

BEIRA'S BIOPHYSICAL FLOOD RISK PROFILE

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Beira, situated along the coast of central Mozambique in Sofala province, is highly vulnerable to extreme weather events. Cyclones, heavy rains, and storm surges – intensified by climate change – pose serious flood risks for this low-lying coastal city.

KEY FACTORS CONTRIBUTING TO BEIRA'S FLOOD RISK:

Cyclone prone zone: Located in the Inter-Tropical Convergence Zone, the Mozambique Channel, and the Southwest Indian Ocean, Beira frequently experiences cyclones and intense storms.



Heavy rainfall: Beira averages 1,593 mm of rain annually, with the rainy season (November to April) bringing the highest flood risk.



Low elevation: Several neighbourhoods have an elevation of 6 meters or less and experienced as much as 10 meters of flooding in the aftermath of Cyclone Idai.



River confluence: The city lies at the junction of two major rivers, exacerbating flood risks, especially during storms or heavy rainfall.



Urbanisation and infrastructure challenges: Rapid, unplanned urban growth, a strained drainage system, and coastal erosion (due to sand extraction and damage to natural barriers like mangroves and dunes) exacerbate the impacts of floods.



Beira, Mozambique

THE FUTURE FLOOD RISK:

- **Rising seas:** Extreme weather events that cause temporary 1-meter sea-level rises occur roughly every decade. Due to climate change, this frequency is expected to quadruple.
- **Cyclones are increasing:** Idai was not an isolated event—Cyclone Eloise in 2021 inflicted further damage on Beira, highlighting the city's ongoing vulnerability.

Beira's future flood resilience is at risk without urgent interventions. Climate adaptation, restoration and management of the natural environment, improved infrastructure, and sustainable urban planning are critical to protecting this coastal city from the increasing impacts of climate change.

RESILIENCE AND ADAPTABILITY AMID LIMITED INFRASTRUCTURE

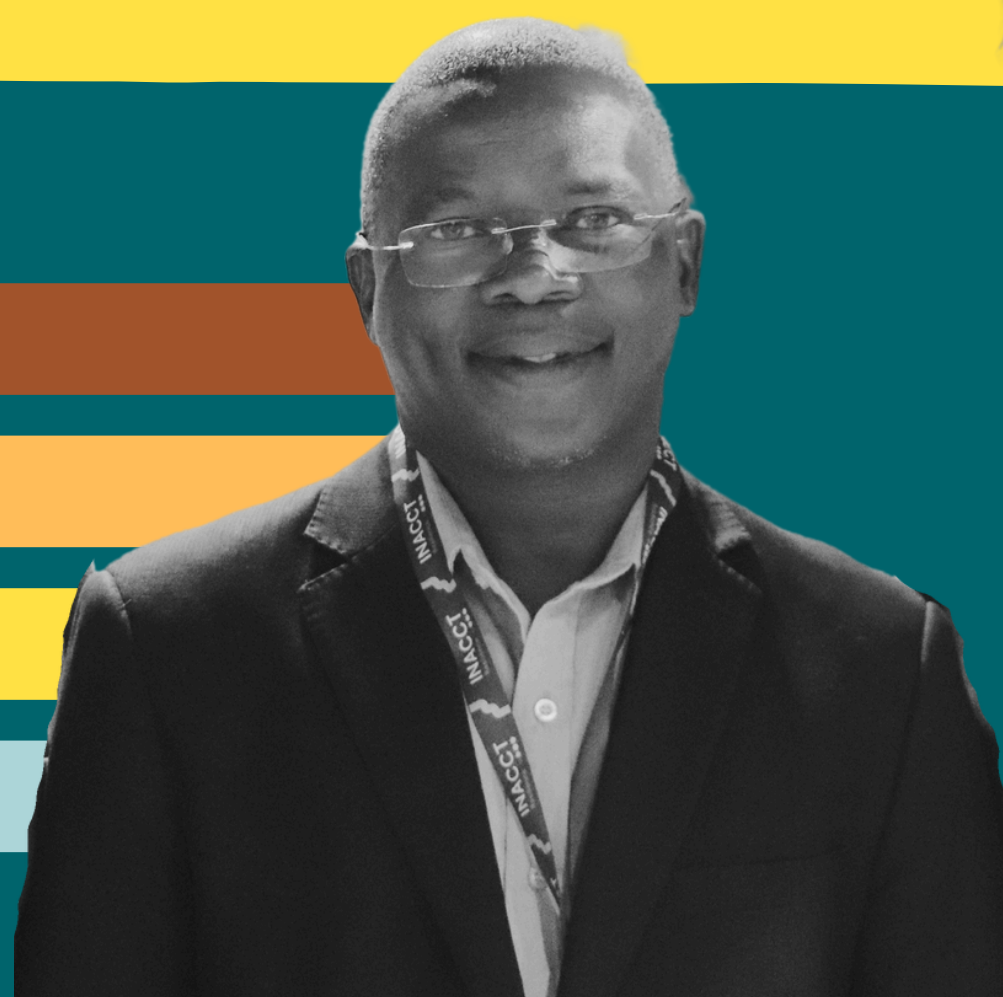
"It is possible to live with water in the city, without it causing troubles – but for that, it is necessary to take precautions, such as not disposing of solid wastes or letting water stagnate."

Mayor Albano António Carige, President of the Beira Municipal Council

CYCLONE IDAI – 2019'S DEVASTATING IMPACT

In March 2019, Beira was struck by Cyclone Idai, one of the most destructive storms in Southern Hemisphere history. It was a Category 4 Cyclone, and winds exceeding 195 km/h battered the city:

- **Severe rainfall:** Between 200 and 400 mm of rainfall fell over Beira, with over 600 mm recorded upstream, creating what was described as an "inland ocean".
- **Widespread destruction:** 90% of the city was destroyed or severely damaged, with over 75% of the land submerged.
- **Human toll:** Over 600 people lost their lives, 1,600 were injured, and 160,927 people were displaced.
- **Health crisis:** Floodwaters contaminated drinking water, leading to a cholera outbreak with 4,979 cases and 8 confirmed deaths.
- **Vegetation loss:** Cyclone Idai caused an 8 to 20 % decline in vegetation, reducing the city's resilience.



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