Africa RiskView

END-OF-SEASON REPORT | The Gambia (2020)

This ***Africa RiskView End-of-season* Report** is a publication by the **African Risk Capacity (ARC)**. The report discusses *Africa RiskView's* estimates of rainfall, drought and population to be affected, comparing them to information from the ground and from external sources. It also provides the basis of a validation exercise of *Africa RiskView*, which is conducted in each country at the end of an insured season. This exercise aims at reviewing the performance of the model and ensuring that the country's drought risk is accurately reproduced by *Africa RiskView* for drought monitoring and insurance coverage. The end-of-season reports is continuously refined with a view of providing early warning to ARC member countries.

Highlights:

Rainfall:

- The seasonal cumulative rainfall amount received between 11 June and 20 November 2020 was generally above normal, with the national average standing at 177 % of the normal - last 37 years average.
- Considerably higher than normal rainfall was registered in North Bank, Lower River, West Coast, Central River and in parts of Upper River Regions.
- The temporal rainfall distribution was mainly favorable, with the rainfall received in July and September significantly exceeding the normal

Drought:

- According to the criteria defined in *Africa RiskView* agricultural drought model, sowing was successful throughout the country and the first sowing opportunity in most parts of the country was realised in dekad 17. Pockets in North Bank and Lower River Regions had their first sowing opportunity in dekad 19.
- The end-of-season WRSI showed that 90 to 100 percent of the water requirement for the selected reference crop (groundnut) had been satisfied.
- The end-of-season WRSI throughout the country was well above the reference benchmark (average WRSI of the last 37 years), indicating favorable production prospects.

Affected Populations:

- For the 2020 agricultural season, no people are estimated to be affected by drought conditions in The Gambia as modelled by the Africa RiskView.

Rainfall

The growing season for The Gambia's reference crop (groundnut) runs from 11 June to 20 November. According to ARC2[1] satellite rainfall estimates, the 2020 rainfall during the growing period was characterised by an above-normal performance, with a national cumulative average of 177% of the normal – the average of the last 37 years (1983-2019). At the sub-county level, significantly higher than normal rainfall, exceeding 165% of the average of the last 37 years, was observed in North Bank, Lower River, West Coast, Central River and in parts of Upper River Regions. Similarly, eastern parts of the country, covering the eastern most of the Upper River Region, had a cumulative rainfall of 148% to 157% of the normal, see Figure 1. In line with this finding, the WFP regional report[2] confirmed that most of The Gambia had an above-normal cumulative rain of between 140% and 180% of the normal for the period from

[1] The satellite rainfall dataset chosen by the TWG for the 2019 customisation in The Gambia

[2] https://reliefweb.int/sites/reliefweb.int/files/resources/WFP-0000120139.pdf

July to the first dekad of October.

Looking at the temporal distribution, most parts of The Gambia had close to normal to above-normal rainfall in most of the dekads throughout the growing season. Slightly lower than normal rain was observed in dekads at the start and toward the end of the growing season. In this respect, districts in the North Bank and Lower River Regions, namely Lower Nuimi, North Bank West, Fonis, Baddibu, Jarra, Jarra West and Kiang, experienced lower than normal rainfall in either the third dekad of June or both the third dekad of June and first dekad of July. Similarly, districts in the Central and Upper River regions had lower than normal rain in the third dekad of June, the first dekad of July, the first and second dekad of August. The rainfall in the third dekad of October through the first dekad of November was slightly lower than normal in most parts of The Gambia, see Figure 2– Figure 17.

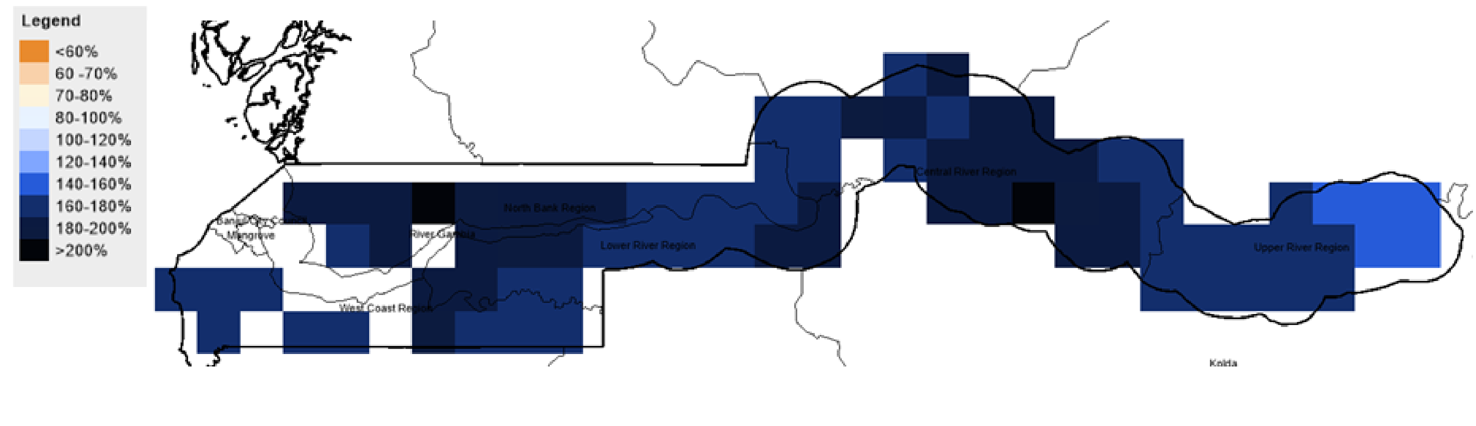

Figure 1: Cumulative Rains as % of normal (11 June 2020 – 20 November 2020), ARC2

Sowing in the *Africa RiskView* agricultural drought model triggers with the fulfilment of a pre-defined dekadal rainfall criteria. This criteria for The Gambia requires a minimum of 20mm rain in one dekad followed by 5mm of rain in each of the two subsequent dekads within the sowing window. If this condition is not met, it is assumed that planting was unsuccessful. Additionally, the "*First*" sowing opportunity aggregation method was assumed to model farmers' response to sowing chances. According to this assumption, farmers are expected to take advantage of the first sowing opportunity within the sowing window, when realized.

As per the sowing definition described above, the first sowing opportunity in most parts of The Gambia was realised in dekad 17. Pockets in North Bank and Lower River regions had their first sowing opportunity in dekad 19, see Figure 18. In most of The Gambia, covering North Bank, West Coast and Lower River Regions, sowing took place two dekads earlier than the normal. The rest of the country had sowing opportunity one dekad earlier than the normal. Slightly delayed sowing (by one dekad) was ob-

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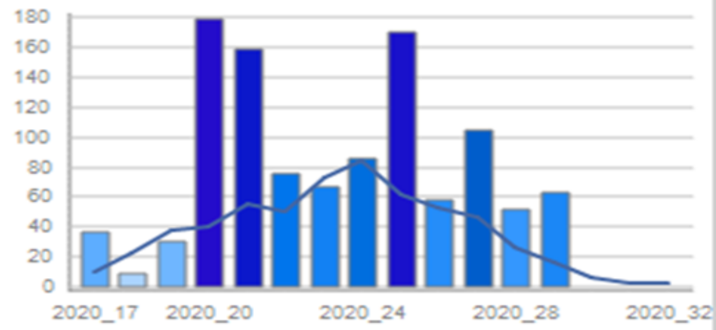

Figure 2: Dekadal distrbution of rainfall compared to long term average in Lower Nuimi (Dekad 17-32, ARC2)

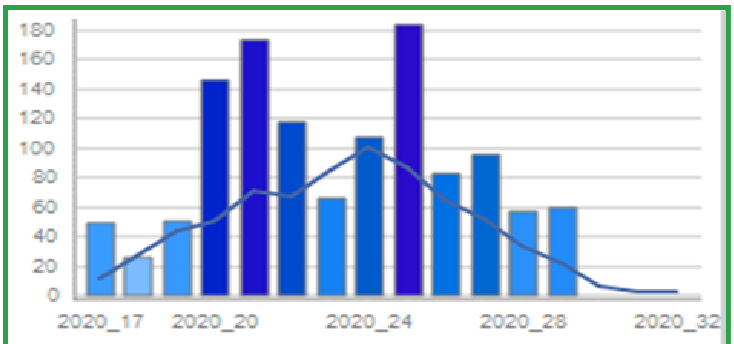

Figure 3: Dekadal distrbution of rainfall compared to long term average in Greater Banjul area (Dekad 17-32, ARC2)

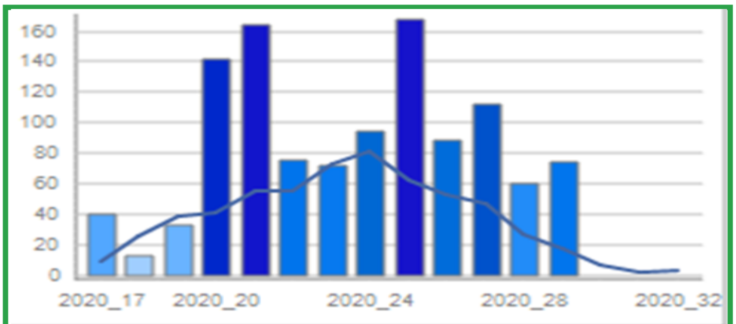

Figure 4: Dekadal distrbution of rainfall compared to long term average in North Bank West (Dekad 17-32, ARC2)

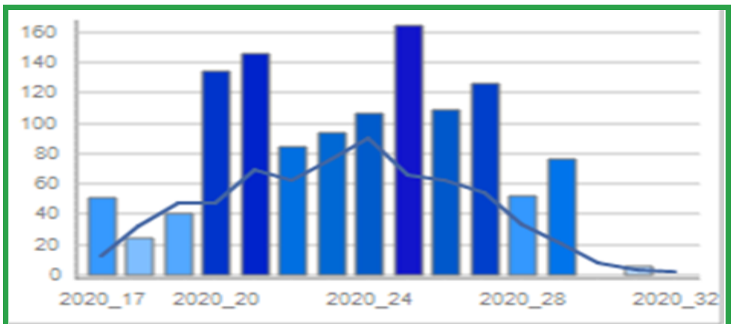

Figure 5: Dekadal distrbution of rainfall compared to long term average in Fonis (Dekad 17-32, ARC2)

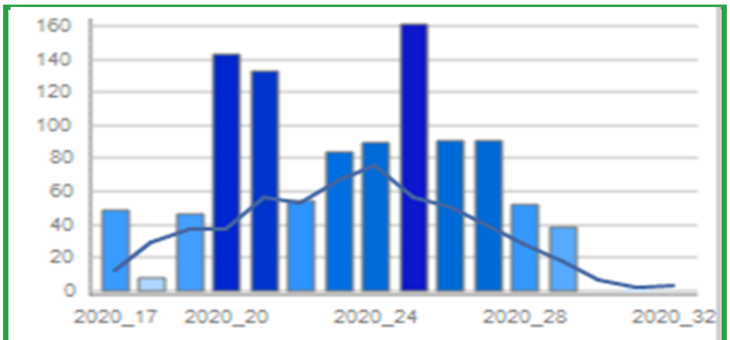

Figure 2: Dekadal distrbution of rainfall compared to long term average in Baddibu (Dekad 17-32, ARC2)

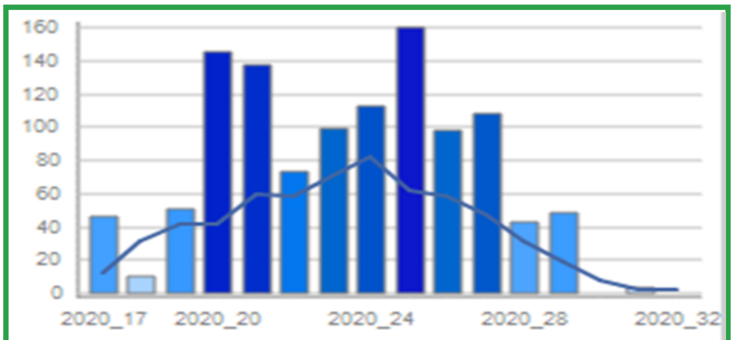

Figure 3: Dekadal distrbution of rainfall compared to long term average in Kiang (Dekad 17-32, ARC2)

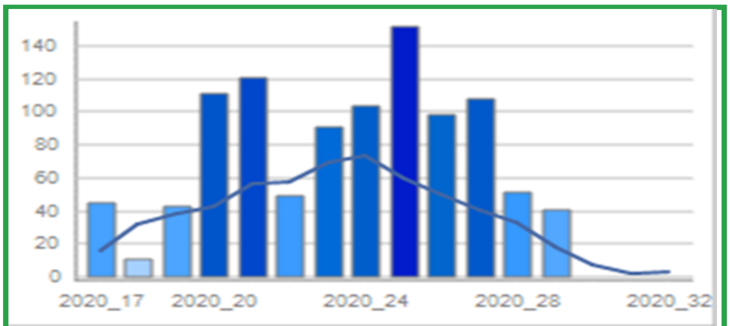

Figure 4: Dekadal distrbution of rainfall compared to long term average in Jarra West (Dekad 17-32, ARC2)

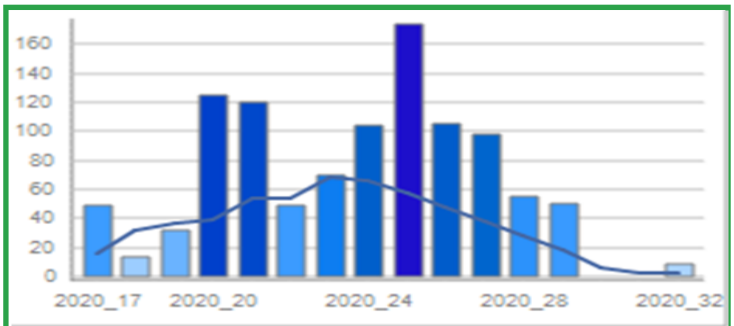

Figure 5: Dekadal distrbution of rainfall compared to long term average in Jarra (Dekad 17-32, ARC2)

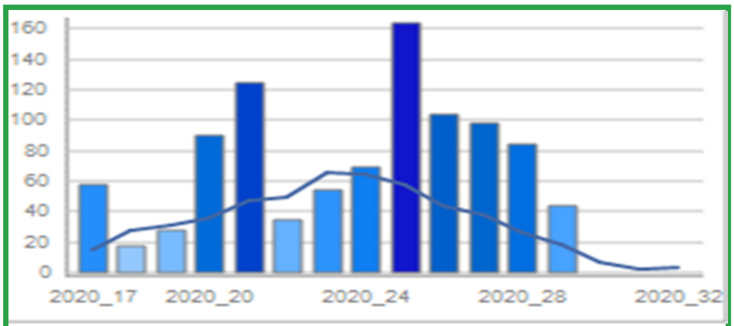

Figure 6: Dekadal distrbution of rainfall compared to long term average in Niamina (Dekad 17-32, ARC2)

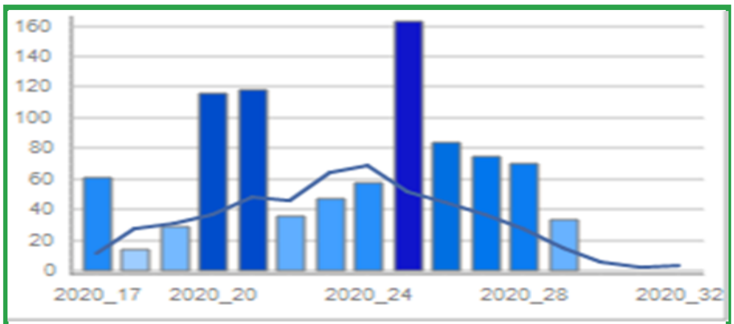

Figure 7: Dekadal distrbution of rainfall compared to long term average in Lower Saloum (Dekad 17-32, ARC2)

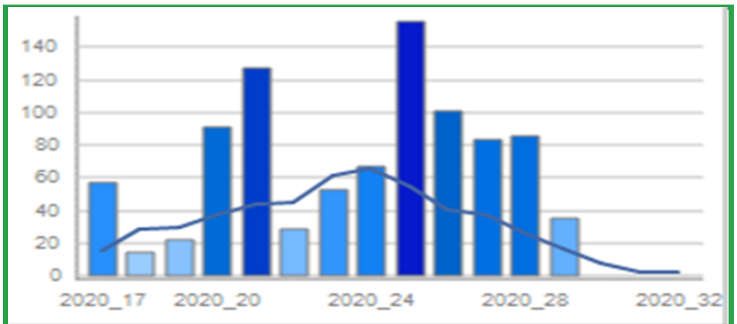

Figure 8: Dekadal distrbution of rainfall compared to long term average in Central River North (Dekad 17-32, ARC2)

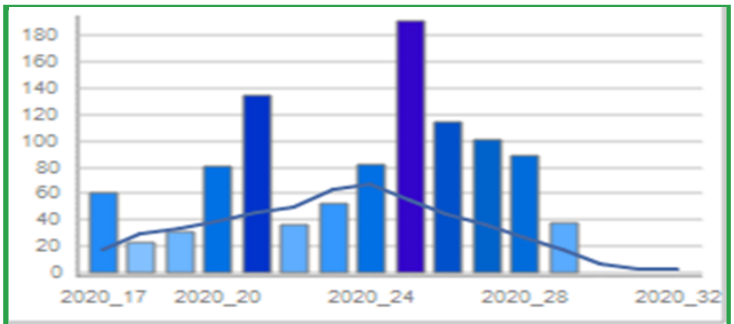

Figure 9: Dekadal distrbution of rainfall compared to long term average in Janjanbureh (Dekad 17-32, ARC2)

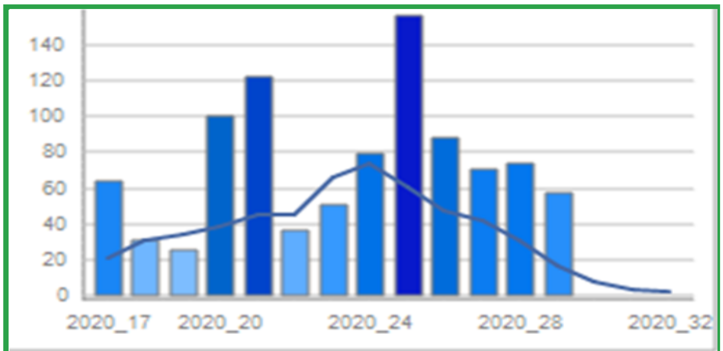

Figure 16: Dekadal distrbution of rainfall compared to long term average in Falladu East (Dekad 17-32, ARC2)

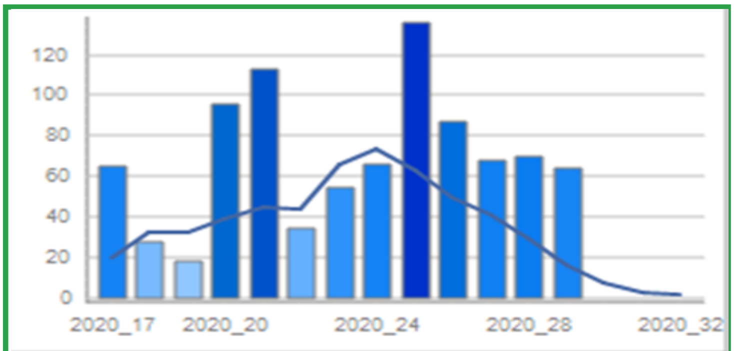

Figure 17: Dekadal distrbution of rainfall compared to long term average in Upper River North (Dekad 17-32) ARC

served over isolated areas in the Lower River Region, see Figure 19.

Drought

Africa RiskView uses the Water Requirements Satisfaction Index (WRSI) as a proxy indicator for drought. The WRSI is an index originally developed by the Food and Agriculture Organization 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. Groundnut was used as a reference crop (a proxy for all crops) for The Gambia and the WRSI within *Africa RiskView* is customised in response to the water need of this crop at different stages of growth.

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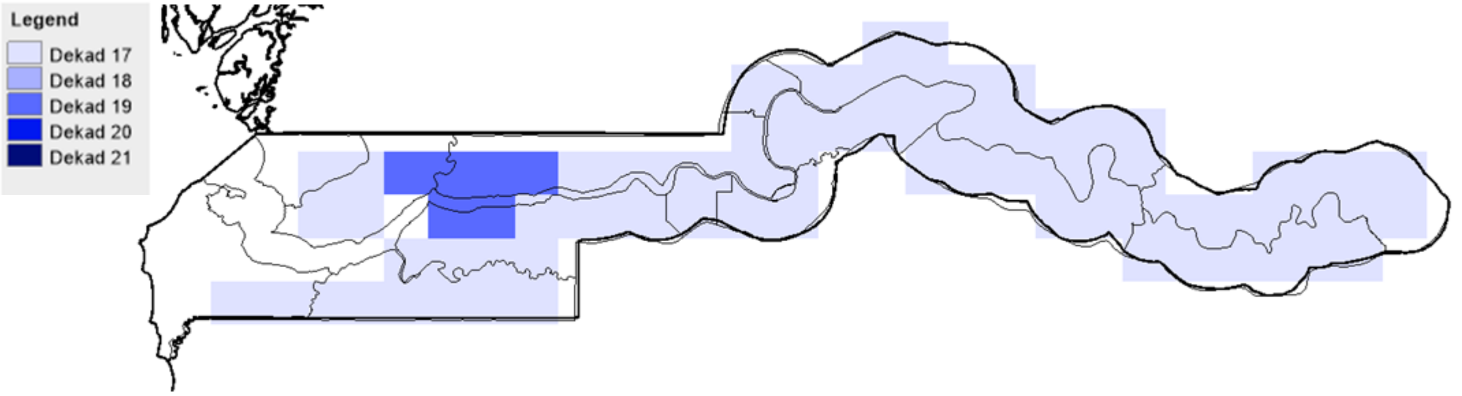

Figure 18: First sowing opportunity (2020, ARC2)

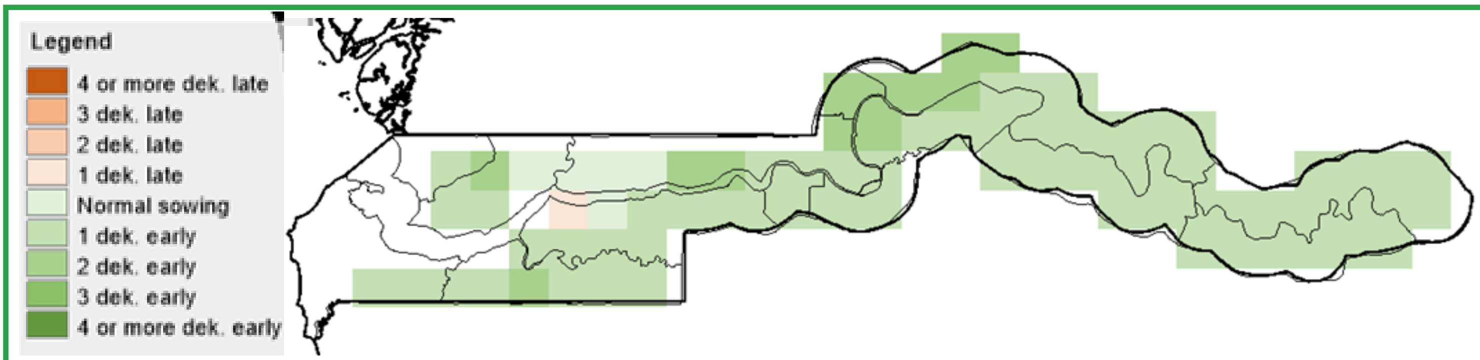

Figure 19: Planting dekads in 2020 compared to the normal , (ARC2)

The end-of-season WRSI value for 2020 season indicates very good to excellent conditions across The Gambia; meaning 90% to 100% of the water required for groundnut has been met, see Figure 20. Comparison of the *Africa RiskView* modelled WRSI with the benchmark selected for the 2020 customisation (average WRSI value of the past 37 years, covering the years from 1983 to 2019) shows that the modelled WRSI value for the entire country was above the benchmark. The WRSI condition in parts of Central River Region corresponding with Central River North and parts of Janjanbureh was significantly higher than the benchmark - see Figure 21.

Modelled Drought Impacts

In order to model drought conditions on the ground, the WRSI at the end of a season is compared to the benchmark, which in the case of The Gambia was determined as the average WRSI value of the past 37 years, covering the year from 1983 to 2019. The drought condition (the extent of the deviation of the WRSI from the benchmark) and the vulnerability of the population in the affected area are used to determine the number of people affected. For the 2020 agricultural season, the end-of-season WRSI was well above the benchmark selected. Hence, the Africa RiskView estimates zero number of people affected by drought, see Figure 22.

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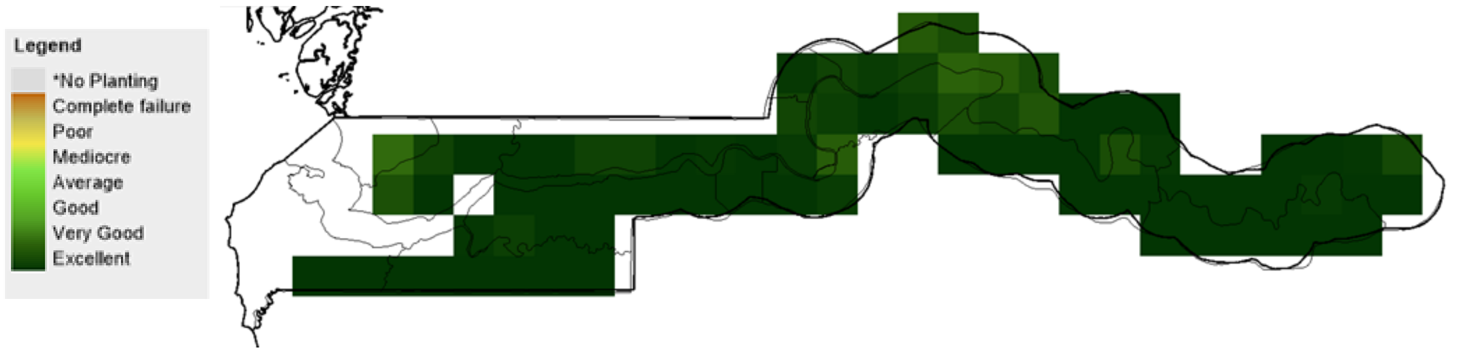

Figure 20: End-of-season WRSI (2020, ARC2)

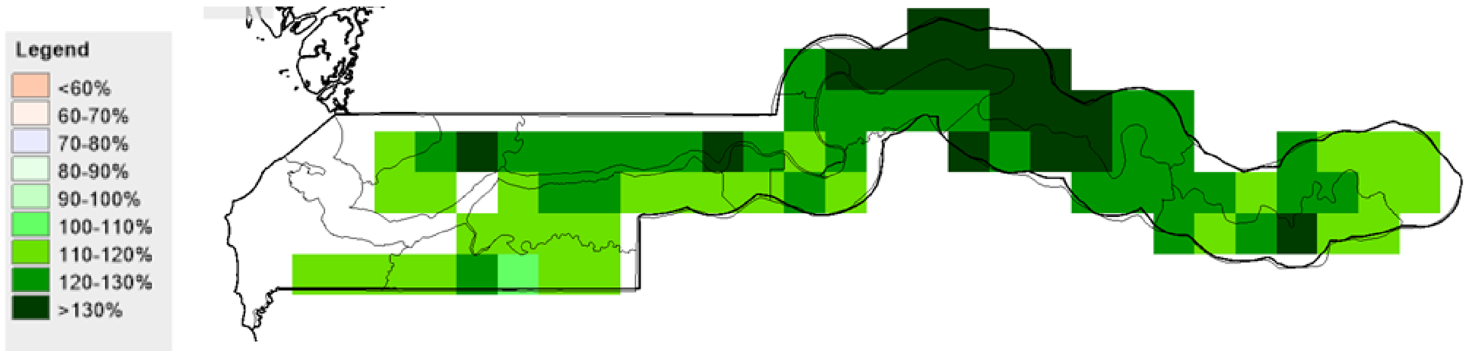

Figure 21: End-of-season WRSI compared to the reference benchmark (2020, ARC2)

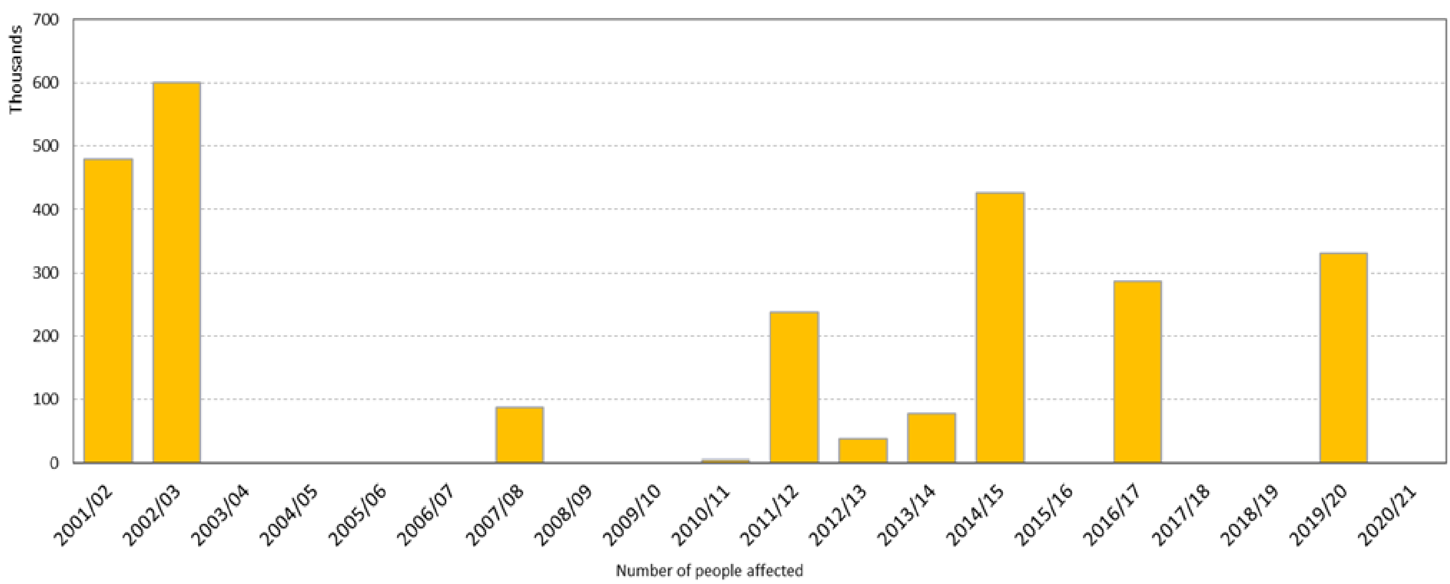

Figure 22: Number of people to be affected (2001/02 to 2020/21)

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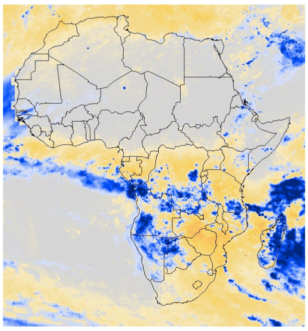
About ARC:

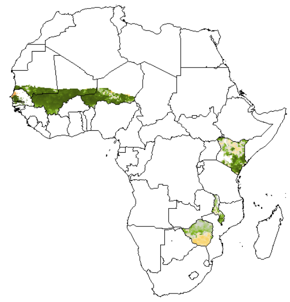
The **African Risk Capacity (ARC)** is a specialised agency of the African Union designed to improve the capacity of AU Member States to manage natural disaster risk, adapt to climate change and protect food insecure populations.

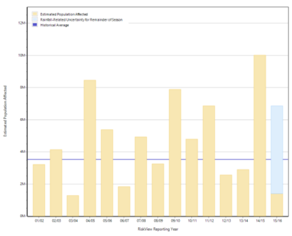
The ***Africa RiskView*** software is the technical engine of ARC. It uses satellite-based rainfall information to estimate the costs of responding to a drought, which triggers a corresponding insurance payout.

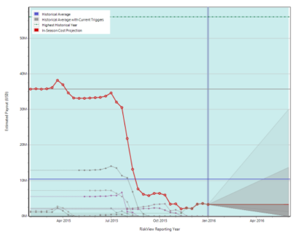
The **ARC Insurance Company Limited** is the financial affiliate of the ARC Agency, which pools risk across the continent through issuing insurance policies to participating countries.

Note on *Africa RiskView's* Methodology:









Rainfall: *Africa RiskView* uses various satellite rainfall datasets to track the progression of rainy seasons in Africa. Countries intending to participate in the ARC Risk Pool are required to customise the rainfall component by selecting the dataset which corresponds the best to the actual rainfall measured on the ground.

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.

Affected Populations: Based on the WRSI calculations, *Africa RiskView* estimates the number of people potentially affected by drought for each country participating in the insurance pool. As part of the in-country customisation process, vulnerability profiles are developed at the sub-national level for each country, which define the potential impact of a drought on the population living in a specific area.

Response Costs: In a fourth and final step, *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. Payouts 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.

For more information visit our website: www.africanriskcapacity.org

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