NATIONAL DROUGHT MANAGEMENT AUTHORITY

NATIONAL DROUGHT EARLY WARNING BULLETIN

JANUARY 2023

1.0 DROUGHT SITUATION OVERVIEW

The drought situation remains critical in 22 of the 23 ASAL counties due to the late onset and poor performance of the much-anticipated October to December 2022 short rains, coupled with four previous consecutive failed rainfall seasons.

Currently, **nine** arid and semi-arid (ASAL) counties namely; Kilifi, Mandera, Marsabit, Samburu, Turkana, Wajir, Isiolo, Kitui and Kajiado are in **Alarm** drought phase while **13** counties are in **Alert** drought phase. These include Garissa, Lamu, Narok, Tana River, Makueni, Tharaka Nithi, Baringo, Laikipia, Meru, Taita Taveta, West Pokot, Nyeri and Kwale. Only Embu county is currently classified in **Normal** drought phase.

Taita Taveta, Kwale, Garissa and Tana River improved from Alarm to Alert phase due to light showers received during the last week of December. Conversely, the drought situation in Baringo and West Pokot counties deteriorated from Normal to Alert drought phase.

High rates of children at risk of malnutrition were noted in Marsabit, Mandera, Garissa, Baringo and Isiolo counties. This is mostly attributed to the continued decrease in milk production and consumption at household level, as well as poor dietary diversity, poor child feeding practices, and reduced food intake at household level.

The long rains assessment conducted in July 2022 had projected that 4.35 million people would require relief assistance by December.

Fig 1: Drought Phase Classification – December 2022

A multi-agency assessment of the 2022 short rains season is ongoing to ascertain its impact on food security. The assessment team comprises representatives from Government departments, UN agencies and NGOs.
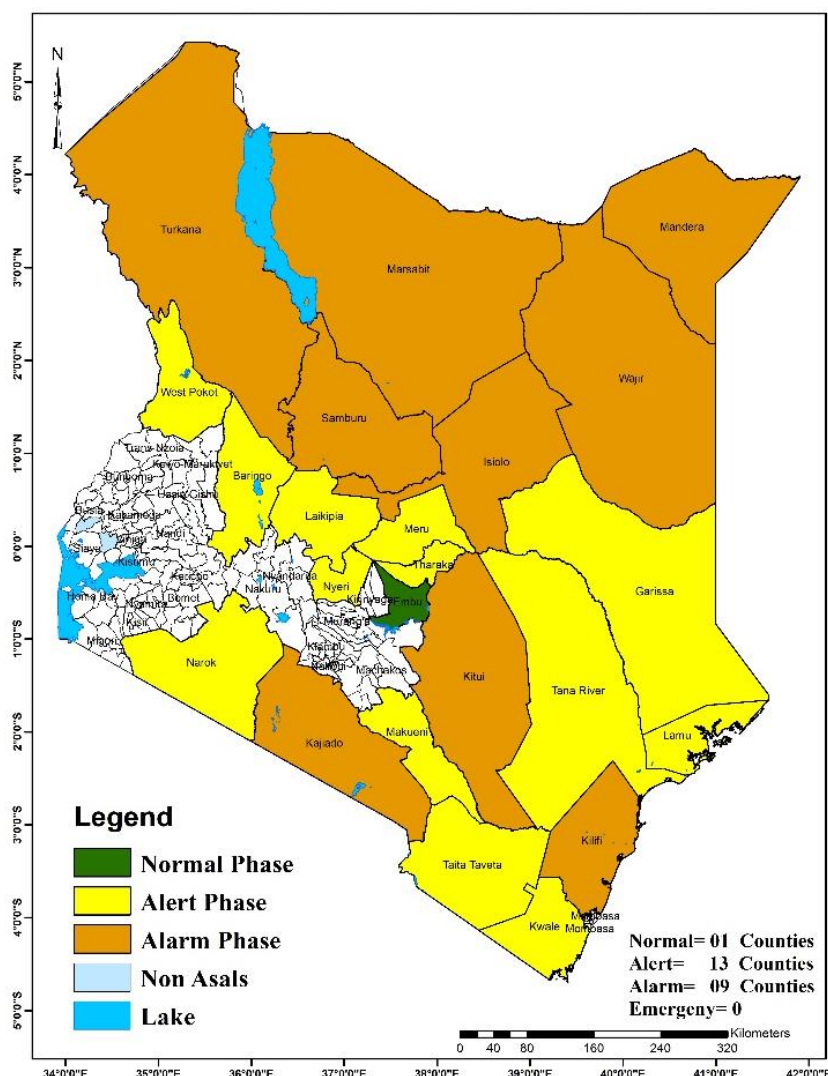
1.1 DROUGHT OBSERVED INDICATORS

1.1.1 December Rainfall Performance

Analysis of the December 2022 rainfall indicates that several parts of the ASALs experienced depressed rainfall. The Pastoral North East, South East Marginal Agriculture, Coast Marginal Agriculture and Pastoral North West livelihood clusters received between 0 to 75% of the December Long Term Mean (LTM).

The Pastoral North East counties including Mandera, Wajir, Isiolo, Tana River and parts of Garissa received between 50 to 75% of the December LTM. However, parts of Garissa and Tana River counties received very minimal rainfall - <10mm.

The South East marginal agriculture counties including Tharaka Nithi Embu, Kajiado, Meru, Makueni and Kitui counties received depressed rainfall, with some parts recording between 26mm to 75 mm of rainfall.

The coastal marginal agriculture counties - Kwale, Kilifi and Lamu - received inadequate rainfall. The agropastoral cluster including Baringo, Narok and West Pokot, received notable amount of rainfall between 76mm to 125mm of rainfall.

Figure 2: December 2022 Rainfall Performance

1.1.2 Rainfall outlook for January 2023

As illustrated in Figure 3, the rainfall outlook for January forecasts occasional rainfall in lower parts of the ASALs are, especially coastal marginal agrilture areas including Kilifi, Lamu, Taita Taveta and Kwale counties.

The South East marginal agriculture counties including Kitui, Makueni, Tharaka Nithi and Meru counties are forecasted to receive light showers while agropastoral counties of Narok and Kajiado are forecasted to receive occassional rainfall.

The upper parts of the ASALs, including Pastoral North East (Isiolo, Mandera, Wajir, Tana River and Garissa) and Pastoral North West (Turkana, Samburu and Marsabit) counties are expected to experience mainly sunny and dry conditions.
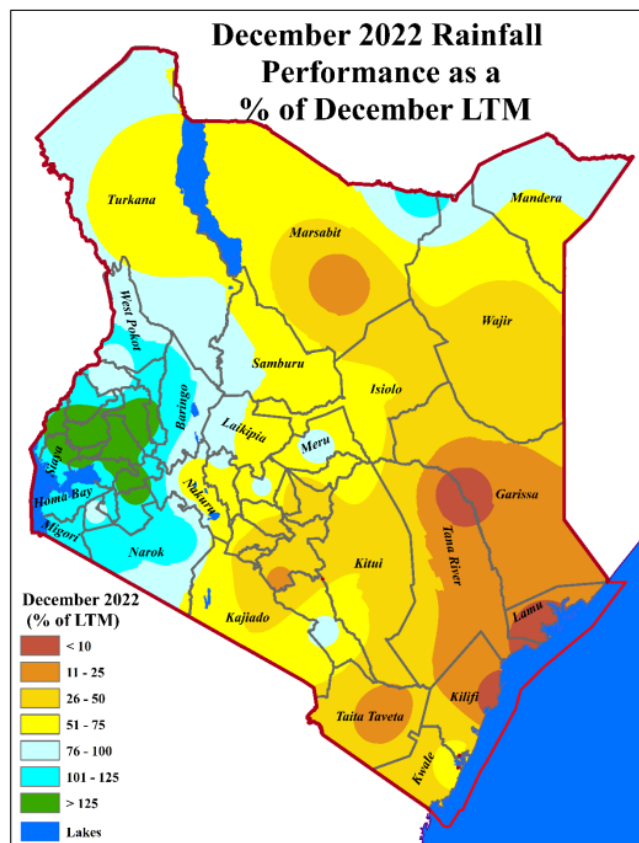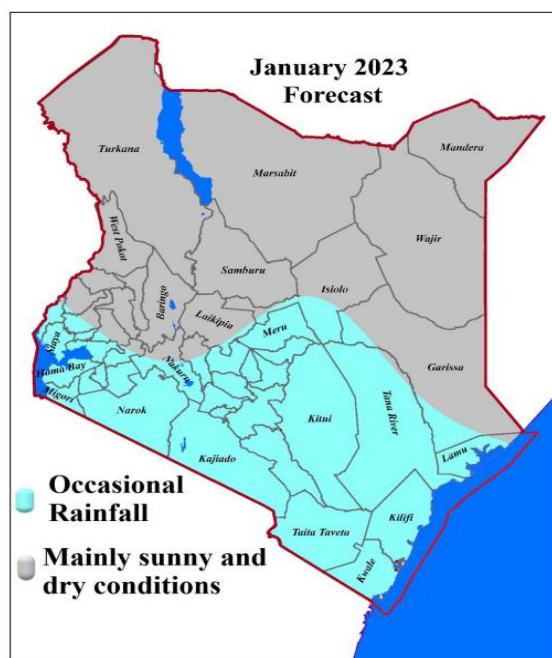

Figure 3: January 2023 rainfall forecast.

1.2 VEGETATION CONDITION

December 2022 recorded alarming deterioration in vegetation condition across ASAL counties compared to the previous month (November 2022). The deterioration is attributed to poor performance of the October to December short rains. Figure 4 compares the vegetation condition index (VCI) in December 2021 and December 2022.
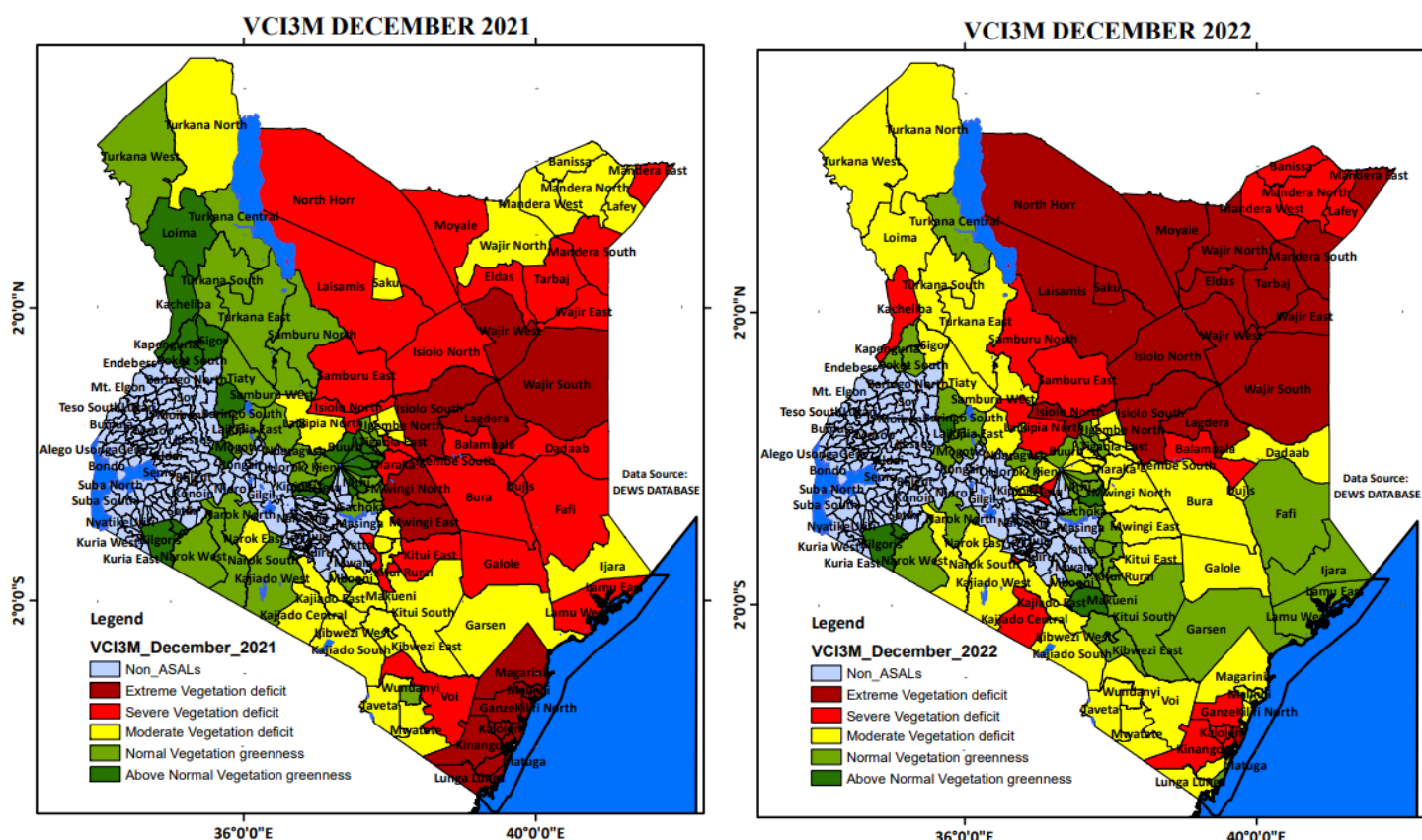
Figure 4: Comparison of Vegetation Condition (VCI) in December 2021 and December 2022.

Three counties - Marsabit, Wajir and Isiolo - recorded **extreme vegetation deficit** while three others - Mandera, Samburu and Kwale recorded **severe deficit**. 12 counties including Turkana, Garissa, Kajiado, Laikipia, Tharaka Nithi, West Pokot, Kitui, Meru, Nyeri, Kilifi, Taita Taveta and Tana River have **moderate vegetation deficit**, hence need for close monitoring and contingency planning.

Five counties - Baringo, Embu, Makueni, Lamu and Narok - recorded Normal vegetation greenness. A summary of the vegetation condition across ASAL counties as at end of December 2022 is provided in Table 13 while Table 1 shows the situation in each county disaggregated by sub-county.

Table 1: Vegetation Condition Index in December 2022

Category	County	Sub Counties (No.)
Extreme	(3) Marsabit Wajir Isiolo	(17) Mandera (East, South) Marsabit (Laisamis, Moyale, Saku, North Horr) Wajir (East, Eldas, North, South, Tarbaj, West) Garissa (Lagdera), Isiolo (North, South) Nyeri (Township), Kilifi (South)
Severe vegetation deficit	(3) Mandera Samburu Kwale	(17) Mandera (Banissa, Lafey, North, West) Samburu (East) Garissa (Balambala, Dujis) Kajiado (Central, North) Laikipia (North) West Pokot (Kacheliba) Nyeri (Mathira, Mukurweini) Kilifi (Ganze, Kaloleni, Rabai) Kwale (Kinango)
Moderate vegetation deficit	(12) Turkana Garissa Kajiado Laikipia Tharaka Nithi West Pokot Kitui Meru Nyeri Kilifi Taita Taveta Tana River	(41) Baringo (Tiaty) Turkana (East, Loima, North, South, West) Samburu (North, West) Garissa (Daadab) Tana River (Bura, Galole) Kajiado (East, South, West) Laikipia (East,) Tharaka Nithi (Tharaka) West Pokot (Sigor) Kitui (East, Mwingi Central, Mwingi North) Makueni (Kilome) Meru (Central Imenti, Igembe Central, Igembe North, Igembe South, North Imenti, South Imenti) Nyeri (Kieni, Othaya, Tetu) Kilifi (Magarini, Malindi, Kilifi North) Kwale (Lungalunga, Matuga) Taita Taveta (Mwatate, Taveta, Voi, Wundanyi) Narok (East, South)
Normal vegetation greenness	(5) Baringo Embu Makueni Lamu Narok	(34) Baringo (Eldama, Mogotio, North, South) Turkana (Central) Garissa (Fafi, Ijara) Tana River (Garsen) Laikipia (West) Tharaka Nithi (Chuka, Maara) West Pokot (Kapenguria, Pokot South) Embu (Manyatta, Mbeere South, Runyenjes)

		Kitui (Central, Mwingi West, Rural, South, West) Makueni (Kaiti, Kibwezi East, Kibwezi West, Mbooni) Meru (Buuri, Tigania East, Tigania West) Kwale (Msambweni) Lamu (East, West) Narok (North, West)
Vegetation greenness Above normal		**(5)** Baringo (Central) Embu (Mbeere North) Makueni (Makueni) Narok (Emurua Dikirr, Kilgoris)

1.3 LIVESTOCK PRODUCTION
1.3.1 Pasture and browse condition

The state of pasture and browse in most ASAL counties remained poor as shown in Table 2. The condition was below normal, with no improvement realised when compared with the previous month. The pasture and browse is not expected to last long due to high concentration of livestock in grazing areas. The condition of pasture and browse deteriorated to poor in Baringo, Garissa, Isiolo, Mandera, Marsabit, Narok, Turkana, Wajir, West Pokot, Kajiado and Kwale counties.

Table 2: Pasture and browse condition in December 2022

Pasture condition			Browse condition		
Poor	Fair	Good	Poor	Fair	Good
Baringo Garissa Isiolo Mandera Marsabit Narok Turkana Wajir West Pokot Kajiado Kwale	Kilifi Kitui Laikipia Meru Samburu Taita Taveta Tana River Embu Nyeri Tharaka Nithi	Lamu Makueni	Isiolo Mandera Marsabit Narok Turkana Wajir	Baringo Garissa Kilifi Kitui Laikipia Lamu Meru Samburu Taita Taveta Tana River West Pokot Embu Kajiado Kwale Nyeri Tharaka Nithi	Makueni

1.3.2 Livestock body condition

Livestock body condition ranged from poor to fair in most ASAL counties except Lamu, Makueni and Taita Taveta counties which reported good body condition for cattle as shown in Table 3. Generally, the current body condition of most livestock is below normal compared to similar periods during a normal year.

Table 3: Livestock body condition in December 2022

Cattle			Goats		
Poor	Fair	Good	Poor	Fair	Good
Garissa Isiolo Mandera Marsabit Turkana Wajir Kajiado	Baringo Kilifi Kitui Laikipia Meru Narok Samburu Taita Taveta Tana River West Pokot Embu Kwale Nyeri Tharaka Nithi	Lamu Makueni	Isiolo Mandera Marsabit Turkana Wajir	Baringo Garissa Kilifi Kitui Laikipia Meru Narok Samburu Tana River West Pokot Embu Kajiado Kwale Nyeri Tharaka Nithi	Lamu Taita Taveta Makueni

1.3.3 Milk production

Milk production during the month of December remained stable in most of the counties compared to November. Garissa, Isiolo, Kajiado, Kilifi, Kitui, Kwale, Laikipia, Lamu, Nyeri, Samburu, Tana River and Tharaka Nithi showed an improving milk production trend. The current milk production status in 21 of the 23 counties is below average compared to normal years.

Table 4: Milk production trends in December 2022

Indicator	Current status			Trend		
	Above LTA	At LTA	Below LTA	Improving	Stable	Worsening
Milk production	Tharaka Nithi	Garissa	Baringo Embu Isiolo Kajiado Kilifi Kitui Kwale Laikipia Lamu Makueni Mandera Marsabit Meru Narok Nyeri	Garissa Isiolo Kajiado Kilifi Kitui Kwale Laikipia Lamu Nyeri Samburu Tana River Tharaka Nithi	Makueni Marsabit Taita Taveta Wajir Embu	Baringo Mandera Meru Narok West Pokot

			Samburu Taita Taveta Tana River Turkana Wajir West Pokot			

NB: Turkana had zero readings.

1.3.4 Cattle prices

Cattle prices in majority of the counties remained stable in December compared to the previous month, with majority of the counties continuing to record below normal prices while four counties reported a worsening trend. Isiolo, Kwale, Lamu, and Mandera counties reported a worsening trend as illustrated in Table 5.

Table 5: Cattle prices in December 2022

Indicator	Current status			Trend		
	Above LTA	**At LTA**	**Below LTA**	**Improving**	**Stable**	**Worsening**
Cattle prices	Tana River	West Pokot Lamu Embu Garissa Kitui	Baringo Isiolo Kajiado Kilifi Kwale Laikipia Makueni Mandera Marsabit Meru Narok Nyeri Samburu Taita Taveta Tharaka Nithi Turkana Wajir	Baringo Embu Kajiado Kitui Laikipia Makueni Meru Nyeri Samburu Tana River Tharaka Nithi West Pokot	Garissa Kilifi Marsabit Narok Taita Taveta Turkana Wajir	Isiolo Kwale Lamu Mandera

1.3.5 Goat Prices

Goat prices in ASAL counties were generally poor, with most ASAL counties recording below long term average prices. However, most counties recorded an improving trend compared to November as result of regeneration of pasture and browse as illustrated in Table 6.

Table 6: Goat prices in December 2022

Indicator	Current status			Trend		
	Above LTA	**At LTA**	**Below LTA**	**Improving**	**Stable**	**Worsening**
Goat prices	Kajiado Kilifi Laikipia Lamu Makueni Samburu Tana River	Embu Kitui Kwale Narok West Pokot	Baringo Garissa Isiolo Mandera Marsabit Meru Nyeri Taita Taveta Tharaka Nithi Turkana Wajir	Embu Isiolo Kajiado Kilifi Kitui Laikipia Lamu Makueni Meru Nyeri Samburu Taita Taveta Tana River Tharaka Nithi West Pokot	Turkana Wajir Narok Mandera Marsabit Garissa Baringo	Kwale

1.4 CROP PRODUCTION

Coast Marginal Agriculture counties: The crop condition in Kilifi County remained poor due to moisture stress, with minimal to no harvest expected as most of the crop is wilting coupled with Fall Army Warm infestation. There was also delayed and poor temporal rainfall distribution, which is likely to lead to crop failure.

Farmers in some areas of Kwale County were weeding in December having planted earlier and received some rains. However, those in the livestock farming livelihood zone were replanting owing to loss of seeds following a dry spell immediately after planting.

South East Marginal Agriculture counties: The area planted in Kitui County was lower than the long term average due to late onset of the short rains and forecasted below normal rainfall. However, majority of crops were at knee height/flowering stage and in fair condition. Weeding for the season was also ongoing across the livelihood zones.

In both the mixed farming and marginal Mixed farming livelihood zones of Makueni County, crops were at different stages, with maize ranging from knee-height to tasseling stage. Cases of fall army worm infestation were reported across all livelihood zone. In some areas, crops germinated and dried up following persistent drought and aridity while in some places there was completely no onset of the short rains.

In Tharaka Nithi County, weeding and pest control by spraying was ongoing. About 90% of the farmers had planted considering the county relies on the short rains for food production. Crops

were at four leaves development stage for legumes and knee height for cereal crops and in good condition. However, farmers continued to encounter production challenges, particularly those related to high input prices for herbicides, certified seeds and the fertilizers.

1.4.1 Maize prices

In Tana River, West Pokot and Makueni counties, the price of maize was at a worsening trend during the month under review while the remaining countie were stable and improving trend compared to the previous month as demonstrated in Table 7. The maize prices were above long term average.

Table 7: Maize prices in December 2022

Indicator	Current status			Trend		
	Above LTA	At/close to LTA	Below LTA	Improving	Stable	Worsening
Maize prices	Baringo Embu Garissa Isiolo Kajiado Kilifi Kitui Kwale Laikipia Makueni Mandera Marsabit Meru Narok Nyeri Samburu Taita Taveta Tana River Tharaka Nithi Turkana Wajir West Pokot	Lamu		Nyeri Meru Marsabit Lamu Kwale	Baringo Embu Garissa Isiolo Kajiado Kilifi Kitui Laikipia Mandera Narok Samburu Taita Taveta Tharaka Nithi Turkana Wajir	Tana River West Pokot Makueni

1.5 WATER ACCESS
1.5.1 Access to water for households

Distances to water for households is currently above long term average in 16 counties. However, the trend is generally improving compared to the previous month. Distances in arid counties ranged between 3.3 and 16.2 kilometres, with Isiolo recording lowest and Mandera recording highest distances.

Distances in semi-arid counties ranged between 2.2 and 6.2 kilometres, with Nyeri (Kieni) recording the lowest and Kajiado the highest. Embu, Kilifi, Kitui, Lamu, Makueni, Meru, Narok, Nyeri, Samburu, Taita Taveta and Tana River counties showed an improving trend as shown in Table 8.

Table 8: Distance from households to main water sources in December 2022

Indicator	Current status			Trend		
	Above LTA	At LTA	Below LTA	Improving	Stable	Worsening
Distance from households to main water sources	Isiolo Kajiado Kilifi Kwale Laikipia Lamu Makueni Mandera Marsabit Nyeri Taita Taveta Tana River Tharaka Nithi Turkana Wajir West Pokot	Kitui Meru	Baringo Embu Garissa Narok Samburu	Embu Kilifi Kitui Lamu Makueni Meru Narok Nyeri Samburu Taita Taveta Tana River	Baringo Isiolo Kajiado Kwale Laikipia Turkana Wajir	Tharaka Nithi West Pokot Mandera Marsabit Garissa

1.5.2 Access to water for livestock

The trekking distance to water source from grazing areas is mainly above long term average and on an improving trend in most ASAL counties compared to the previous month. However, trekking distances in Embu, Meru, Tharaka Nithi, West Pokot, Mandera and Marsabit counties are on a worsening trend due to poor performance of short rains seasons.

The average trekking distance in arid counties ranged between 5 and 33.1 kilometres, with Baringo recording lowest distances and Marsabit highest. The average trekking distance in semi-arid counties ranged between 3.2 and 8.1 kilometres, with Nyeri recording the lowest and Taita Taveta highest. Table 9 shows the trend of distances for livestock from grazing areas to water main source.

Table 9: Distance from livestock grazing areas to main water sources in December 2022

Indicator	Current status			Trend		
	Above LTA	At LTA	Below LTA	Improving	Stable	Worsening
Distance from livestock grazing area	Embu Isiolo Kilifi Laikipia	Kajiado Kitui Kwale Samburu	Baringo Garissa Narok	Baringo Isiolo Kajiado Kilifi	Garissa Taita Taveta Turkana Wajir	Embu Meru Tharaka Nithi

to main water sources	Lamu Makueni Mandera Marsabit Meru Nyeri Taita Taveta Tharaka Nithi Turkana Wajir West Pokot	Tana River		Kitui Kwale Laikipia Lamu Makueni Narok Nyeri Samburu Tana River		West Pokot Mandera Marsabit

1.6 TERMS OF TRADE

Table 10 shows the trends in terms of trade (ToT) between the relative prices of goats and maize in ASAL counties. In most counties, ToT values are below the long term average. The terms of trade are stable compared to the previous (November).

Table 10: Terms of Trade in December 2022

Indicator	Current status			Trend		
	Above LTA	At LTA	Below LTA	Improving	Stable	Worsening
Terms of trade (ToT)	Isiolo	Narok	Baringo Embu Garissa Kitui Kwale Makueni Mandera Meru Kilifi Laikipia Samburu Taita Taveta Tharaka Nithi Wajir West Pokot Kajiado Marsabit Turkana Tana River Nyeri Lamu Isiolo	Baringo Garissa Mandera Nyeri Laikipia Samburu Marsabit Tharaka Nithi Wajir Lamu Narok Kilifi Turkana Embu Kajiado Kitui Makueni Meru Isiolo Taita Taveta West Pokot	Kwale Tana River	

1.7 HEALTH AND NUTRITION

High rates of children at risk of malnutrition were noted in Marsabit, Mandera, Garissa, Baringo and Isiolo counties. In addition, Kilifi, Kitui, Laikipia, Lamu, Taita Taveta, Turkana and West-Pokot recorded Middle-Upper-Arm-Circumference (MUAC) measurement below long-term average. This is mostly attributed to the continued decrease in milk production and consumption at household level, as well as poor dietary diversity, poor child feeding practices, and reduced food intake at household level. Kilifi, Laikipia, Lamu, Mandera, Meru, Narok and Nyeri counties recorded a worsening in trend during the month under review.

Table 11 shows the trend in the proportion of children at risk of malnutrition across ASAL counties based on MUAC measurement.

Table 11: Children at risk of malnutrition in December 2022

Indicator	Current status			Trend			
	Above LTA	**At LTA**	**Below LTA**	**Improving**	**Stable**	**Worsening**	
MUAC	Baringo Nyeri Kajiado Tharaka Nithi Isiolo Wajir Mandera Tana River Makueni Marsabit Garissa Narok	Embu Kwale Meru Samburu	Kilifi Kitui Laikipia Lamu Taita Taveta Turkana West-Pokot	Embu Kitui Marsabit Tana River West Pokot Tharaka-Nithi Wajir Kwale Samburu Makueni Isiolo Turkana Taita-Taveta	Baringo Garissa Kajiado	Kilifi Laikipia Lamu Mandera Meru Narok Nyeri	

2.0 DROUGHT PHASE CLASSIFICATION

On the basis of the range of indicators monitored above, nine (9) counties including Isiolo, Kitui, Kajiado, Kilifi, Mandera, Marsabit, Samburu, Turkana and Wajir are in **Alarm** drought phase. Another 13 counties - Garissa, Lamu, Narok, Tana River, Makueni, Tharaka Nithi Kwale Baringo, Laikipia, Meru, Taita Taveta, West Pokot and Nyeri - are in **Alert** drought phase, while Embu is in **Normal** drought phase.

During the month under review, eight (8) counties reported an improving trend, three (3) counties recorded a stable trend, while twelve (12) counties reported a worsening trend. Table 12 sums up the trend in drought phase classification as at the end of December 2022.

Table 12: Drought phase classification in December 2022

Drought status	Trend		
	Improving	Stable	Worsening/Deteriorating
Normal		Embu	
Alert	Garissa Lamu Narok Tana River Makueni Tharaka Nithi	Kwale	Baringo Laikipia Meru Taita Taveta West Pokot Nyeri
Alarm	Isiolo Kitui	Kajiado	Kilifi Mandera Marsabit Samburu Turkana Wajir
Emergency	-	-	-
Recovery	-	-	-

3.0 RECOMMENDATIONS

1. **Food and safety nets:** Provision of food assistance and scaling up of cash transfers targeting households that are currently food insecure as a result of the prevailing drought stress.
2. **Livestock sector:** Provision of livestock feeds and supplements; and treatment and vaccination against emerging livestock diseases.
3. **Water sector:** Support water trucking; rehabilitation and maintenance of water facilities; provision of fuel subsidies to motorised boreholes; and procurement and distribution of water storage tanks.
4. **Health and nutrition sector:** Support towards hygiene and sanitation promotion; provisions for severe acute malnutrition – Ready-to-Use Therapeutic Food (RUTF) and Ready-to-Use Supplementary Food (RUSF).
5. **Education sector:** Enhanced hygiene promotion in learning institutions; and provision of food to subsidise school fees in boarding secondary schools.
6. **Peace and security sector:** Facilitating intra/inter community peace dialogues and resource use agreements; and coordination of peace and security activities in conflict-prone counties.
7. **Coordination:** Support to County Steering Groups (CSGs) to effectively coordinate drought response activities.

Table 13: Vegetation Condition Index (VCI-3 month) as at 25ᵗʰ December 2022

ADMINISTRATIVE UNIT		VEGETATION GREENNESS		DROUGHT CATEGORIES/REMARKS		
COUNTY	Sub County	VCI-3 month as at 27ᵗʰ Nov 2022	VCI-3 month as at 25ᵗʰ Dec 2022	Colour	VCI values (3-month)	Drought Category
					≥50	Vegetation greenness above normal
					>=35 - <50	Normal vegetation greenness
					>=20 - <35	Moderate vegetation deficit
					>=10 - <20	Severe vegetation deficit
					<10	Extreme vegetation deficit
BARINGO	County	56.99	37.83	The entire county and four sub-counties recorded Normal vegetation greenness. However, this was a worsening trend compared to November.		
	Central	66.98	53.62			
	Eldama	66.98	44.62			
	Mogotio	54.37	37.22			
	North	56.93	38.15			
	South	57.98	39.26			
	Tiaty	54.52	33.46			
MANDERA	County	15.64	11.79	The county recorded worsening trend in vegetation condition at severe vegetation deficit. Mandera South and Mandera East worsened to extreme vegetation deficit in December.		
	Banissa	17.96	17.84			
	M East	10	5.59			
	Lafey	15.4	10.66			
	M North	17.84	16.16			
	M South	11.89	7.22			
	M West	17.66	10.93			
TURKANA	County	34.86	25.32	The county recorded worsening trend in vegetation greenness though still maintained at moderate vegetation deficit		
	T Central	42.83	36.64			
	T. East	37.27	24.19			
	T. Loima	36.87	26.77			
	T. North	26.54	20.54			
	T. South	41.84	28.21			
	T. West	35.99	25.57			
MARSABIT	County	12.5	8.79	The county and all sub counties worsened to extreme vegetation deficit in December.		
	Laisaimis	11.77	8.26			
	Moyale	11.43	6.8			
	N. Horr	13.19	9.76			
	Saku	12.46	5.75			
WAJIR	County	13.84	7.3	The county and all sub counties worsened to extreme vegetation deficit in December.		
	W East	14.83	7.41			
	W. Eldas	9.33	3.81			
	W. North	19.08	8.84			

	W. South	12.89	8.53	
	W. Tarbaj	16.9	8.75	
	W West	9.69	3	
SAMBURU	County	18.7	15.38	The county maintained remained at severe vegetation deficit during the month under review. Samburu West worsened to moderate vegetation deficit from normal vegetation greenness.
	S East	9.31	11.31	
	S. North	23.26	16.45	
	S. West	41.47	28.41	
GARISSA	County	17.59	27.59	The county experienced an improvement in vegetation condition index to moderate vegetation deficit from severe vegetation deficit in December. Lagdera worsened to extreme vegetation deficit from severe vegetation deficit.
	Balambala	11.49	17.72	
	Daadab	13.77	20.79	
	Fafi	21.95	36.56	
	Ijara	21.71	37.62	
	Lagdera	10.26	7.67	
	Dujis	16.67	22.13	
ISIOLO	County	9.86	7.37	The county and all sub counties maintained extreme vegetation deficit during the month under review.
	I. North	9.46	6.68	
	I. South	10.46	8.42	
TANA RIVER	County	20.62	29.21	The county and sub counties recorded moderate vegetation deficit in December. Garsen improved to normal vegetation greenness.
	Bura	17.99	20.64	
	Galole	20.22	30.54	
	Garsen	23.1	35.66	
KAJIADO	County	26.3	23.87	The county recorded moderate vegetation deficit. Kajiado central and Kajiado North recorded severe vegetation deficit.
	K. Central	15.44	14.07	
	K. East	23.79	24.52	
	K. North	31.99	19.86	
	K. South	23.97	21.14	
	K. West	35.29	31.42	
LAIKIPIA	County	32.04	24.27	The county recorded moderate vegetation deficit which was stable. Laikipia North worsened to severe vegetation deficit.
	L. East	31.34	32.13	
	L. North	21.64	15.37	
	L. West	51.85	37.15	
THARAKA NITHI	County	26.19	31.81	The county was stable at moderate vegetation deficit during the month under review.
	Chuka	39.26	44.71	
	Maara	41.89	39.42	
	Tharaka	16.24	24.52	
WEST POKOT	County	47.2	28.24	The County worsened to moderate vegetation deficit from normal vegetation greenness during the month under review.
	Kacheliba	40.59	18.59	
	Kapenguria	57.72	40.29	
	Pokot South	66.9	49.04	
	Sigor	38.71	23.33	
EMBU	County	41.19	47.79	The county and three its sub-counties recorded normal vegetation greenness except Mbeere north which recorded above normal vegetation greenness.
	Manyatta	51.3	42.24	
	Mbeere North	38.92	52.05	
	Mbeere	36.31	48.56	

	South			
	Runyenjes	53.21	41.51	
KITUI	**County**	24.67	33.93	The county maintained moderate vegetation deficit during the month under review. However, five sub counties improved to normal vegetation greenness.
	Kitui Central	25.99	37.34	
	Kitui East	23.54	33.73	
	Mwingi Central	22.49	28.51	
	Mwingi North	19.05	23.3	
	Mwingi West	34.41	36.53	
	Kitui Rural	24.26	43.12	
	Kitui South	26.4	38.74	
	Kitui West	29.65	37.15	
MAKUENI	**County**	33.34	46.06	The county recorded an improvement in vegetation greenness to normal vegetation greenness from moderate vegetation greenness.
	Kaiti	38.34	43.54	
	Kibwezi East	26.26	41.52	
	Kibwezi West	31.82	48.74	
	Kilome	26.93	30.65	
	Makueni	43.31	56.32	
	Mbooni	40.73	48.77	
MERU	**County**	29.98	32.83	The county recorded moderate vegetation deficit during the month under review which was stable compared to November.
	Buuri	36.64	41.45	
	Central Imenti	40.6	32.14	
	Igembe Central	23.05	29.25	
	Igembe North	14.55	25.97	
	Igembe South	25.48	25.35	
	North Imenti	31.15	27.09	
	South Imenti	52.4	31.19	
	Tigania East	26.3	36.08	
	Tigania West	26.87	41.11	
NYERI	**County**	36.65	24.43	The county worsened to moderate vegetation deficit up from normal vegetation greenness during the month of November.
	Kieni	34.39	29.61	
	Mathira	35.64	12.62	
	Mukurweini	28.22	16.28	
	Othaya	55.09	26.78	
	Tetu	47.22	24.62	
	Township	12.72	2.37	
KILIFI	**County**	7.36	20.78	The vegetation condition in the county improved to

	Ganze	2.48	12.55	moderate vegetation deficit from extreme vegetation deficit in December.
	Kaloleni	13.62	12.75	
	Magarini	6.21	24.58	
	Malindi	8.2	24.48	
	Kilifi-North	20.44	32.45	
	Rabai	21.37	16.44	
	Kilifi-South	18.14	5.03	
KWALE	**County**	17.33	17.46	The county recorded stability trend in vegetation greenness at severe vegetation deficit during the month under review.
	Kinango	9.15	11.23	
	Lungalunga	24.56	22.02	
	Matuga	32.65	30.62	
	Msambweni	40.92	36.13	
LAMU	**County**	37.41	44.57	The County and one of its sub-counties recorded normal vegetation greenness which was improving trend when compared to the previous month of November.
	Lamu East	31.76	36.37	
	Lamu West	40.68	49.31	
TAITA TAVETA	**County**	17.95	22.88	The county and two sub-counties recorded moderate vegetation deficit up from severe vegetation deficit, which was a decrease compared to November.
	Mwatate	11.83	21.7	
	Taveta	21.01	25.09	
	Voi	17.94	22.28	
	Wundanyi	23.79	22.9	
NAROK	**County**	48.29	38.22	The county recorded normal vegetation greenness in December.
	Narok-East	34.05	31.9	
	Emurua Dikirr	69.31	60.65	
	Kilgoris	64.44	54.87	
	Narok-North	43.32	37.59	
	Narok-South	36.78	27.42	
	Narok-West	58.21	41.82	

Table 14: Indicators monitored by the drought early warning system

Type of indicator	Examples of indicators monitored	Types of impact
Biophysical	Rainfall data Vegetation condition State of water sources	Environmental
Production	Livestock body condition Milk production Livestock migration Livestock mortality Crop production	Livestock production Crop production
Access	Terms of trade (meat/maize) Milk consumption Distances to water	Markets Access to food and water
Utilisation	MUAC (Mid-Upper Arm Circumference) Coping strategies Food consumption score	Nutrition Coping strategies

SUMMARY OF DROUGHT EARLY WARNING SYSTEM

Each month, field monitors collect data in a number of sentinel sites across 23 arid and semi-arid counties. This is then complemented by information from other sources, particularly satellite data. For all indicators, the current value is compared with the long-term average for the time of year in order to establish whether it falls within seasonal norms.

Four types of indicators are monitored, capturing different kinds of impact (Table 12). The combined analysis from all four indicator groups then determines the particular drought phase: normal, alert, alarm, emergency or recovery (Figure 4). Identifying the correct drought phase helps to guide the most appropriate response for that stage in the drought cycle.
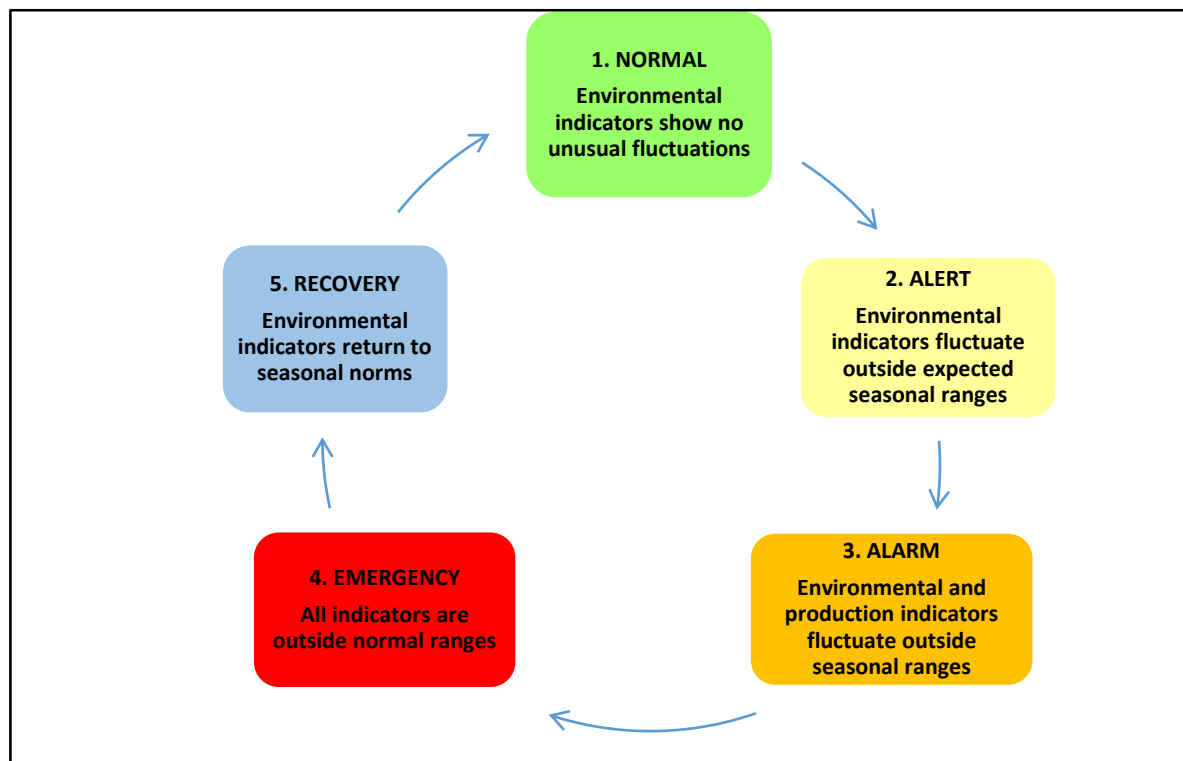

Figure 5. Drought Phase Classification.