



Blue Carbon in the Western Indian Ocean

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International Union for Conservation of Nature (IUCN)

International workshop on sustainable use of coastal and marine resources in Kenya

27-29 October 2014

Kilifi, Kenya

1. Introduction to Blue Carbon
2. Blue Carbon science – how much is there?
3. Research in the WIO
4. Policy Options
5. International Projects

Three key ecosystems provide critical services locally.....

Mangroves

Salt Marshes

Seagrass



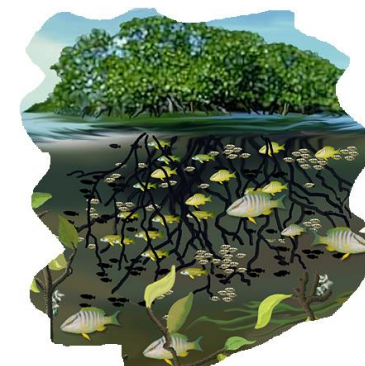
Shoreline protection



Pollution filtration



Fishery nursery



...and provide one service to all
humanity



Permanent Carbon Sequestration and Storage

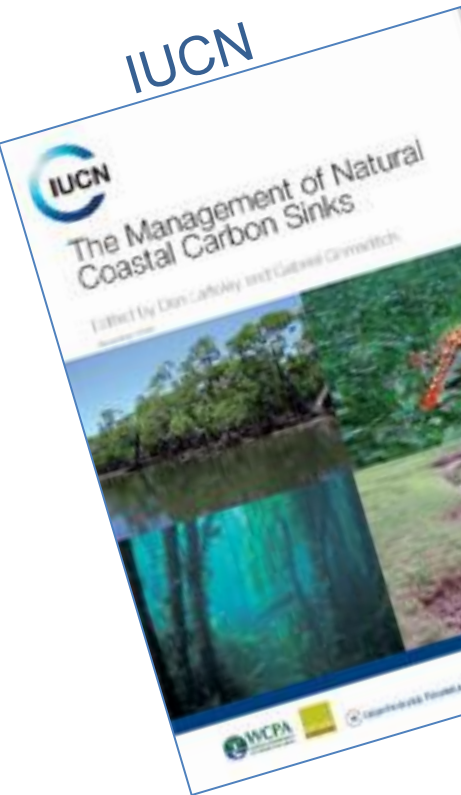


Carbon from plants settles in soil and builds up over thousands of years

Blue Carbon science is evolving



IUCN



UNEP



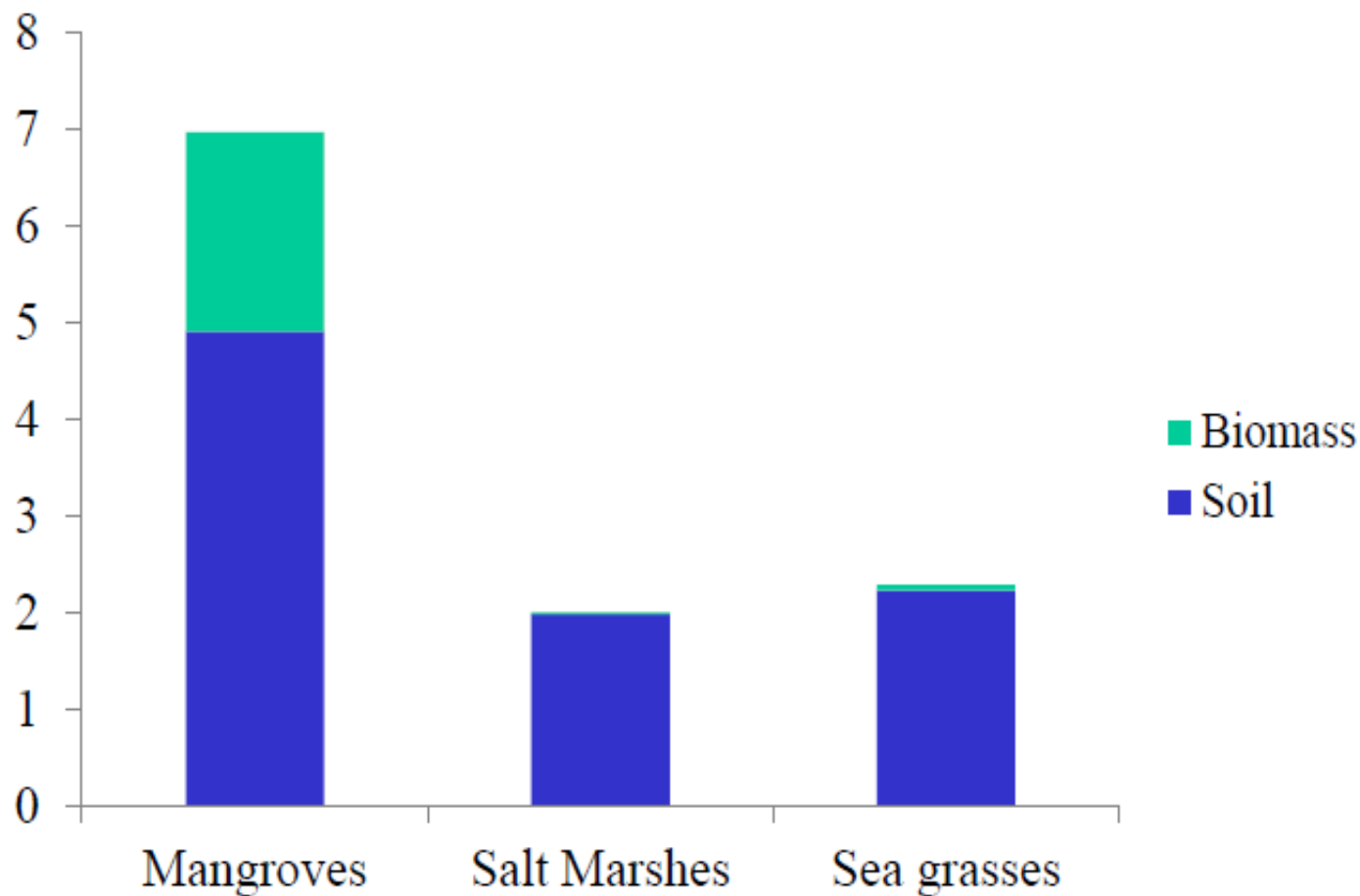
Duke University



World Bank



Global Blue Carbon Stock (billions of tons)



How much is being released?

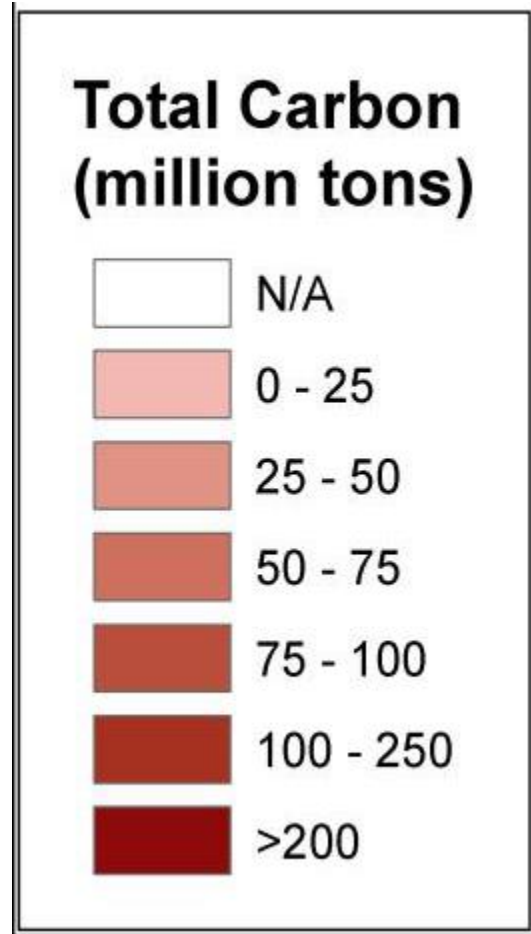
~1-3% of total GHGs

OR: ~10-20% as big as REDD

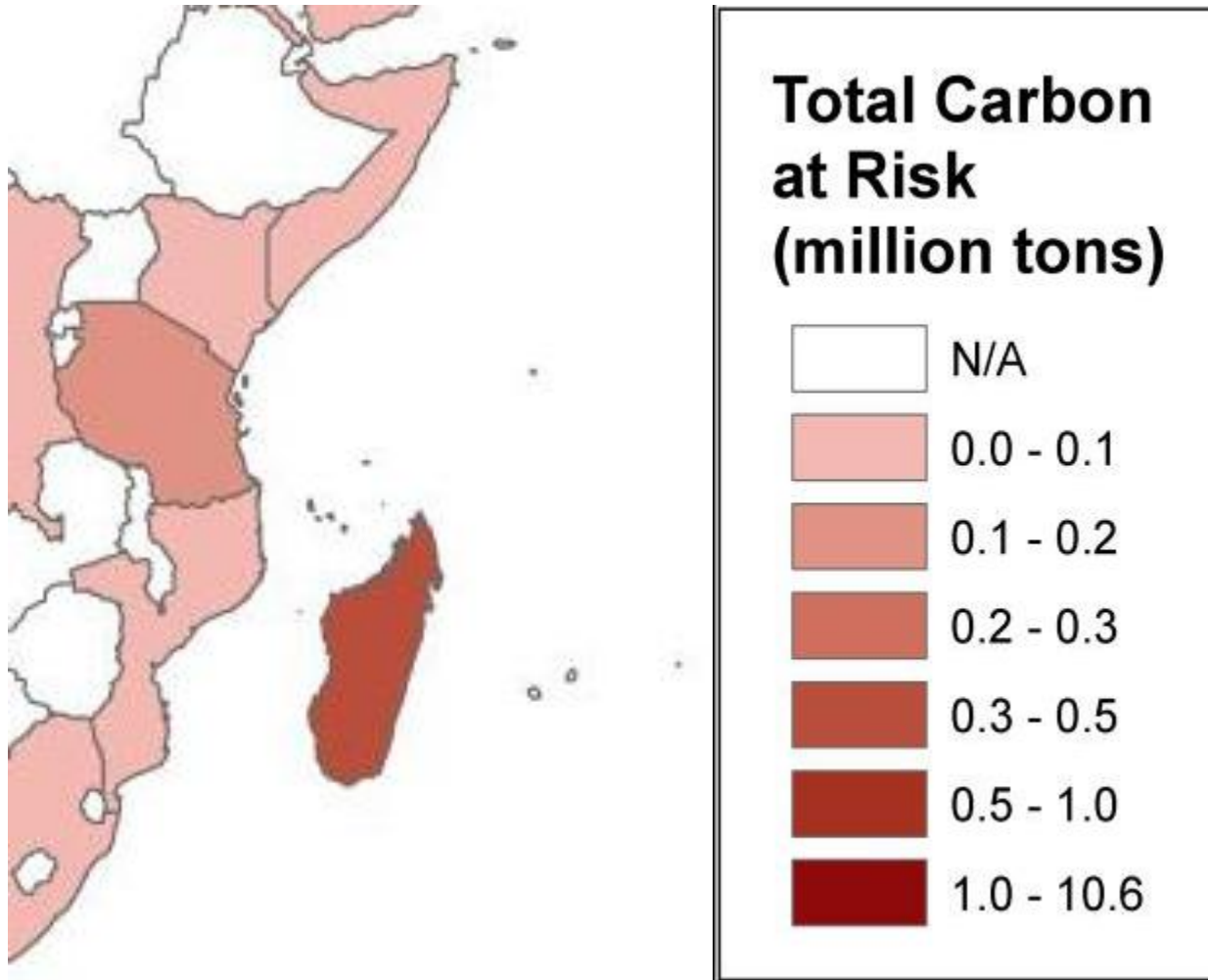
OR: As much as all emissions of Germany

	CO ₂ Emissions <u>Mt/year</u>
Blue Carbon	300-900
Total GHGs	35,000
REDD	4,000
Germany	900

Mangrove carbon stock, by country



Emissions from mangrove loss



Global mangrove literature analysis

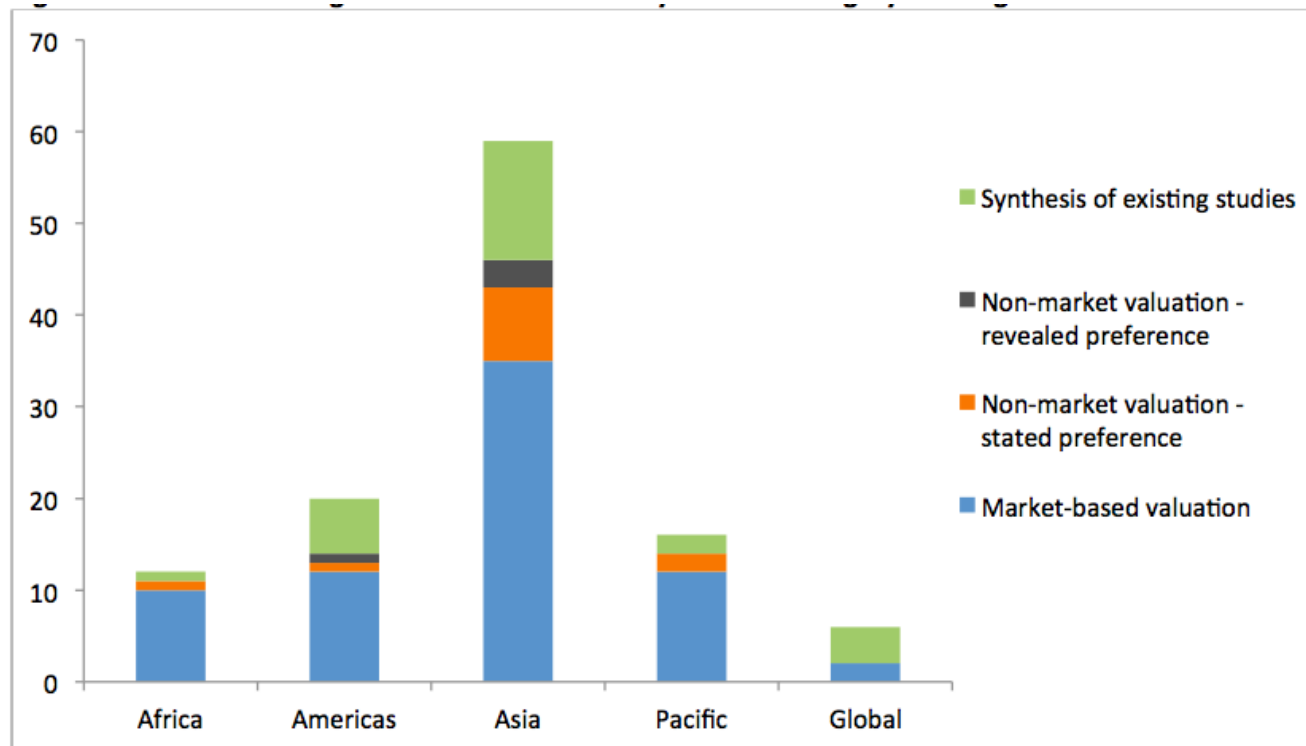
Majority of ES studies come from Asia (63%). 7% from Africa (mostly East Africa)

Most studies on market-based valuation – very few on non-market values

Increasing literature since 2013, due to international interest in Blue Carbon

Gaps for seagrass

www.mesp.org



Research initiatives in the WIO



Country	Organizations
Kenya	KMFRI, Napier University
Tanzania	Ministry of Tourism and Natural Resources, WWF, Stockholm University
Mozambique	Univ. Eduardo Mondlane, WWF, US Forestry Service
Madagascar	Univ. Antananarivo, Blue Ventures, Univ. British Columbia

Mostly on mangroves, a little on seagrass

Policy options for the WIO



1. UNFCCC

- Coastal ecosystems have been marginalized in international negotiations
- Reducing Emissions from Deforestation and Forest Degradation (REDD+)
 - Definition of forests, REDD readiness plans
- Intergovernmental Panel on Climate Change (IPCC)
 - National Communications
- Clean Development Mechanism (CDM)
 - Methodology exists
- Nationally Appropriate Mitigation Actions (NAMAs)
 - International climate finance

2. VOLUNTARY

- Voluntary Carbon Market (VCM)
 - Small-scale projects exist

Research Needs



- Habitat cover from remote sensing data needs to be validated in order to improve its accuracy
- Change analysis to calculate loss rates needs to be conducted
- Carbon data is growing in WIO but more needed, especially for soil
- Network of projects in the region
- Communicate results to government and stakeholders
- Submit results to IPCC

International efforts



- GEF/UNEP/GRID Blue Forests project
 - Inception workshop in Abu Dhabi
 - Activities in Kenya, Mozambique and Madagascar
- CI/IUCN/UNESCO working groups on science and policy
- New manual on measuring carbon stocks and flux
- <http://bluecarbonportal.org>

