



Coastal ecosystem Mapping



# 1- Economic values

## OCEAN ASSET VALUE IN THE WIO - SHARED WEALTH FUND

Marine assets in the WIO provide considerable value and could provide even more if they are well managed.

**US\$ 333.8 bn** TOTAL SHARED WEALTH FUND ASSET BASE



## WIO GROSS MARINE PRODUCT

(data from 2015)

Gross Marine Product (GMP) is the ocean's annual economic value.

**70.2%**

ADJACENT BENEFITS OF THE OCEAN

- 50.0% Coastal tourism
- 14.0% Carbon sequestration
- 6.0% Coastal protection
- 0.2% Marine biotechnology



**20.7%**

DIRECT SERVICES ENABLED BY THE OCEAN

- 19.0% Marine tourism
- 0.8% Research & development
- 0.5% Security & control
- 0.2% Ocean survey
- 0.1% Cruise industry
- 0.1% Education & training

**9.1%**

DIRECT OUTPUT OF THE OCEAN

- 7.8% Industrial fisheries
- 1.2% Subsistence fisheries
- 0.1% Aquaculture / mariculture

**MANGROVES, CORAL REEFS, SEAFOOD, FISHERS, TOURISM OPERATORS — THEY'RE ALL CONNECTED.**

Across the WIO, peoples' livelihoods and income are often inextricably linked to healthy functional ecosystems. When these are damaged, all pay the price.

### PRIMARY ASSETS

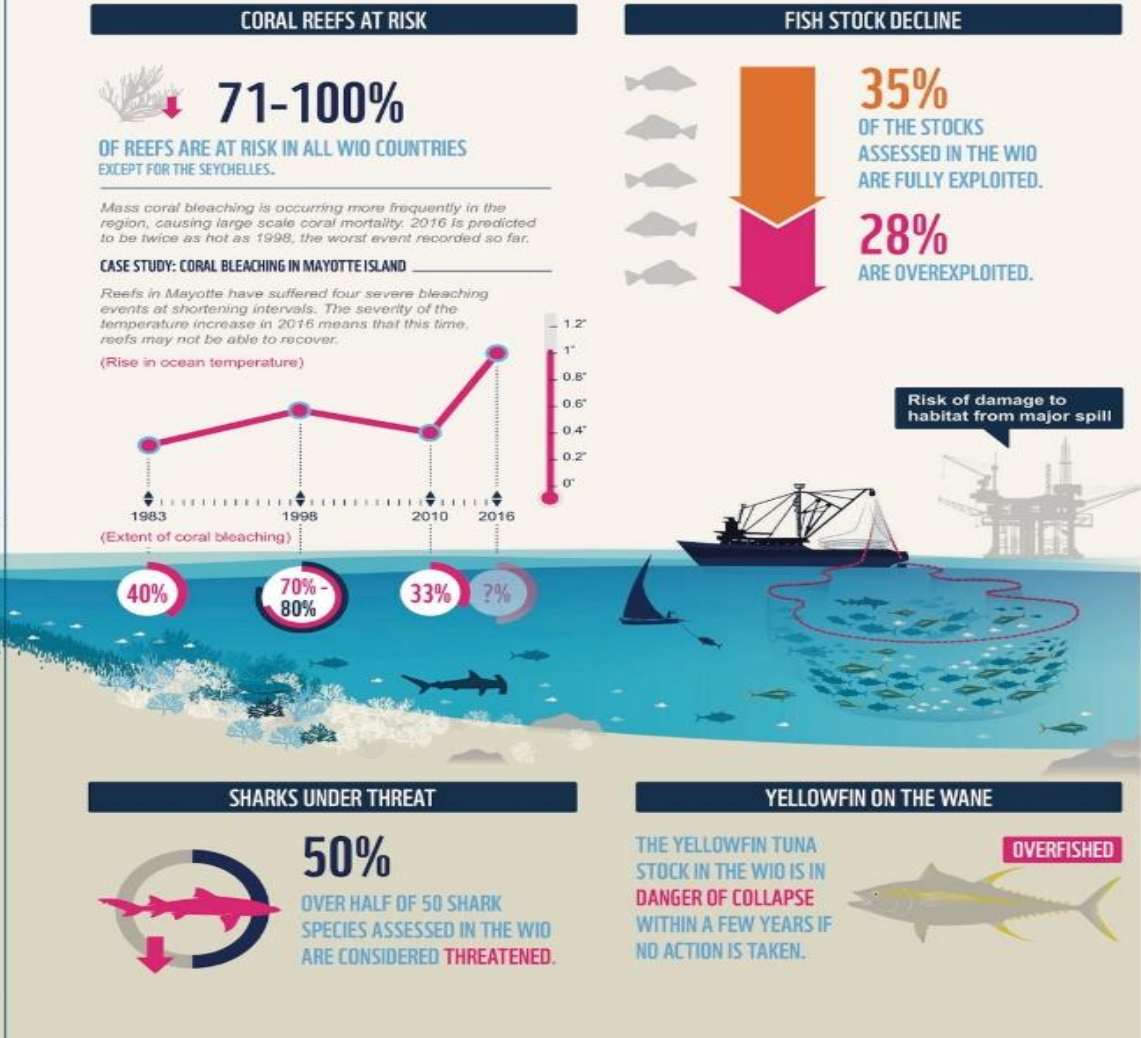
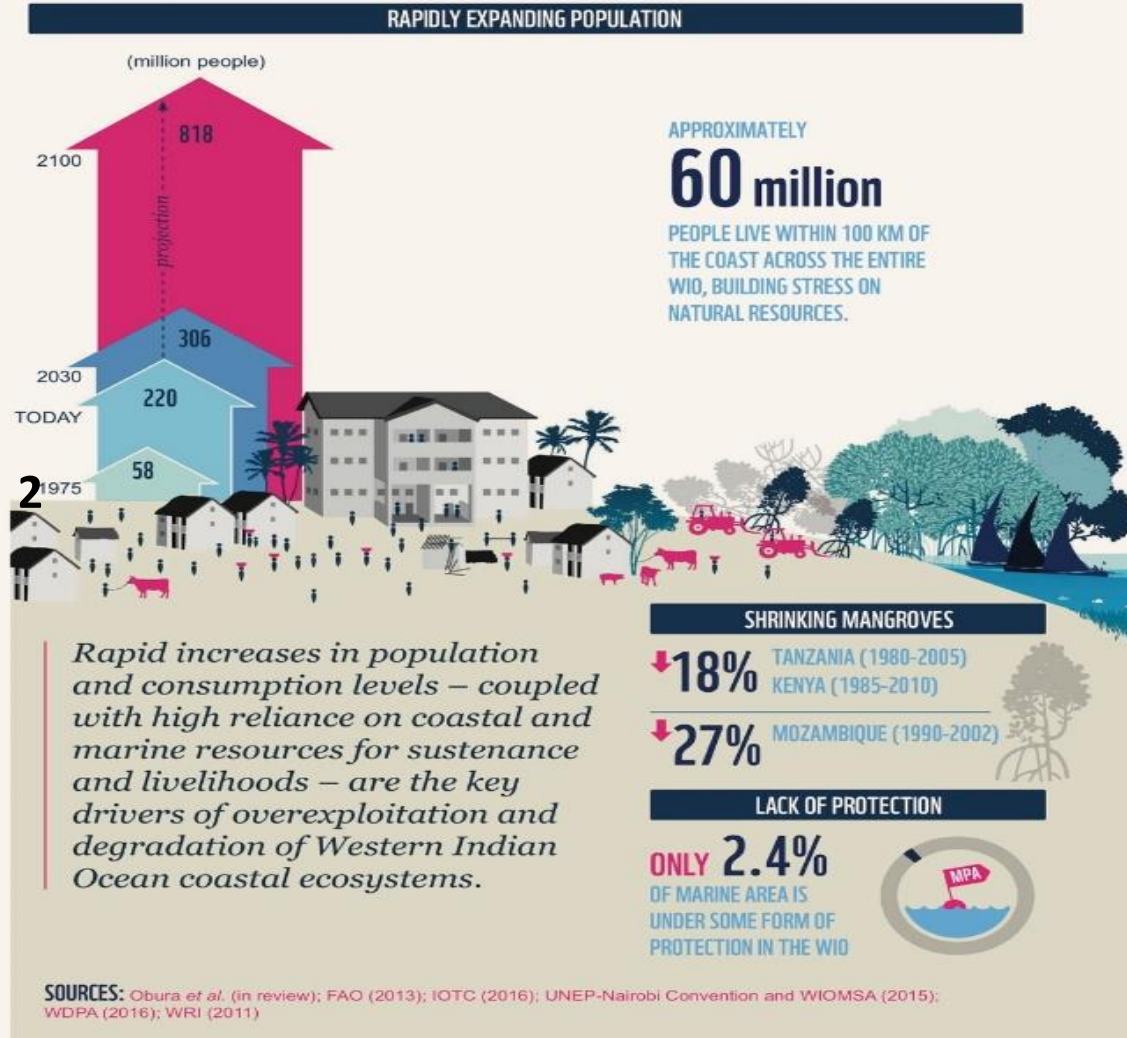
	Marine Fisheries	US\$ 135.1 bn
	Mangroves	US\$ 42.7 bn
	Coral Reefs	US\$ 18.1 bn
	Seagrass	US\$ 20.8 bn

### ADJACENT ASSETS

	Productive Coastline	US\$ 93.2 bn
	Carbon Absorption	US\$ 24.0 bn



**FIGURE 2 STATE OF MARINE ASSETS IN THE WESTERN INDIAN OCEAN (WIO)**







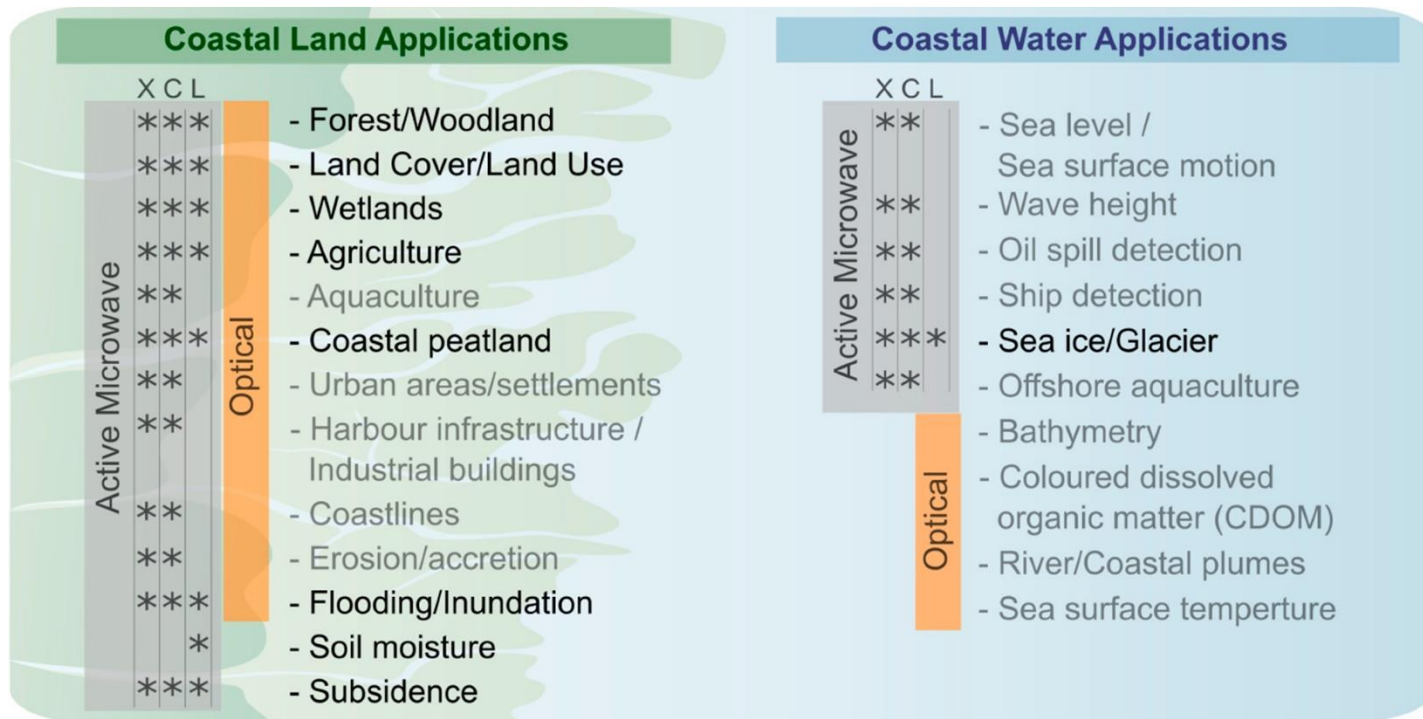
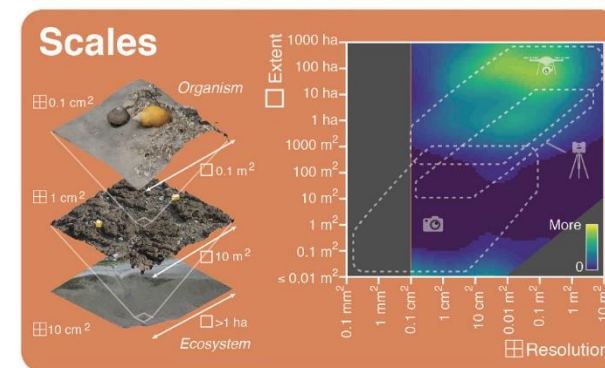
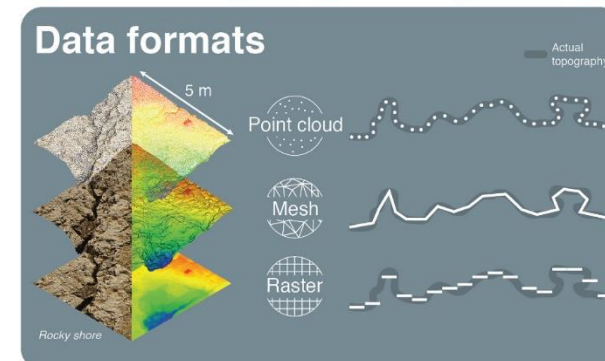
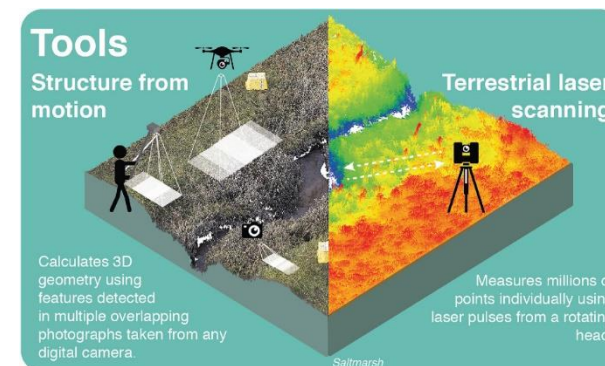
# People, Climate and Ecosystems

- Nature-based solutions (NBS) are solutions that are inspired and supported by nature, and can provide environmental, social and economic benefits for urban resilience and [sustainability](#) with locally adapted, resource-efficient and systemic interventions
- Nature-based solutions (NbS) to climate change currently have considerable political traction. Nature-based interventions are most often shown to be as effective or more so than alternative interventions for addressing climate impacts.
- Planning for and implementing multifunctional nature-based solutions can improve urban ecosystems' adaptation to climate change, foster urban resilience, and enable social and environmental innovation.
- Addressing urban challenges with nature-based approaches can improve and protect ecosystem services.
- A sustainable approach to shoreline management demands a balance between protection of property and preservation of coastal ecosystem services.

# Tools

Spaceborne L-Band Synthetic Aperture Radar Data for Geoscientific Analyses in Coastal Land Applications: A Review (<https://doi.org/10.3390/rs12142228>)

High-resolution remote sensing tools for rapid and accurate 3D mapping in ecology—terrestrial laser scanning and structure-from-motion photogrammetry (<https://doi.org/10.1098/rspb.2019.2383>).



## Question on **coastal and marine ecosystem mapping**

- Why do we need to better understand the foundation of ecosystems in urban, rural and protected areas?
- What is the relationship between ecosystem and coastal resilience?
- What are the critical needs for ecosystem mapping in the African context?
- What are the observational services (intelligence/usable information) we need to close the gap in ecosystem mapping for coastal resilience?
- What is the process for designing ecosystem mapping services?