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Climate

The Impact of Climate Change on Africa

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The Impact of Climate Change on Africa

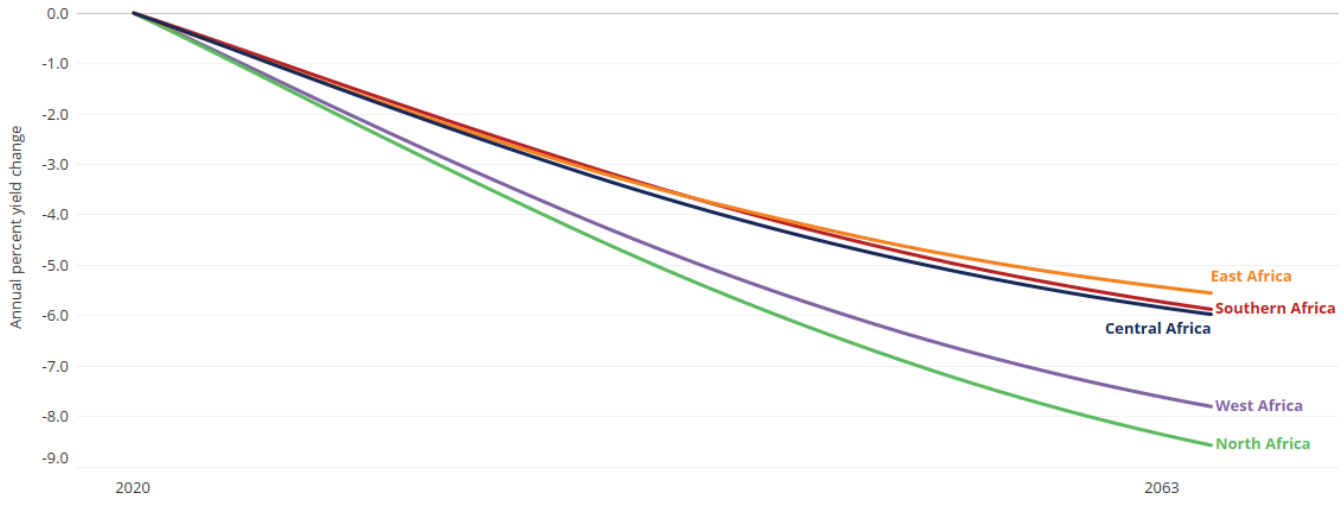
Africa has historically contributed little to the climate crisis but bears a disproportionate burden of severe climate change impacts. The continent grapples with escalating challenges, including rising temperatures, water stress, heat-related mortality, diminished food production, increased extreme weather events, climate-induced displacement, biodiversity loss, worsening air quality and the spread of climate-sensitive diseases. These impacts foster conflict and insecurity, reduce investor confidence and complicate governance in a region with many of the lowest infrastructure, health, education and human development indicators globally. According to the EMDAT database, since 1984, Africa has endured 1 865 climate-related disasters, accruing US$53 billion in direct financial losses and affecting an estimated 702 million people. In 2024 alone, Africa witnessed some of the most severe climate-related disasters, including widespread flooding in East Africa, which affected more than 700 000 people, and the worst drought in Southern Africa in a century, leaving 27 million people, including 21 million children, facing food insecurity.

Climate-related disasters now account for nearly 70% of all natural disasters, with extreme weather events increasing in frequency and severity. 2024 saw 73 devastating climate-related disasters on the continent, 40 of which were attributed to flooding alone, collectively impacting nearly 10 million people. Other extreme events included prolonged droughts in Southern Africa, cyclones along the southeastern coast, and heatwaves across North and West Africa, exacerbating food insecurity and displacement.

Compounding the crises is Africa's high vulnerability to climate-related disasters. With almost 30% of the population living in absolute poverty, the continent grapples with systemic challenges that exacerbate the impact of any natural disaster. Limited infrastructure, slow economic growth and fragile governance exacerbate Africa's climate risks. Governments in many African countries lack the agility and resources needed for effective disaster response. Political instability, logistical hurdles and corruption frequently delay aid and relief efforts, weakening community resilience.

The effect of climate change differs significantly across Africa. Chart 3 illustrates the anticipated impact on agricultural yields, precipitation changes and temperature anomalies by region from 2020 to 2063.

Chart 3: Climate change impact on agricultural yields, precipitation and temperature, 2020-2063
Measured as annual percent yield change, percent change in precipitation from 1990 and degrees Celsius change from 1990



Source: IFs 8.34

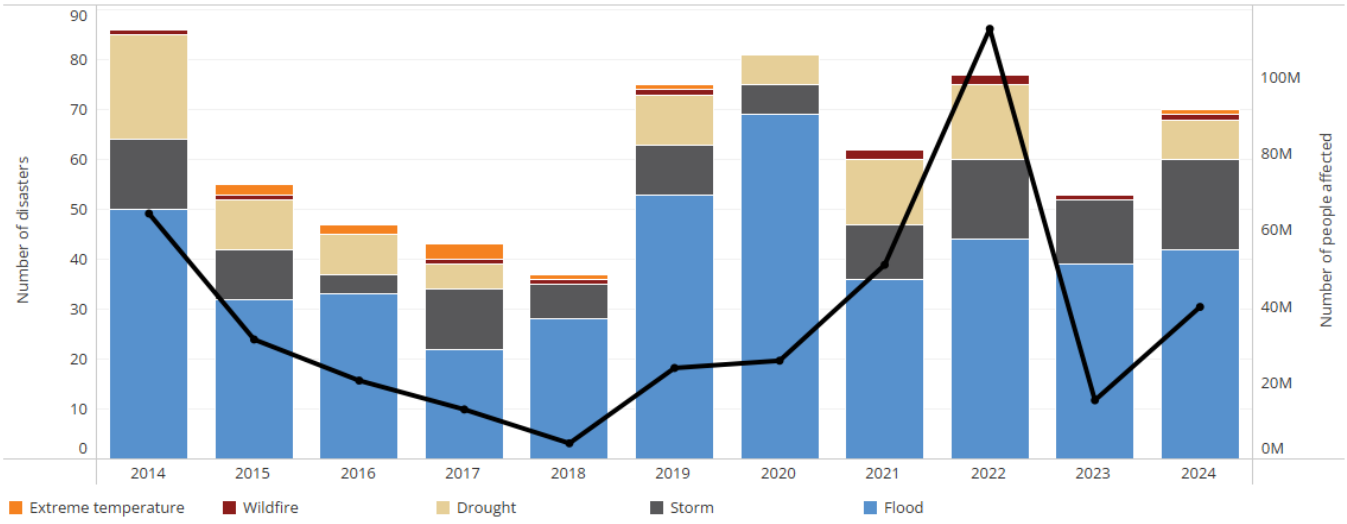
Further contributing to the high vulnerability rates is the continent's stark wealth disparity, particularly in Southern Africa, which has some of the highest inequality rates globally, with countries like South Africa and Namibia ranking among the

most unequal in the world. Limited investment in critical infrastructure exacerbates vulnerabilities and increases exposure to hazards, leaving critical resources such as healthcare facilities and transportation networks unable to withstand the onslaught of climate-related disasters.

Many African nations are still struggling to recover from economic shocks induced by the 2008 financial crisis, the COVID-19 pandemic and escalating climate-induced infrastructure damages. Alarmingly, only 9% of the direct climate-related disaster losses incurred over the past four decades on the continent were insured, leaving governments, communities, and families without the necessary means to recover and rebuild in the aftermath of these disasters. This lack of financial protection pushes vulnerable communities into deeper poverty and increases their long-term risks. Ecosystem degradation and biodiversity loss further diminish the capacity to buffer against catastrophe. The subsequent deforestation and soil erosion escalate the risk of floods, amplifying the magnitude of their impact on vulnerable communities.

Chart 4 presents the number of climate-related disasters in Africa by type. Water-related disasters emerge as the continent's Achilles' heel, constituting 82% of all climate-related incidents. The precarious balance between too much water in the form of floods and too little during droughts underscores the urgent need for adaptation interventions.

Chart 4: Africa's climate disasters, 2014-2024
Number of disaster per year and type (bar chart), and number of people affected per year (line chart)



Source: EM-DAT database

South-east Africa is disproportionately exposed to severe weather events, including convective storms, tropical lows, cut-off lows and cyclones. The devastating impact of Cyclone Freddy (the longest-lasting and most intense[1] tropical cyclone ever recorded), which caused widespread devastation in Mozambique, Malawi, Zimbabwe and Madagascar in 2023, and the 2022 devastating floods in the KwaZulu province of South Africa (caused by an intense cut-off low-pressure system) are worrying examples. The warming Indian Ocean along Africa's east coast is fuelling the intensification of cyclones. As temperatures rise, intense weather events are becoming more frequent and destructive. The escalating exposure to such disasters will exacerbate existing vulnerabilities on the continent, further challenging the resilience of communities and countries alike.

The Horn of Africa, too, is particularly vulnerable to droughts, floods and disease outbreaks as years of conflict and instability have eroded community resilience. The region recently experienced one of the worst droughts recorded in history, and critically high food insecurity and conflict have contributed to large-scale internal displacement across the region. The 2023 estimate of 12.15 million internally displaced and almost 60 million food insecure people was a

noticeable increase from the 37 million recorded in 2022. Climate projections differ in their forecasts for rainfall in the region. Still, there is agreement that the area is drying due to increased evapotranspiration and that a noticeable rise in the frequency of extreme events is highly probable. Given the high reliance on subsistence farming and the prominence of the agricultural sector, food insecurity and shortages will likely rise.

On the other side of the continent, large areas in the Sahel and West Africa risk transforming into a desert landscape. The susceptibility to desertification is especially noticeable in the Sahel, a transitional zone between the Sahara Desert to the north and the more fertile and moist regions to the south. Climate change will increase erratic rainfall patterns and prolonged droughts in this region, exacerbating existing socio-economic challenges in an area considered highly unstable. The region's exposure to climate change and the meagre adaptive capacity pose significant risks to human well-being. As with the Horn, increased population displacement is unfolding as arable land diminishes and pastoral communities face intense challenges to sustaining their livelihoods.

Climate change in Africa is significantly reshaping the landscape of diseases, affecting both infectious and non-communicable diseases. Rising temperatures and alterations in rainfall patterns are shifting the prevalence of diseases like malaria, dengue, measles, etc. Despite breakthroughs in vaccine development offering promise, the heightened risk in countries grappling with underlying socio-economic challenges and strained healthcare systems is apparent, as exemplified by the recorded disease outbreaks in the Horn of Africa in 2023. Disease outbreaks, including polio, meningitis, malaria, measles, dengue, cholera and anthrax, underscore the vulnerability of areas facing climate-induced health challenges.

Outbreaks of water-borne diseases, including cholera and diarrhoeal illnesses, are also likely to become more prevalent due to prolonged droughts and intense flooding impacting water quality and sanitation systems. A case in point is Malawi, where such conditions have escalated the risk of water-borne diseases, necessitating enhanced public health interventions in early 2023. South Africa also saw the outbreak of a severe Cholera epidemic in early 2023, as rising temperatures and failing sanitation and water management contributed to the disaster.

Climate change also affects respiratory health, particularly in urban areas marked by industrialisation and increased transportation activity. Elevated temperatures and shifting precipitation patterns contribute to ground-level ozone and particulate matter formation, exacerbating respiratory conditions.

Vulnerable population groups, such as the elderly, those with pre-existing health conditions and children, face an elevated risk of heat-related illnesses like heatstroke. In 2003, a heatwave cost the lives of 72 000 people in Europe, showing just how deadly the urban heat island effect can be and underscoring the need for targeted healthcare interventions and public health initiatives to safeguard the well-being of these populations. Heat-related illness and death are severely underreported in Africa and difficult to monitor. Still, a WHO study showed that heat-related deaths among the elderly in South Africa can climb from a baseline of two deaths per 100 000 to as many as 20 to 50 deaths per 100 000 by 2050. Rising temperatures also threaten African cities as urbanisation continues amidst poor planning a lack of housing regulations and insufficient use of heat-resistant building materials.

Endnotes

1. The most ambitious transboundary project in Africa to fight desertification, land degradation and climate change is the Great Green Wall (GGW) initiative introduced in 2007 by the African Union. The project aims to restore 100 million hectares of degraded land, capture 250 million tons of CO2 and contribute to creating 10 million jobs by 2030. At the COP26 conference in 2021, the EU reconfirmed their commitment to the GGW with an additional annual commitment of US$ 700 million, pushing the global commitments to this programme to €19 billion.

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About the authors

Ms Alize le Roux joined the AFI in May 2021 as a senior researcher. Before joining the ISS, she worked as a principal geo-informatics researcher at the CSIR, supporting various local and national policy- and decision-makers with long-term planning support. Alize has 14 years of experience in spatial data analysis, disaster risk reduction and urban and regional modelling. She has a master's degree in geographical sciences from the University of Utrecht, specialising in multi-hazard risk assessments and spatial decision support systems.

Dr Jakkie Cilliers is the ISS's founder and former executive director. He currently serves as chair of the ISS Board of Trustees and head of the African Futures and Innovation (AFI) programme at the Pretoria oce of the Institute. His 2017 best-seller Fate of the Nation addresses South Africa's futures from political, economic and social perspectives. His three most recent books, Africa First! Igniting a Growth Revolution (March 2020), The Future of Africa: Challenges and Opportunities (April 2021), and Africa Tomorrow: Pathways to Prosperity (June 2022) take a rigorous look at the continent as a whole.

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