OCTOBER TO DECEMBER 2022 SEASON SUMMARY REPORT

DRIVE INDEX BASED LIVESTOCK INSURANCE (IBLI)

1.   BACKGROUND

DRIVE is a Horn of Africa project, funded by the World Bank and implemented by governments with an aim of enhancing pastoralists' access to financial services for drought risk mitigation, include them in the value chains, and facilitate the livestock trade in the Horn of Africa. After the signing of the Project Financing Agreement in June 2022, DRIVE was declared effective in October 2022, and has two components:

- Component I: Package of financial services for climate resilience
- Component II: Livestock Value Chains and Trade Facilitation.

ZEP-RE (PTA Reinsurance Company) oversees Component I implementation in the four countries (Kenya, Somalia, Ethiopia, and Djibouti). This component has insurance, savings, digital accounts, and platform coordination. Component II is implemented by the Kenya Development Corporation (KDC) and the State Department of Livestock (SDL). In Kenya, the government is targeting implementation of the DRIVE Project in 21 arid and semi-arid lands (ASAL) with an aim of reaching pastoralists with resilience building tools against drought as well as develop capacity for the livestock value chain development. The IBLI product was developed to be used to back pastoralists' savings in the case of severe drought. It is designed to keep animals alive in an affordable way and to rapidly trigger and distribute payouts without the need for evidence of livestock dying. The IBLI product is designed based on a forage scarcity index developed using anomalies in Normalized Difference Vegetation Index (NDVI) based on eVIIRS data from 2002 to 2021. The table below summarizes the product features that has been distributed in Kenya for the 2022 – 2023 season.

Table 1: Summary Product Description

Feature	Description
Index	The index is a Normalized Difference Vegetation Index – NDVI, using remote-sensed data (from satellites) on pasture levels.
Coverage period	The monitoring period for Kenya is based on the length of the vegetation growing season (rainy months) and the dry months as well. Short Rains, Short Dry Season: October – February Long Rains, Long Dry Season: March – September While the contracts are issued on an annual basis, covering all the seasons.
Unit Areas of Insurance (UAI)	Several UAIs per region determined based on the homogeneity of vegetation conditions and pastoral migration extents. Also, rangeland dominance, forage availability, seasonality and drought history are also considered.
Trigger & Exit	The trigger level has been set at the 25th percentile and the exit level at the 5th percentile. The selected trigger corresponds to a return period, which expresses the frequency with which the contract would

	have triggered based on the selected threshold and the underlying NDVI data. This model adopts 1 in 4 seasons return period for the trigger (25th percentile) and an Exit threshold at 1 in 20 seasons return period (5th percentile). This an improvement from KLIP 1 in 5 seasons return period for the trigger (20th percentile) and an exit threshold at 1 in 20 seasons.
NDVI Data	EVIIRs Satellite with 375m resolution.

This report covers the first payout of the Short Rains, Short Dry Season covering the months of October 2022 – December 2022. For this season only 4 counties were covered i.e., Garissa, Wajir, Tana River and Samburu.

2.   UNDERWRITING DETAILS

Insured: Pastoralists in Kenya against prolonged forage scarcity ONLY because of drought.

Product description: The product's main aim is to provide cover against prolonged forage scarcity ONLY because of 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 an the NDVI index.

Period of Insurance: 1st October 2022 to 30th September 2023

Calculation period: 1st October 2022 to 31st December 2022 (Short rains, Phase 1)

Type of Cover: Index based livestock insurance based on Normalised Difference Vegetative Index, NDVI

Scope of Cover (Perils):   Forage scarcity because of drought.

Areas of Cover: Kenya (Garissa, Wajir, Samburu and Tana River)

No. of insured farmers: 16,829

Sum Insured: USD 10,956,918 (Ksh. 1,314,830,136)

Premium: USD 2,087,298 (Ksh. 250,475,778)

3.   DROUGHT SITUATION[1]

Cumulative rainfall has been less than 55% of the 40-year average since October 1st, 2022, leading to severely diminished food and income from livestock production among pastoral households and crop production and agricultural labor among agropastoral and farming households. The October to December 2022 short rains had a late onset, with cumulative rainfall in October largely less than 85% of the 30-year average across most of Kenya.

Pasture conditions: Following four consecutive below-average rainy seasons and a poor start to a likely fifth below-average rainy season, reports indicate that browse and pasture conditions are largely poor in the northwestern, northern, and northeastern pastoral livelihood zones. Remote-sensing data, including the satellite-derived eVIIRS Normalized Difference Vegetation Index (NDVI), is confirming ground reports that vegetation greenness is less than 80% of normal across most of Kenya. In particular, in the northwestern, northern, northeastern, and southeastern areas of Kenya, vegetation greenness is less than 60% of the 2012 to 2021 mean.

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[1] Kenya - Food Security Outlook: Mon, 2022-10-31 to Wed, 2023-05-31 | Famine Early Warning Systems Network (fews.net)

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.

4.   DATA AND MAPS

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

Table 2: 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 10 years backwards normalization
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

Based on the NDVI data, all the UAIs under coverage triggered a payout based on varied drought severity levels. The graph below shows the percentiles per UAI for historical data (2002 – 2021) and for the period under review (October – December 2022). Key to note that is that the percentiles are representative of the levels of the NDVI during the period under observation. This has been done cumulatively for October – December 2022 and compared with the long-term distribution. However, the percentiles cannot be directly used to convert to a payout amount for each district due to the technicalities of the z-score and payout calculation. From Figure 1 below, all the UAIs covered in the 4 counties were expected to trigger a payout as they all show figures below 25%.

Figure 1: Maps showing the UAIs covered in Kenya and the cumulative NDVI percentiles
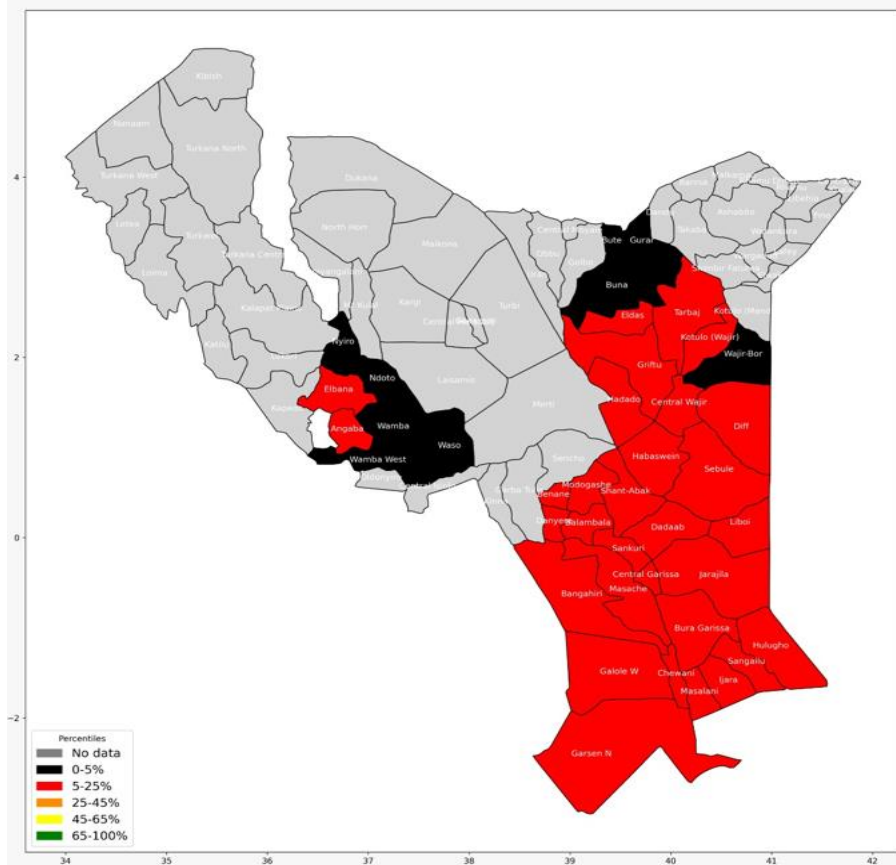

Further below, the figure shows how the drought has settled in Kenya as at end of December 2022. A separate video is attached to this report showing the progression of the drought from October 2022 to December 2022.

Progression of drought for the 12 weeks in the October 2022 – December 2022 season in East Africa, is consistent with the payout results discussed in the next section. The **brown** is the negative index reading (NDVI) showing a lack of vegetation, **grey** index is where there is no difference and **green** is the positive index.

By the end of December 2022, the drought had shifted south with Somalia showing limited severe drought while South Ethiopia and Northern Kenya were severely affected.
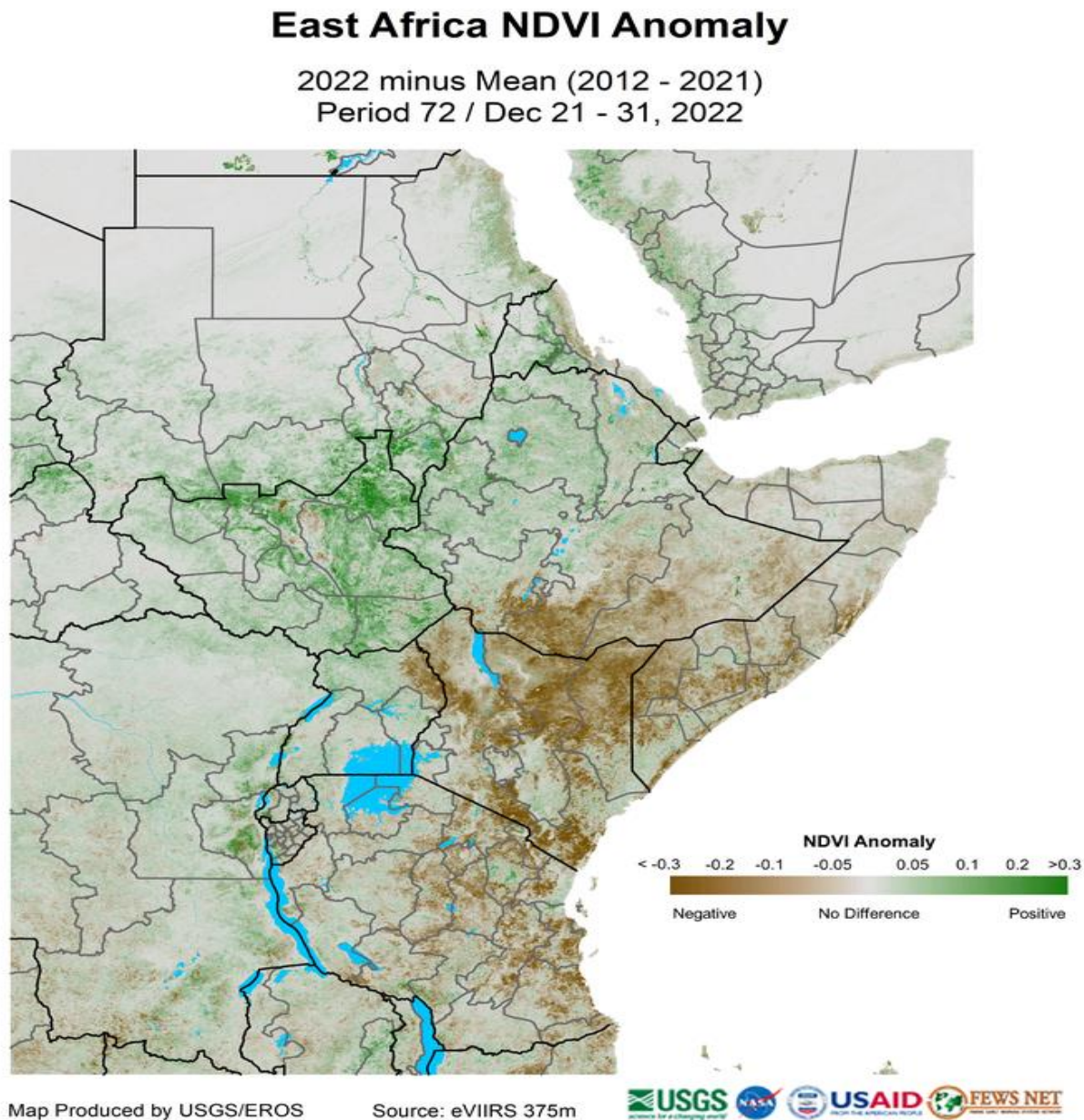
5.   CLAIM DETAILS

Period Of Loss: 1st October 2022 to 31st December 2022 (Short Rains, Phase 1)

Date Reported: February 2023

Calculated payout: **USD 1,441,993 (KSh 173,039,189)**

Overall, 39 out of 40 UAIs are going to receive payouts for the Phase 1, 2022 SRSD season. The only UAI not receiving any payouts is **Masache, Tana River County**. The level of the payout for Masache region was 2.13% which was less than the 5% deductible. While this UAI triggered a payout, the product has a 5% deductible, whereby it does not cater for 5% of the payouts.

The county with the highest payout is Tana River, followed by Wajir, Samburu and Garissa subsequently. However, the overall payout as a percentage of the premium paid is highest for Wajir (101%) and lowest for Tana River (69%).

The table below shows the distribution of the payouts per county.

Table 3: Distribution of total payouts per County, Ksh. Amount

County	UAIs	Pastoralists	Animals	TLUs	Total Premium (KSh)	Total Premium (USD)	Total Payout (KSh)	Total Payout (USD)
GARISSA	15	3,688	95,909	18,201	56,638,488	471,987	34,028,954	283,575
SAMBURU	7	3,117	25,771	12,254	39,027,778	325,231	36,668,710	305,573
TANA RIVER	5	6,834	66,722	32,288	104,135,948	867,800	51,432,897	428,607
WAJIR	13	3,032	86,984	14,843	48,810,239	406,752	49,320,441	411,004
UNKNOWN[2]		158	22	586	1,863,326	15,528	1,588,188	13,235
Total	**40**	**16,829**	**275,408**	**78,171**	**250,475,778**	**2,087,298**	**173,039,189**	**1,441,993**

While the payout amount relative to the premium paid, is lower for Tana River, the actual amount is higher, and this is because the county registered the highest TLUs, almost the sum of the TLUs for the other 3 counties combined. This led to a much higher sum insured for this region relative to the others.

Table 4: Distribution of average payouts per County, % of the Sum Insured

County	Sum Insured (KSh)	Pastoralists payment (KSh)	Total Premium (KSh)	Total Payout (KSh)	Average payout (% of the Sum Insured)
GARISSA	306,134,815	10,067,754	56,638,488	34,028,954	14.5%
SAMBURU	206,107,630	7,587,579	39,027,778	36,668,710	17.7%
TANA RIVER	543,085,661	20,595,498	104,135,948	51,432,897	9.0%
WAJIR	249,651,277	9,217,829	48,810,239	49,320,441	19.8%
UNKNOWN	9,850,753	361,364	1,863,326	1,588,188	16.1%[3]
Total	**1,314,830,136**	**47,830,024**	**250,475,778**	**173,039,189**	**16.1%**

The numbers above are synonymous with the NDVI anomaly map that shows that Tana River area was relatively greener than the other regions.

Savings enrolment bonus was also paid out to 12,946 pastoralists, to act as an early resilience mechanism to protect against the initial effects of drought (KSh 6,000 (USD 50) per pastoralist). This is shown in the table below.

Table 5: Summary of the Savings enrolment bonus

County	Registered Pastoralists	Qualified Pastoralists	Enrolment Bonus Payable	Paid Pastoralists	Enrolment Bonus Paid (KSh)
GARISSA	3,688	3,648	21,888,000	2,488	14,928,000
SAMBURU	3117	2,621	15,726,000	2,588	15,528,000
TANA RIVER	6834	4,574	27,444,000	5,616	33,696,000
WAJIR	3032	2,956	17,736,000	2,254	13,524,000
UNKNOWN	158		To be confirmed		
Total	**16,829**	**13,799**	**82,794,000**	**12,946**	**77,676,000**

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[2] Unknown – These are pastoralists who paid without registering their locations and are yet to be traced.

[3] Used the country average payout in the absence of pastoralists' location data.

COUNTY LEVEL ANALYSIS

The graphs in this section show the percentiles per UAI for historical data (2002 – 2021) and for the period under review (October – December 2022) for each of the 4 counties. Key to note that is that the percentiles are representative of the levels of the NDVI during the period under observation. This has been done cumulatively for October – December 2022 and compared with the long-term distribution. However, the percentiles cannot be directly used to convert to a payout amount for each district due to the technicalities of the z-score and payout calculation.

We further compare this with the level of payout expected by the UAIs in each of the respective counties.

1. Garissa County

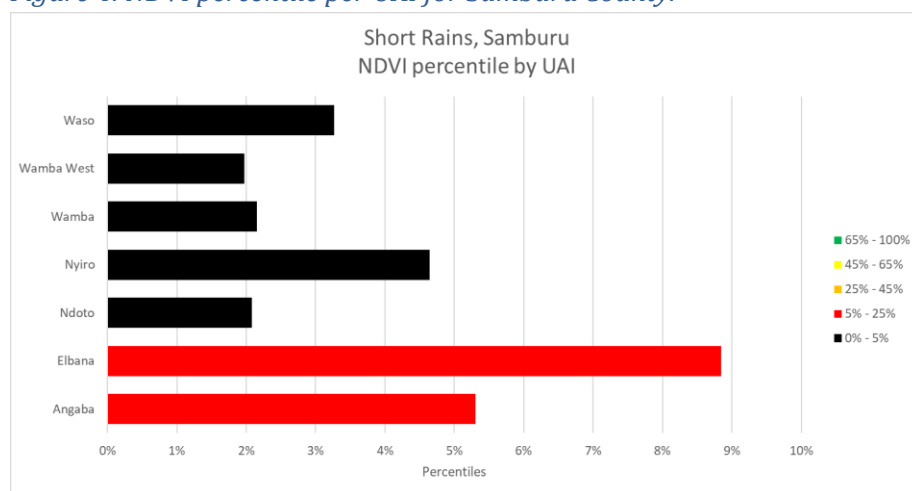*Figure 3: NDVI percentile per UAI for Garissa County.*
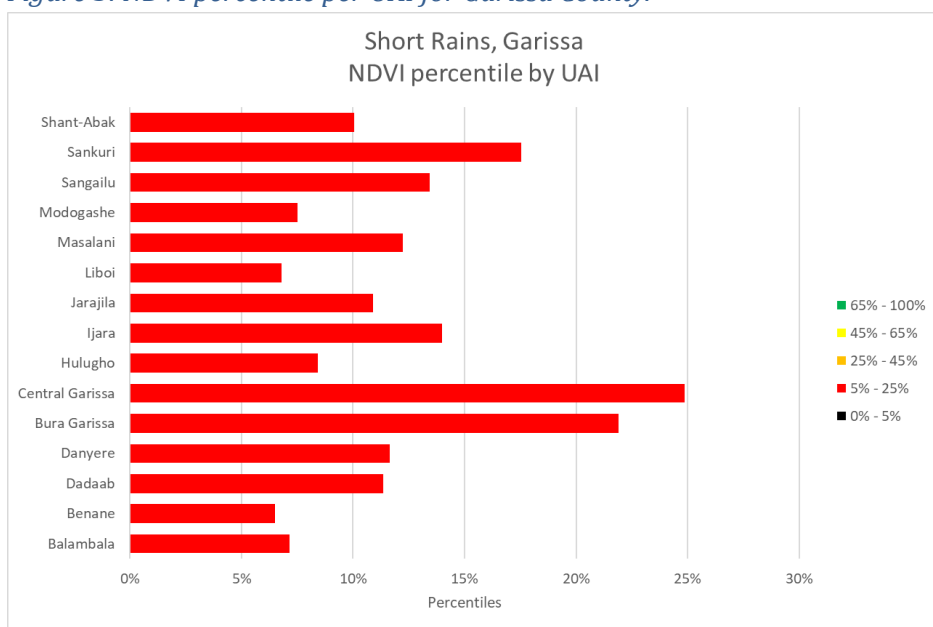
Payout analysis per UAI

GARISSA	Pastor alists	TLUs	Sum Insured (USD)	Premium (KSh)	Premium (USD)	Total Payout (KSh)	Total Payout (USD)	Average payout %
Balambala	248	1,209	169,478	4,079,297	33,994	4,067,476	33,896	20.0%
Benane	109	540	75,690	1,793,719	14,948	1,816,560	15,138	20.0%
Bura	417	2,084	292,079	6,711,726	55,931	1,927,721	16,064	5.5%
Central	877	4,236	593,726	12,921,256	107,677	3,134,876	26,124	4.4%
Dadaab	129	640	89,710	2,118,756	17,656	2,153,051	17,942	20.0%
Danyere	1	4	579	13,785	115	11,805	98	17.0%
Hulugho	126	625	87,604	1,943,006	16,192	1,555,848	12,965	14.8%
Ijara	154	766	107,322	2,393,264	19,944	1,326,503	11,054	10.3%
Jarajila	407	2,032	284,845	7,018,615	58,488	4,819,576	40,163	14.1%
Liboi	18	82	11,490	229,470	1,912	273,008	2,275	19.8%
Masalani	396	1,980	277,591	5,533,688	46,114	4,297,103	35,809	12.9%
Modogashe	199	980	137,370	2,860,017	23,833	3,296,871	27,474	20.0%
Sangailu	100	500	70,083	1,694,158	14,118	765,310	6,378	9.1%
Sankuri	462	2,297	321,955	6,647,466	55,396	3,824,821	31,874	9.9%

Shant-Abak	45	225	31,601	680,266	5,669	758,425	6,320	20.0%
TOTAL	**3,688**	**18,201**	**2,551,123**	**56,638,488**	**471,987**	**34,028,954**	**283,575**	**14.5%**

Central Garissa is expected to have the lowest payout relative to premium paid because from the percentile graphs, it was less dry than the other regions. However, it is also worth noting that the percentage of the amount of payout expected relative to the premiums paid is also affected by the premium rate and the number of TLUs covered which is used to determine the sum insured.

2. Samburu County

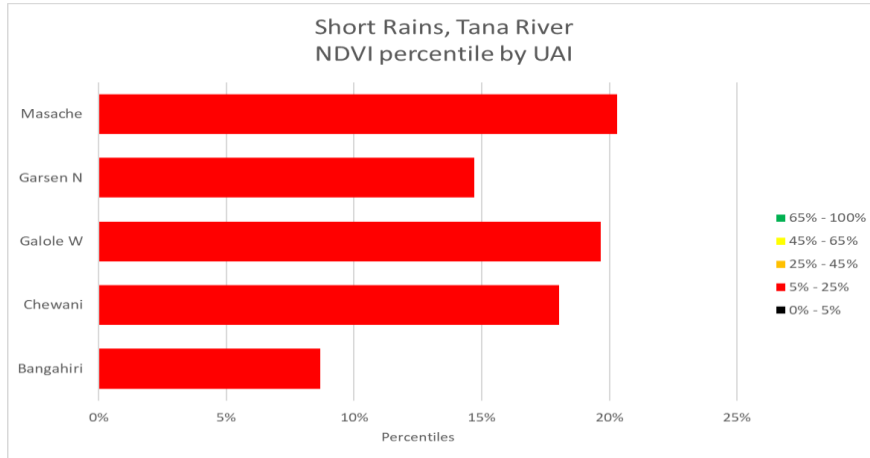*Figure 4: NDVI percentile per UAI for Samburu County.*

Payout analysis per UAI

SAMBURU	Pastoralists	TLUs	Sum Insured (USD)	Premium (KSh)	Premium (USD)	Total Payout (KSh)	Total Payout (USD)	Average payout
Angaba	401	1,970	276,082	5,633,189	46,943	4,472,525	37,271	13.5%
Elbana	454	1,527	214,335	4,528,880	37,741	2,752,064	22,934	10.7%
Ndoto	115	416	59,038	1,102,746	9,190	1,416,914	11,808	20.0%
Nyiro	347	1,721	241,263	5,116,577	42,638	5,790,322	48,253	20.0%
Wamba	433	1,463	204,373	5,097,861	42,482	4,904,952	40,875	20.0%
Wamba West	991	3,845	538,936	13,602,848	113,357	12,934,455	107,787	20.0%
Waso	368	1,284	180,032	3,864,729	32,206	4,320,779	36,006	20.0%
Unknown	8	28	4,567	99,868	832	97,238	810	17.7%
TOTAL	**3,117**	**12,254**	**1,718,627**	**39,046,698**	**325,389**	**36,689,249**	**305,744**	**17.7%**

Elbana is expected to have the lowest payout relative to premium paid because from the percentile graphs, it was less dry than the other regions.

3. Tana River

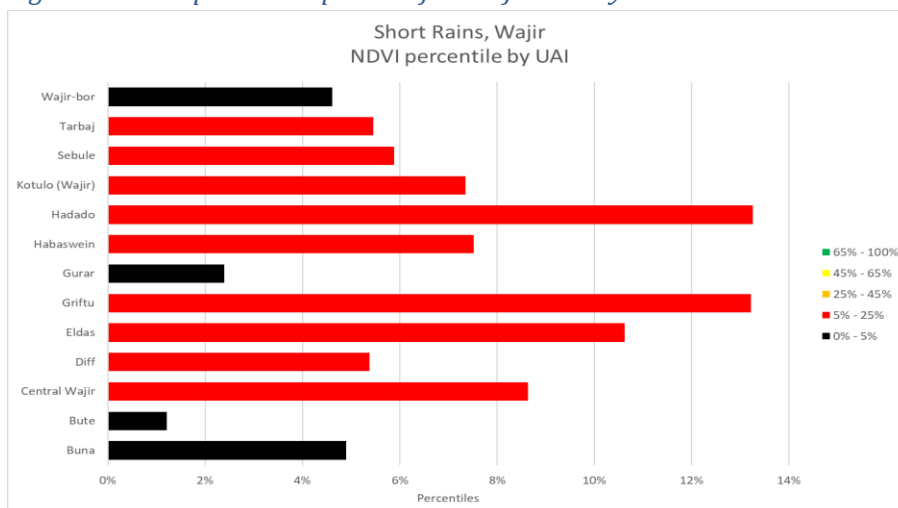*Figure 5: NDVI percentile per UAI for Tana River County.*

Payout analysis per UAI

TANA RIVER	Pastoralists	TLUs	Sum Insured (USD)	Premium (KSh)	Premium (USD)	Total Payout (KSh)	Total Payout (USD)	Average payout
Bangahiri	1,626	7,792	1,092,218	25,913,678	215,947	20,970,590	174,755	16.0%
Chewani	251	1,152	161,537	3,565,268	29,711	2,326,130	19,384	12.0%
Galole W	2,279	10,524	1,475,051	35,088,981	292,408	6,018,208	50,152	3.4%
Garsen N	2,032	9,637	1,350,823	29,986,750	249,890	22,045,435	183,712	13.6%
Masache	630	3,135	439,369	9,429,156	78,576	-	-	0.0%
Unknown	16	48	6,716	152,115	1,268	72,535	604	9.0%
Total	**6,834**	**32,288**	**4,525,714**	**104,135,948**	**867,800**	**51,432,897**	**428,607**	**9.0%**

Masache is expected to have the lowest payout relative to premium paid because from the percentile graphs, it was less dry than the other regions.

4. Wajir

Figure 6: NDVI percentile per UAI for Wajir County.

Payout analysis per UAI

Wajir	Pastora lists	TLUs	Sum Insured (USD)	Premium (KSh)	Premium (USD)	Total Payout (KSh)	Total Payout (USD)	Average payout
Buna	232	1,160	162,594	3,883,814	32,365	3,902,245	32,519	20.0%
Bute	268	1,335	187,170	3,817,965	31,816	4,492,074	37,434	20.0%
Central	449	2,267	317,713	6,321,246	52,677	7,625,106	63,543	20.0%
Diff	347	1,666	233,469	5,278,973	43,991	5,603,252	46,694	20.0%
Eldas	112	535	74,958	1,769,357	14,745	1,798,984	14,992	20.0%
Griftu	372	1,853	259,718	6,772,232	56,435	6,233,225	51,944	20.0%
Gurar	229	1,145	160,483	4,146,928	34,558	3,851,600	32,097	20.0%
Habaswein	159	753	105,514	2,606,309	21,719	2,532,338	21,103	20.0%
Hadado	315	1,517	212,587	5,249,151	43,743	5,102,099	42,517	20.0%
Kotulo	364	1,726	241,936	6,010,184	50,085	5,196,779	43,306	17.9%
Sebule	46	231	32,411	787,052	6,559	777,861	6,482	20.0%
Tarbaj	113	537	75,282	1,729,162	14,410	1,806,757	15,056	20.0%
Wajir-Bor	25	113	15,888	421,003	3,508	381,303	3,178	20.0%
Unknown	1	5	706	16,862	141	16,818	140	19.8%
Total	**3,032**	**14,843**	**2,080,427**	**48,810,239**	**406,752**	**49,320,441**	**411,004**	**19.8%**

All the UAIs in Wajir triggered the maximum payout except Kotulo Wajir, with the NDVI percentile maps showing the severity of the drought in this region as depicted by the low NDVI percentiles.

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:

Pastoralists	TLUs	Sum Insured (USD)	Premium (KSh)	Premium (USD)	Total Payout (KSh)	Total Payout (USD)	Average payout
158	587	84,044	1,927,108	16,059	1,626,006	13,550	16.1%
158	**587**	**84,044**	**1,927,108**	**16,059**	**1,626,006**	**13,550**	**16.1%**

Due to the unavailability of location data, the payout has been estimated based on the average payout for all the regions.

ANNEX TO THIS REPORT

1. Term sheet with the index
2. Z-Score verification report from independent calculation agent, Planet.
3. Graphic showing the progression of the drought from October 2022 to December 2022 in the Horn of Africa
4. Premiums and Claims payable distribution
5. Enrolment savings bonus payout distribution