

Climate Extremes in Africa: Water-related disaster management in Kenya and regional cooperation in Eastern Africa.

Water-related disasters within Eastern Africa (Floods, Droughts, Cyclones)

ICHARM 20th Anniversary Events and Symposium

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Overview of Water related disasters in Eastern Africa

- Africa is increasingly exposed to **dual climate extremes** (floods and droughts) that pose significant challenges to sustainable development, food security, and human well-being.
- These water-related disasters are not only becoming more frequent but also more severe, driven by climate change, environmental degradation, socio-economic pressures and **ENSO variability**.
- Floods devastate infrastructure, displace communities, and trigger outbreaks of waterborne diseases, while droughts erode agricultural productivity, deplete water resources, and intensify food insecurity.
- The compounded effect of these extremes undermines resilience and adaptation across the African continent



Country risk matrix on Water related disaster in Eastern Africa

S/No.	Country	Flood Risk/Coastal flooding	Drought Risk	Cyclones	Remarks
1.	South Sudan	Very High – riverine flooding	Moderate		Severe floods in since 2019 to 2024 affected 1.2 million people and displaced 300,000
2.	Kenya	High flood risk	High		Catastrophic flooding in 2024 killed 294 people and displaced over 40,000 households in Nairobi
3.	Uganda/Rwanda	High floods and landslides			Frequent floods and landslides (Kasese, Mbale, Kampala) affected over 39,000 people in May 2024.
4.	Tanzania	High			El Niño rains in 2023 caused widespread floods in Manyara and Morogoro, coastal flooding
5.	Burundi	High			Rising Lake Tanganyika waters and Rusizi River floods displace tens of thousands annually
6.	Ethiopia	High	High		Cyclical droughts and floods devastate rural communities
7.	Somalia	High	High		Worst drought in 40 years (2025) displaced 156,000 people; 4.4 million face acute food insecurity.
8.	Eritrea	High	High		Recurring droughts and flash floods
9.	Djibouti		High		Severe droughts (2022–2023) left 160,000 people food insecure.
10.	Mozambique	Riverine flooding (High)	Moderate	High	Hit by 8 major cyclones between 2019–2023; floods in 2025 affected 600,000 people.
11.	Madagascar	High Coastal flooding		High	Recurrent droughts in the south, back-to-back cyclones, and floods devastate agriculture; 1.6 million face acute food insecurity.

Flooding and droughts hotspots in Eastern Africa

South-Eastern Africa Mozambique, – cyclones & river floods.

Eastern Africa: South Sudan (Sudd wetlands), DRC – South Sudan is among the world's most fragile states and is exceptionally vulnerable to the impacts of climate change, placing it second globally in vulnerability indices while possessing limited resources to cope and adapt

Horn Of Africa: Kenya, Uganda, Tanzania, Somalia – seasonal floods linked to El Niño.

Drought Hotspots: Horn of Africa: Ethiopia, Somalia, Kenya – multi-year droughts and expansion Asal areas.

Drivers: Rising sea temperatures, poor urban drainage, stronger ENSO and IOD cycles.



South Sudan



Mozambique



Kenya



Key Drivers: Floods and Droughts in Eastern Africa

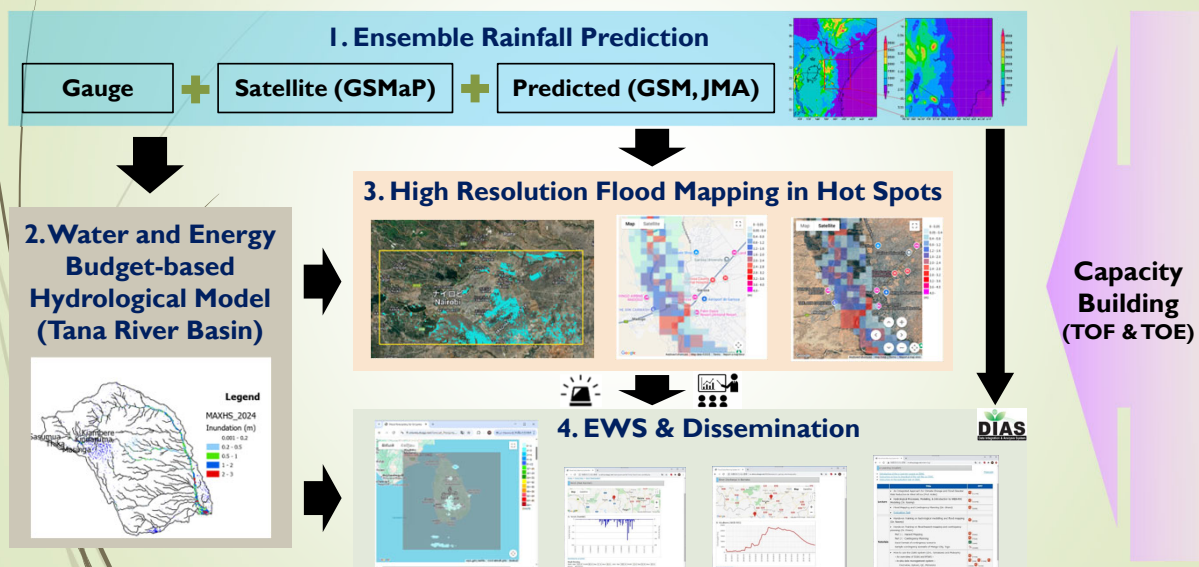
Climate & Environmental Drivers

- **Climate change:** Rising temperatures intensify rainfall extremes and evaporation, worsening both floods and droughts.
- **ENSO variability:** El Niño and La Niña cycles drive alternating wet and dry extremes across regions.
- **Deforestation:** Loss of forest cover reduces water retention, increases runoff, and accelerates desertification.
- **Land degradation:** Overgrazing and poor soil management reduce resilience to drought and increase flood susceptibility.

Socio Economic Factors

- **Rapid urbanization:** Expansion of informal settlements in flood prone areas without proper drainage systems.
- **Agricultural dependence:** Heavy reliance on rain fed farming makes communities highly vulnerable to rainfall variability.
- **Poverty:** Limited resources restrict adaptation measures like irrigation, flood defences, or insurance.
- **Population growth:** Rising demand for water and land intensifies pressure on fragile ecosystems.

ICHARM'S support in Enhancing Flood Resilience within the Tana River Basin and Nairobi



Governance & Institutional Challenges

- **Weak disaster preparedness:** Limited early warning systems and response capacity.
- **Policy gaps:** Inconsistent integration of climate risk into national development plans.
- **Infrastructure deficits:** Poor roads, drainage, and water storage systems exacerbate impacts.
- **Transboundary water conflicts:** Shared rivers like the Nile and Juba-Shebbele create political tensions over resource allocation.