Sea-level rise

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Trends and vulnerabilities

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About the reports

- Literature reviews, only consisting of existing research
- Limited research on the effects of SLR, specifically for Kenya and Mozambique
- Limited research on adaptation efforts, specifically for Kenya, Madagascar, and Mozambique
- The reports do not cover everything

Trends of sea level rise

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	Kenya	Madagascar	Mozambique	Seychelles
Sea level rise projections 2100	**0.5-0.96m SSP3-7.0 = 0.75m**	**0.5-0.94m SSP3-7.0 = 0.73m**	**0.5-1m SSP3-7.0 = 0.75m**	**0.51-1m SSP3-7.0 = 0.87m**
Coastline	536km	4,828km	2,470km	491km
Population	56.4 million	29.5 million	34.4 million	121,355 people
Coastal population	7.6% = 4.3 million	38% = 12.16 million	60% = 28 million	100%
Urbanisation	Urban population: 29.5% of total population (2023) Rate of urbanisation: 4.09% Projected increase: 46% by 2050	Urban population: 40.6% of total population (2023) Rate of urbanisation: 4.26%	Urban population: 38.8% of total population (2023) Rate of urbanisation: 4.24%	Urban population: 58.8% of total population (2023) Rate of urbanization: 0.99% Over 85% resides on Mahé island
Economy	Agriculture: 21.3% (2024 est.) Industry: 16.1% (2024 est.) Services: 55.9% (2024 est.) Population below poverty line: 38.6%	Agriculture: 22.5% (2024 est.) Industry: 22.8% (2024 est.) Services: 46.4% (2024 est.) Population below poverty line: 78%	Agriculture: 26.3%; employ 70% Industry: 24.6% (2024 est.) Services: 38.4% (2024 est.) Population between poverty line: 62.8% Informal sector employ 80%	Agriculture: 2.5% (2024 est.) Industry: 12.3% (2024 est.) Services: 65.8%; tourism employ 60% People below poverty line: 25.3% Highest GDP in Africa
Geography	Its terrain rises from a low coastal plain on the Indian Ocean to mountains and plateaus at its centre.	59% of the country is coastal Low-lying coastal area on all sides and highland plateau through the centre	Mainly coastal lowlands with uplands in its centre and high plateaus in the northwest	115 islands Mahé island narrow coastal strips and rocky interior region

General risks of sea level rise

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- SLR leading to land-loss, erosion, more frequent storm surges, tsunamis, cyclones, floods, and saline intrusion
- Threatening ecosystems, specifically mangroves and coral reefs
- Disruption to economic activities: such as fisheries, agriculture (saline intrusion) and tourism
- Potential risk to hydropower due to erosion and saline intrusion

- Infrastructure damage along the coast
- Loss of livelihoods, food insecurity, and freshwater
- Risk of backflowing sewers and leeching septic systems can lead to waterborne diseases
- Aquafers (saline intrusion)

Vulnerabilities of sea level rise

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Kenya:

- Especially risk for Kwale, Mombasa, Kilifi, Tana River and Lamu
- 4-6 km2 of Mombasa is likely to be submerged with SLR of 0.3m
- Different hazards along the country
  - Cyclones, flooding, erosion, and saline intrusion
  - Or drought
- The Port of Mombasa (biggest port of East Africa)
  - Serving Kenya, landlocked countries and north of Tanzania
- Marine ecosystems: 3% of natural forest cover are mangroves; coral reefs along the entire coast
  - Around 60% in the Lamu County

- Coastal infrastructure are at risk on the coast
- 40% of the energy comes from hydropower
- Informal settlements
  - Kilifi has 11 informal settlement
  - Nearly 50% of the population in Mombasa
  - Insufficient water and sanitation
- Tourism is dependent on natural resources, especially on the coast
- Marine fisheries contribute to 95% of the national catch
  - Risk of food insecurity
- The need to strengthen EWS and monitoring hightide levels

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Madagascar:

- Part of the coastal areas of Morondava and Mahajanga can be submerged by 2100
- Over 570,000 thousand people are projected to be directly impacted by SLR between 2070-2100
- Highest risk of cyclones in Africa (3-4 per year)
- Northeastern region = cyclones, floodings and heavy rain
  - South region = droughts
- 300,000 hectares of mangroves, 3,450km of coral reefs.
  - 70% of mangroves in Tsiribihina have moderate – high vulnerability of SLR

- Limited railway = high dependance on roads
- Road system = the lowest rank in terms of density
- 60% of urban residents' lives in informal settlements
- Only 15% are connected to electricity
- 30% of Madagascar's energy is from Hydropower
- Toamasina port
- Dependent on fisheries, tourism (63% by the coast) and agriculture (employing 80%)
- 78% live under poverty line

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Mozambique:

- 7th most disaster risky country in the world
- Vulnerable coastal cities Beira, Maputo, Matola, and Quelimane
  - Rapid urbanisation with limited resilience planning
- 3 million people exposed to rising sea levels
- Land losses could reach 3,268 km2 including 291km2 of agriculture land
  - 70% of the population works in agriculture
- Projections by 2100, 4.35 million people affected by flooding per year
- 70% of schools are in high-risks zones of hazards, including SLR
  - Impacting 57,000 students annually
- Storage and drainage systems are insufficient
- Tourism dependent on natural resources
- Risk for sea-ports in Maputo, Beira and Nacala
- 5 million people are already food insecure
  - crisis is likely to worsen
- 6,6 million people depend on fish from local coastal fisheries
- 138,000 IDPs in 2025 to climate related disasters, and 461,754 people due to the ongoing conflict in Cabo Delgado
  - Some resettling areas are in coastal zones
- Challenges in EWS due to lack of financial resources, and human capacity

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Seychelles :

- 100% of the population live in coastal areas
  - Almost 85% live within the vicinity of the coastal area
- Severely impacted districts of Aux Cap, Beau Vallon, Northeast Point, and Anse La Blague
- Risks of SLR, extreme precipitation, flooding, drought and coastal erosion
  - Lies outside the cyclone belt
- Economy dependent on tourism and fisheries
  - Tourism infrastructure are in the exposed coastal plains
  - Tourism dependent on natural resources
  - Fisheries 80% of export revenues

- Mangroves, seagrass meadows and coral reefs are decreasing
  - Effecting e.g., fisheries, storms, wave energy, erosion
- High levels of physical development at lower island elevation
- Agriculture land occupies 3,4% of the land area, most are located by the coast
- Challenges of adaptation strategies due to lack of capital and capacity, and limited developed land
- Need to strengthen forecast, early warning systems and climate information services

Summary

- There are clear similarities and differences between the countries risks and vulnerabilities
- No "one solution fits all"

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