

Africa RiskView

SENEGAL END-OF-SEASON REPORT | DECEMBER 2015

HIGHLIGHTS:

RAINFALL:

- The start of the 2015 rainfall season in Senegal was delayed; subsequent above-normal rains from late June onwards have generally compensated for the late start with the exception of areas in northern Senegal

DROUGHT:

- *Africa RiskView* shows average to above-average final WRSI values in most parts of the country except for parts in the northern areas where optimal sowing conditions were not reached
- The *Africa RiskView* results are confirmed by the Senegal Center for Ecological Monitoring VCI images as well by the eMODIS NDVI published by FEWS NET

AFFECTED POPULATIONS:

- *Africa RiskView* estimated that people were affected by drought this season due to the late onset of the rains in Louga (13,000), Saint Louis (33,000) and Thies (107,000)
- These results will be discussed with the in-country Technical Working Group (TWG) in the coming weeks to validate *Africa RiskView's* estimates on the ground

INSURANCE:

- According to the Calculation Report issued by ARC Ltd as Calculation Agent for the insurance policy, the modelled drought response cost at the end of the risk period was below the trigger threshold for a policy pay-out

OVERVIEW

This *Africa RiskView Report* analyses the situation in Senegal at the end of the 2015 agricultural season. The report highlights *Africa RiskView's* estimates of rainfall, drought and population affected, and discusses the implications for the risk pool of the *African Risk Capacity (ARC)*. Then, it 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.

Senegal is among the eight countries that form the **second ARC risk pool in 2015/16**, together with Kenya, Mali, Mauritania, Niger, The Gambia, Malawi and Zimbabwe¹. These eight countries insured their respective agricultural or rangeland seasons against the cost of a drought-related response within the context and mandate of ARC. Before taking out insurance with ARC Ltd., Senegal customised *Africa RiskView* to reflect the main agricultural season in the country.

RAINFALL

In Senegal, the rainfall season started this year between June and July; this is late when compared to the historical average as late May generally marks the onset of the rains in the south, and June in the north. The cumulative rainfall for the country this season was, however, average to above average given the good rains that were received during the remainder of the season, ranging from 300 mm in Saint Louis in the north to over 1,300 mm in Ziguinchor in the wetter south. The overall performance of the rains was

average to above-average in southern areas; whereas it was slightly below normal in parts of the northern areas of the country (see Map 1).

Although the onset of the rains was well below average during May and June throughout the country, the performance during the rest of the season made up for the late start in southern areas (see Graph 1 illustration for Tambacounda). However, further north in Dakar, Thies, Louga, and Saint Louis, most areas did not reach sowing conditions (rainfall greater than 20 mm in a dekad) by the end of July; beyond this period is not considered optimal for planting (see Graph 2 illustration for Louga).

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. To maximise the accuracy of *Africa RiskView*, countries intending to take out insurance customise the software's parameters to reflect the realities on the ground. In Senegal, the software was customised using groundnut as the reference crop.

Despite a delayed start of the season in many areas, the cumulative seasonal rainfall in Senegal was generally average to above-average, as discussed in the previous section. However, the distribution of the rains were inadequate in the northern areas. This is

¹ Zimbabwe's participation is yet to be confirmed.

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reflected in the WRSI maps which show the final WRSI performance and the final WRSI compared to the 2001-2014 average (see Maps 2 and 3). The end-of-season WRSI was above the 2001-2014 average in most parts of the country however, as sowing conditions were not reached in many parts of Dakar, Thies, Louga and eastern Saint Louis, the final WRSI values in these areas were generally well below average (see Map 3) as *Africa RiskView* assumes sowing did not take place in these areas.

The Center for Ecological Monitoring (Centre de suivi écologique (CSE)) reports a favourable *Vegetation Condition Index* (VCI) throughout the agricultural zones of the country at the end of October except for parts of Louga, Thies, Saint Louis and Matam (Map 4), in line with ARV findings.

The [FEWS NET's croplands WRSI](#) map at the end of November shows average to above average conditions throughout the country (comparison with median year); whereas the [eMODIS Normalised Difference Vegetation Index \(NDVI\)](#) map for the same period confirms ARV estimates as it shows below-average conditions in the same areas in the north. It is important to note however that the NDVI anomaly does not take into account the performance of specific crops.

AFFECTED POPULATIONS

Africa RiskView uses the WRSI calculations discussed in the previous section of this report to estimate the **number of people potentially affected by drought** in Senegal, based on pre-defined vulnerability profiles at the sub-national level. The vulnerability profiles define the potential impact of a drought on the population living in a given area.

Drought was detected (pre-defined deviation from the 5 year median WRSI) in Louga, Saint Louis and Thies where ARV estimates that nearly 13,000, 33,000 and 107,000 people respectively could be affected and in need of assistance. Despite this, compared to previous years, the 2015 season performed well in a country that is frequently affected by droughts, as depicted by Graph 3. Localised floods were also reported in Dakar, Fatick, Kaolack, Saint Louis and Matam between July and September. The impact of floods on vulnerable households is not currently captured by *Africa RiskView* nor is it covered by Senegal's insurance policy with ARC Ltd.

FEWS NET reports that adequate availabilities from harvests are expected to keep households generally food secure during the coming months. However, the north-eastern areas will be of concern by June 2016 according to [FEWS NET's November Food Security Outlook Update Report](#). This is due to the early depletion of food stocks from the below-average production in these areas. Consequently, poor households will experience a deteriorating food security situation to Stressed (IPC Phase 2) by June 2016.

IMPLICATIONS FOR THE ARC RISK POOL

For the purposes of the insurance coverage, *Africa RiskView* converts the numbers of affected people into **response costs**. For countries participating in the insurance pool these national response costs are the **underlying basis of the insurance policies**. Pay-outs are 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. The 2015/16 agricultural season in Senegal was characterised by adequate rains in most parts of the country despite the late onset. According to the Calculation Report issued by ARC Ltd as Calculation Agent for the insurance policy, the modelled drought response cost at the end of the risk period was below the trigger threshold for a policy pay-out.

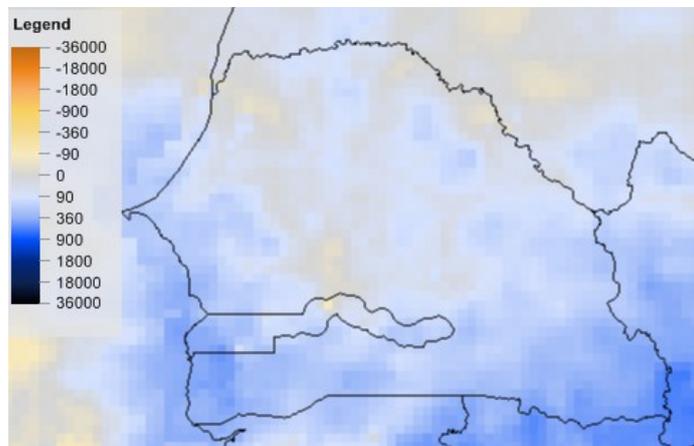
Senegal has experienced several major droughts recently (see Graph 3). The most recent and significant drought event was during the 2014/15 season which triggered a pay-out of \$16.5 million from ARC Ltd.

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 report provides the basis for this validation exercise, which will be conducted together with the in-country Technical Working Group (TWG) over the coming weeks as part of Senegal's preparation for the next insurance pool.

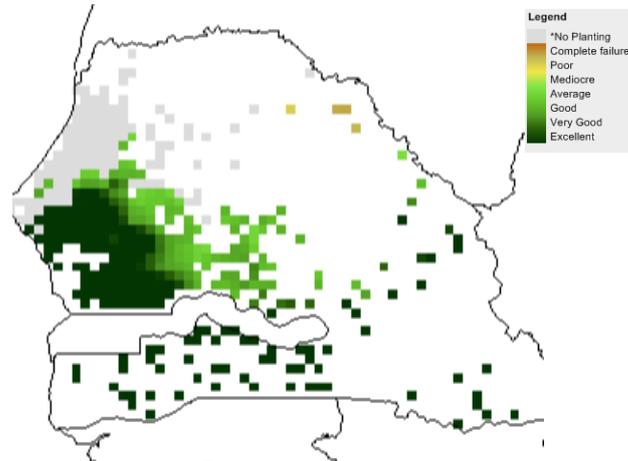
Disclaimer: The data and information contained in this report have been developed for the purposes of, and using the methodology of, *Africa RiskView* and the African Risk Capacity Group. The data in this report is provided to the public for information purposes only, and neither the ARC Agency, its affiliates nor each of their respective officers, directors, employees and agents make any representation or warranty regarding the fitness of the data and information for any particular purpose. In no event shall the ARC Agency, its affiliates nor each of their respective officers, directors, employees and agents be held liable with respect to any subject matter presented here. Pay-outs under insurance policies issued by ARC Insurance Company Limited are calculated using a stand-alone version of *Africa RiskView*, the results of which can differ from those presented here.

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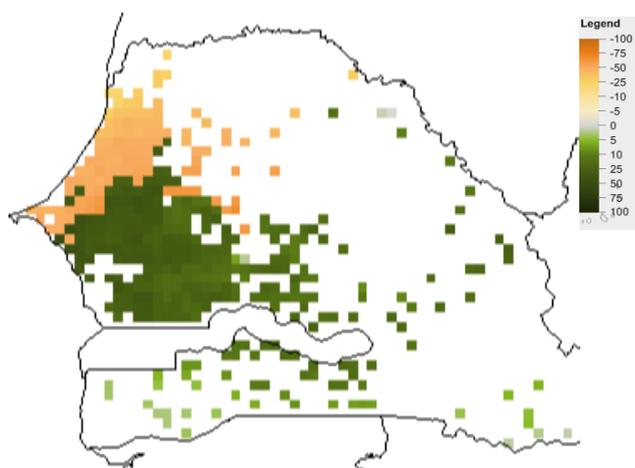
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MAP 1: RAINFALL COMPARED TO AVERAGE (2001-2014), SENEGAL, 11 MAY - 10 NOVEMBER 2015 (RFE2)

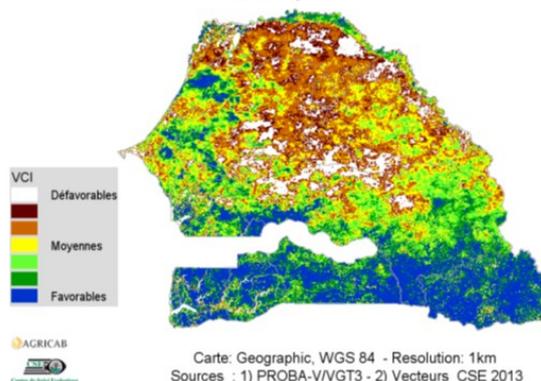


MAP 2: ARV FINAL WRSI 2015/16, SENEGAL

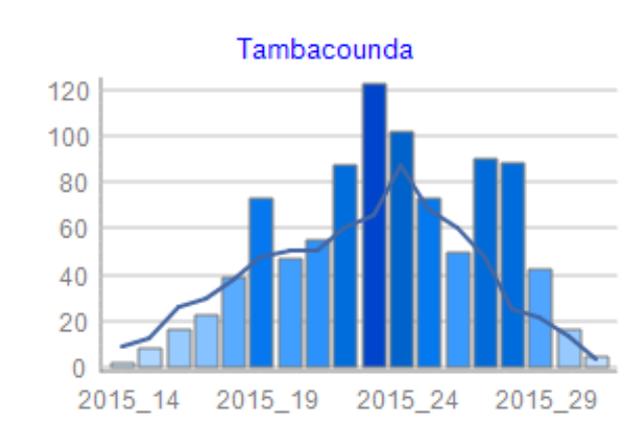


MAP 3: ARV WRSI COMPARED TO AVERAGE (2001-2014), SENEGAL

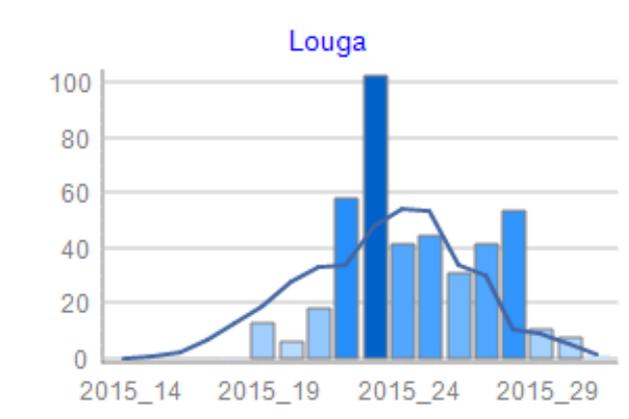
SENEGAL - Conditions de Croissance de la Végétation (VCI)
Décade 3, 10/2014



MAP 4: VEGETATION CONDITION INDEX (VCI), SENEGAL, OCTOBER 2015 (SOURCE: CENTRE DE SUIVI ECOLOGIQUE)



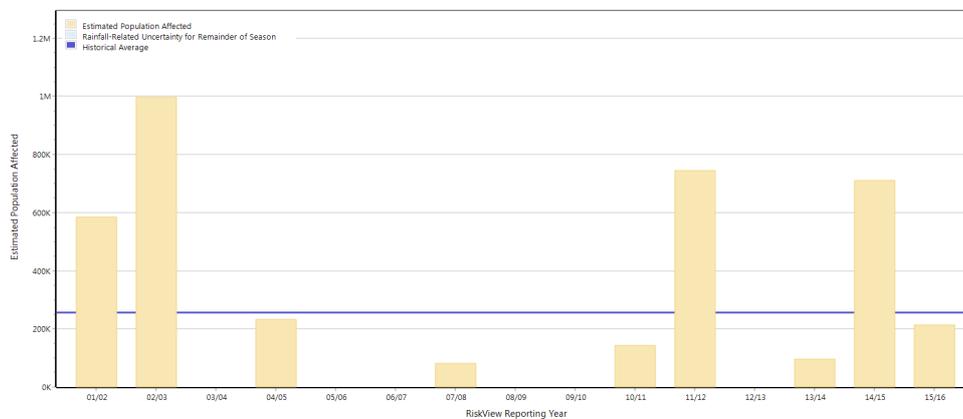
GRAPH 1: RAINFALL (MM) COMPARED TO AVERAGE, IN TAMBACOUNDA, SENEGAL, 11 MAY - 10 NOVEMBER 2015 (RFE2)



GRAPH 2: RAINFALL (MM) COMPARED TO AVERAGE, IN LOUGA, SENEGAL, 11 MAY - 10 NOVEMBER 2015 (RFE2)

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