HOA DRIVE, IBLI PAYOUT SUMMARY REPORT - KENYA

OCTOBER – DECEMBER 2023 SEASON

1. EXECUTIVE SUMMARY

This report covers the payouts of the DRIVE Index Based Livestock Insurance (IBLI) product being sold in Kenya. The product's main aim is to provide cover against prolonged forage scarcity ONLY due to a drought. It triggers payment to pastoralists to help maintain their livestock in the face of severe forage scarcity. The payment amount depends on the value derived from a Normalised Difference Vegetation Index (NDVI). The pricing and payout methodologies are the same across all UAIs and result in the same price/payout within each UAI[1] level.

This report covers payouts for the Short Rains season, covering the months of October 2023 – December 2023 for the various regions under cover i.e. Samburu, Mandera, Garissa, Tana River, Wajir, Isiolo, Marsabit, Kajiado, Turkana, Laikipia, Narok, Lamu, for two covers whose details are outlined below:

Table 1: Cover descriptions

	Cover 1[2]	**Cover 2**
Product Structure	Two payout phases per season **Short Rains:** Phase 1 – October - December Phase 2 – January – February **Long Rains:** Phase 1 – March - June Phase 2 – July - September	One payout phase, at the end of each season **Short Rains:** October - December **Long Rains:** March - June
Period of cover	1st March 2023 to 29th February 2024	1st October 2023 to 30th September 2024
Regions	10 Counties - Samburu, Mandera, Garissa, Tana River, Wajir, Isiolo, Marsabit, Kajiado, Turkana, Laikipia.	12 Counties - Samburu, Mandera, Garissa, Tana River, Wajir, Isiolo, Marsabit, Kajiado, Turkana, Laikipia, **Narok, Lamu**

[1] UAI – Unit Area of Insurance per region as is determined based on the homogeneity of vegetation conditions and pastoral migration extents. Also, rangeland dominance, forage availability, seasonality and drought history are also considered.

[2] Cover 1 product structure (two payout phases per season) is only applicable until the end of March 2024, thereafter we fully transition to the cover 2 product structure of having only one payout applicable at the end of each season.

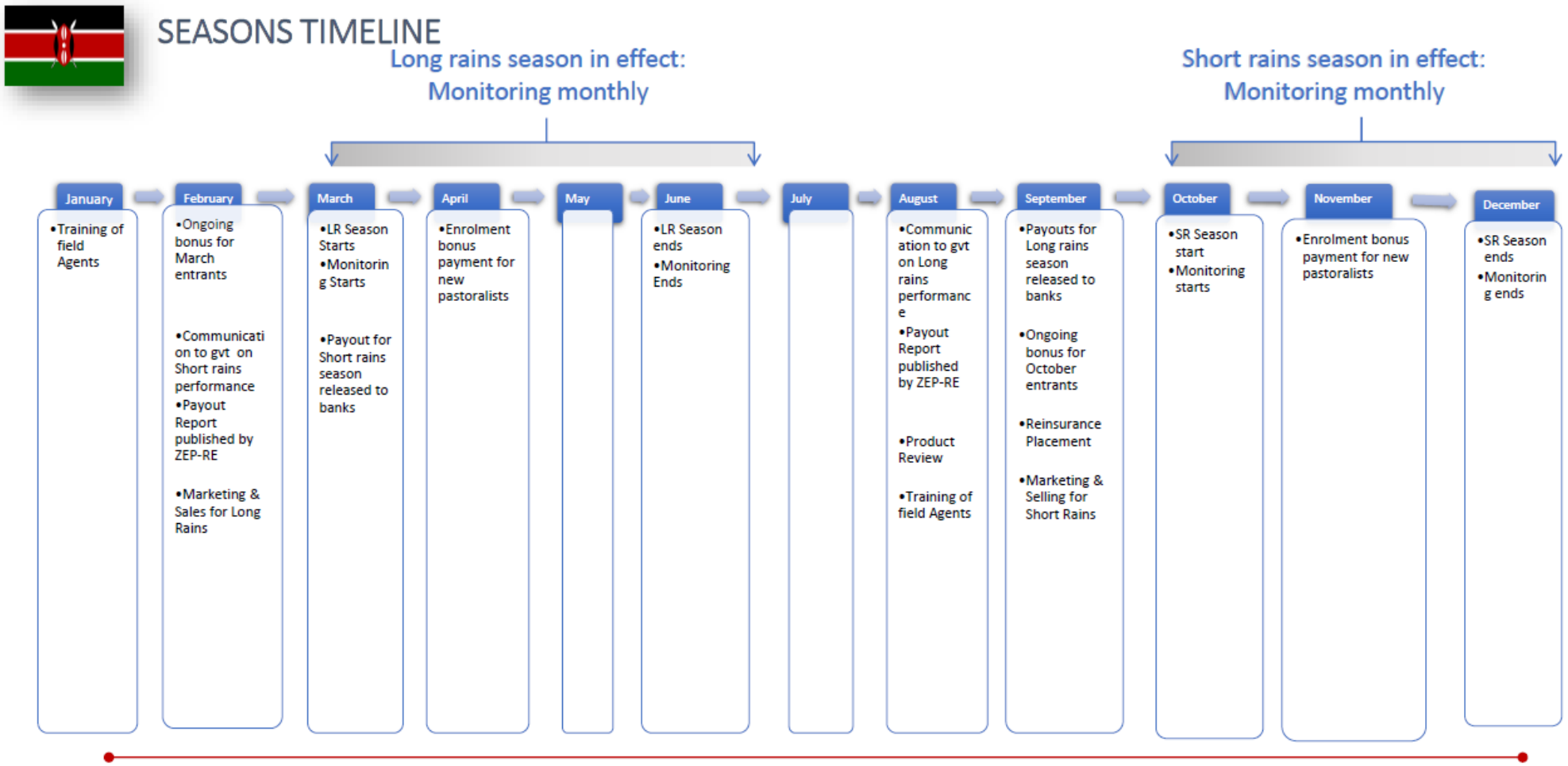
		
Number of pastoralists	57,723[3]	35,399
Total Premium	KSh. 758,481,840	KSh. 416,312,228
Total Sum Insured	Ksh. 3,803,579,235	Ksh. 1,882,494,559
Payout calculation period	OND Phase 1 – 1st October – 31st December 2023 OND Phase 2 – 1st January – 29th February 2024 (**To be calculated in April**)	1st October – 31st December 2023
Payout Amount	Ksh. 14,993,526	Nil

The variance in payout amounts between Cover 1 and Cover 2 can be attributed to the differing calculation methodologies resulting from adjustments in the product structure. Under Cover 1, monitoring occurs on a monthly basis, allowing for the detection and accumulation of minor deviations from the average vegetation conditions over the three-month season. Conversely, for Cover 2, monitoring takes place at the season's end, focusing on the cumulative average performance across the three months, thereby mitigating the impact of small deviations from the seasonal average.

[3] This number consists of 56,737 pastoralists, whose details are known and 986 pastoralists whose location details are unknown, and efforts are being made to locate them and allocate them into the correct UAIs.

The calendar timeline for payouts is as shown below:

Figure 1: Calendar timeline for payouts[4]



The payout calculations have been done by ACRE Africa, in their role as the payout calculation agent, and have been internally reviewed by ZEP RE. Further, the Z-Scores[5] have been validated[6] by data service providers and validation agent, Planet.

[4] This timeline is in relation to the new product structure under Cover 2.
[5] The z-score describes the variation in the NDVI relative to the historical time series by subtracting the average and dividing by the standard deviation of the historical NDVI readings.
[6] See Final Data Report for more details.

Following the concluded Short Rains season and the finalization of the payout calculations for the season, **the total payout for the 93,122 pastoralists covered in the 12 counties** is **Ksh. 14,993,526** for Cover 1 and **Nil** for Cover 2, with the details shown in the tables below:

The highest payout is **KSh 6,002,790** (40% of total payout) from Garissa County.

MAM 2023 – Cover 1

Table 2: Distribution of total payouts per County (Short Rains, Phase 1)

County	Total Number of Pastoralists Covered	Total Premiums	Total Sum Insured	Total Number of Pastoralists receiving Phase 1 payouts	Total Payouts	Average payout percentage[7]
Garissa	6,217	89,503,352	445,341,225	3,036	6,002,790	0.83%
Isiolo	6,199	80,098,379	375,384,663	1,125	784,321	0.15%
Kajiado	1,924	30,274,708	149,268,396	486	980,542	0.43%
Laikipia	1,799	23,490,459	114,250,876	934	1,217,779	0.50%
Mandera	6,328	62,965,267	328,499,404	-	-	0.00%
Marsabit	8,675	128,257,976	633,944,395	-	-	0.00%
Samburu	5,452	65,730,753	331,827,465	-	-	0.00%
Tana River	6,354	85,928,427	398,546,610	3,494	5,647,464	1.50%
Turkana	8,619	106,739,290	609,222,395	-	-	0.00%
Wajir	5,170	74,101,012	360,058,820	-	-	0.00%
Unknown[8]	986	11,392,184	57,234,996	986	360,630	0.58%
Total	**57,723**	**758,481,808**	**3,803,579,245**	**10,061**	**14,993,526**	**0.26%**

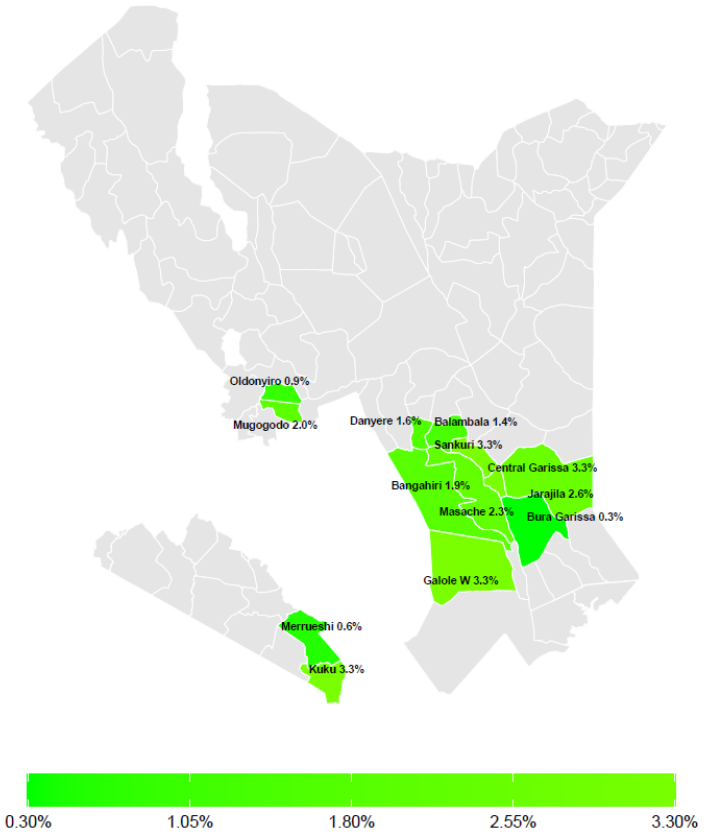
The amount of payouts was lower than previous seasons largely driven by improved vegetation conditions in most of the counties under cover. A detailed analysis is presented in subsequent sections.

[7] This is as a percentage of the total sum insured, but the maximum payout percentage is capped at the number of months for the observation period. Expected maximum payout for the Short Rains was 38% after allowing for the deductible of 5%. A 5% deductible is applied to the payout percentage whereby, if the payout percentage is greater than 5%, then the final payout percentage will be (x-5%), if it is less than 5%, then the final payout % will be 0%.

[8] Unknown – These are pastoralists who paid without registering their locations and are still being traced and the payout percentage is an average of all the UAIs payout percentages.

5 out of 10 counties covered in Phase 1 of the Short Rains season recorded lower than expected vegetation levels leading to a payout. Payouts were recorded in 13 out of 108 UAIs covered in Cover 1 as shown below:

Figure 2: Kenya Payout Map OND 2023 Phase 1, Cover 1



Source : Internally calculated

The map above shows the level of the payout due to the pastoralists as a percentage of the sum insured for the areas that recorded lower than average vegetation conditions.

Table 3: Distribution of total payouts per County (Short Rains)

County	Total Number of Pastoralists Covered	Total Premiums	Total Sum Insured	Total TLUs	Total Payouts
Garissa	2,460	27,938,289	124,981,188	7,431	-
Isiolo	4,260	57,382,265	247,785,215	14,732	-
Kajiado	281	4,196,416	21,061,064	1,252	-
Laikipia	1,591	18,398,238	87,899,817	5,226	-
Lamu	1,142	12,359,078	57,584,821	3,424	-
Mandera	453	4,992,263	24,490,334	1,456	-
Marsabit	2,399	27,655,758	134,491,829	7,996	-
Narok	160	1,106,775	4,267,282	254	-
Samburu	4,678	52,820,046	240,003,467	14,269	-
Tana River	6,090	80,778,302	312,440,882	18,576	-
Turkana	3,812	42,303,620	203,338,531	12,089	-
Wajir	7,694	81,996,157	403,835,594	24,009	-
Unknown	379	4,385,021	20,314,535	1,208	-
Grand Total	**35,399**	**416,312,228**	**1,882,494,559**	**110,920**	**-**

2. DATA

The table below shows a brief description of the data set used.

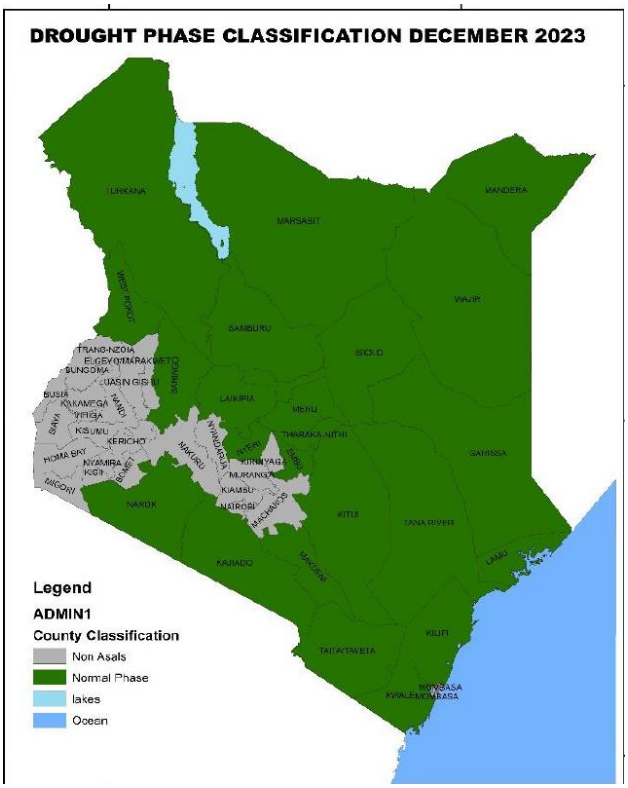
Table 4: Summary of the data characteristics

Data Source & Data Characteristic	
ITEM	**Description**
Data Source	eVIIRS
Characteristics	Visible and infrared imagery along with global observations of Earth's land, atmosphere, cryosphere, and ocean.
Historical time series length	10 years with an additional 10 years of backwards normalisation using eMODIS data.
Spatial Resolution	375 m X 375 m
Temporal Resolution	7- or 10-day data composited data sets updated every 5 days
Data Availability (free or premium)	Free
Instruments	Suomi National Polar-orbiting Partnership (Suomi NPP) and NOAA-20 satellites

3. DROUGHT SITUATION[9]

Majority of the Arid and Semi-Arid (ASAL) counties experienced rainfall over the first ten days of December, albeit with reduced intensity compared to November. However, most of the ASAL counties registered cessation of the October-November-December rains during the month under review, except. Consequently, all the counties were categorized under the 'Normal' drought phase based on the range of indicators monitored (environmental, production, access and utilization indicators fell within usual ranges).

Figure 3: Drought phase classification in December 2023

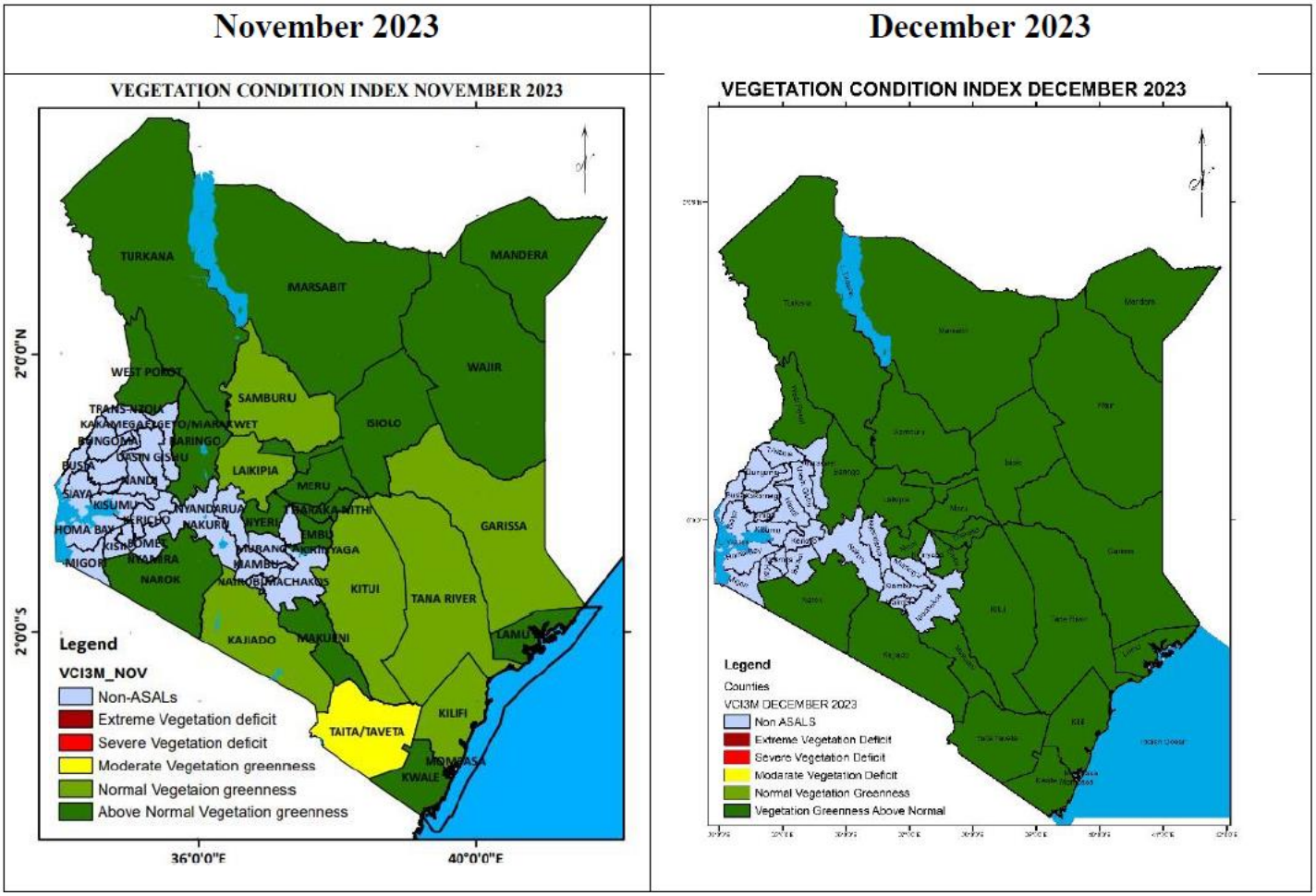


Vegetation conditions:[10] Significant improvement in the condition of vegetation was witnessed across December in all the ASAL counties, with dense canopies evident over most areas due to the cumulative rainfall across the October to December season. Consequently, **all the counties presented either normal or above normal vegetation greenness**. This was a notable improvement from the previous period, especially in Taita Taveta which had moderate vegetation deficit in November. All counties recorded above normal vegetation greenness while a few sub-counties including Baringo (Mogotio), Turkana (East), Wajir (West, Eldas), Garissa (Balambala, Township) and Taita Taveta (Mwatate, Taveta) reported normal vegetation greenness as illustrated below:

[9] NDMA - KnowledgeWeb

[10] Kenya Food Security Outlook Update, August 2023 - Kenya | ReliefWeb

Figure 4: Comparison of vegetation conditions between November 2023 and December 2023

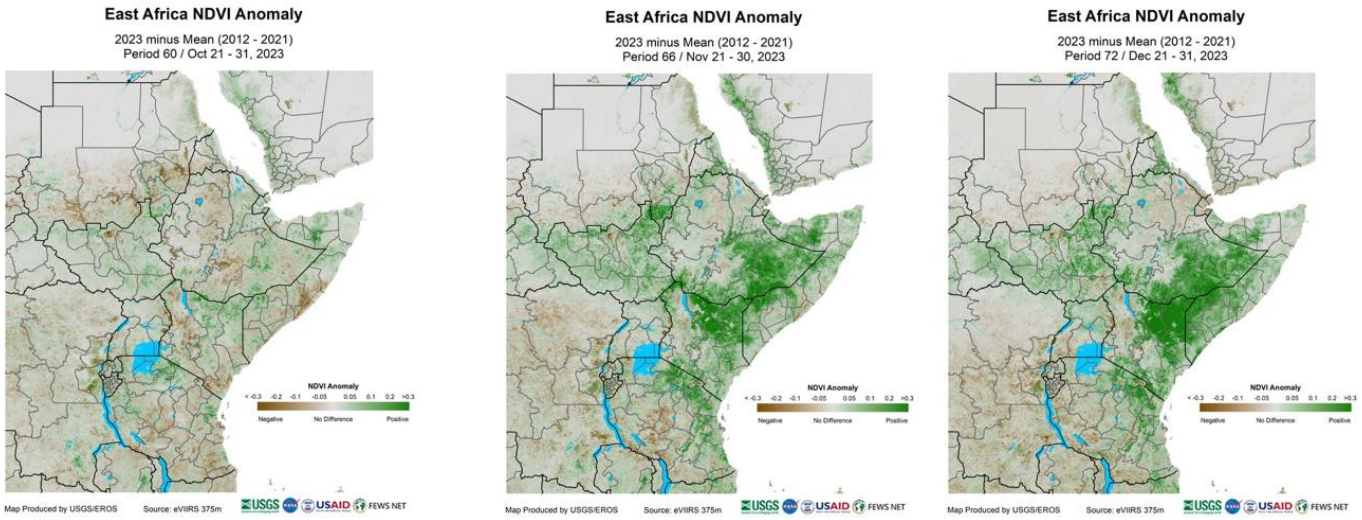


Generally, the vegetation condition in December depicted further improvement from November as shown above.

The condition of pasture and browse improved further with all the counties reporting good and above normal, except Turkana and West Pokot. Consequently, dense canopies of browse were observed across all the areas, which was attributed to the enhanced rainfall, leading to strong vegetation regeneration.

Further, the map below shows the vegetation progression, within the East African Region, from the month of October 2023 to December 2023, with the level of greenness increasing in the arid and semi-arid lands.

Figure 5: Horn of Africa NDVI Maps (October - December 2023)



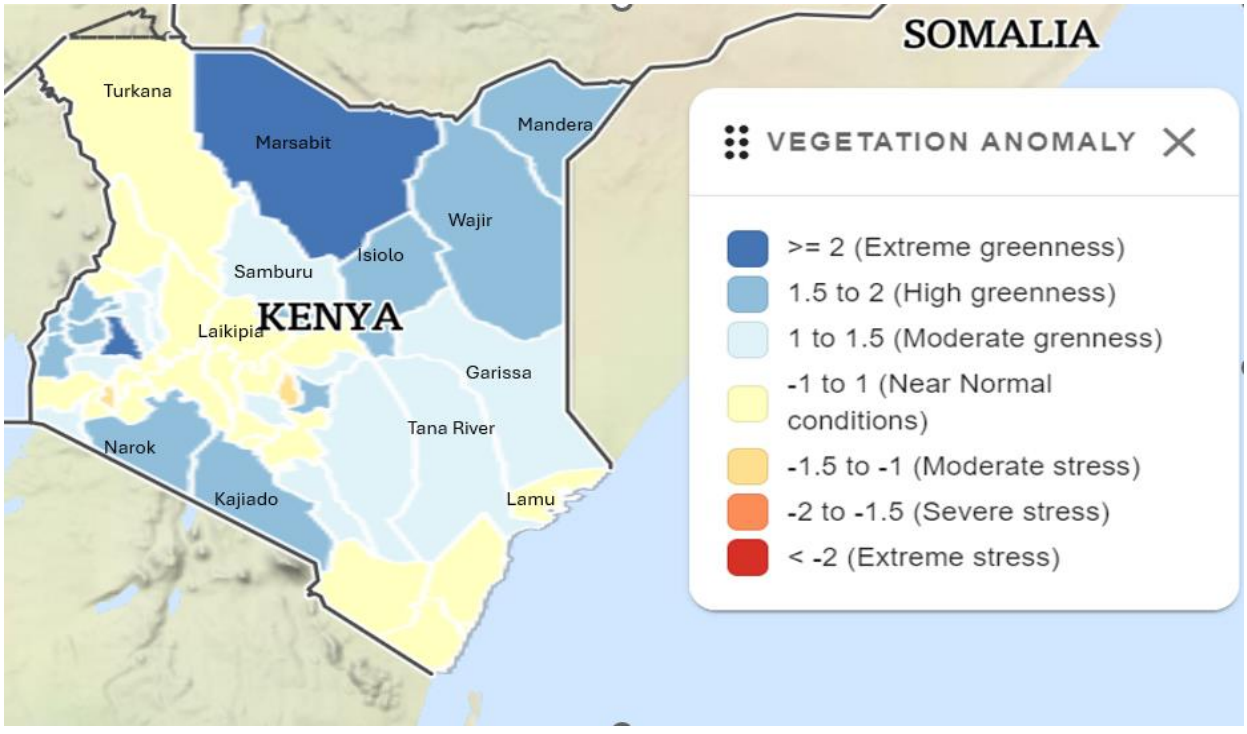
Source : https://earlywarning.usgs.gov/fews/search/Africa/East%20Africa

Progression of drought for the short rains season in East Africa, is consistent with the payout results indicated in this report.

Additional drought indicators were reviewed for the period under observation, and this was consistent with the payout results. These are:

1. **Vegetation Anomaly:** Positive anomalies seen as a result of increased rainfall and improved soil moisture which provided a conducive environment for vegetation growth.

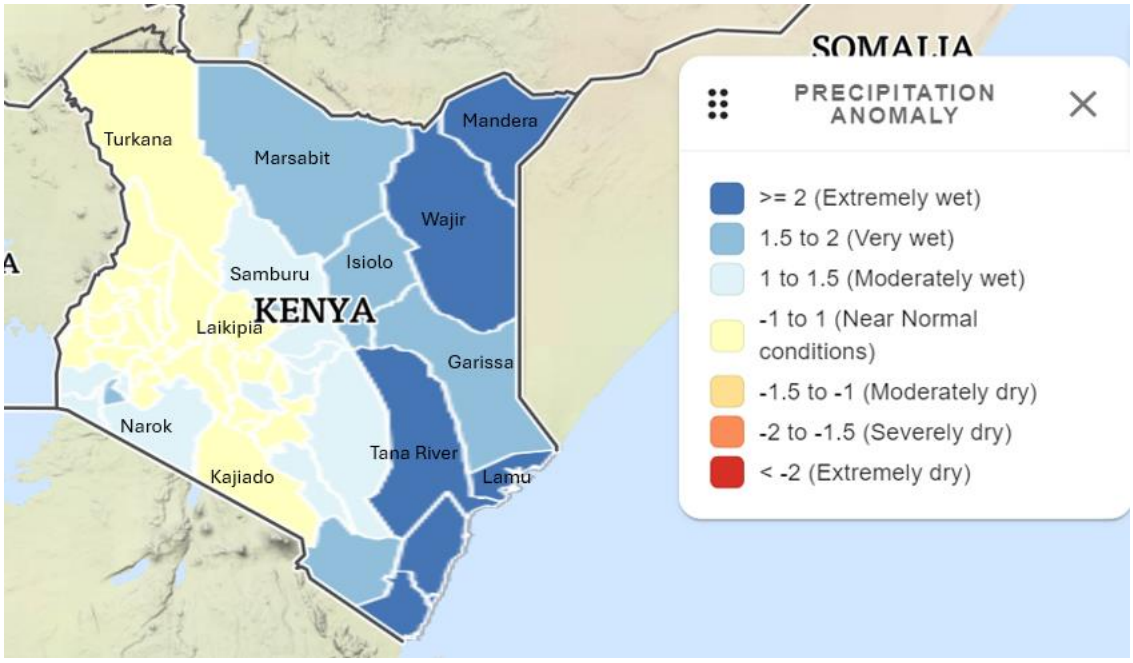
Figure 6: Vegetation Anomaly for 12 Kenya IBLI Counties (October - December 2023)



Source: NGDI Dashboard (ngdi-dashboard.azurewebsites.net)

2. **Precipitation Anomaly:** A review of the precipitation index showed that high levels of rainfall (above the historical average) lead to extremely wet conditions which is consistent with the NDVI data.

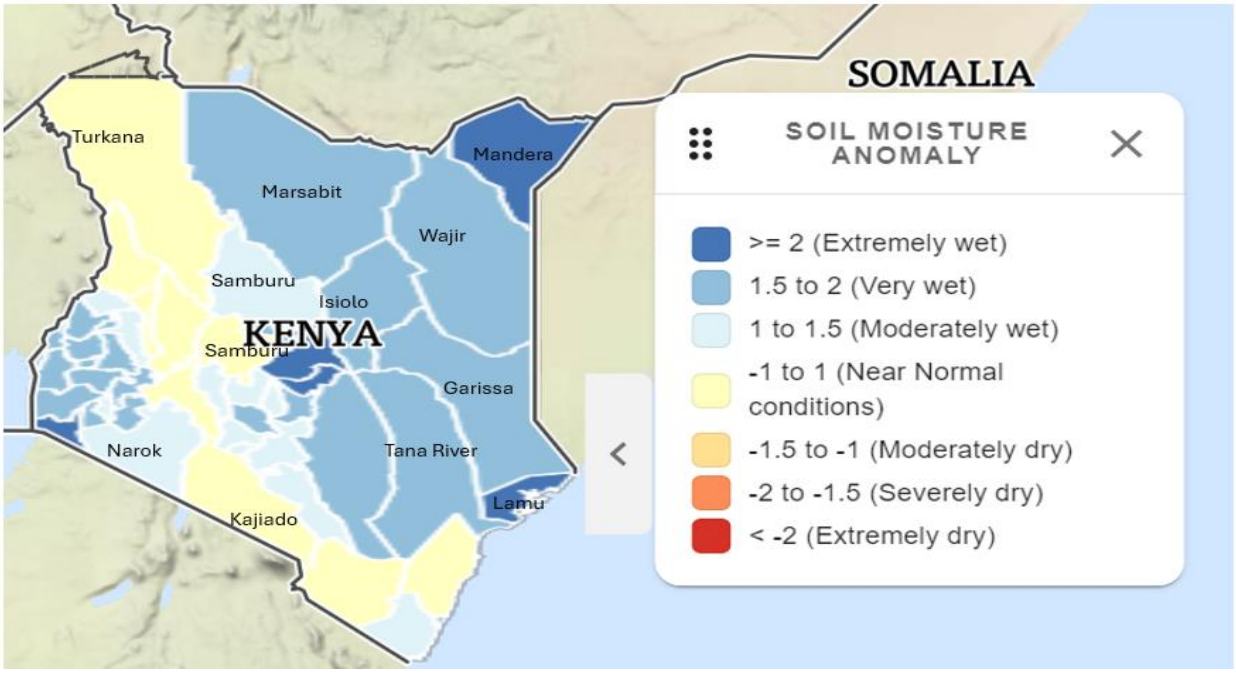
Figure 7: Precipitation Anomaly for 12 Kenya IBLI Counties (October - December 2023)



Source: [NGDI Dashboard (ngdi-dashboard.azurewebsites.net)]

3. **Soil Moisture Anomaly:** A review of the index confirmed that the increased rainfall caused the soil to become moister making it conducive to enhanced vegetation conditions.

Figure 8: Soil Moisture Anomaly for 12 for Kenya IBLI Counties (October - December 2023)



Source: [NGDI Dashboard (ngdi-dashboard.azurewebsites.net)]

4. COUNTY LEVEL ANALYSIS

Only 5 counties recorded payouts under the MAM 2023 product structure, and these are:

1. Garissa County

GARISSA	Total Pastoralists Covered	Total Pastoralists Receiving Payouts	Total Payout	Average Payout percentage
Balambala	231	231	227,013	1.40%
Benane	285	-	-	0.00%
Bura Garissa	344	344	85,945	0.30%
Central Garissa	1,648	1,648	3,759,597	3.30%
Dadaab	808	-	-	0.00%
Danyere	31	31	33,662	1.60%
Hulugho	30	-	-	0.00%
Ijara	171	-	-	0.00%
Jarajila	179	179	403,435	2.60%
Liboi	245	-	-	0.00%
Masalani	627	-	-	0.00%
Modogashe	573	-	-	0.00%
Sangailu	49	-	-	0.00%
Sankuri	603	603	1,493,137	3.30%
Shant-Abak	393	-	-	0.00%
TOTAL	**6,217**	**3,036**	**6,002,790**	**0.83%**

Pasture conditions in October were poor for most of the UAIs but improvement was noted in November and December with only 6 UAIs out of 15 triggering a payout due to lower-than-average cumulative NDVI signals.

2. Tana River

TANA RIVER	Total Pastoralists Covered	Total Pastoralists Receiving Payouts	Total Payout	Average Payout percentage
Bangahiri	1,510	1,510	1,899,820	1.90%
Chewani	524	-	-	0.00%
Galole W	1,583	1,583	3,086,049	3.30%
Garsen N	2,336	-	-	0.00%
Masache	401	401	661,595	2.30%
TOTAL	**6,354**	**3,494**	**5,647,464**	**1.50%**

3 out of 5 UAIs recorded a payout under the observation period, October – December 2023. While there was month on month vegetation improvement due to rainfall experienced in the region, Bangahiri, Galole W and Masache had lower than average cumulative NDVI signals thus triggering a payout.

3. Isiolo

Isiolo	Total Pastoralists Covered	Total Pastoralists Receiving Payouts	Total Payout	Average Payout percentage
Central Isiolo	1,877	-	-	0.00%
Garba Tulla	765	-	-	0.00%
Kinna	204	-	-	0.00%
Merti	1,659	-	-	0.00%
Oldonyiro	1,125	1,125	784,321	0.90%
Sericho	569	-	-	0.00%
TOTAL	**6,199**	**1,125**	**784,321**	**0.15%**

Pasture conditions in were relatively good from October to December 2023 in Isiolo. Only 1 UAI out of 6 had cumulative NDVI signals worse than average, thus breaching the trigger, and ultimately triggering a payout.

4. Kajiado

Kajiado	Total Pastoralists Covered	Total Pastoralists Receiving Payouts	Total Payout	Average Payout percentage
Iloodokilani	352	-	-	0.00%
Kaputiei	248	-	-	0.00%
Keekonyokie	148	-	-	0.00%
Kuku	383	383	931,233	3.30%
Matapato	189	-	-	0.00%
Merrueshi	103	103	49,309	0.60%
Olgulului	243	-	-	0.00%
Olkeriai	257	-	-	0.00%
Urban	1	-	-	0.00%
TOTAL	**1,924**	**486**	**980,542**	**0.43%**

There was improvement in pasture conditions in the County of Kajiado since the Long Rains leading to higher-than-average cumulative NDVI signals, thus leading to payouts in only 2 out of 9 UAIs covered.

5. Laikipia

Laikipia	Total Pastoralists Covered	Total Pastoralists Receiving Payouts	Total Payout	Average Payout percentage
Mugogodo	934	934	1,217,779	2.00%
Salama	103	-	-	0.00%
Segera	136	-	-	0.00%
Sosian	626	-	-	0.00%
TOTAL	**1,799**	**934**	**1,217,779**	**0.50%**

There was improvement in pasture conditions in the County of Laikipia since the Long Rains leading to higher-than-average cumulative NDVI signals, thus leading to payouts in only 1 out of 4 UAIs covered.

6. Unknown

These are pastoralists who did not register through the system but paid directly to the account. Minimal details are available, but efforts are being made to locate them to ensure they will receive their payout.

Their details are as shown below:

UNKNOWN	Total Pastoralists Covered	Total Pastoralists Receiving Payouts	Total Payout	Average Payout percentage
Unknown	986	986	360,630	0.58%
TOTAL	**986**	**986**	**360,630**	**0.58%**

Due to the unavailability of location data, the payout has been estimated based on the average payout for all the regions. i.e., 0.58%. The number has been reducing as we have been making calls to the affected pastoralists and updated their details so as to place them in the correct UAIs.

ANNEX TO THIS REPORT

1. Term sheet with the index.
2. Graphic showing the progression of the drought from October 2023 to December 2023 in the Horn of Africa.
3. Final Data Report from Planet.