CLIMATE CHANGE IN MOZAMBIQUE: FROM VULNERABILITY TO RESILIENCE PERSPECTIVES

Eduardo Jaime Bata[1,*], Manuel Macandza[2], Diego Tarley Ferreira Nascimento [3]

[1] Rovuma University (Mozambique)
[2] Pedagogical University (Mozambique)
[3] Federal University of Goiás (Brazil)

Abstract

The year 2023 was marked by temperature records in various regions of the world, establishing itself as the hottest year since 1850. This scenario reinforces the urgency of actions to mitigate and adapt, promoting resilience to climate change. Strategies such as energy efficiency, green infrastructure, and sustainable management are essential to address the global climate crisis. While some countries have implemented public policies and managed to reduce greenhouse gas emissions and mitigate the impacts of climate change, the case of Mozambique is concerning due to its extreme vulnerability. Extreme weather events, such as cyclones, floods, and droughts, have plagued the country, affecting infrastructure and causing significant losses. The research conducted highlights the specific vulnerabilities of Mozambique, particularly in its major coastal cities, which host most of the population and are subject to extreme weather events. Between 2015 and 2023, the country faced a series of natural disasters, highlighting the urgent need for investment in infrastructure and adaptation policies. The results indicate that Mozambique needs to strengthen its climate governance policies and adopt mitigation and adaptation strategies at all levels of government. Only with coordinated and integrated actions will it be possible to address the challenges imposed by climate change and protect the country's vulnerable communities.

Keywords: Climate Change; Extreme Events; Adaptation; Mitigation.

INTRODUCTION

The year 2023 is considered, thus far, as the hottest since 1850, with temperature records in Europe, Asia, and the United States, with record highs of 47°C in Phoenix (USA) and 52.2°C in Sanbao (China), for example. The recurrence and increased intensity of extreme events corroborate projections and reaffirm the magnitude of the global climate crisis, with all the associated problems.

Therefore, it is essential that coherent and proactive measures are taken to reduce greenhouse gas emissions and minimize the impacts, effects, and vulnerabilities resulting from climate change, promoting mitigation and adaptation leading to resilience. To this end, strategies and technologies encompassing energy efficiency, urban green infrastructure, waste management, and sustainable management of forests, plantations, and pastures are examples of technically viable and economically accessible mitigation strategies (IPCC, 2022).

In many countries, public policies have been implemented to increase energy efficiency, reduce deforestation rates, and accelerate the deployment of sustainable technologies, resulting in the reduction and, in some cases, removal of greenhouse gas emissions. European cities like Rotterdam (Netherlands), London (England), and Copenhagen (Denmark) present visible results of actions and strategies implemented just over a decade ago. However, the case of Mozambique is alarming, as the country is considered the most vulnerable in the world to climate change. Recent climatic events, namely cyclones IDAI, Gombe, and Ana, floods in the central and southern regions, and droughts in Inhambane and Gaza, reveal the country's vulnerability.

Therefore, this research seeks to highlight Mozambique's vulnerabilities to climate change, as well as to present possible mitigation and adaptation strategies considering the provinces of Nampula, Sofala, and Maputo, located in the North, Central, and South regions of the country (Fig. 1).

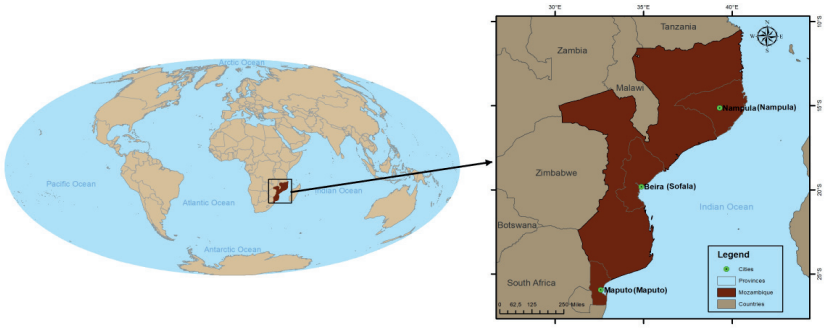

Fig. 1: Map of the location of Mozambique, with the provinces of Nampula, Sofala, and Maputo and their respective capitals. Source: authors

METHODOLOGY

The methodology relies on literature review and collection of journalistic materials that highlight events, impacts, and vulnerabilities associated with climate change in Mozambique. For this purpose, articles were consulted in the databases of Google Scholar, Web of Science, and SCOPUS, using keywords associated with climate change and extreme weather events, with the spatial focus on Mozambique and no specific temporal cut-off. Additionally, journalistic materials were compiled from local, national, and international media available on the internet, using Google search mechanisms.

RESULTS AND DISCUSSIONS

Extreme weather events have been recurrent in Mozambique, affecting social and economic infrastructures such as health centers, schools, subsistence agricultural areas, and access roads (OMBE; LIMA, 2017; BERNARDO et al., 2022; NGANHANE, 2023). Given the physical characteristics and location of most Mozambican cities, extreme rainfall and storms have high degrees of vulnerability and exposure to risks of damage and loss, both material and human lives.

Mozambique has most of its main cities on the coast, which accommodate over 60% of the country's population, such as Maputo City, Xai-Xai, Inhambane, Beira, Quelimane, Nampula, Nacala, and

Pemba, which are frequently affected by extreme weather events and require research and investments to mitigate the effects of climate change and adapt infrastructure to reduce vulnerability to society.

Between 2015 and 2023, Mozambique experienced a series of extreme events, such as torrential rains in the central and southern regions of Mozambique, affecting public and private infrastructure and causing the deaths of thousands of people; droughts, which led to food shortages and food insecurity among families in the Northern districts of the provinces of Inhambane, Gaza, and Manica; cyclones Idai, Kenedy, Gombe, Ana, Freddy, among others, with cyclone Idai alone causing the deaths of 602 people, 1,641 injured, and over a million in need of essential health services (PDNA, 2019) – Fig. 2.

Fig. 2: Impactos nas infraestruturas ocasionados pelo ciclone Freddy na cidade de Quelimane, província de Zambézia (A) e danos materiais e destruição de áreas agrícolas devido o ciclone Idai (B). Source: (A): Alfredo ZUNIGA / UNICEF / AFP; (B): Ocha/ Saviano Abreu / ONU.

Despite efforts, especially in the context of post-Idai reconstruction, bolder measures and strategies are needed to address the current climate crisis, which, in the case of Mozambique, is largely exacerbated by the poverty conditions associated with the weak capacity of the affected population to respond.

However, energetic mitigation actions are still awaited in the country, especially regarding energy transition, as Mozambique was the first to receive resources from the World Bank's trust fund

to reduce greenhouse gas emissions from deforestation and forest degradation.

CONCLUSIONS

The literature demonstrates that extreme weather events are part of the daily lives of the population in Mozambique, reflecting significant vulnerability to intense rainfall and storms, resulting in floods and inundations that affect various infrastructures and cause material and human losses. However, the increased recurrence, intensity, duration, and severity have revealed the emergence of the climate crisis.

It is imperative and urgent to strengthen climate governance policies in Mozambique, promoting the adoption of strategies at local and regional scales, in line with national strategies, with integrated actions and coordination among different governance levels. Only then will it be possible to promote mitigation and adaptation to climate change in these countries.

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*Corresponding author. Email addresses: ebata@unirovuma.ac.mz (Eduardo Jaime Bata), manuelmacandza4@gmail.com (Manuel Macandza), diego_nascimento@ufg.br (Diego Tarley Ferreira)