Africa RiskView

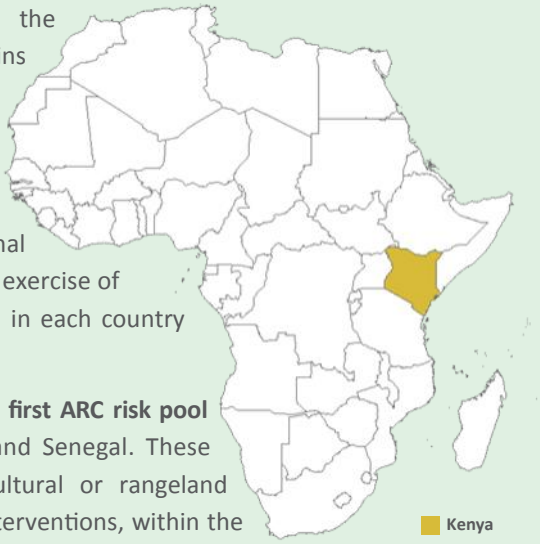
Special Report: Kenya

African Risk Capacity
Sovereign Disaster Risk Solutions
A Specialized Agency of the African Union

IN THIS REPORT:

Overview:

This ***Africa RiskView* Special Report** analyses the situation in Kenya at the end of the 2015 long rains season. The report highlights *Africa RiskView*'s estimates of rainfall, drought, population affected and discusses the implications for the risk pool of the ***African Risk Capacity* (ARC);** and then compares the results against external sources. It also provides the basis of a validation exercise of *Africa RiskView*'s estimates, which is conducted in each country at the end of an insured season.



Kenya is amongst the four countries to form the **first ARC risk pool in 2014/15**, together with Mauritania, Niger and Senegal. These four countries insured their respective agricultural or rangeland seasons against the cost of a drought-related interventions, within the context and mandate of ARC. Before participating in the ARC risk pool, Kenya customised *Africa RiskView* to show rangeland developments in the country's bi-modal arid and semi-arid lands.

Highlights:

Rainfall:

- Despite a slightly delayed start of the season, the 2015 long rains were above average in most of Kenya
- However, some parts of Isiolo, Wajir and Marsabit in northern Kenya experienced rainfall deficits of up to 50 percent below average

Drought:

- The rangeland WRSI is above average in most pastoral areas after the good 2015 long rains season in the country
- Pockets of below average rangeland WRSI were observed in Isiolo, Moyale, western Wajir and eastern Marsabit

Potentially Affected Populations:

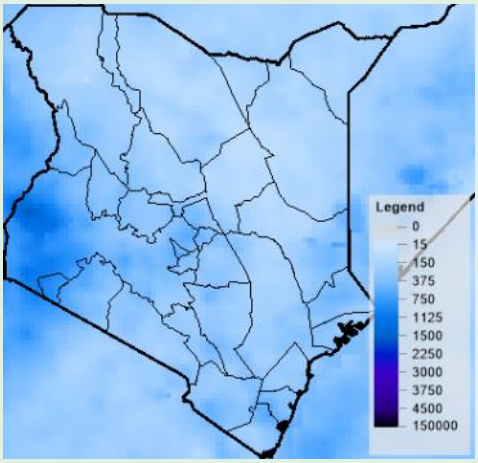
- *Africa RiskView* estimates that only a marginal number of people are affected in Kenya after the end of the 2015 long rains
- Areas of Isiolo and Wajir are in Crisis (IPC Phase 3) food security conditions according to FEWS NET, due to the combined effects of the poor rainfall performance from previous seasons and inadequate rains this season on crops and pastures

Insurance:

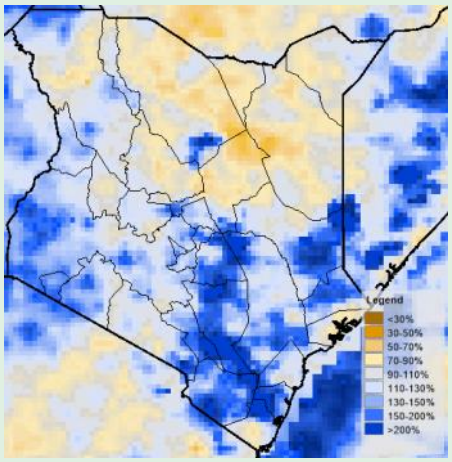
- Given the small number of people modelled to be directly affected by drought, the pre-defined triggers for a pay-out have not been reached at the end of the 2015 long rains season

Rainfall

The overall cumulative rainfall measured in Kenya during the long rains season, which lasts from February to June, varied between around 70 mm in parts of northern Kenya to over 1,400 mm in agricultural areas of western Kenya. In the arid and semi-arid lands, which include pastoral areas in northern, eastern and southern Kenya, the cumulative rainfall varied between 70 mm in Marsabit (northern Kenya) and over 500 mm in Trans Mara in the country's south-west (see Map 2).



Map 2: Cumulative rainfall, Kenya, RFE2 (Feb-Jun 2015)



Map 3: Rainfall in percent of normal, Kenya, RFE2 (Feb-Jun 2015)

Compared to the long-term average (2001-2014), the seasonal rains were normal to above normal in most parts of the country, with rainfall surpluses of over 100 mm (up to over 200 percent of normal rainfall) in the south-eastern parts of the country (see Map 3). Similarly, western and central Kenya also experienced significant rainfall surpluses. However, some areas in northern Kenya, including parts of Isiolo, Wajir and Marsabit, recorded rainfall deficits of over 50 mm, or up to over 50 percent below normal. Despite these pockets of below average rains, the season performed generally well throughout most of the country.

In terms of temporal and spatial rainfall distribution, the rains started in the third dekad of March in eastern and northern Kenya marking a late start by 2-3 dekads to the season for that region. This was followed by relatively consistent above average rains in most parts of the country until May in pastoral areas and June in the west. Figure 1 illustrates the generally good long rains pattern in Tana River: despite the slow start, rains were abundant for the rest of the season. The exception occurred in some parts of Isiolo (Figure 2), Wajir, Moyale and Marsabit in northern Kenya and Lamu in the east, which suffered from below normal rains throughout most of the season.

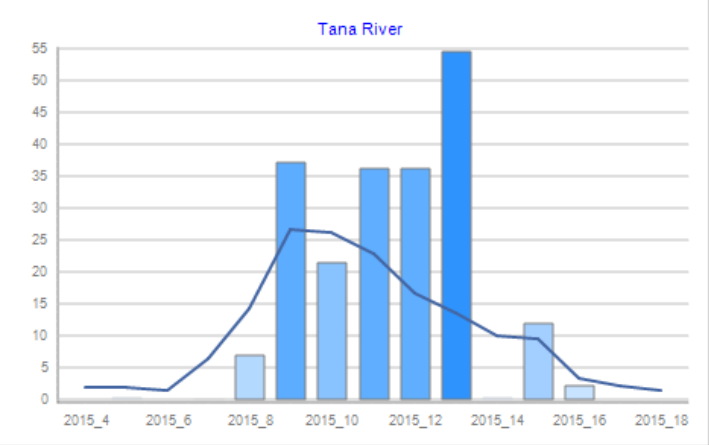


FIGURE 1: RAINFALL PATTERNS IN TANA RIVER, KENYA, FEB-JUN 2015 (RFE2)

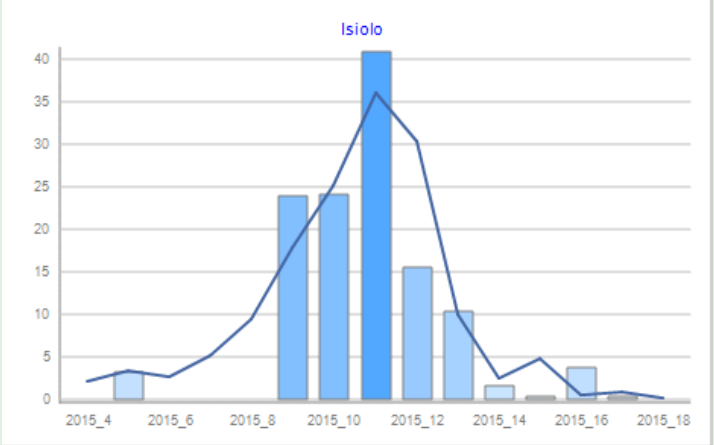
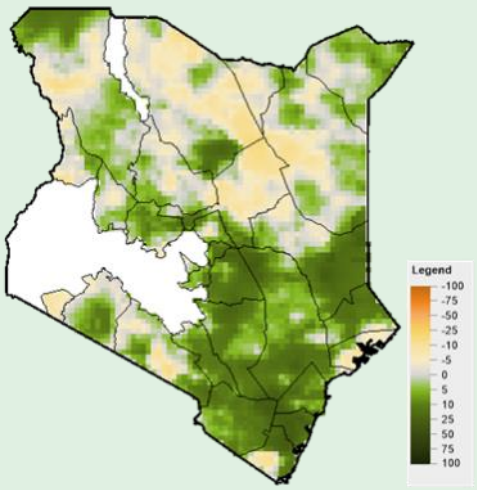


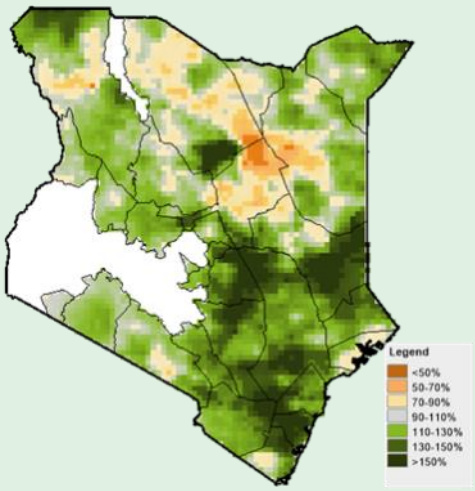
FIGURE 2: RAINFALL PATTERNS IN ISIOLO, KENYA, FEB-JUN 2015 (RFE2)

DROUGHT

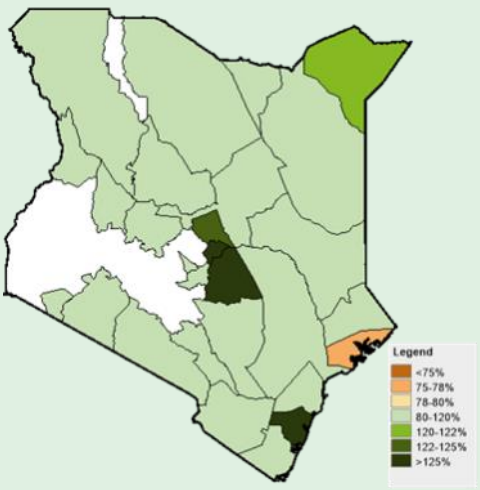
Africa RiskView uses the ***Water Requirements Satisfaction Index*** **(WRSI)** as an **indicator for drought**. The WRSI is an index developed by the *Food and Agriculture Organisation of the United Nations* (FAO), which, based on satellite rainfall estimates, calculates whether a particular crop is getting the amount of water it needs at different stages of its development. In Kenya, which chose to focus on its pastoral arid and semi-arid lands (ASAL) in the context of its participation in the first ARC insurance pool in 2014/15, the software was customised for rangeland developments. In essence, customised for rangeland, *Africa RiskView* models the progression of a default grass crop, which serves as an indicator for pasture growth.



MAP 4: RANGELAND WRSI COMPARED TO AVERAGE (2001-2014), 2015 LONG RAINS



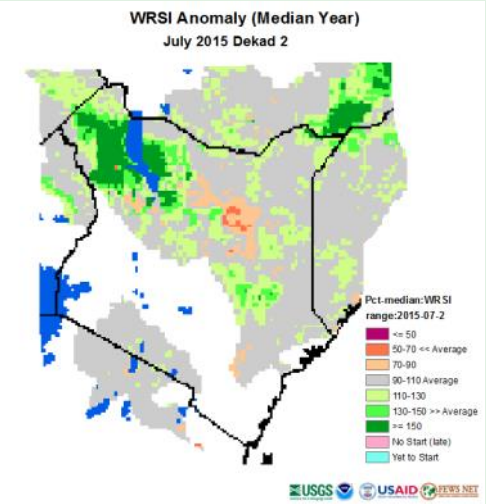
MAP 5: RANGELAND WRSI IN PERCENT OF AVERAGE (2001-2014), 2015 LONG RAINS



MAP 6: RANGELAND WRSI COMPARED TO BENCHMARK (5-YEAR MEDIAN), 2015 LONG RAINS

The 2015 long rains season lasted from February to June. As discussed above, the rains were above normal in most areas, with the exception of some parts of northern Kenya, which suffered from moderate rainfall deficits (up to 50% below the 2001-2014 average). The rangeland WRSI is very closely linked to these rainfall patterns. As Map 4 indicates, the drought index is above the 2001-2014 average in most pastoral areas of Kenya, with the exception of some parts of northern Kenya, namely Isiolo, Moyale, Lamu, western Wajir and eastern Marsabit. The most affected area is Isiolo, where the rangeland WRSI is up to over 50% below normal in its north (see Map 5). As the rangeland WRSI maps indicate, below average rangeland conditions can be observed in other parts of northern Kenya, as well as along the northern part of the coast, while the rest of the country benefitted from a well above average rangeland WRSI.

During the customisation of *Africa RiskView*, countries that want to participate in the ARC risk pool need to define a benchmark against which the performance of the season is measured. This benchmark is used as an indicator of normal conditions in the country. In the case of Kenya, the median of the previous 5 years was selected as the calculation method for the benchmark. As Map 6 indicates, the rangeland WRSI at district level was within the normal range, or above the benchmark, in all districts apart from Lamu along the northern coast. This means that only in this district, a medium drought was triggered (a medium drought being defined as a 22 to 25% negative deviation from the median WRSI of the previous 5 years). It has to be noted that for the comparison with the benchmark, the WRSI values are aggregated at the district level, which means that localised dry conditions can be compensated by an above average WRSI in other areas of the district. Moreover, it is important to keep in mind that the performance of previous seasons will affect the benchmark against which the current season is measured. For instance, in Isiolo, three out of the previous five seasons performed poorly, therefore a drought was not triggered this year, despite a final rangeland WRSI that is below the long-term average.



MAP 7: RANGELAND WRSI ANOMALY (MEDIAN YEAR), KENYA, JULY 2015 DEKAD 2 (SOURCE: FEWS NET)

The comparison with external sources confirms the relatively good performance of the 2015 long rains season estimated by *Africa RiskView*. The Kenyan National Drought Management Authority June Early Warning Bulletins report drops, in the Standardized Precipitation Index (SPI) and the Vegetation Condition Index (VCI) during the period under review for the same localities detected by *Africa RiskView* (Wajir, and Isiolo districts).

The Famine Early Warning Systems Network (FEWS NET) rangeland WRSI model depicts a similar situation as *Africa RiskView*'s (Map 7). Most areas in Kenya recorded a normal to above normal rangeland WRSI at the end of the 2015 long rains season. In north-western Kenya, the rangeland WRSI is above normal; while the season performed poorly in the same areas in north-eastern Kenya that are highlighted as having a below normal WRSI by *Africa RiskView* (Isiolo district). Similarly, the FEWS NET Normalised Difference Vegetation Index (NDVI) Anomaly also shows negative values for north-eastern Kenya (i.e. below the average of 2001-2010).

AFFECTED POPULATIONS

Based on the above rangeland WRSI results, *Africa RiskView* estimates the **number of people potentially affected by drought** in Kenya at the end of the season. As part of the in-country customisation process, **vulnerability profiles** have been developed at the sub-national level, 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, needs are often driven by a variety of factors including but not limited to the weather. This section reviews the drought affected population estimates for the rainfall season (long rains) just completed.

As mentioned in the previous section, the overall performance of the 2015 long rains season was generally positive across Kenya. The drought index analysis identified pockets of below average rangeland WRSI, mainly around Isiolo, Moyale, western Wajir and eastern Marsabit. However, looking at country averages, conditions were not much worse than in the past five years, so none of these areas were highlighted as having experienced a drought (drought is triggered when there is a significant deviation from the benchmark). In contrast, conditions in Lamu district were only slightly below the long-term average, but significantly drier than the median of the pas five years. As a result, ARV estimates that a very

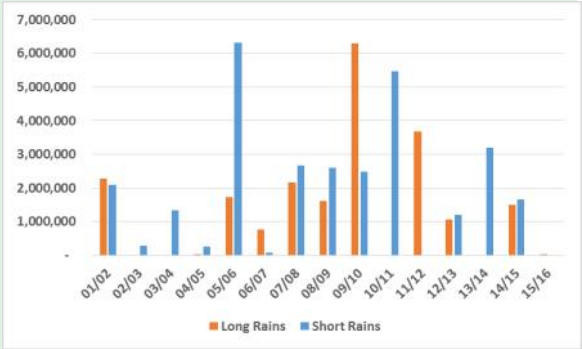


FIGURE 3 : ESTIMATED POPULATION AFFECTED BY DROUGHT (2001/02 - 2015/16)

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*** software is the technical engine of ARC. It uses satellite-based rainfall information to estimate the costs 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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small number of people have been affected by drought. Overall, compared to previous years, it appears that the 2015 long rains season performed well in a country that is frequently affected by droughts, as depicted by Figure 3.

Nonetheless, it is important to note that parts of northern Isiolo and western Wajir are areas of concern with most households in Crisis (IPC Phase 3) food security conditions (FEWS NET July Food Security Outlook Report). This is due to lingering effects of the poor rainfall performance from previous seasons as well as inadequate rains this season, and their combined impacts on crops and pastures.

Households in the rest of the pastoral areas remain in Stressed (IPC Phase 2) food security conditions. Particularly in 2009 and 2011, Kenya's pastoral areas experienced major droughts, which affected millions of vulnerable people. In 2014, the acutely food insecure population increased from 1.3 million in February to 1.5 million in August due to poor long rains. The following short rains were also well below average. These past episodes have negatively affected household resilience to shocks. It is important to note that *Africa RiskView's* estimates only looks at the impact of the 2015 long rains season itself, and do not take into account potential carry-over effects from previous seasons.

IMPLICATIONS FOR THE ARC RISK POOL

Together with Mauritania, Niger and Senegal, Kenya is amongst the four countries that formed the **first ARC risk pool in 2014/15**. These four countries insured their respective agricultural or rangeland seasons against the cost of a drought-related intervention. As discussed above, the 2015 long rains season in the country performed well, with a small number of people affected by drought, according to *Africa RiskView*. The modelled drought response cost, which is based on the customisation of the drought and vulnerability parameters in *Africa RiskView*, is thus small compared to previous drought years. Despite localised dry conditions, such as the ones observed in parts of northern Kenya, or the modelled drought in Lamu district, the overall drought response cost thus remains below the trigger level defined by the country during the customisation of *Africa RiskView*. As a consequence, Kenya 2015 long rains season did not trigger a payout.

Kenya has experienced several major drought events in the recent past, due to the poor performance of the long or the short rains seasons. The most significant drought event in the last five years was the drought in 2011, which was triggered by the poor performance of the 2010/11 short rains, and the following 2011 long rains, which led to a major food security crisis in Kenya and the region. Before that, the failure of the 2009 long rains season also resulted in a high number of affected people, according to *Africa RiskView*. Had the most recent rainy season performed as poorly as it did in 2009, the country would have received a pay-out from the ARC Insurance Company Limited.

At the end of each insured season, the customisation of *Africa RiskView* is reviewed using information collected on the ground, and the most recent information on food security and vulnerability of rural households. This end-of-season Special Report provides the basis for this validation exercise, which will be conducted together with the in-country Technical Working Group (TWG) over the next weeks.