

# ADVISORY NOTE

BUILDING RESILIENCE AGAINST RECURRING EXTREME  
WEATHER AND CLIMATE EVENTS IN SADC REGION

PUBLISHED BY  
CARE INTERNATIONAL AND FOOD AGRICULTURE AND NATURAL RESOURCES POLICY ANALYSIS NETWORK (FANRPAN)



# INTRODUCTION

Climate change presents a significant threat to the Southern Africa Development Community (SADC) region as it is expected to increase the frequency and intensity of climatic events. Predicted higher temperatures, altered rainfall patterns, and an overall decrease in rainfall will have serious consequences for the region. The recent occurrence of weather-related phenomena such as Tropical Cyclones Desmond, Enawo, Idai and Kenneth between January and April 2019 caused an unprecedented amount of damage in the Union of Comoros, Madagascar, Malawi, Mozambique, United Republic of Tanzania and Zimbabwe. .

Cyclone Idai was recorded as one of the worst tropical storms to ever affect Africa and the southern hemisphere. The cyclone claimed hundreds of lives and left a trail of destruction, including severe damage to key infrastructure such as roads, bridges, schools and clinics. Over 800 000 hectares of cropland as well as crops and seed stocks were destroyed by the cyclone, while about 3.3 million people were left in need of immediate humanitarian assistance such as food, shelter, clothing, potable water, sanitation and medical support. Following the occurrence of drought and floods in the 2018/19 season, the region has an estimated cereal deficit of more than 5,4 million tonnes this year.

Climate resilience is key and must be built around participatory climate risk assessments, best available science, proven technologies, and cross-sectoral collaboration. Greater action is required to strengthen or build institutional capacity for risk monitoring and early warning systems; emergency preparedness and response; vulnerability reduction measures; shock-responsive and long-term social protection; and planning and implementing resilience building measures.

CARE Southern Africa and the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) welcome the climate early warning statement for the 2019/2020 rainfall season from the Twenty Third Southern African Regional Climate Outlook Forum (SARCOF-23), held in Luanda, Angola 28 - 30 August 2019. This call to action is published with a view to highlight concerns about the impact of climate change on agriculture in the Southern Africa region given the central role played by agriculture in the economies of the Southern Africa Development Community (SADC) Member States and livelihoods of people especially women small-scale farmers whose main source of livelihood is from rain-fed agriculture.



# THE CHALLENGE: WEATHER, CLIMATE VARIABILITY, AND VULNERABILITY OF SADC MEMBER STATES TO CLIMATE CHANGE

## TRENDS

**1961 - 2014**

0.4 °C per decade

Historical rain patterns are characterised by strong inter-annual and inter-decadal variability and there is little evidence for a substantial drying or wetting over the region.

### Decrease in Rainfall

Overall temperatures in the eastern regions of SADC are projected to increase more than those in the west.

## PROJECTION

**0.2°C to 0.5°C**

Projected Warming

Botswana, parts of north western South Africa, Namibia and Zimbabwe being likely to experience the greatest warming of 0.2°C to 0.5°C per decade.

**> 35 °C**

### High warming rates

Overall temperatures in the eastern regions of SADC are projected to increase more than those in the west.

## IMPACT

**1980 - 2015**

Climate Change

491 recorded climate disasters that have struck southern Africa have exacted a heavy toll: causing \$10 billion in damage.

**2.47M People Homeless**

### Insecurity

In 2018/19 cropping season SADC has seen 41 million people become food and nutrition insecure, with some countries the numbers increasing by 144% (Zambia) from last year.

# SOUTHERN AFRICA

## OBSERVED TRENDS IN CLIMATE

The SADC region has already experienced an increasing frequency of hot days and decreasing frequency of extremely cold days (Naidoo et al., 2013). For the period 1961 to 2014, temperatures over the region have increased at a rate of 0.4 °C per decade.

Rainfall trends are variable but evidence points to an increased inter-annual variability to date, with extremely wet periods and more intense droughts in different countries (Young et al., 2010).

Historical rain patterns are characterised by strong inter-annual and inter-decadal variability and there is little evidence for a substantial drying or wetting over the region (Davis-Reddy and Vincent, 2017).

Over southern Africa a decrease in late summer rainfall has been reported over the western regions including Namibia and Angola (Niang et al., 2014). There is also evidence from other studies which shows that inter-annual rainfall variability over southern Africa has increased since the late 1960s and that droughts have become more intense and widespread in the region (Fauchereau et al., 2003).

There is strong evidence to suggest that the number of hot extremes have increased and the number of cold extremes have decreased, which is consistent with the global warming trend (Field, 2012; Stocker et al., 2013). Low temperatures, including the number of frost days, have decreased in frequency and are expected to become less frequent in the future.

## PROJECTED CLIMATE FUTURES

Projected changes within the SADC region into the future are (DEA, 2013). Overall temperatures in the eastern regions of SADC are projected to increase more than those in the west.

Projections show that changes will not be uniform over the region with the central, southern land mass of SADC, extending over Botswana, parts of north western South Africa, Namibia and Zimbabwe being likely to experience the greatest warming of 0.2°C to 0.5°C per decade.

Warming is also predicted to increase the frequency and intensity of tropical storms in the Indian Ocean (Young et al., 2010). In the northern regions of SADC, the role of the Inter Tropical Convergence Zone (ITCZ), the major driver of rainfall in the region is less certain. As a result of the increasing temperatures and other climatic forces, the rainfall within the region is projected to change.

Below-normal rainfall years are projected to become more frequent (Davis-Reddy and Vincent, 2017). Assuming that emissions of anthropogenic greenhouse gases continue rising at current or higher levels, central southern Africa is likely to be drier in the future during mid-summer, with parts of Tanzania and northern Mozambique likely to be wetter (Davis-Reddy and Vincent, 2017).

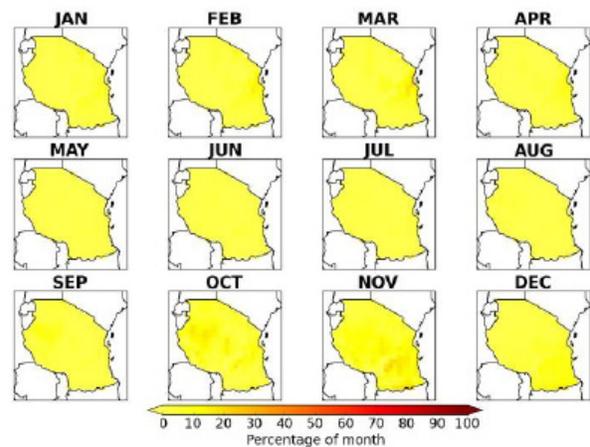
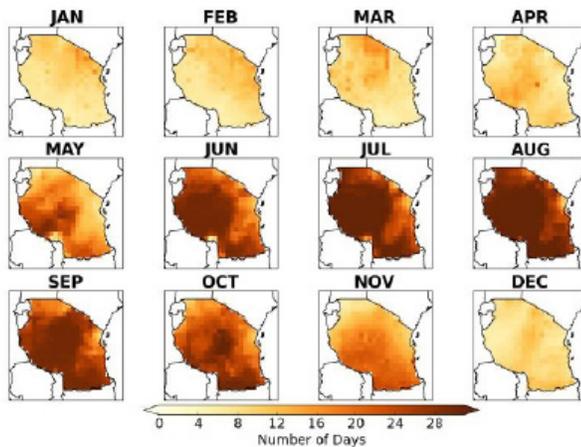
# EXAMPLE CLIMATE INDICES FOR TANZANIA

## CONSECUTIVE DRY DAYS AND PERCENTAGE OF DAYS IN MONTH $> 35^{\circ}\text{C}$

2050s

Consecutive Dry Days

Percentage of month  $> 35^{\circ}\text{C}$





# SOCIO – ECONOMIC IMPACTS OF EXTREME WEATHER EVENTS IN SOUTHERN AFRICA

Weather-related events in the SADC region to date have caused extensive damage to the economy and society at large and have resulted in a significant increase in direct and recovery costs (Serdeczny,2017).

Since 1980, the 491 recorded climate disasters that have struck southern Africa have exacted a heavy toll: causing \$10 billion in damage, 110 978 deaths and leaving 2.47 million people homeless. A further 140 million people have been affected by these disasters that unfolded across the region between 1980 and 2015 (Davis-Reddy and Vincent, 2017).

For three consecutive years (2014–16), the SADC region was exposed to an intense drought, and during the 2015/16 rain season the situation was exacerbated by one of the strongest El Niño Southern Oscillation (ENSO) episodes on record (SADC, 2016). The 2015/16 drought became the worst to affect the region since the start of record keeping more than a century ago (FAO, 2016). The impacts of the 2015/16 drought were quite severe as more than 40 million people became food insecure requiring international assistance (SADC, 2016).

Agriculture in Southern Africa is predominantly rainfed (with the exception of wheat-producing areas in South Africa), which makes the region inherently vulnerable to climate variability and change (Lesolle, 2012). The impact of climate change on precipitation, temperature and the increased frequency of drought and flood are considered detrimental to the agricultural sector. Drought in a number of SADC countries has changed the length and timing of the growing season and lead to a drop in agricultural productivity due to lower crop yields (Davis-Reddy and Vincent, 2017).

These impacts are increasing and becoming persistent, leading to an increase in food insecurity and a rise in food prices (Masipa, 2017), indirectly also causing exacerbating malnutrition challenges especially stunting and wasting.

The severity of the 2015/16 drought resulted in 643 000 livestock deaths due to lack of pasture and water (De Waal and Vogel, 2016). There was also an overall maize (the staple crop in the region) deficit of 5.1 million t, which is a 10% decrease in production compared to the previous year and a 15% drop compared to the 5-year average (Nhamo, 2019.; SADC 2016).

In 2018/19 cropping season SADC has seen 41 million people become food and nutrition insecure, with some countries the numbers increasing by 144% (Zambia) from last year. SADC Annual vulnerability Synthesis Report attributed the food insecurity to impact of climate change.

Additionally, climate-related diseases triggered by heat waves and floods have become more prevalent. Incidences of armyworm and locust invasion, which are associated with drought, were also reported in Madagascar, Malawi, South Africa, Zambia and Zimbabwe during the 2015/16 ENSO drought (FAO 2016).

# WHAT NEEDS TO HAPPEN?

All these variances of climate mean that balanced planning and readjustment are necessary to adapt to the new normal. It is important to adequately plan to respond continually to both droughts and floods, while increasing resilience to these extremes. As droughts and other climate change related disasters are increasing in frequency and intensity in the region, there is a need to build resilience through drought early warning.

Failure to act will only worsen the plight of vulnerable populations and perpetuate poverty. The emphasis should be beyond short-term relief aid but towards transitioning vulnerable communities into resilient and sustainable communities. Achieving this requires a paradigm shift from the present reactionary approaches to one that is aimed at building and strengthening resilience.

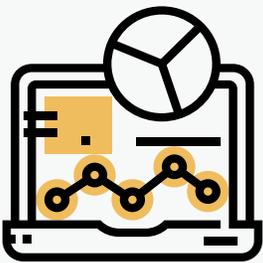
## IN ORDER TO FURTHER PROGRESS, GOVERNMENTS ARE CALLED TO CONSIDER THE FOLLOWING RECOMMENDATIONS:



**Invest in reserach and develop-ment** for forecasting as a priority, and specialilly forecast tailored to relevant sectors, including an audit of reserach and development gaps.



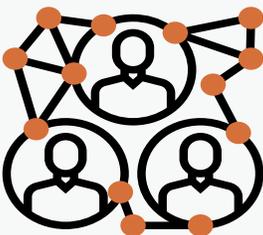
**Strengthen institutional capac-ity** to respond to early warning system information at all levels engagement in collecting and sharing information.



**Build capacity of member states climate services** to enage with users for the effec-tive updte and use of climate information



**Mainstream disaster risk re-duction** (not simply disaster response) into policy and com-prehensive development plan-ning for all sectors and levels of memebr sates



**Build on the existing wealth of experience** and current database of programe and or-ganisation involved in resilience-building interventions to improve resilience in the agri-cluture sector.

## OUR COMMITMENT

Climate change is a decisive challenge, which, if not urgently addressed, will put at risk not only the environment and the ecosystems on which we all depend but also the region's economic prosperity, development, food security and, more broadly, stability and security. CARE Southern Africa and the Food, Agriculture and Natural Resources Policy Analysis Network (FANRPAN) working with national, regional and international partners confirm their commitment towards supporting SADC member states to make agriculture and food production in the region more productive, sustainable and resilient to climate change. We will continue to support countries to reduce poverty, hunger, and malnutrition whilst addressing the broader aims of the Sustainable Development Goals and key targets of the Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods in Africa.

**FANRPAN** is currently implementing a number of climate change related interventions designed to contribute to a substantial increase in food production and improved food security in Africa and to build resilient communities that can withstand the impacts of climate change. Of significance is the GCRF-AFRICAP programme which consists of an internationally-recognised, cutting-edge, interdisciplinary team of academics and policy-specialists able to articulate climate risks to SADC member states in terms of changing patterns of extreme weather (drawing on new modelling capabilities) and, working with national Meteorological Agencies, to document how they may impact farming. The consortium is also working to illustrate the relationships between climate change and crop yields, and how these will vary spatially into the future by modelling and evaluating the pathways to be followed to achieve economic growth and food and nutrition security in Malawi, South Africa, Tanzania and Zambia, through agriculture development that is climate-smart and resilient.

The models incorporate the full range of agricultural and land use dynamics in each country, helping to inform policy development and further research agendas, using decision support tools that combine climate impacts and land use modelling tools. Through integrated models the programme is working to quantify greenhouse gas mitigation, crop yields, water use, biodiversity impacts, soil fertility and water and air quality. Using trade and land use data, the programme is assessing the amount of food likely to be available in the future under different scenarios and how this will impact on diet and nutrition. Using current trends (crop management, climate change, land and water availability, emissions trajectory) the project is forecasting agricultural development and its impact (yield and nutrition, requirement for land, water, GHG emissions, ecosystem services). In the process the programme will also map the pathways working back from the desired development objectives in 2050 to today, to highlight the technical routes by which these outcomes can be achieved.

**CARE International** is currently implementing a number of climate change related interventions designed to increase resilience to the diverse impacts of climate change especially on women small-scale farmers. CARE is also influencing the implementation of the agriculture, climate change and nutrition policies which Governments have entered through multilateral processes such as the UNFCCC Nationally Determined Contributions (NDCs), African Union Malabo Declaration for the Acceleration of Agriculture Development and the World Health Assembly Nutrition for Growth Commitments. CARE is active in Malawi, Tanzania, Zambia, Zimbabwe, Mozambique and Madagascar, implementing climate resilience, women and girl's empowerment projects and responding to climate related humanitarian situations.

Some programme and Projects include, increasing food and nutrition security where apart from building community resilience programmes also engages communities to solicit lessons for policy and decision makers. CARE is also engaging communities and civil society advocate for an inclusive and transparent land sector, strengthening the land tenure security and resilience of small-scale farming and pastoral communities—particularly women. CARE promotes sustainable, productive/profitable and rights based resilience building and policy implementation. CARE continues to complement Government efforts especially in the implementation of Malabo Declaration.



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