March-April-May 2019) will be normal to below normal throughout the county. (KMD).
- Markets will continue to operate normally despite poor infrastructure and insecurity.
- Cereal prices are expected to decrease while those of goat prices are projected to increase, thus terms of trade expected to favour for livestock farmers.
- Forage conditions are projected decline and hence destabilize livestock body conditions, production and prices in coming months.
- The distance to water sources for both human and livestock is expected to increase.
- The vegetation condition is expected to worsen further in fishing livelihood zone.
- Malnutrition cases are likely to increase over the period, as children would access less milk.
- Household food stocks is expected to decline further.
- Cases of conflicts between livestock and crop farmers are expected to increase due to declining pasture and browse.

8.0 RECOMMENDATIONS BY SECTORS;

8.1 Water

- Expand water trucking for areas most severely hit with water scarcity.
- Constructions/rehabilitation of water pans/dam for preparedness.
- Conducting of hydro geological survey and drilling of boreholes.
- Promotion of rain water harvesting, repair of Djabias, roof catchment areas, installation of gutters and tanks in Villages and Institutions.
- Provision of water treatment tabs to households mainly in rain fed areas.

8.2 Livestock

- Livestock disease surveillance, Vaccinations and control to curb spread of livestock diseases.
- Upscale efforts aimed at stock piling livestock feeds in strategic hay reserves for use during the dry season by providing farmer groups with pasture seeds so as to maximize production over the short rains period.
- Promote Pasture and fodder planting in the county during and after the short rains.
- Provision of hay band machines for harvesting.
- Promote livestock insurance services.

8.3 Agriculture

- Build Capacity of crop farmers to plant drought resistance food crops.
- Mobilization and sensitization of farmers' on crop insurance.
- Provision of seeds and fertilizers to farmers during the short rains period.
- Training communities on CMDRR

8.4 Health and Nutrition

- Strengthen malnutrition screening and active case search as well as strengthen integrated management of acute malnutrition in the community.
- Enhance disease and nutritional surveillance in hot spot areas.
- Deworming exercise for both adults and children.
- Enhance household level water treatment.

8.5 Education

- Support to schools feeding programmes for the most vulnerable communities focusing on the most vulnerable areas in the county to minimize drop outs.
- Provide Food for fees for students hailing from Vulnerable and poor families.
- Provision of water plastic tank to learning institution for preparedness.

8.6 Peace and Security Sector (Co-ordination)

- Peace and security meetings should be enhanced in the County
- Inter Counties peace and security to be enhanced in order to avert future conflicts.
- Provision of relief food to vulnerable household in the County.

8.7 Information Communication Technology

- Promote use of ICT on drought information(Forums) sharing and development programmes.

Reference Tables

Table 1: 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.
<p>Recovery: The drought phase must have reached at least Alarm stage. Recovery starts after the end of drought as signalled by the environmental indicators returning to seasonal norms; local economies starting to recover</p>			

Table 2: Standardized Precipitation Index (SPI)

Colour	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 3: 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 4: 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 Warns

The EW phases are defined:

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, 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 signalled 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.