Africa RiskView

Special Report: Kenya (End of Season)

Highlights:

- ***Rainfall:***
  - **Normal to above normal** cumulative rains in **western Kenya**, but **below normal rains** recorded in the **central and eastern** parts of the country
  - **Poor spatial and temporal distribution** of rainfall in **central and eastern Kenya**
- ***Drought:***
  - **Below normal rangeland WRSI** in most of central and eastern Kenya, while the western and north-eastern pastoral areas experience good rangelands conditions
- ***Populations Affected:***
  - ARV estimates that a total of **1.67 million** people in Kenya's ASAL are affected by drought at the end of the 2014/15 short rains season, which remains **below the long-term average**
  - The areas most affected include parts of **central and eastern Kenya**, particularly Garissa, Meru North and Marsabit counties
- ***Insurance:***
  - The triggers for a pay-out by the ARC Insurance Company Ltd were not reached in **Kenya** at the end of the 2014/15 short rains season

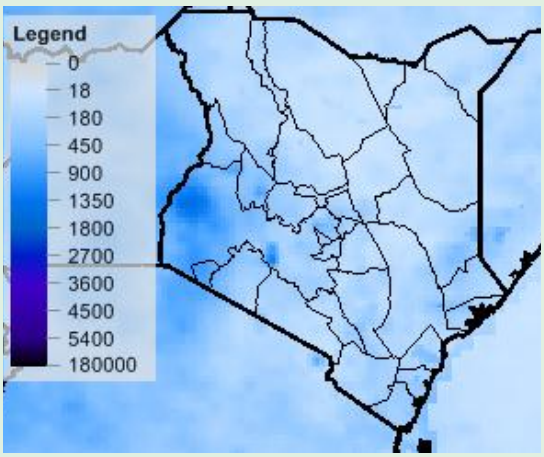
Introduction

This ***Africa RiskView* Special Report** will analyse the situation in Kenya at the end of the 2014/15 short rains season, as detected by the software *Africa RiskView*. Kenya is amongst the four countries that form the **first risk pool** of the ***African Risk Capacity* (ARC)**, together with Mauritania, Niger and Senegal. These four countries insured in total five agricultural or rangeland seasons against the cost of a drought-related intervention, within the context and mandate of ARC. Before participating in the first risk pool, Kenya customised ARC's technical engine, ***Africa RiskView* (ARV)**, which uses satellite-based rainfall information to estimate the cost of responding to a drought, to show rangeland developments in the country's bi-modal pastoralist areas.

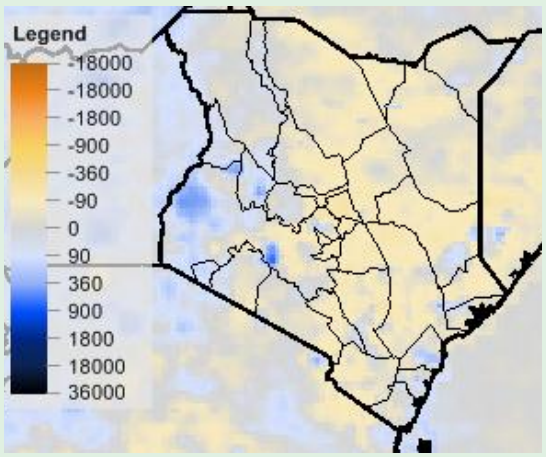
This **end-of-season report** will review the performance of the 2014/15 short rains season in Kenya's pastoralist areas, and present ARV's modelled results. It is part of a **validation exercise** of ARV, which is conducted in each country after the end of each insured season. This exercise is aimed at verifying the model's performance in order to identify potential improvements for drought monitoring and insurance coverage. The ARV Special Report covers the following topics: **rainfall**, **drought**, **affected population and response cost estimates**, and discuss these in the context of **external sources**.

Rainfall

The analysis of the **cumulative rainfall** received throughout the 2014/15 short rains season (August 2014 to January 2015) suggests that western Kenya received the bulk of the rains, while the central and eastern parts remained drier. Trans Mara, Baringo, West Pokot and Narok counties recorded the highest cumulative rains, with totals ranging from 300 to 760 mm. On the other hand, Moyale, Marsabit, Isiolo and Wajir only received between 60 and 100 mm of rain (see Map 1).



Map 1: Cumulative rainfall, Kenya, RFE2 (Aug 2014-Jan 2015)

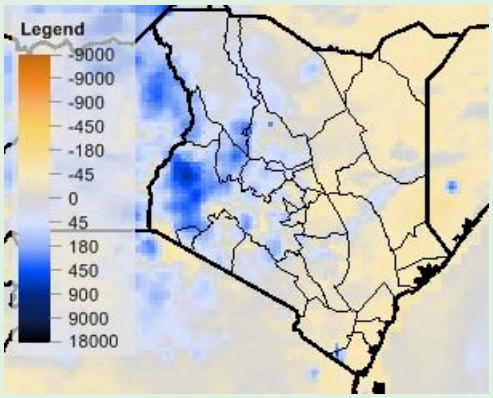


Map 2: Rainfall compared to normal, Kenya, RFE2 (Aug 2014-Jan 2015)

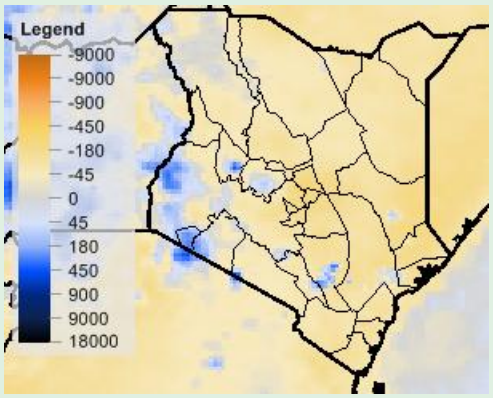
Compared to the long-term average (2001-2013), the data indicates that while western Kenya recorded rainfall surpluses, the central and eastern parts of the country experienced a below average rainy season. Some counties in western Kenya, particularly Trans Mara, Baringo and West Pokot received between 50 and 100 mm of excess rainfall during the season, which is 15-30% above the long-term average. Conversely, Marsabit, Meru North, Mwingi, Isiolo and Moyale counties received only half of their normal cumulative rains, with rainfall deficits ranging up to over 160 mm.

The **spatial and temporal distribution** of the rains over the duration of the season also suggests that western Kenya benefited from better and more consistent rains, while the central and eastern parts of the country experienced late and below average seasonal rains. In western Kenya, the season started early with excess rainfall of up to 180 mm in some areas such as Baringo county (see Map 3). These off-season rains were followed by average to above average rains until December 2014 (see Maps 4-7). The most excessive rains in western Kenya were recorded in October and/or December

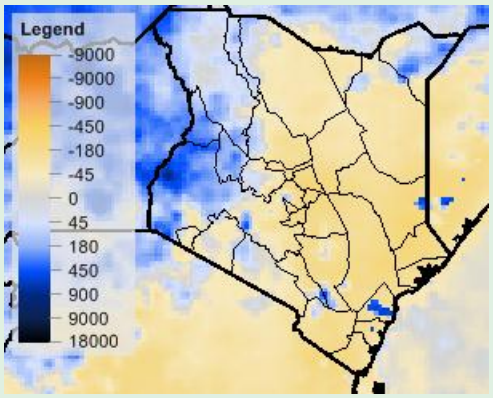
2014. However, the seasonal rains subsided earlier than normal in western Kenya, with significant rainfall deficits of up to 250 mm in Trans Mara county (see Map 8). Central and eastern Kenya experienced a delayed start of the rainy season, which was followed by below average rains throughout the duration of the rangeland season (see Maps 3-8). Some localised good rains in November and December 2014 (see Maps 6 and 7) were not sufficient to allow for normal pasture recovery in all areas. Only Mandera county in the north-east experienced good rains between October and December (see Maps 5-7), which had a positive impact on the rangeland situation.



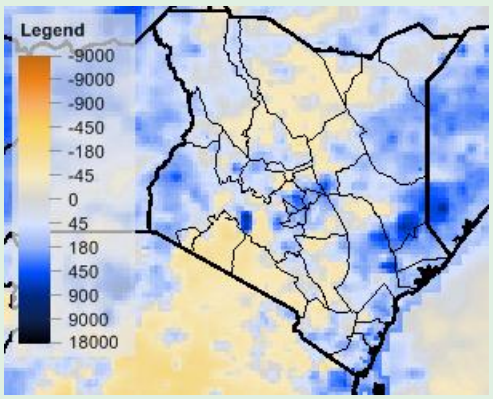
MAP 3: RAINFALL COMPARED TO NORMAL, KENYA, AUG 2014 (RFE2)



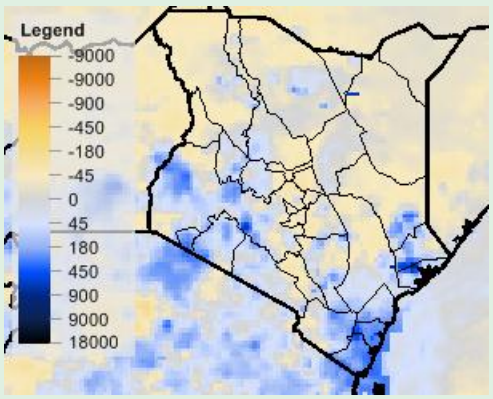
MAP 4: RAINFALL COMPARED TO NORMAL, KENYA, SEP 2014 (RFE2)



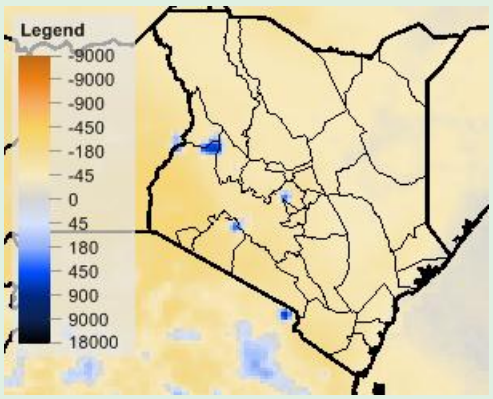
MAP 5: RAINFALL COMPARED TO NORMAL, KENYA, OCT 2014 (RFE2)



MAP 6: RAINFALL COMPARED TO NORMAL, KENYA, NOV 2014 (RFE2)



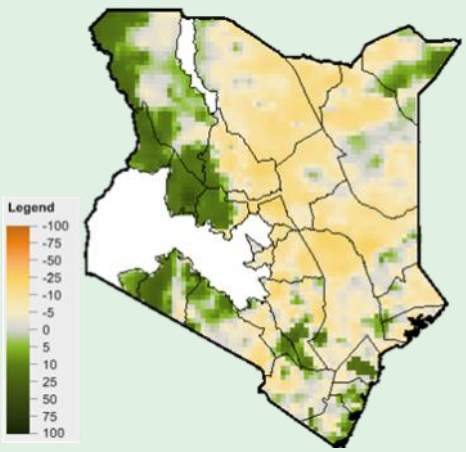
MAP 7: RAINFALL COMPARED TO NORMAL, KENYA, DEC 2014 (RFE2)



MAP 8: RAINFALL COMPARED TO NORMAL, KENYA, JAN 2015 (RFE2)

DROUGHT

ARV uses the ***Water Requirements Satisfaction Index*** (WRSI) as an **indicator for drought**. The WRSI is an index developed by the *Food and Agriculture Organisation of the United Nations* (FAO), which, based on satellite rainfall estimates, calculates whether a particular crop is getting the amount of water it needs at different stages of its development. It can also be adapted to monitor pasture and rangeland. In the context of its participation in the first ARC insurance pool, Kenya chose to focus only on its arid and semi-arid lands (ASAL). ARV was thus customised to show rangeland development in the country's bi-modal pastoral areas, through the rangeland WRSI, which uses grass as reference crop tracked throughout the rainfall season. The rangeland WRSI, which shows the progression of pasture in the ASAL, is closely linked to the rainfall performance in the country. In western Kenya, where the season started early and good rains were received between September 2014 and January 2015, ARV's final rangeland WRSI indicates that pasture conditions are well above average (see Map 9). Particularly in Baringo, Turkana, West Pokot and Narok counties, the final rangeland WRSI is 20-40% above the long-term average (2001-2013), and the usually drought-prone Mandera county experienced an average season, due to good rains between October and December 2014. However, as discussed above, the central and eastern parts of the country experienced late and erratic seasonal rains, which resulted in a below average rangeland WRSI. The most affected areas include Moyale, Marsabit, Isiolo, Meru North and Mwingi counties, which record WRSI values that are 30-55% below average, according to ARV.

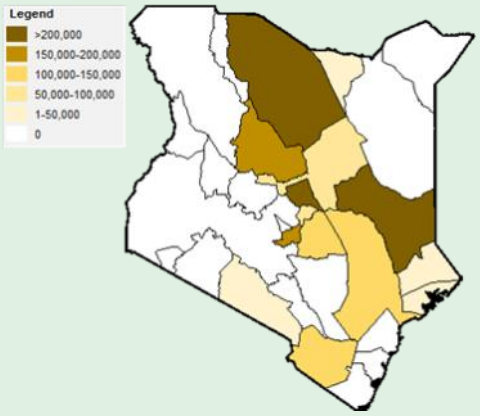


MAP 9: RANGELAND WRSI COMPARED TO NORMAL, KENYA (2014/15 SECOND RANGELAND SEASON)

POPULATION AFFECTED

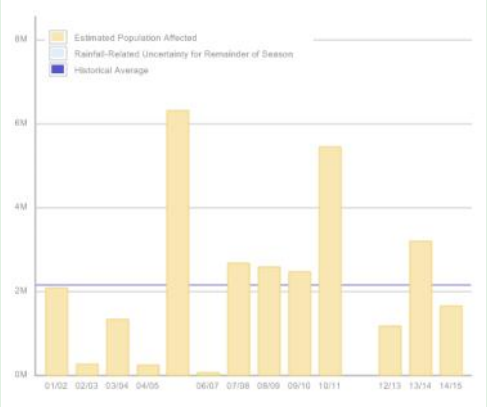
Based on the WRSI calculations discussed in the previous section of this report, ARV estimates the **number of people potentially affected by drought**. As part of the in-country customisation process, **vulnerability profiles** are developed at sub-national levels for each country, which define the potential impact of a drought on the population living in a specific area. It is important to note that not all those affected by a drought might be in need of humanitarian assistance. Moreover, humanitarian needs are often driven by a variety of factors including, but not limited to, the weather.

The outcome of the vulnerability profiling exercise in Kenya indicates that around 6.4 million people are exposed to the risk of a medium or severe drought in Kenya's ASAL. Of these, ARV estimates that after the end of the 2014/15 short rains season, **about 1.67 million people are directly affected by drought conditions**. The geographic distribution of the affected population closely follows the rainfall and WRSI patterns discussed in the previous sections of this report. The counties with the highest numbers of affected people are Garissa, where nearly 240,000 people (or 38% of the total population) are estimated to be directly affected by drought, followed by Meru North (around 220,000 people or 16% of the population), Marsabit (209,000 people or 72% of the population), Mbeere (184,000 people or 36% of the population) and Samburu, where over 150,000 people, or 68% of the county's total population, are affected (see Map 10). Overall, the five most affected counties in central and eastern Kenya contribute over 1 million drought affected people alone. However, in some usually drought-prone counties such as Turkana in the north-west and Wajir and Mandera in the north-east no one is estimated to be affected after the 2014/15 short rains as on average the WRSI performance is adequate. However pockets of both Wajir and Mandera are clearly suffering from drought (see Map 9). The total number of drought affected people at the national level remains below the long-term average of just over 2 million people per year between 2001 and 2014.



MAP 10: DROUGHT AFFECTED POPULATION, KENYA 2014/15 SECOND RANGELAND SEASON)

Historically, the short rains in 2005/06, 2010/11 and 2013/14 are the worst performing seasons on record (see Graph 1), and indeed they corresponded to major drought events at the national level. However, if only the five most affected counties (Garissa, Meru North, Marsabit, Mbeere and Samburu) are considered, it appears that the 2014/15 short rains season is amongst the worst performing seasons, comparable to 2013/14, 2010/11 and 2005/06 if the current population and vulnerability information is applied. This highlights the severity of the localised drought conditions detected by ARV. It should be noted, however, that these modelled population estimates only estimate the number of people directly affected by a drought in the country. They are not necessarily representative of the wider food security situation, which depends on various other factors such as non-rainfall related issues that affect agricultural and livestock production (diseases, floods, input availability etc.), as well as broader food security indicators such as market prices, nutrition, food access etc.



GRAPH 1: ESTIMATED DROUGHT AFFECTED POPULATION, KENYA (SECOND RANGELAND SEASON), 2001-2015

RESPONSE COST ESTIMATION

The response cost estimation, which ARV does in a fourth and final step, consists in the **conversion of the numbers of affected people into response costs**, based on a pre-defined response cost per person. The modelled response costs are the underlying basis of the insurance policies for countries that participate in the ARC insurance pool. Pay-outs will be triggered from the ARC Insurance Company Limited to countries where the estimated response cost at the end of the season exceeds a pre-defined threshold specified in the insurance contracts. After then end of the season in Kenya, the national response cost remains below the country attachment level according to ARV. Thus, Kenya will not be eligible for a pay-out by the ARC Insurance Company Ltd, which historically would have triggered after the 2005/06 and 2010/11 short rainy season droughts given the country's current selection of risk transfer parameters. However, it is important to note that the current customisation of ARV only triggers a pay-out in case of a major drought at the national scale. As discussed in the previous sections of this bulletin, some areas in central Kenya suffered from poor rangeland conditions in the

About ARC:

- The ***African Risk Capacity*** **(ARC)** is a specialised agency of the African Union designed to improve the capacity of AU Member States to manage natural disaster risk, adapt to climate change and protect food insecure populations.
- The ***Africa RiskView*** **(ARV)** software is the technical engine of ARC. It uses satellite-based rainfall information to estimate the cost of responding to a drought, which triggers a corresponding insurance pay-out.
- The ***ARC Insurance Company Limited*** is the commercial affiliate of the ARC Agency, which pools risk across the continent through issuing insurance policies to participating countries.

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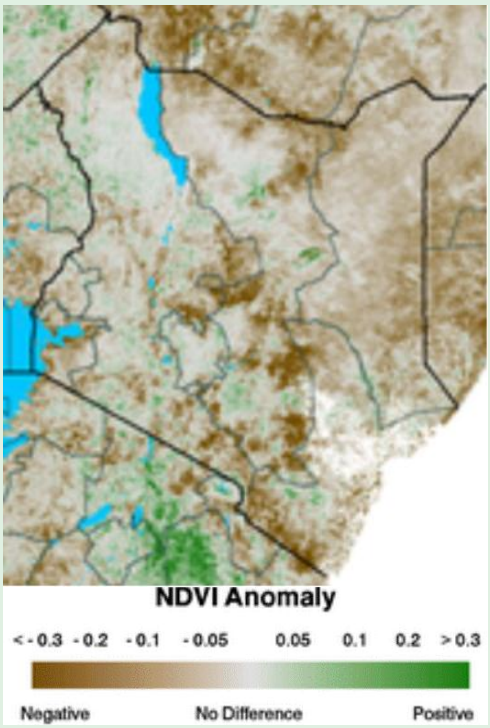
2014/15 short rains season. While these did not result in a major drought event at the national scale, they will still require localised interventions.

VALIDATION OF ARV WITH EXTERNAL SOURCES

The *Normalised Difference Vegetation Index* (NDVI) allows verification of ARV's estimates using satellite imagery that visualises the progression of the vegetation in Kenya. The NDVI at the end of the 2014/15 short rains season in Kenya indicates that while normal vegetation conditions prevail in the north-western parts of the country (Turkana county), most of central and eastern Kenya suffers from a significant negative NDVI anomaly (see Map 11). This closely matches ARV's rangeland WRSI, which indicates comparable patterns. No major discrepancy can thus be noted between the NDVI and ARV's rangeland WRSI.



MAP 11: EMODIS NDVI ANOMALY, KENYA (21-31 JANUARY 2015)

The Famine Early Warning Systems Network (FEWS NET) produces an independent rangeland WRSI model for East Africa. The end-of-season WRSI data also draws a very similar picture to ARV's rangeland WRSI, highlighting that pastoral areas in central Kenya suffered from poor pasture conditions. The most affected areas include parts of Samburu, Isiolo, Marsabit, Wajir, Mwingi and Tana River counties. Conversely, rangelands conditions in western, southern and north-eastern Kenya are normal to above normal, according to FEWS NET's WRSI model, which is in line with ARV's estimates.

The most recent Kenya Food Security Outlook, which was published jointly by FEWS NET, WFP and the Government of Kenya on 31 January 2015, is based on the assumptions discussed above. The report highlights the poor performance of the seasonal rains in central and eastern Kenya, which have not allowed for a normal pasture regeneration. Limited access to pasture and water is expected to have a negative impact on the livelihoods of people living in these areas. However in north-western pastoral areas, as well as in Mandera county in the north-east, pasture and water availability are expected to be better due to abundant rainfall during the 2014/15 short rains season. These assumptions are reflected in FAO's latest Global Information and Early Warning System (GIEWS) Kenya country brief.

In terms of affected populations, FEWS NET, WFP and the Government of Kenya estimate that over 1.5 million people will be food insecure in the January to March 2015 period, as a result of the poor rains in parts of Kenya. The most food insecure areas include parts of Wajir, Isiolo and Garissa counties in central and eastern Kenya, where poor households will be classified in Crisis (IPC Phase 3). Other pastoral areas, which experienced better rains, are likely to remain classified in Stressed (IPC Phase 2). Conditions are expected to improve with the start of the 2015 long rainy season in March 2015, which Kenya decided to insure in the context of its participation in the first ARC insurance pool.