

# CLIMATE ADAPTATION AND MITIGATION

## 1. INTRODUCTION

Africa stands at a pivotal juncture in the global climate discourse, confronted by a strategic dilemma: should it prioritise **adaptation**, which responds to the lived impacts of climate change, or continue to invest in **mitigation**, which targets its root causes? While mitigation remains the dominant global narrative, driven by carbon markets and emission reduction targets, it offers limited relief to communities already facing floods, droughts, displacement, and food insecurity. Adaptation, by contrast, provides both **short-term protection** and **long-term resilience**, making it a more immediate and justice-driven response for the continent.

Before engaging the technical and legal complexities of this debate, it is essential to clarify the key terms. **Adaptation** refers to the adjustment of ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects.<sup>1</sup> **Mitigation**, on the other hand, involves reducing greenhouse gas emissions to slow the pace of global warming.<sup>2</sup>

Africa's climate vulnerability is not merely environmental. It is deeply political. The continent suffers from **climate injustice**, having contributed minimally to global emissions yet bearing the brunt of their consequences. Historically, Africa has served as the supplier of raw materials that sustained the industrial economies of the Global North. Before the Industrial Revolution, agrarian systems dominated. But the adoption of fossil fuel-driven industrialisation, marked by widespread deforestation, rapid urbanisation, coal combustion, and oil exploitation, has led to the long-term degradation of the planet. What was once hailed as progress now reveals itself, three centuries later, as a global reckoning: the once green continent, now ravaged by drought, catastrophic floods, desertification and the spread of diseases, making it increasingly uninhabitable.

Perhaps the pioneers of industrialisation might have drawn the line had they foreseen the consequences. Some thinkers did. In 1832, German polymath **Johann Wolfgang von Goethe** warned: *“Man in his misguidance has powerfully interfered with nature. He has devastated the forests, and thereby even changed the atmospheric conditions and climate... These and other things are serious encroachments upon Nature, which men nowadays entirely overlook but which are of the greatest importance.”*<sup>3</sup>

Yet such voices were ignored, dismissed as poetic rather than prophetic. Today, the cliché “we’ll cross that bridge when we get there” no longer suffices; we have arrived at that bridge. The question now is urgent and unavoidable: This paper argues that Africa must reframe its climate strategy to foreground **adaptation** as a constitutional, fiscal, and ethical imperative, rather than continuing to export mitigation outcomes that serve external interests more than local survival.

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<sup>1</sup> United Nations Framework Convention on Climate Change (UNFCCC), *What is Climate Change Adaptation?* (UNFCCC, 2022)

<sup>2</sup> United Nations Environment Programme (UNEP), *Emissions Gap Report 2023* (UNEP, 2023)

<sup>3</sup> Johann Wolfgang von Goethe, *Theory of Colours* (Charles Lock Eastlake tr, MIT Press 1970) 306.

## 2. Climate Change

Climate change is widely recognised as one of the most pressing challenges of the 21st century, characterised by long-term alterations in global temperature, precipitation patterns, and the frequency and intensity of extreme weather events.<sup>4</sup> Although the Global South, particularly African nations, contributes less than 4% of global greenhouse gas emissions, it bears a disproportionate share of the consequences.<sup>5</sup> These include heightened food insecurity, desertification, coastal erosion, and increasingly destructive floods.

### A. Mozambique – Cyclone Idai and Coastal Vulnerability

A salient example is **Mozambique**, where the devastating impact of **Cyclone Idai** in March 2019 illustrated the intensifying nature of climate-induced disasters.<sup>6</sup> The cyclone, which claimed over 1,000 lives across Southern Africa, was fuelled by abnormally warm ocean temperatures in the Mozambique Channel, conditions linked to anthropogenic climate change.<sup>7</sup> Warmer waters increase the energy available for tropical cyclones, resulting in stronger winds, heavier rainfall, and greater destruction.

Contrary to common misconceptions, this warming is not caused by ozone layer depletion. Rather, it results from the **greenhouse effect**, whereby emissions from fossil fuel combustion, deforestation, and industrial activity trap heat in the lower atmosphere.<sup>8</sup> These emissions increase the concentration of gases such as carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), and nitrous oxide (N<sub>2</sub>O), which absorb infrared radiation and prevent heat from escaping into space.<sup>9</sup> The ocean absorbs over 90% of this excess heat, leading to thermal expansion and elevated sea surface temperatures, key drivers of cyclone intensification.

### B. Senegal – Coastal Erosion and Community

In **Senegal**, climate change has manifested through **coastal erosion and rising sea levels**, particularly in small island communities like **Dionewar** in the Saloum Delta. Warmer ocean temperatures and shifting tidal patterns have accelerated shoreline retreat, threatening homes, livelihoods, and cultural heritage. The intrusion of saltwater into freshwater systems has disrupted agriculture and fisheries, compounding food insecurity and economic vulnerability.

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<sup>4</sup> IPCC, *Climate Change 2021: The Physical Science Basis* (Cambridge University Press 2021)

<sup>5</sup> UNEP, *Emissions Gap Report 2022*

<sup>6</sup> UN OCHA, *Cyclone Idai: Response and Recovery Overview* (2019)

<sup>7</sup> NASA Earth Observatory, 'Cyclone Idai's Path of Destruction' (2019)

<sup>8</sup> Kevin E Trenberth, 'Climate Change Caused by Human Activities and Its Impact on Cyclones' (2019) *Nature Climate Change* 9(9) 689–695

<sup>9</sup> US EPA, 'Overview of Greenhouse Gases'

### 3. Mitigation-centric models

In the aftermath of escalating climate damage, global efforts have predominantly centred on mitigation—reducing greenhouse gas emissions to restore planetary balance. While conceptually sound, these models are often economically driven, prioritising cost-effective carbon sequestration over equitable outcomes and community welfare, thereby failing to address the root causes of vulnerability. Two prominent mitigation mechanisms—**REDD+** (Reducing Emissions from Deforestation and Forest Degradation) and the **Paris Agreement**—illustrate this imbalance. Though both are backed by the UNFCCC and framed as cooperative climate solutions, their implementation has revealed deep contradictions, especially for African nations navigating climate injustice.

#### 1. REDD+ FRAMEWORK

REDD+ treats forests primarily as **carbon sinks for global markets**, reducing complex ecosystems and cultural landscapes to tradable carbon units. This logic commodifies nature without securing **Free, Prior, and Informed Consent (FPIC)** from forest-dependent communities<sup>10</sup>. In the Congo Basin, timber continues to be harvested and exported, often without proper oversight, fueling illegal logging and ecological degradation.<sup>11</sup> Countries such as the **United States, Germany, and the United Kingdom** claim carbon credits from REDD+ projects, while local communities report **minimal consultation, no access to revenue flows**, and exclusion from governance structures.<sup>12</sup>

“Forests are being monetised for external benefit, while indigenous custodians are sidelined from decision-making.”<sup>13</sup>

In more extreme cases, REDD+ projects have facilitated forced evictions under the guise of conservation, echoing colonial-era forest management practices. For instance, a World Bank–funded initiative in Kenya’s Embobut Forest intensified the displacement of the Sengwer people from their ancestral lands. Despite international safeguards, the project reproduced a colonial conservation model, framing indigenous inhabitants as threats rather than essential stewards.<sup>14</sup> As scholar Kurang (2022) observes:

“The Sengwer were reduced to observers, not participants, excluded from Kenya’s REDD+ governance.”<sup>15</sup>

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<sup>10</sup> UN-REDD Programme, *REDD+ Implementation Challenges in Africa* (2021)

<sup>11</sup> Global Witness, *Deforestation and Timber Trade in the Congo Basin* (2020)

<sup>12</sup> Forest Peoples Programme, *REDD+ and Indigenous Rights in Africa* (2022)

<sup>13</sup> African Development Bank, *REDD+ in Africa: Context and Challenges*

<sup>14</sup> Human Rights Watch, *Kenya: Evictions in Embobut Forest* (2018)

<sup>15</sup> Abdoulie Kurang, ‘Colonial Framing in REDD+ Conservation’ (2022)

## 2. The Paris Agreement: Loopholes and Contradictions

Although the Paris Agreement is a landmark treaty that promises inclusive governance and differentiated responsibilities, its implementation reveals profound contradictions that exacerbate climate injustice for African nations.

A primary issue lies in **Article 6, which establishes mechanisms for international carbon trading (6.2 and 6.4) and non-market approaches (6.8).**<sup>16</sup> These rules allow high-emitting countries to meet their emission targets by purchasing offsets from lower-emitting nations, often through forestry or energy projects in Africa. While framed as “cooperative action,” this system risks reducing African nations to carbon offset zones for wealthy polluters, diverting land, attention, and resources away from locally-led adaptation and resilience strategies.<sup>17</sup>

Furthermore, although the Agreement commits to mobilising climate finance, over **60% of adaptation funding to Africa is delivered as loans**, not grants.<sup>18</sup> This pushes vulnerable nations deeper into debt, contradicting the Agreement’s stated goal of building resilience. Compensation for loss and damage remains voluntary and politically contested, treated as charity rather than a legal obligation.<sup>19</sup>

“Climate governance remains mitigation-heavy, burdening the victims of carbon emissions with debt, while major polluters evade accountability.”<sup>20</sup>

In conclusion, the global climate governance architecture remains overwhelmingly mitigation-heavy. By prioritising carbon markets over community rights and allowing financial loopholes to persist, it places an unjust burden on the victims of the climate crisis. African countries are left to manage the devastating impacts of emissions they did not produce, often through debt-financed adaptation, while the world’s largest polluters face no meaningful accountability. This system perpetuates a neo-colonial dynamic that must be fundamentally reformed to prioritise justice, resilience, and equity.

### Climate Adaptation and Resilience

It's essential to note the nuance that Climate change effects have been present for a long time, thus not a distant threat but a present and persistent reality. The long atmospheric lifespan of greenhouse gases, particularly carbon dioxide and methane, ensures that warming effects will endure for decades, even if emissions ceased today. This underscores the imperative for adaptation and resilience as primary policy responses.

### How Adaptation Works: Community-Led Resilience

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<sup>16</sup> UNFCCC, *Paris Agreement Article 6 Guidance* (2023)

<sup>17</sup> Carbon Market Watch, *Human Rights Risks in Article 6 Implementation* (2022)

<sup>18</sup> UNEP, *Adaptation Finance Gap Report* (2022)

<sup>19</sup> IPCC, *Climate Change 2022: Impacts, Adaptation and Vulnerability*

<sup>20</sup> ACTS, *Reframing Climate Justice for Africa’s Future* (2025)

Adaptation refers to measures that reduce the adverse impacts of climate change while enhancing the capacity of communities and ecosystems to cope. In Kenya, Lake Baringo exemplifies the impact of climate-induced disruption. The lake has experienced erratic flooding during rainy seasons and severe droughts during dry spells, leading to food insecurity and ecosystem degradation. In response, Baringo County has adopted erosion control strategies in high-risk zones, including:

- Terracing and indigenous tree planting to reduce flash flooding and siltation.
- Community-led catchment rehabilitation, supported by the County Climate Change Action Plan 2023–2027, which integrates local knowledge and participatory risk assessments.<sup>21</sup>
- Solar energy adoption, notably through M-KOPA systems, reduces reliance on fossil fuels and expands energy access in off-grid areas.<sup>22</sup>

In Nigeria, desertification in the northern regions has prompted restoration of over 2,800 hectares of degraded land through agroforestry, mulching, and erosion control. These practices improve soil moisture, enhance yields, and shield communities from dust storms, an adaptation strategy that doubles as a livelihood intervention.

Rwanda leads East Africa in environmental conservation. Its climate-smart agriculture initiatives include:

- Promotion of drought-resistant crops and sustainable irrigation.
- Farmer training in soil conservation and erosion control.
- Expansion of green transport infrastructure, including electric buses and charging stations, which serve both mitigation and domestic growth.<sup>23</sup>

## **Lessons from the Global North: Adaptive Infrastructure**

Africa's adaptation journey can draw strategic lessons from the Global North, where climate resilience has been institutionalised through long-term planning and infrastructure investment.

In the United Kingdom, the catastrophic North Sea flood of 1953 exposed London's vulnerability to tidal surges, killing over 300 people across the Thames Estuary.<sup>24</sup> This disaster catalysed decades of planning, culminating in the Thames Barrier, a 520-meter flood defence system that protects 1.4 million people and £321 billion in assets.<sup>25</sup> The barrier operates on adaptive pathways, allowing for flexible upgrades in response to sea level rise projections of up to 1.15 metres by 2100.<sup>26</sup>

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<sup>21</sup> Baringo County Government, *Climate Change Action Plan 2023–2027* (Maarifa Centre, 2024)

<sup>22</sup> M-KOPA Solar, 'Impact Report 2023'

<sup>23</sup> Rwanda Environment Management Authority, *Green Growth and Climate Resilience Strategy* (2021)

<sup>24</sup> Harry Howard, 'How 1953 Great North Sea Flood Led to Thames Barrier' *Daily Mail* (31 January 2023)

<sup>25</sup> [https://en.wikipedia.org/wiki/Thames\\_Barrier](https://en.wikipedia.org/wiki/Thames_Barrier)

<sup>26</sup> Environment Agency UK, *Thames Estuary 2100 Plan* (2020).

In the Netherlands, the 2003 floods triggered a paradigm shift from resisting water to living with it. Projects like Schoonschip, a floating neighbourhood in Amsterdam, showcase climate-resilient architecture powered by solar energy, shared thermal pumps, and microgrids.<sup>27</sup> Water plazas and floating homes represent a reimagining of urban design in response to rising seas.

## **Reframing Mitigation: From Export to Empowerment**

Prioritising adaptation does not necessitate abandoning mitigation. Instead, it demands a strategic reframing. Africa must reject its role as a carbon offset exporter and instead harness mitigation for developmental sovereignty.

The continent's profound energy poverty, with over 600 million people lacking access to electricity, can be addressed by building distributed renewable energy grids. These grids power adaptation (e.g irrigation, cooling centres, health clinics) and drive sustainable industrialisation.<sup>28</sup>For example:

- Lake Turkana Wind Power in Kenya supplies 17% of the national grid and demonstrates how blended finance can unlock large-scale renewable projects.<sup>29</sup>
- Morocco's Noor Ouarzazate Solar Complex offsets 690,000 tonnes of CO<sub>2</sub> annually and serves as a model for regional energy transition.<sup>30</sup>

This approach transforms mitigation from a mechanism that serves the Global North into a tool for achieving African energy sovereignty, job creation, and resilient economic growth.

## **Conclusion: The Sinking Ship Analogy**

To simplify the climate crisis, consider the analogy of a sinking ship. Mitigation is the act of plugging the leak to prevent more water from pouring in. For Africa, a passenger who did not cause the leak but stands in the deepest water, the immediate priority is to bail out the flooding decks. This is adaptation. Climate resilience is the reinforcement of the parts not yet breached.

Thus, Africa must build resilience not as a concession to vulnerability, but as a strategy of survival and agency. Mitigation must work for Africa, not as a service to others, but as a catalyst for inclusive development and climate justice.

*A journey of a thousand miles begins with a single step.* Let that step be rooted in African sovereignty, community wisdom, and the courage to reframe the climate narrative.

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<sup>27</sup> Andreea Cutieru, 'Schoonschip: Floating Neighbourhood in Amsterdam' *ArchDaily*

<sup>28</sup> Africa Energy Portal, *Renewable Energy Transition in Africa* (2021).

<sup>29</sup> Enzi Ijaya Africa Initiative, *Bridging the Gap: Financing Africa's Renewable Future* (2025).

<sup>30</sup> Africa Sustainability Matters, 'Role of Renewable Energy in Mitigating Climate Change' (2024).

