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

Africa RiskView

MID-SEASON REPORT: SOUTHERN AFRICA

FEBRUARY 2020, DEKAD 05 | 2019/2020 SEASON

Highlights :

- **Covered countries :**
  - *Madagascar, Malawi, Mozambique, Zambia and Zimbabwe.*
- **Rainfall:**
  - *Persistent abnormal dry conditions througout much of southern and central parts of Southern Africa;*
  - *Above-normal rainfall resulted in flooding in eastern and northern Zambia and northern parts of both Madagascar and Mozambique.*
- **Drought :**
  - *Crop sowing failures were noticed in the southern parts of Madagascar, Mozambique and Zimbabwe due to dry conditions; and*
  - *Most affected districts in the countries mentioned above are 60%-90% below average drought index values.*
- **Projections of people affected by drought**
  - *Mozambique, Madagascar and Zimbabwe are adversely impacted with an estimated 3 to 5 million people projected to be affected by season end (May 2020) in these three countries;*
  - *Drought impacts are moderate in Zambia with about 100,000 people projected to be affected by season end.*

OVERVIEW:

This *Africa RiskView* Special Report provides an analysis of the performance of the agricultural season in Southern Africa mid-2019/20 agricultural season (dekad 5, 2020). It discusses seasonal rainfall patterns, *Africa RiskView's* drought projections, and their implications for the ARC Risk Pool for the five countries in the region where the ARC drought model has been fully or partially customised.

The *Africa RiskView* Report is part of a validation exercise which aims to verify the model's estimates on the ground together with the in-country Technical Working Groups (TWGs) and to inform policy makers about the performance of ARC's drought model in the Pool countries.

The main planting window in Southern Africa is between early November and late-January, in most countries. A review of the performance of the planting window in *Africa RiskView* for the countries where customisation has been fully or partially undertaken reveals a highly varied planting season.

This report focuses on the performance of the planting window in: Madagascar, Malawi, Mozambique, Zambia and Zimbabwe (see Fig. 1)– countries where full or partial customisation of the

Fig 1. Southern African countries customised by ARC

Africa RiskView drought model has been undertaken - and makes projections on the modelled number of people likely to be affected by drought conditions by the end of the growing season, as estimated by *Africa RiskView*. External data and analyses are used to assess the performance of the planting season in an additional countries where customisation of *Africa RiskView* has not been undertaken.

RAINFALL

Southern Africa typically receives the bulk of its rainfall between the months of November through to mid-April. During the review period (dekad 29 to dekad 5), southern and central parts of the region experienced drier

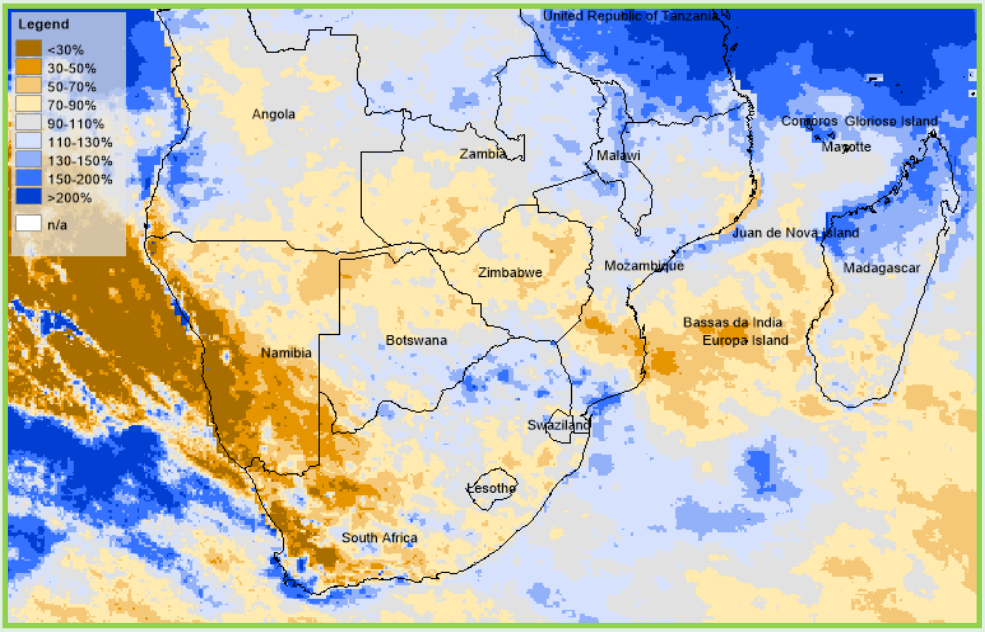

Fig 2. Cumulative rainfall received over Southern Africa (dek 28—dek 5) compared to the 20-year average(2001-2019) based on RFE2 satellite rainfall estimates

than normal conditions, including western South Africa, much of Namibia, parts of Angola and Botswana, Zimbabwe as well as southern Zambia, Mozambique and Madagascar.

For some areas like northern Botswana, south-eastern Angola, parts of Namibia, southern Zambia and Zimbabwe, it is the second consecutive year of abnormal dryness and, according to SADC, the period from Oct to Dec 2019 was one of the driest since 1981 (SADC Food Security Early Warning System 2020).

Compared to the average rainfall of 2001–2019, the growing season 2019/2020 was particularly dry in Zimbabwe (17% below average), the southern parts of Zambia (up to 25% below average), Madagascar (10% below average) and Mozambique (up to 32% below average in Inhambene), see Fig 2.

By contrast, seasonal rainfall was well above the long-term average in the north-eastern part of Southern Africa, including, Tanzania, Malawi (24% above average), eastern and northern Zambia (18-23% above average) as well as the northern parts of Mozambique (up to 22% above average in Cabo Delgado), and Madagascar (up 47% in Sofia and Boeny and 52% in Diana). In parts of those countries, heavy rainfall resulted in flooding.

DROUGHT

Africa RiskView uses the Water Requirement Satisfaction Index (WRSI) as an indicator for drought. WRSI is an indicator of crop performance based on the availability of water to the crop during a growing season. The index captures the impact of timing, amount and distribution of rainfall on staple annual rain-fed crops. The WRSI was initially developed by the Food and Agriculture Organisation of the United Nations (FAO), which, based on rainfall, calculates whether a particular crop's water requirements are met at different stages of its development. In Southern Africa, maize has been used as a reference crop and parameters in *Africa RiskView* have been customised to reflect the local conditions and agricultural practices.

The poor and erratic rainfall at the beginning of the season significantly impacted crop development throughout Southern Africa and led to poor germination, replanting and permanent crop wilting in various parts of the region. Among the Southern African countries where ARC is actively engaged, south-eastern Zimbabwe, southern Mozambique and southern Madagascar were particularly affected. Within the most affected districts, the WRSI at the end of the season is projected to reach values between 60% and 90% below normal (in terms of average WRSI values ranging from 2001-2019 based on RFE2).

Based on the modelled drought index values as of dekad 5, the following areas are modelled as the most affected by the rainfall deficits: Bikita, Chiredzi, Mwenzi and Zaka in Zimbabwe, Inhambene and Gaza in Mozambique and Ambovombe-Androy, Beloha, Tsiombe, Betioky and Toliary II in Southern Madagascar (Fig 3). In several parts of these districts, *Africa RiskView* modelled failed planting, implying that the planting criteria as defined by the in-country Technical Working Group were not met during the sowing window (Fig 2).

In southeast Angola, northern Botswana, parts of Namibia and

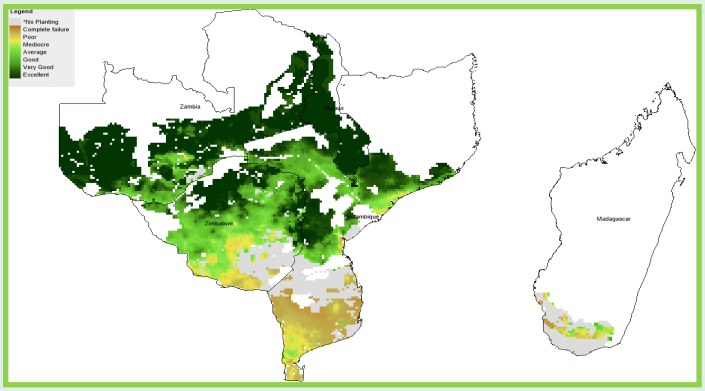

Fig 3: Projected end-of-season WRSI for Southern Africa (at dekad 5, 2020) for the 2019/2020 agricultural season

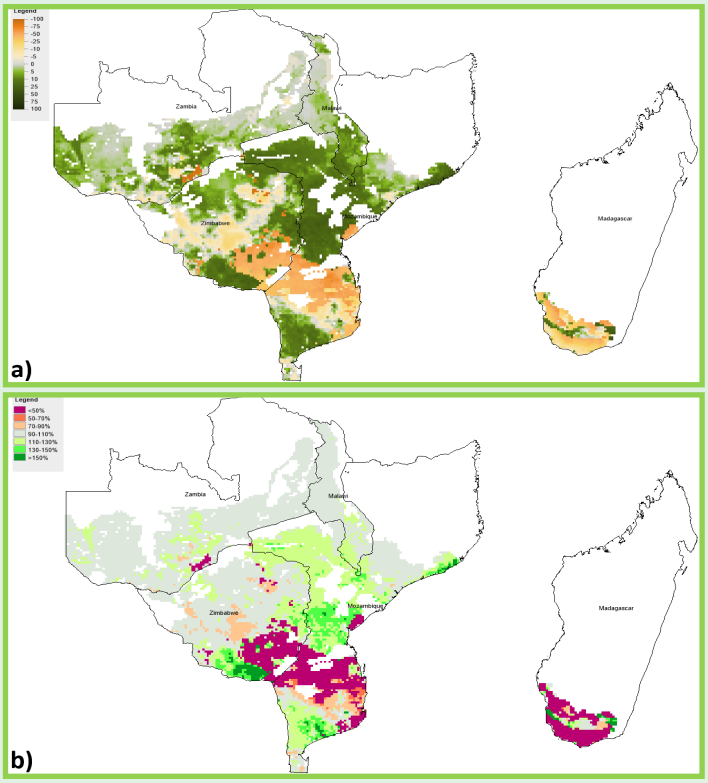

Fig 4. Projected end-of-season WRSI by dekad 5, 2020, a) values and b) percentages, for Southern Africa compared to normal (Average 2001-2019)

northern South Africa, the agricultural season 2019/20 was adversely affected by rainfall deficits as well. Moreover, low river, dam and groundwater levels were observed in areas such as Namibia that experienced the effects of repeated droughts events (SADC Food Security Early Warning System 2020).

AFFECTED POPULATIONS

Based on the season's progress and historical trends, the *Africa RiskView* software can provide estimates of populations likely to be affected by drought by the end of the agricultural season. This implies that the current numbers of people affected are only projections based on the historical rainfall patterns in these countries. ***All the affected population estimates are as of dekad 5, 2020 (20 February 2020).***

Malawi: The overall rainfall performance in Malawi was 24% above the 20-year long-term average during the 2019/2020 sowing window. The country was also subjected to flooding due to heavy rainfall in December and January. Less than 50,000 people are projected to be directly affected by drought impacts, a number that is far below the historical average and indicative of mild and very localised drought effects.

Madagascar: As a result of the persistent drier than normal conditions during the sowing season, the planting thresholds determined by the in-country Technical Working Group were not met through much of southern Madagascar. The rainfall deficits experienced resulted in failed sowing in many districts in the country. Due to these crop failures, one million to 1.3 million people are projected to be affected by drought at the end of the season, if rainfall performance during the rest of the agricultural season is similar to the average of the last 36 years.

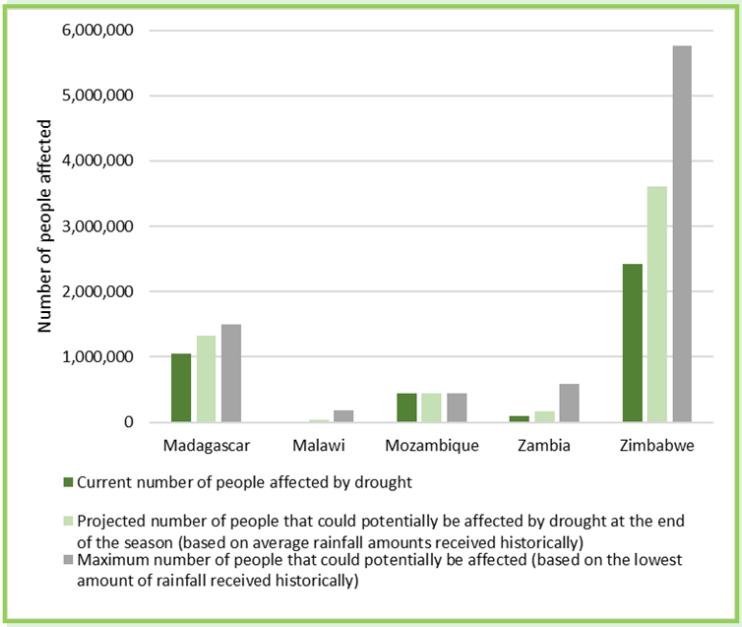

Fig 5. Current, projected and maximum number of people affected or likely to be affected by drought

Zambia: Rainfall deficits observed in the south-western parts of Zambia will result in crop losses within these regions. *Africa RiskView* projects that about 100,000 people will be affected by drought in the southern parts as a result of poor rains during the 2019/2020 season.

Zimbabwe: As a result of the below-average rainfall conditions, particularly in southern and south-eastern Zimbabwe, crop failures are projected to reduce the current seasons production. **Crop sowing is reported to have either failed or wilting of crops was not only reported but also modelled in *Africa RiskView* in parts of southern and south-eastern Zimbabwe as shown in Fig 3 and Fig 4.** The *Africa RiskView* drought model as at dekad 5 projects that 2.4 to 3.5 million could be affected by drought at the end of the season if rainfall performance during the rest of the agricultural season is similar to the average of the last 20 years.

Mozambique: Planting failures across southern Mozambique, as a result of persistent erratic and below average rainfall during the season, will result in significant yield losses potentially affecting 450,000 people.

IMPLICATIONS FOR THE ARC RISK POOL

In a fourth and final step, *Africa RiskView* converts the numbers of people affected into response costs. For countries participating in the drought insurance pool, these national response costs are the underlying basis of the insurance policies. 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. Within East and Southern Africa, Madagascar and Zimbabwe participated in the 6th risk pool of ARC.

Madagascar: As discussed, the southern part of Madagascar is currently experiencing severe drought conditions. At the end of dekad 5, the Modelled Drought Response Cost (MDRC) had reached USD 39.7 million, **exceeding the attachment level chosen by the country**. With this response cost and in accordance with the risk transfer parameters that the country selected, **the country is expected get a pay-out from ARC to provide assistance to the affected populations**. Although a

About ARC :

- *African Risk Capacity (ARC) is a specialized agency of the African Union, whose purpose is to improve the capacity of AU Member States to manage risks related to natural disasters, adapt to climate change and assist populations at risk of food insecurity .*
- *The Africa RiskView is ARC's technical platform. It uses various satellite rainfall datasets to track the progression of agricultural seasons in Africa.*
- *It uses the Water Requirements Satisfaction Index (WRSI) as an indicator for drought.*
- *Based on the WRSI calculations, Africa RiskView estimates the number of people potentially affected by drought for each country participating in the 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.*

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guaranteed minimum pay-out is already confirmed, the final pay-out amount to be determined at the end of the season will depend on the performance of rains until the end of the season (see Fig 6).

Zimbabwe: Zimbabwe is facing the second consecutive year of severe drought. Current estimates of *Africa RiskView* (as of dekad 5) indicate Modelled Drought Response Costs (MDRC) close to the trigger threshold. As the season in Zimbabwe is still evolving, the final end-of-season MDRC and whether a pay-out is triggered or not will depend on the performance of rainfall until the end of the season (see Fig 7).

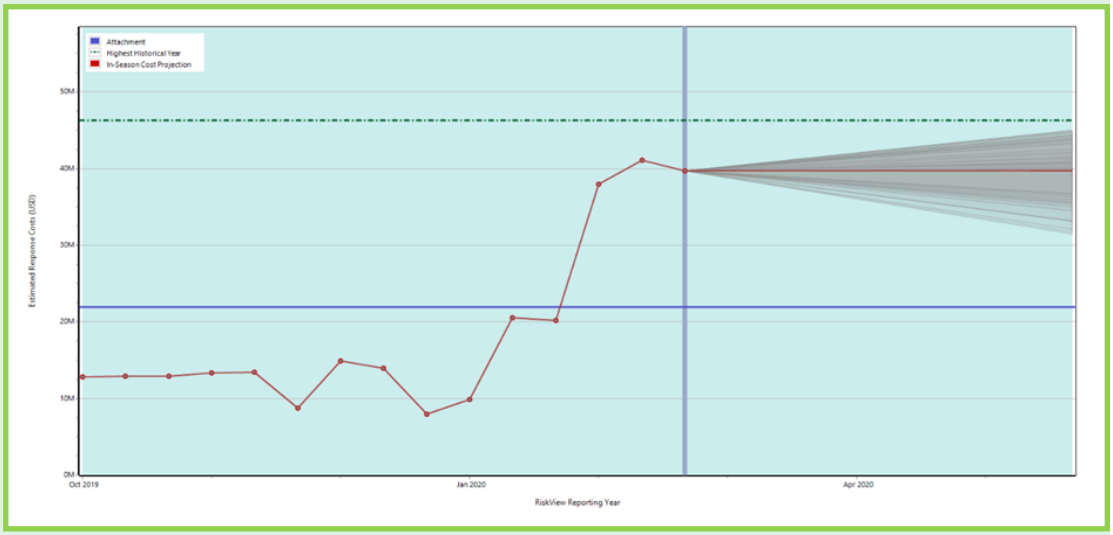

Fig 6. Projected end-of-season Modelled Drought Response Cost (red line) compared with the selected trigger threshold (blue line), Madagascar

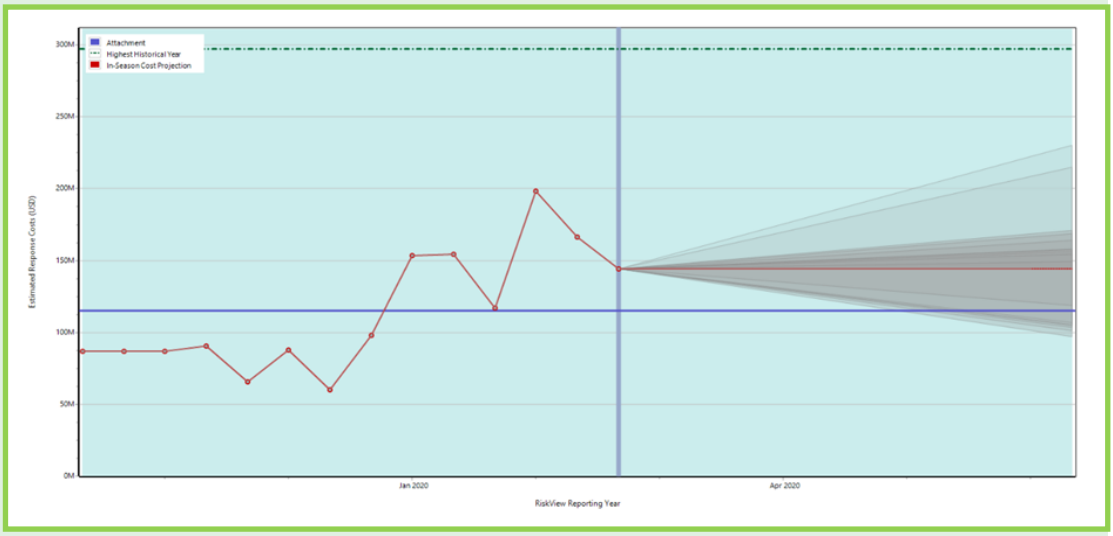

Fig 7. Projected end-of-season Modelled Drought Response Cost (red line) compared with the selected trigger threshold (blue line), Zimbabwe