

Economic Valuation of Blue Carbon Ecosystems: The Case Study of the Kenya-Tanzania TBCA

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Background

- The Governments of Kenya (KWS) and Tanzania (MPRU) - bilateral initiative to investigate the options and possibility for a coastal and marine Trans-Boundary Conservation Area (TBCA)
- With support from the Nairobi Convention and WIOMSA
- The TBCA would provide protection to highly sensitive and endangered ecosystems and species, i.e. highly significant marine and coastal biodiversity.
- What is the investment case for this?



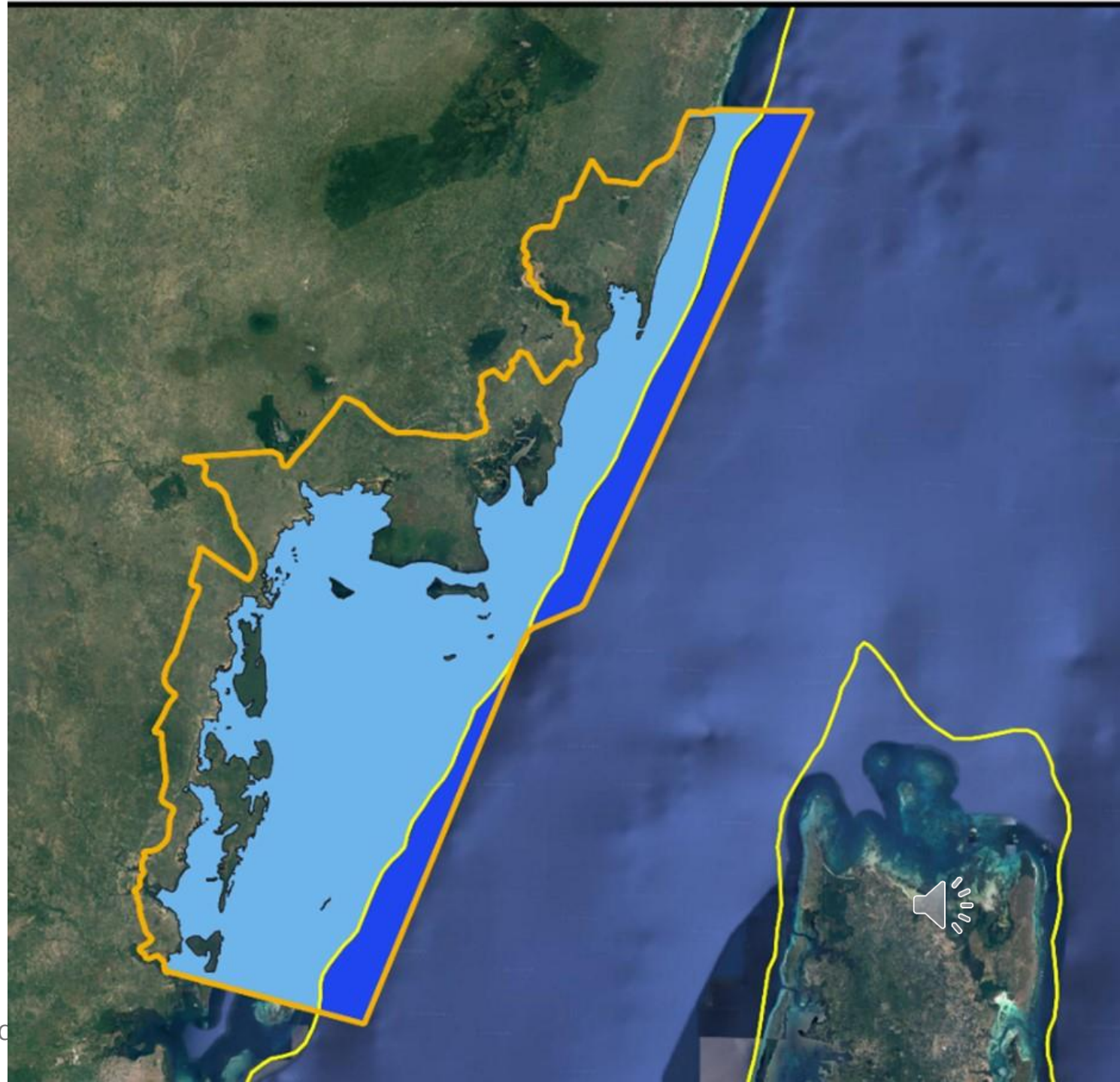
Natural Capital

- 10,000 ha mangroves
- 36,500 ha coral reefs
- 17,800 ha tidal flats
- 18,000 ha seagrass beds
- Fresh water and estuarine systems
- Shelf and oceanic zones
- An abundance of species

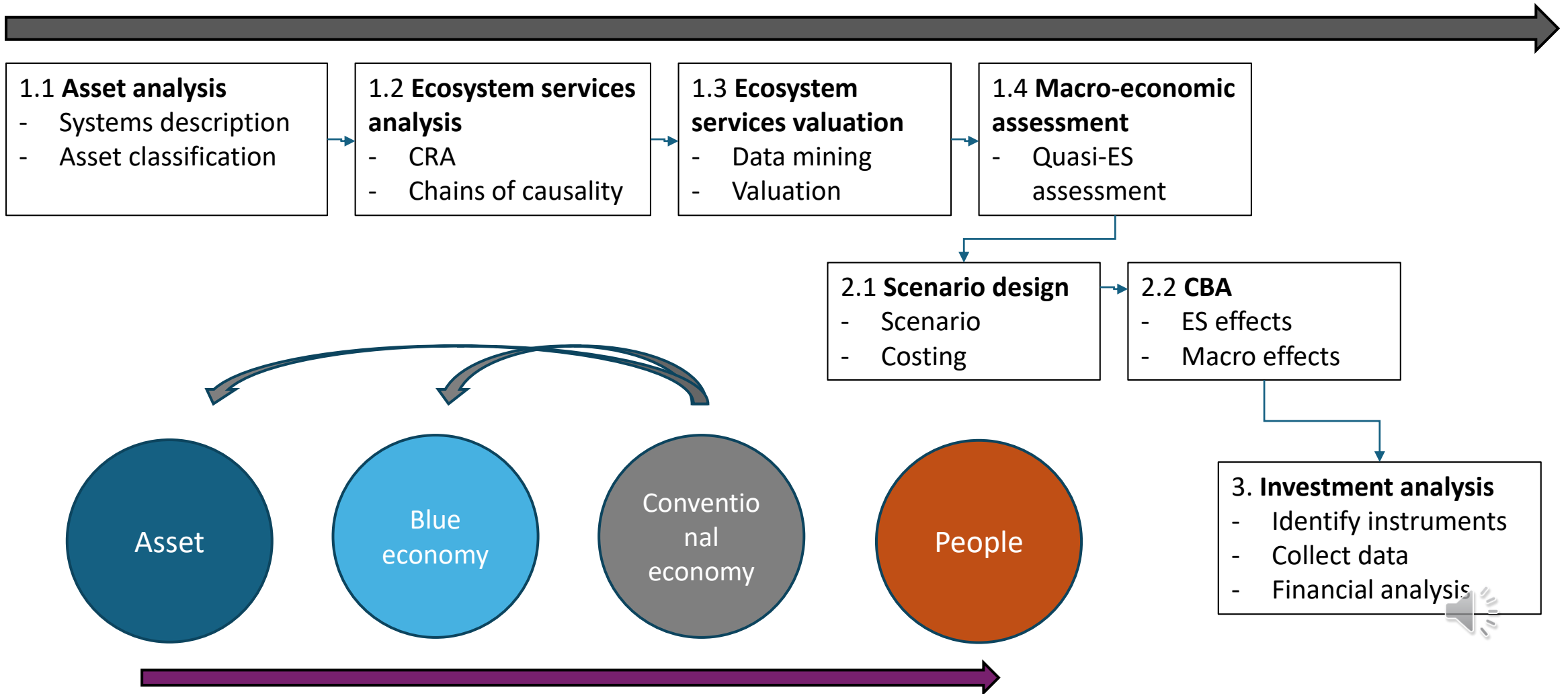


24 October 2024

Regional Blue C



Approach and methodological steps



Blue economy (current / pre- COVID)

- \$130 - \$230 million per year revenue produced
- Local communities are the key beneficiaries
- Non-residents also reveal significant value

Ecosystem Service	Estimated annual benefits (USD/a)		Asset value (NPV, USD)	
	Min	Max	Min	Max
Food provisioning	14,859,000	17,527,000	228,737,000	269,949,000
- Fish harvest	6,254,000	7,315,000	98,142,000	114,202,000
- Aquaculture production	1,034,000	1,398,000	16,300,000	22,053,000
Agricultural production	7,571,000	8,814,000	114,295,000	133,694,000
Raw materials	995,000	1,346,000	13,633,000	18,447,000
- Charcoal	975,000	1,319,000	13,363,000	18,080,000
- Timber	20,000	27,000	270,000	367,000
Carbon Cycling	121,000	346,000	2,488,000	6,227,000
- Mangroves	424,000	518,000	7,337,000	8,968,000
- Seagrass	172,000	303,000	2,741,000	4,849,000
Tourism and recreation	65,810,000	117,227,000	996,422,000	1,774,933,000
- Tourism	63,663,000	113,487,000	963,915,000	1,718,311,000
- Recreation	2,147,000	3,740,000	32,507,000	56,622,000
Regulation of extreme events	564,000	940,000	8,534,000	4,224,000
Scarce Habitats	48,299,000	94,832,000	731,285,000	1,435,851,000
Total	130,648,000	232,218,000	1,981,099,000	3,519,631,000

Ecosystem Service Provided (MEA, 2003 & TEEB, 2013)	Risk of Status quo Scenario to ES (L-Low; M-Medium; H-High; E-Extreme)							
	Mangroves	Seagrasses	Tidal Flats	Freshwater Systems	Coral Reef	Shelf Zone	Oceanic Zone	Fish Stock
Food provisioning	E	E	H	H	E	M	L	E
Fresh water provisioning	L			M				
Raw materials (Fuel and Fibre)	E			M				
Biochemical and Genetic Resources	M	H	M	L	H	M	L	H
Carbon Sequestration	E	E	L	L	M	L	L	
Water Quantity Regulation	L	L	L	M				
Regulation of extreme events	E	H	H	M	H	L		
Waste Assimilation	E	E	M	H		L		
Sediment Regulation	E	E	H	H	E	L		
Landscape and Amenity Value	M	L	L	H	M	L	L	E
Ecotourism & Recreation	H	H	H	H	E	M	L	H
Educational and Inspirational Value	E	E	H	M	E	M	L	E
Aesthetic Appreciation	E	H	H	H	E	L	L	L
Spiritual & cultural heritage, Sense of place	H	H	H	M	M	L	L	E
Habitat	E	E	H	H	E	H	H	E



Annual Programme Cost Item	Annual Costs (USD)	Ad hoc capital Costs (USD)
Total Annual Costs	7,460,000	
Total Capex:		16,959,000

A likely MPA Management Plan

- Enabling sustainable use and benefit sharing
- Implementing a scientific programme that enables adaptive management
- Controlling access and restricting harmful activities
- Providing alternative use options
- Implementing restoration in sites exposed to degradation are the most common
- Enhancing eco-tourism
- Establishing community-led conservation activities

The costs are large

Beneficiary	NPV of Benefits	NPV of Costs	BCR
Local Communities	263,054,000	126,655,000	2.08
Combined national economies	700,009,000	126,655,000	5.53

The benefits are larger



Some investment options are available and natural capital returns are favorable

	2024	2025 - 2028	2029-2050
Debt For Nature swap – Kenya	\$7,869,240	\$7,869,240	\$7,869,240
Debt For Nature swap – Tanzania	\$5,989,264	\$5,989,264	\$5,989,264
Carbon financing	\$941,747	\$960,155	\$1,005,586
Concessions	\$1,467,694	\$1,467,694	\$1,467,694
Total	\$16,267,945	\$16,286,352	\$16,331,783

IRR	44%
ROI	58%
NPV	\$41,779,961
Average net income	\$8,659,010



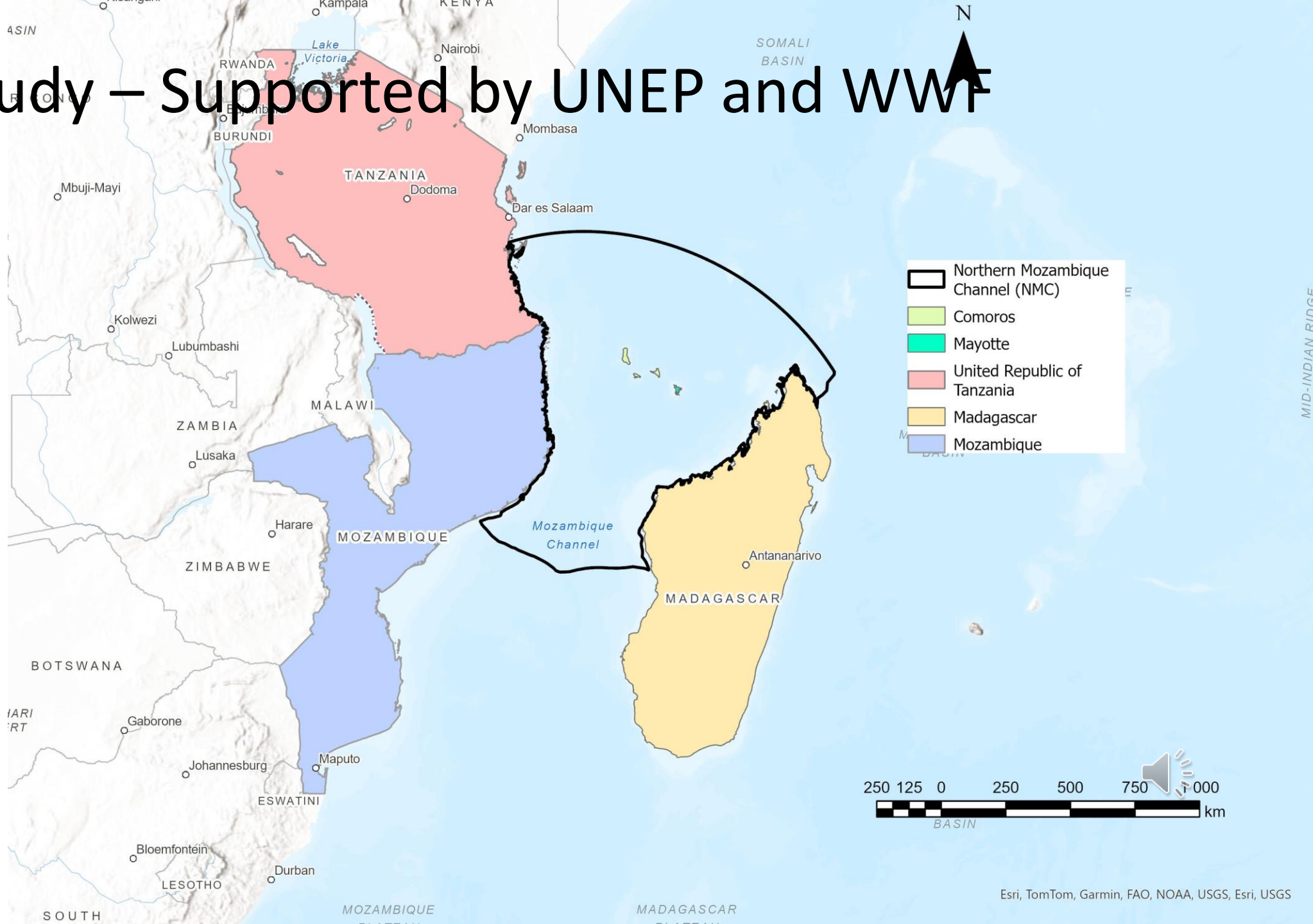
In summary

- The TBCA would secure a vast and unique ecosystem
- Which provides a livelihood to a large population
- It would mitigate high and extreme risks to natural assets
- The TBCA management plan has the potential to significantly increase natural capital value and thus ecosystem service values and national economy value add
- Investment mechanisms exist through which to fund the TBCA management planning activities



New study – Supported by UNEP and WWF

- Northern Mozambique Channel
- Applying similar methodology
- Nov 2024 – Oct 2025



24 October 2024