



**THE PRESIDENCY  
MINISTRY OF DEVOLUTION AND PLANNING**

# National Drought Early Warning Bulletin

**January 2017**



## Summary

The short rains season has now ended, but it was far too brief and weak to have any meaningful impact on recovery. No county reported normal rainfall in December. Consequently, there is now a significant vegetation deficit across the ASALs.

In livestock areas, the water and forage situation is far from normal. This is undermining production and disrupting the regular pattern of seasonal migration. Terms of trade are falling, while the risk of conflict is increasing. In agricultural areas, widespread crop failure is predicted.

Without urgent and appropriate action, Kenya could see a repeat of the drought situation in 2011. The national and county governments and their partners should significantly scale up both livelihood support and relief activities that reinforce the coping strategies of affected populations.

## 1 Drought status

### 1.1 Drought indicators

#### *Rainfall*

No ASAL county reported normal rainfall in December. In all cases the amount was depressed and the distribution was poor. For example, there was no rain at all in the lowland areas of West Pokot, in large parts of Turkana, and in Sericho and Oldonyiro wards of Isiolo, while most lowland areas of Marsabit received only a day of rain, in some cases none.

Almost all counties also reported an untimely end to the season. In counties such as Kitui, Mandera and Samburu this was as premature as early December, while in most semi-arid counties it was in the second half of the month. Given that the season also started late, the short rains have been remarkably brief. For counties such as Garissa, Tana River, Kilifi and Lamu, their poor performance has compounded the impact of the previous poor long rains season.

#### *Vegetation condition*

The Vegetation Condition Index (VCI) communicates the vigour of vegetation cover, comparing it with the range of values for the same period in previous years. Annex 1 contains the VCI data at 26 December 2016. There are five categories: above-normal vegetation, normal vegetation, moderate vegetation deficit, severe vegetation deficit, and extreme vegetation deficit.

In almost all counties the vegetation condition is worse in December than it was in November. The deficit extends across most of the ASALs, which is an abnormal situation for the end of the rainy season:

- **Extreme vegetation deficit:** Kilifi, Kwale and Lamu (in all three of which the VCI values are negative), as well as Ijara (Garissa), Garsen (Tana River), Wajir South, Wajir West and Tharaka.
- **Severe vegetation deficit:** Garissa, Isiolo, Mandera, Marsabit, Samburu, Taita Taveta, Tana River, Turkana and Wajir, as well as Mwingi North (Kitui), Laikipia North, North Imenti and Tigania West (Meru), Town (Nyeri) and Kacheliba and Sigor (West Pokot)

- **Moderate vegetation deficit:** Baringo, Kajiado, Kitui, Laikipia, Meru, Tharaka Nithi and West Pokot, as well as Mbeere North and South (Embu), Kibwezi East and Kilome (Makueni), Narok East and Narok South

This month, Annex 1 also contains the VCI values that prevailed in the same month in 2010, in order to compare the current situation with that immediately before the major drought of 2011. In 2010 the short rains also failed, but a key difference between then and now is that the coastal and eastern regions were in a better position. This means that a key drought mitigation strategy used by pastoralists, of accessing grazing areas at the coast and in other semi-arid regions, is likely to be closed off in 2017.

Field observations confirm the poor VCI values. There has been some recovery in counties or parts of counties which received reasonable rainfall, but this is likely to be short-lived. Moreover, in the border areas of West Pokot and in North Horr in Marsabit, pasture is available but inaccessible due to conflict.

#### **Water sources**

Only a few semi-arid counties reported a normal water situation for this time of year. For the most part, pans and dams recharged to far less than their maximum capacity. As open water sources dry up, the pressure on permanent sources such as boreholes increases, leading to longer waiting times and the risk of breakdown. High surface temperatures reported in counties such as Baringo and Taita Taveta mean that any remaining open sources will dry up sooner than usual. River levels in Isiolo, Meru and West Pokot had already reduced significantly by the end of December.

Broken water sources continue to be reported, most notably in the drought reserve areas of Isiolo and in the marginal mixed farming and pastoral zones of Laikipia.

#### **Livestock production**

There has been a temporary improvement in livestock body condition in areas where rainfall replenished water sources and reduced walking distances, but on the whole, the situation is far from normal. Livestock body condition is worsening in the lowlands of Marsabit and deteriorating fast in Tana River. In the agro-pastoral zone of Meru, poor body condition is attributed to inadequate and unpalatable pasture, infrequent watering, and a rise in intestinal worms.

Milk production rose significantly in some counties but fell in others and generally remains at low levels. For example, while it rose in Kajiado and doubled in Wajir, it is still only 50 percent and 75 percent of the long-term mean respectively in these two counties. In Baringo, Isiolo, Kwale, Mandera, Turkana and West Pokot, milk production fell on the previous month to as low as ten percent of the long-term mean in Mandera; in Tana River it is just four percent of the long-term mean.

Five counties reported livestock deaths associated with drought (rather than from predation or disease): Garissa (small stock), Marsabit (small stock), Samburu (a few cases in the North and East), West Pokot (cattle in Pokot North and Central) and Lamu (Didewaride, Lumshi, Kibokoni and Chalaluma). The number of deaths in Lamu fell on the previous month while in Kwale and Taita Taveta it reduced to zero.

The bulletins highlight outbreaks of contagious diseases whose spread can be increased by drought-related migration, leading to measures such as market closure:

- Foot and Mouth Disease: Baringo, Isiolo, Kajiado, Kwale, Lamu, Marsabit, Meru, Narok, Samburu and Taita Taveta.
- Contagious Bovine Pleuropneumonia: Garissa, Kajiado, Narok and Taita Taveta.
- Contagious Caprine Pleuropneumonia: Baringo, Isiolo, Kajiado, Kwale, Marsabit, Meru, Samburu, Taita Taveta, Turkana and West Pokot, with suspected cases in the Kitui/Tana River border area.
- Peste des Petits Ruminants: Baringo, Marsabit and West Pokot.

However, many of the bulletins also report vaccination programmes by the county governments, in some cases supported by partners such as the World Bank-funded Regional Pastoral Livelihoods Resilience Project and the European Union-funded drought contingency fund held by the NDMA.

More counties this month report unusual livestock migration. In Isiolo, Kajiado and Samburu, livestock have either remained in their dry season grazing areas or, in the case of Kajiado, returned to them after finding that the wet season areas received little rainfall. Unusual migration was reported in West Pokot, where more than 75 percent of the herd has moved towards the borders with Turkana and Uganda. In Narok there is a high concentration of cattle in harvested farms, while in Taita Taveta herders are moving into settlement areas because of the poor regeneration of pasture in the ranches.

### ***Crop production***

The prospects for the short rains harvest in the marginal agricultural counties are very poor, given the below-average performance of the season and its early cessation at a critical stage of crop development:

- In Embu, crop failure is expected in most areas because the season has been too short for crops to reach maturity. Cases of weevils and aphids are affecting the cowpea and green gram crops.
- In Kitui, near total crop failure is expected. The early planted maize crop is on the verge of wilting from moisture stress, while the late planted crop is stunted from the same. Only a few areas are expected to realise a modest harvest of green grams and cowpeas.
- In Makueni, both maize and beans in the marginal mixed farming zone are stunted from moisture stress and a below-normal harvest is expected. All but one of the wards in Kibwezi East are affected by moisture stress and infestation of pests and birds. However, a relatively good harvest of green grams and cowpeas is expected.
- In Meru, where the short rains season is the most important for rain-fed production, both cereals and legumes are water-stressed and production is likely to be below average.
- In Nyeri, there are signs of water stress and wilting in the maize, beans and potato crops. The acreage under production was also lower than in the previous season.
- In Tharaka Nithi, an insignificant harvest is expected. Crops are withering, shedding leaves and dropping flowers, attributed to the early end to the rains, the high temperatures and lack of cloud cover. A number of pests are affecting both cereals and legumes.

Elsewhere, crops are water-stressed in Kilifi, where less than five percent of farmers attempted to plant. In West Pokot, there was no planting of beans – the main crop grown during the short rains – due to the late onset and early end to the season and the depressed rainfall. In Baringo and Isiolo, irrigated crop production is also affected by falling river levels.

### ***Access to water***

In most counties, distances to water for both people and livestock have either reduced on the previous month or are stable, given the temporary replenishment of water sources. However, these reductions can be from a very high base. In Meru, for example, distances to water for both households and livestock fell by around 34 percent but are still three times the long-term mean and were already increasing again by the end of December. In Tana River, the distances for livestock fell by more than half but are still nearly twice the long-term mean.

In a number of counties distances to water are still increasing, which is not normal at the end of the rainy season. In Baringo, household distances increased by 70 percent on the previous month and are now three times longer than average, while in West Pokot they rose by 52 percent on the previous month and are now more than twice the long-term mean. In Kilifi, household distances rose by 62 percent to more than five times the seasonal norm. It is important to note that these are averages and that in certain areas the actual distances will be much longer.

County governments are continuing to truck water to areas in need, including in Kilifi, Lamu, Mandera and Tana River. New partners are lending their support, such as Mombasa Cement in Kilifi. Meanwhile in Kitui, household distances to water halved on the previous month, attributed to recent investment in roof catchments and other water harvesting infrastructure which impounded water for the first time this season.

### ***Terms of trade***

Each month, the drought early warning system monitors the relative price of goats and maize, showing the number of kilogrammes of cereal that can be exchanged for one goat.<sup>1</sup> Table 1 summarises the trend when compared with the previous month.

Livestock prices rose in several counties in December, but this was primarily attributed to increased demand during the holidays rather than necessarily an improvement in livestock body condition. Several bulletins suggest that prices will soon decline as drought stress deepens and school fees fall due in January (leading to an over-supply in the market). Moreover, some of the rises were from a very low base. In Garissa, for example, the average price of goats rose by 81 percent but has still not reached the long-term mean.

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<sup>1</sup> These terms of trade are an important indicator of pastoralists' purchasing power. As drought stress increases, animals lose condition and more of them enter the market causing the price to fall. At the same time, the price of cereals tends to rise as stocks become depleted prior to harvest. Thus, livestock-keepers are caught in a pincer movement, as the value of their principal asset decreases and the price of the food they need increases.

Maize prices were generally stable on the previous month. The largest rises were in Makueni (by Kshs. 6 per kg) and in Turkana and West Pokot (Kshs. 3), while the largest falls were in Kwale (Kshs. 5) and Narok (Kshs. 3).

The largest fall in terms of trade was in West Pokot, where the sale of a goat purchased 89kg of maize in November but only 68kg in December.

**Table 1: Terms of trade, December 2016**

<i>Trend</i>	Improving	Stable	Worsening
<b>Below long-term mean (LTM)</b>	Kilifi Makueni Marsabit Tana River		Isiolo Mandera West Pokot
<b>At / close to LTM</b>	Garissa Samburu Tharaka Nithi		Baringo
<b>Above LTM</b>	Kajiado Laikipia Wajir		Kitui Turkana

*Note: Data based on 16 counties*

### **Health and nutrition**

The bulletins monitor the percentage of children under five at risk of malnutrition, determined by a mid-upper arm circumference (MUAC) measurement (Table 2).

**Table 2: Children at risk of malnutrition (MUAC), December 2016**

<i>Trend</i>	Improving	Stable	Worsening
<b>Below long-term mean (LTM)</b>	<b>Isiolo</b> Kilifi <b>Marsabit</b> Nyeri (Kieni)	Makueni <b>Turkana</b> <b>Wajir</b>	Embu (Mbeere) <b>Mandera</b>
<b>At / close to LTM</b>	Kwale Laikipia	Kajiado Lamu Taita Taveta Tharaka Nithi	<b>Baringo</b>
<b>Above LTM</b>	Garissa Kitui Narok <b>Samburu</b> Tana River		<b>Meru (North)</b> West Pokot

*Note: Counties highlighted in bold have MUAC rates above 15%*

Eight counties have MUAC rates above the 15 percent threshold of concern, of which the highest is Meru North at 28 percent, closely followed by Mandera at 26.3 percent. These eight counties now include Baringo, which experienced one of the largest rises in the MUAC rate on the previous month (25 percent). The other large rise was in Embu, of 52 percent.

The largest falls in the MUAC rate on the previous month were in Garissa (by 32 percent), attributed to the impact of health interventions and a slight reduction in drought stress after the rains, and in Samburu (by 23 percent). However, this recovery is likely to be fragile, since milk consumption in Garissa is still only one-fifth of the long-term mean, and the MUAC rate in both counties is well above normal.

The bulletins also monitor the quality of food being consumed by households:

- In North Imenti, Meru, where there is a severe vegetation deficit, 100 percent of sampled households had poor food consumption.
- In Ijara, which is experiencing an extreme vegetation deficit, 84 percent of households had poor food consumption.
- In West Pokot, the proportion of households with poor food consumption increased to 54 percent from 13 percent in the previous month.

## 1.2 Drought phase classification

The drought phase is determined by the indicators discussed in the previous sections (Table 3). Livelihood zones that differ from the overall county status are shown in footnotes.

The main changes on the previous month are the generally worsening trend and the rise in the number of counties in alarm (from eight to eleven). Only three counties report an improving trend, and even here it is partial. On a slightly more positive note, the ranching zone of Kilifi has moved out of the emergency phase.

Table 3: Drought phase classification, December 2016

<i>Drought status</i>	<i>Trend</i>	Improving	Stable	Worsening	
<b>Normal</b>				Nyeri (Kieni)	
<b>Alert</b>		Makueni <sup>2</sup> Narok <sup>3</sup> Taita Taveta	Laikipia	Baringo Embu (Mbeere) Kajiado Kitui	Meru (North) Tharaka Nithi Wajir <sup>4</sup>
<b>Alarm</b>			Kwale	Garissa Isiolo Kilifi Lamu Mandera	Marsabit Samburu Tana River Turkana West Pokot
<b>Emergency</b>					
<b>Recovery</b>					

<sup>2</sup> The marginal mixed farming livelihood zone is on a worsening trend

<sup>3</sup> The pastoral livelihood zone is not improving

<sup>4</sup> The pastoral (cattle) and pastoral all-species livelihood zones are in alarm.

## 2 Other food security challenges

The most serious cases of conflict in the previous month, resulting in death, displacement or the loss of livestock, were reported from Baringo, Isiolo, Kitui, Laikipia, Marsabit, Meru, Turkana and West Pokot. Tension remains high in Samburu and Tana River. Peace building can be effective, as efforts along the Baringo/Elgeyo Marakwet border have shown.

Human-wildlife conflict is affecting food security in Baringo, Laikipia, Samburu, Taita Taveta and West Pokot. In Taita Taveta, elephants are causing widespread damage in Marungu ward and the lower parts of Sagalla ward in Voi, attributed to their fear of using designated tunnels under the newly constructed standard gauge railway.

## 3 Actions being taken

### 3.1 Drought contingency fund

Since July 2016, the NDMA has disbursed nearly Ksh 188 million of drought contingency finance in 14 counties, complementing what the counties and their partners are doing (Table 4).

**Table 4: DCF disbursements, July-December 2016**

County	Coordination	Education	Health & Nutrition	Livestock	Security	Water	Total
Garissa	1,585,800		1,172,000	5,373,700		2,893,300	11,024,800
Garissa	1,593,100	7,732,200	4,084,800	9,704,300		4,591,400	27,705,800
Kajiado	1,000,300		1,094,300	5,148,000		2,599,200	9,841,800
Kajiado				609,200			609,200
Kilifi	627,900		545,500	4,323,800	115,450	961,000	6,573,650
Kilifi				5,020,400			5,020,400
Kilifi				10,111,400		6,155,600	16,267,000
Kilifi			2,963,700				2,963,700
Kitui	931,200		1,076,100	4,699,600		1,060,300	7,767,200
Kwale	689,575		594,650	4,035,250	93,000	1,126,568	6,539,043
Kwale			1,835,200	8,725,000		1,506,000	12,066,200
Lamu	333,200		567,800	3,063,900	253,200	1,767,800	5,985,900
Lamu						418,000	418,000
Lamu				3,377,600			3,377,600
Lamu	484,000					605,800	1,089,800
Makueni	784,700		1,362,600	2,046,800		862,300	5,056,400
Mandera	1,549,300		921,600	3,647,800		843,000	6,961,700
Marsabit	3,776,000		4,420,600	4,622,600	555,200	3,273,400	16,647,800
Narok				3,331,440		3,056,640	6,388,080
Narok				1,197,000			1,197,000
Samburu	1,166,400		764,340	3,753,300		1,206,000	6,890,040
Taita Taveta	700,100		188,000	2,618,900	653,100	3,572,880	7,732,980
Tana River	714,600	315,000	795,000	904,800	519,000	50,000	3,298,400
Tana River	235,200	3,265,300		1,592,900		1,248,600	6,342,000
Wajir	1,048,500		1,816,200	898,000		6,092,000	9,854,700
<b>Total</b>	<b>16,735,875</b>	<b>11,312,500</b>	<b>24,202,390</b>	<b>88,805,690</b>	<b>2,188,950</b>	<b>43,283,988</b>	<b>187,619,193</b>

The new allocations made in December 2016 totalled Kshs. 16.7 million and were distributed as follows:

- **Kajiado:** facilitation of a team from the county government carrying out vaccination against Foot and Mouth Disease and Lumpy Skin Disease.
- **Lamu:** water trucking, including by boat to the islands.
- **Mandera:** support for health outreach, commercial livestock offtake, rapid response teams carrying out borehole repairs, and fuel subsidies and seeds for fodder farmers
- **Narok:** vaccination campaign against sheep pox
- **Samburu:** support for a range of activities including ring vaccination against Foot and Mouth Disease in the Samburu/Baringo/Laikipia border area, rapid response teams and fast-moving spares for borehole repairs, aqua tabs for households, livestock offtake, and supplementary feeds for livestock.

### **3.2 Shock-responsive transfers**

In December, the Hunger Safety Net Programme made emergency cash transfers totalling Kshs. 71.5 million to an additional 26,482 households, i.e. over and above its core caseload. These were triggered when the VCI indicated a severe vegetation deficit in Marsabit, Mandera and Wajir. The transfer value was Kshs. 2,700 per household, the same as the regular beneficiaries receive in a month, and the number of households which benefited were 582 in Mandera, 5,626 in Marsabit, and 20,274 in Wajir.

## **4 Projected food security situation**

The food security situation will continue to worsen over the next few months. The short rains season was too brief and too weak to have any meaningful impact on recovery. For counties where both the long rains and the short rains were below normal, conditions are already very poor. For all other counties, particularly the arid, conditions will deteriorate sharply now that there is no prospect of further rainfall until March or April.

Water stress will increase, distances to water and pasture will lengthen, milk production will fall even lower, and malnutrition will rise. Migration patterns will deviate still further from the norm, carrying the risk of conflict and the spread of livestock disease. In semi-arid counties the short rains harvest is likely to be poor, even negligible. Counties and sectors should be ready to deal with major drought conditions and widespread food insecurity during the first half of 2017.

## 5 Recommendations

Without urgent and appropriate action, Kenya could see a repeat of the drought situation in 2011. In order to prevent this, the national and county governments and their partners should significantly scale up both livelihood support and relief activities that reinforce the coping strategies of affected populations. The following are priorities:

1. Urgently scale up the provision of relief transfers to those in need, whether of food or cash.
2. Carry out rapid repairs and maintenance of water points, particularly in drought reserve areas.
3. Provide water to communities and institutions without permanent sources, and in order to facilitate access to rangeland.
4. Intensify the provision of livestock feed supplements, disease surveillance, and vaccination where appropriate.
5. Facilitate livestock marketing, preferably through commercial channels, so that herders can destock before the value of their animals falls still further.
6. Maximise the benefits of any short rains harvest by supporting proper post-harvest storage, and ensure timely availability of inputs in advance of the next season.
7. Rapidly scale up integrated health outreach programmes, nutrition surveillance, and the provision of essential supplies.
8. Provide food for fees, or scale up school feeding programmes, or take other measures which help students continue their education.
9. Intensify peace building and conflict management activities, particularly in dry season grazing and in areas likely to experience unusual livestock migration.
10. Promote inter-county and international coordination and negotiation, in order to monitor and facilitate livestock mobility so that conflict is prevented and essential services are maintained.
11. Ensure that attention to the long-term Ending Drought Emergencies agenda is not lost as the crisis deepens, particularly by embedding drought risk reduction measures in the next round of national and county planning and budgeting (particularly in the key foundational sectors such as security, infrastructure, education, health and nutrition).

## Annex 1 Vegetation Condition Index, 26<sup>th</sup> December 2016

ADMINISTRATIVE UNIT				Remarks			
COUNTY	Sub County	VCI-3, 27 <sup>th</sup> Dec 2010	VCI-3, 28 <sup>th</sup> Nov 2016	VCI-3, 26 <sup>th</sup> Dec 2016	Color	VCI values (3-month)	Drought Category
						≥50	Vegetation greenness above normal
						35 to 50	Normal vegetation greenness
						21 to 34	Moderate vegetation deficit
						10 to 20	Severe vegetation deficit
						<10	Extreme vegetation deficit
<b>BARINGO</b>	<b>County</b>	<b>41.99</b>	<b>39.16</b>	<b>27.35</b>			
	Central		54.74	42.29			Negative trend with all sub-counties, except Central, in the moderate vegetation deficit band. The short rainy season has been inadequate, with insufficient recharge of water sources and poor regeneration of pasture. Unless there are off-season rains in January and February, the VCI will continue to decline in the next quarter, with a probable severe vegetation deficit that will significantly affect local livelihoods.
	Eldama		46.73	31.1			
	Mogotio		34.22	21.31			
	North		42.82	28.75			
	South		42.34	32.13			
	Tiaty		33.96	23.6			
<b>MANDERA</b>	<b>County</b>	<b>16.46</b>	<b>25.16</b>	<b>15.94</b>			
	Banissa		23.87	16.9			The VCI continues to decline across all sub-counties and is now approaching the extreme vegetation deficit band. This situation is very similar to the one experienced in December 2010 that was followed by the bad drought of 2011.
	M East		22.78	11.7			
	Lafey		23.02	11.94			
	M North		21.11	13.28			
	M South		37.72	23.73			
	M West		19.05	14.3			
<b>TURKANA</b>	<b>County</b>	<b>20.8</b>	<b>24.47</b>	<b>18.22</b>			
	T Central		43.24	33.44			Declining VCI in all sub-counties with a very negative prognosis for the next dry season unless some off-season rains are received in January/February.
	T. East		20.86	16.26			
	T. Loima		27.42	20.98			
	T. North		22.04	14.89			
	T. South		24.78	18.15			
	T. West		20.74	16.24			
<b>MARSABIT</b>	<b>County</b>	<b>12.22</b>	<b>20.52</b>	<b>13.73</b>			
	Laisaimis		25.62	15.7			Extremely poor performance of the rainy season with significant rains received only around Mt Marsabit and Moyale town. The situation is very similar to the one experienced in December 2010. Based on the current scenario, an extreme vegetation deficit is expected in the next quarter, with major negative impacts on livelihoods which can be mitigated only through prompt and targeted provision of livelihood support to the affected populations.
	Moyale		13.75	12.48			
	N. Horr		18.91	12.77			
	Saku		28.98	16.95			
<b>WAJIR</b>	<b>County</b>	<b>9.48</b>	<b>19.08</b>	<b>12.53</b>			
	W East		17.42	15.66			Two sub-counties have moved to the extreme vegetation deficit band and the livelihood situation is expected to greatly worsen in the next quarter.
	W.Eldas		23.11	12.99			
	W. North		26.96	15.88			
	W. South		12.98	9.81			
	W.Torbaj		27.68	18.59			
	W West		15.29	7.65			
<b>SAMBURU</b>	<b>County</b>	<b>18.17</b>	<b>17.17</b>	<b>15.81</b>			
	S East		13.37	15.51			Samburu County faces a very significant vegetation deficit for the period, comparable with the one experienced in Dec 2010. The production indicators are below the long-term average for the period and will continue to degrade in the course of the next dry season.
	S. North		18.05	13.85			
	S. West		29.79	23.97			

COUNTY		VCI-3, 27.12.10	VCI-3, 28.11.16	VCI-3, 26.12.16	
GARISSA	County	19.89	11.31	11.65	The county was already badly affected by a severe drought that occurred during the previous dry season, while the current poor rainy season has not allowed adequate recovery. As a result, at the end of the rainy season the county faces a severe vegetation deficit which is expected to cause livelihood crises in the next dry season. The current situation is even worse than the one experienced in 2010/11.
	Balambala		18.47	18.25	
	Daadab		8.73	11.2	
	Fafi		6.33	11.14	
	Ijara		9.04	6.16	
	Lagdera		24.13	15.06	
	Dujis		15.62	18.35	
ISIOLO	County	9.95	21.03	17.63	Negative trend with poor rainfall performance across all livelihood zones. This critical situation is aggravated by emerging conflicts in Isiolo North.
	I. North		21.46	17.72	
	I. South		20.38	17.49	
TANA RIVER	County	26.99	18.19	13.92	Like Garissa county, Tana River experienced a significant drought during the last dry season and the current situation is worse than the one of 2010/11.
	Bura		16.2	19.57	
	Galole		22.32	16.54	
	Garsen		17.31	7.53	
KAJIADO	County	41.09	29.92	32.93	Some rains received in late December have slightly improved the vegetation greenness, but there is still a moderate deficit in three sub-counties. However, the drought situation is relatively less pronounced than in other counties although most crops have started withering and pasture regeneration is below normal for the period.
	K. Central		26.42	29.94	
	K. East		23.68	30.1	
	K. North		56.58	45.5	
	K. South		25.6	28.6	
	K. West		37.48	39.06	
LAIKIPIA	County	44.01	28.38	26.63	In line with other counties, the onset of the season was late and rainfall distribution was poor, especially in the pastoral livelihood zone, with Laikipia North experiencing a severe vegetation deficit. The next dry season will be critical, also considering the possible high influx of livestock from other drought-affected counties which could escalate conflict over scarce resources.
	L. East		27.63	32.03	
	L. North		19.32	18.8	
	L. West		45.71	38.68	
THARAKA NITHI	County	37.41	31.95	24.11	While the vegetation greenness is normal in Chuka and Maara sub-counties, the situation in Tharaka sub-county is far below normal with a VCI entering the extreme deficit band.
	Chuka		49.47	45.68	
	Maara		49.22	43.82	
	Tharaka		19.83	9.68	
W POKOT	County	35.56	33.56	22.87	Depressed rainfall with poor distribution is determining a negative trend in vegetation greenness especially in Kacheliba and Sigor sub-counties which are now in the severe deficit band. Current conditions will cause a severe drought spell in the next dry season unless there are off-season rains in January/February.
	Kacheliba		25.34	13.62	
	Kapenguria		43.28	33.09	
	Pokot South		52.89	43.38	
	Sigor		28.87	18.96	
EMBU	County	47.32	36.43	36.21	Mbeere North and South are currently experiencing a moderate vegetation deficit.
	Manyatta		56.66	54.99	
	Mbeere North		23.81	26.78	
	Mbeere South		31.55	29.85	
	Runyenjes		60.57	60.32	
KITUI	County	44.24	23.9	26.35	The county received some good rains but with poor temporal distribution. The marginal mixed farming livelihood zone, and in particular Mwingi North, is experiencing a significant vegetation deficit with wilting of crops reported in some areas.
	Kitui Central		37.84	38.18	
	Kitui East		25.78	29.2	
	Mwingi Central		24.58	25.05	
	Mwingi North		21.33	19.8	
	Mwingi West		26.99	27.03	
	Kitui Rural		26.96	33.18	
	Kitui South		21.47	26.49	
	Kitui West		33.18	31.76	

COUNTY		VCI-3, 27.12.10	VCI-3, 28.11.16	VCI-3, 26.12.16	
MAKUENI	<b>County</b>	<b>58.91</b>	<b>25.93</b>	<b>37.68</b>	Good rains received in late November have improved the vegetation greenness substantially. However, due to the late onset of the rainy season, crops in the marginal mixed farming zone will not perform well if additional rains are not received.
	Kaiti		49.11	46.61	
	Kibwezi East		18.69	32.29	
	Kibwezi West		19.27	35.95	
	Kilome		25.1	32.61	
	Makueni		29.79	43.58	
Mbooni			42.07	45.24	
MERU	<b>County</b>	<b>37.49</b>	<b>31.86</b>	<b>27.07</b>	The season has been characterised by a late onset and poor spatial distribution of rains across all livelihood zones. As a result, two sub-counties are now in the severe vegetation deficit band. Poor harvests are expected and water availability is below normal for the period.
	Buuri		32	31.36	
	Central Imenti		41.21	32.75	
	Igembe Central		30.32	23.47	
	Igembe North		27.54	23.41	
	Igembe South		32.61	23.42	
	North Imenti		23.48	16.26	
	South Imenti		53.72	45.03	
	Tigania East		23.52	25.34	
	Tigania West		21.33	10.35	
NYERI	<b>County</b>	<b>56.16</b>	<b>49.05</b>	<b>42.21</b>	The vegetation greenness is within normal ranges due to the good rains received in November, although a clear deficit is recorded in Town sub-county.
	Kieni		47.54	46.42	
	Mathira		45.07	36.43	
	Mukurweini		50.01	35.15	
	Town		31.53	17.94	
	Othaya		60.66	43.85	
Tetu			58.3	41.13	
KILIFI	<b>County</b>	<b>29.8</b>	<b>5.27</b>	<b>-11.82</b>	The county continues to experience the worst drought ever documented, with all sub-counties recording VCI values far below zero. The depressed rainy season has not allowed any meaningful recovery from the severe drought spell that occurred during the last dry season. The prognosis for the next dry season is very negative and will require further scale up of livelihood support and relief interventions.
	Ganze		2.8	-10.82	
	Kaloleni		-6.57	-23.91	
	Magarini		7.53	-9.13	
	Malindi		-1.17	-16.81	
	Kilifi-North		-0.08	-23.2	
	Rabai		7.13	-25.83	
Kilifi-South		25.22	-6.59		
KWALE	<b>County</b>	<b>37.44</b>	<b>7.07</b>	<b>-3.76</b>	Although some good rains were received, these have not been sufficient to enable recovery from the last severe drought spell. However, most water sources have sufficiently recharged and some harvests in areas that received better rainfall should occur.
	Kinango		3.52	-4.82	
	Lungalunga		7.15	-3.57	
	Matuga		16.02	-5.26	
	Msambweni		25.38	11.66	
LAMU	<b>County</b>	<b>35.89</b>	<b>6.37</b>	<b>-6.55</b>	Lamu County is also experiencing the worst drought situation ever recorded. The prognosis for the next dry season is very poor and will require prompt scale up of livelihood support services.
	Lamu East		15.36	4.18	
	Lamu West		1.12	-12.83	
TAITA T.	<b>County</b>	<b>30.69</b>	<b>20.92</b>	<b>17.92</b>	Some rains received in late December should marginally mitigate the drought situation.
	Mwatate		17.04	11.88	
	Taveta		34.01	22.36	
	Voi		16.17	17.69	
	Wundanyi		25.41	19.38	
NAROK	<b>County</b>	<b>51.82</b>	<b>34.63</b>	<b>37.61</b>	The VCI in December is within normal ranges although the situation in the pastoral areas will probably worsen during the next dry season.

## Annex 2 Summary of the 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 indicator are monitored, capturing different kinds of impact (Table 5). The combined analysis from all four indicator groups then determines the particular drought phase: normal, alert, alarm, emergency or recovery (Figure 1). Identifying the correct drought phase helps to guide the most appropriate response for that stage in the drought cycle.

**Table 5: 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	Nutrition Coping strategies

**Figure 1: Drought Phase Classification**

