



# CLIMATE INDUSTRY SPOTLIGHT

## Sub-Saharan Africa's Climate Change Vulnerabilities & Opportunities

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Africa, specifically Sub-Saharan Africa, despite contributing the least (< 4%) to global warming and greenhouse gas emissions, is the most vulnerable region to climate change outcomes (African Development Bank, 2019).

Vulnerability to climate change can be the degree to which a region is at risk of being negatively impacted by climate change (Cuffari, 2019, para 1). Climate change vulnerability can be further represented as a function of the nation's exposure, sensitivity, and adaptive capacity to the effects of climate change (Intergovernmental Panel on Climate Change (IPCC).

Vulnerabilities include floods, droughts, landslides, rising sea levels, and alterations to rainfall patterns (White, 2021). These negative outcomes of climate change cause adverse, systemic, and exponential risks to Africa's water and food systems, agriculture yields and livelihoods, public health, infrastructure investments, and economies.

Climate-related outcomes also pose a threat to "undo [Africa's] modest development gains and slip [it] into higher levels of extreme poverty" (African Development Bank, 2019, para 1).

Globally, Sub-Saharan Africa has 95% of rain-fed agriculture (African Development Bank, 2019); a prominent attributing factor to Africa's vulnerability. For two decades i.e., 2000 to 2020, sub-tropical regions of Africa and southern Africa's yield from rain-fed agriculture reduced by up to 50% due to the warming and long-term drying process of displaced rainfall systems (IPCC, 2007a; IPCC, 2007c: IPCC, 2022).

Additionally, sub-Saharan Africa's rural population, most of whom are agriculturally employed or engaged in other weather-sensitive work, such as herding and fishing, make up a large share, approximately 60% of the continent's GDP (World Bank, 2020).

Another susceptibility factor is the climate-related rate of rising temperatures in Africa. The average global surface temperature is increasing, but Africa's rate of temperature increase is at a faster pace (White, 2021). Consequently, droughts and other natural disasters have also increased in frequency and intensity in Africa much faster than in other parts of the world.

Relative to 1970-79, the frequency of droughts in sub-Saharan Africa nearly tripled in 2010-19, it has more than quadrupled for storms, and it has increased more than tenfold in the case of floods (White, 2021, para 2). Such increases exacerbate road damage, power cuts, reduced number of habitable homes, hospitals, schools, other infrastructure, and a reversal of modest development gains in sub-Saharan Africa (Mitra & Vu, 2021).

Climate change is "a threat multiplier, exacerbating existing problems, including conflicts" (Shephard, 2019, para 21). Non-climatic factors such as coup d'etats, poverty, poor economic growth and governance, increasing demographic divide, and changing disease patterns contribute to Africa's vulnerability to climate change.

Although climate change poses profound challenges to Africa, it provides opportunities for transformation. It is within constraints that innovations emerge, and the greater the constraint, the greater the urgency to innovate. Of the ten (10) countries most affected by climate change, seven (7) are in Africa; Mozambique is ranked first and Ghana eighth (African Development Bank, 2019).

In effect, Africa ought to be fervently seeking approaches to adapt to climate change, not so much mitigation as it is negligibly contributing to it.





Every country will have to spend money to mitigate the effects of climate change, with America and Europe spending about 6% of their GDP and Africa 10% (Krishnan, et al 2022). According to the African Development Bank (2019), "Africa will need investments of over \$3 trillion in mitigation and adaptation by 2030 to implement its Paris Agreement (NDCs) Nationally Determined Contributions [which are] aspirations to build climate resilient low carbon economies" (para. 4).

This is a challenge in itself for Africa. Yet building "a new climate economy is also a once-in-a-lifetime opportunity that every African nation should prioritize and claim a stake in", (Okonjo-Iweala, 2020, para 6).

To initiate the fight against climate change, Africa could consider low-cost innovative, and simple approaches, such as tree-planting. According to Mitra and Vu (2021) new, resilient, green infrastructure investments, which are central to tackling the damaging effects of climate change, are up to twelve times more cost-effective than the traditional frequent disaster relief measures. The new green investments can help sub-Saharan Africa leapfrog onto a trajectory of prosperity.

They can mitigate the impact of climate change without necessarily costing more than the traditional infrastructure (Mitra & Vu, 2021). Additionally, resilient and green infrastructure could catalyze private sector investment as it reduces risks of damage and other business costs. "[When] done right, boosting resilience to climate change goes hand-in-hand with increasing opportunities for all, improving livelihoods, and reducing poverty" (Mitra & Vu, 2021).

In addition to investment in green infrastructure to adapt to climate change, climate information, pre-disaster preparation, and tax reform are other possible solutions for consideration. Regular integration of science-based climate information in public and private sector decisions forms the basis for building resilience and adaptation to climate change and sustainable livelihoods and development (The State of Climate Report for Africa, UN, 2020).

In Africa, the uptake and use of climate information services in development planning and practice are limited due partly "to the paucity of reliable and timely climate information" (The State of Climate Report for Africa, UN, 2020).

Setting up a climate information service on the continent to enhance individual resilience, policy, and research, and adaptive capacity would be valuable. Another adaptive behavior is to develop a culture of preparing for unpredictable weather. It may be challenging to do but doing nothing is a poorer alternative.

Countries in Africa ought to heighten their pre-disaster preparation and disaster management methods. According to Ighobor (2012), South Africa passed a Disaster Management Act in 2002 that mandates national, provincial, and municipal authorities to devise pre-disaster plans as a prevention and mitigation measure.

Ten years later (in 2012), "authorities in Côte d'Ivoire took pre-emptive measures by ordering 6,000 families in flood-prone areas of Abidjan, the capital, to relocate and gave them \$300.00 each to do so". The move helped save lives, as landslides, rock-falls, and flooding in previous years had caused deaths (Ighobor, 2012).

More countries in Africa should develop and implement pre-disaster and disaster management plans. Therefore, the Climate Report for Africa has a critical role in this respect, including informing Africa's actions for achieving the goals of the Africa Union Agenda 2063," Rural Economic and Agriculture of the African Union Commission. (UN report 2020)

Climate change outcomes disrupt economic activity and increase the volatility of government revenues (White, 2021). However, suppose sub-Saharan Africa uses fiscal instruments such as environmental tax reform and subsequent revenues. In that case, it can "finance climate change adaptation and mitigation policies, alleviate the social impact risks, and speed up the transition toward resilient infrastructure and technologies", (White, 2021).

It presents the impetus to structure, restructure, or reform taxes. A critique to the proposed approach is the often-adverse effect tax reforms have on low-income households.

White (2021) argues that there are benefits to low-income families when some of the taxes are used for social protection programs such as affordable housing, health care, and education.

The Sub-Saharan region may be the most vulnerable to the adverse outcomes of climate change and may not have the financial structure to mitigate the effects. Still, there are low-cost behavior changes they could implement if the region took advantage of the challenges as an opportunity for innovation and change.



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