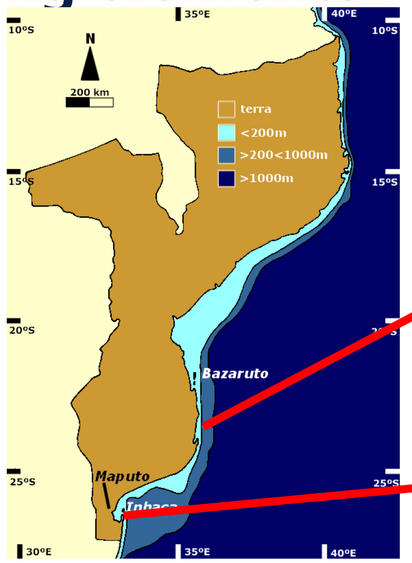
Project Title: Seagrass restoration for sustainable shellfish fisheries and drafting of a management action plan in Mozambique”

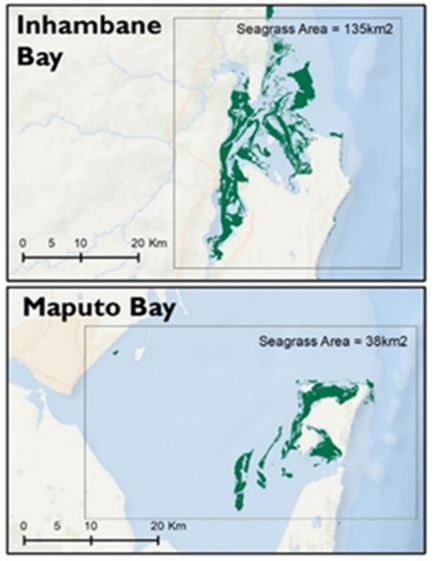
7th WIOSAP PROJECT STEERING COMMITTEE
DARES SALAAM, TANZANIA
29TH JANUARY 2025

Name of IP: Salomão Bandeira

Why the Project

- **Objective:**
- (a) develop an integrated knowledge to enabling management of seagrass habitats focus to **restoring seagrass meadows**;
- (b) test and bring **technologies for seagrass restoration**;
- (c)document diversity and harvested **macroinvertebrate fisheries**, and
- (d) **document value chain** related to macroinvertebrate fisheries as options for **empowerment and sustainability of the fishers/woman**
- **(e) Drafting elements for seagrass management pl**
- **Where:**



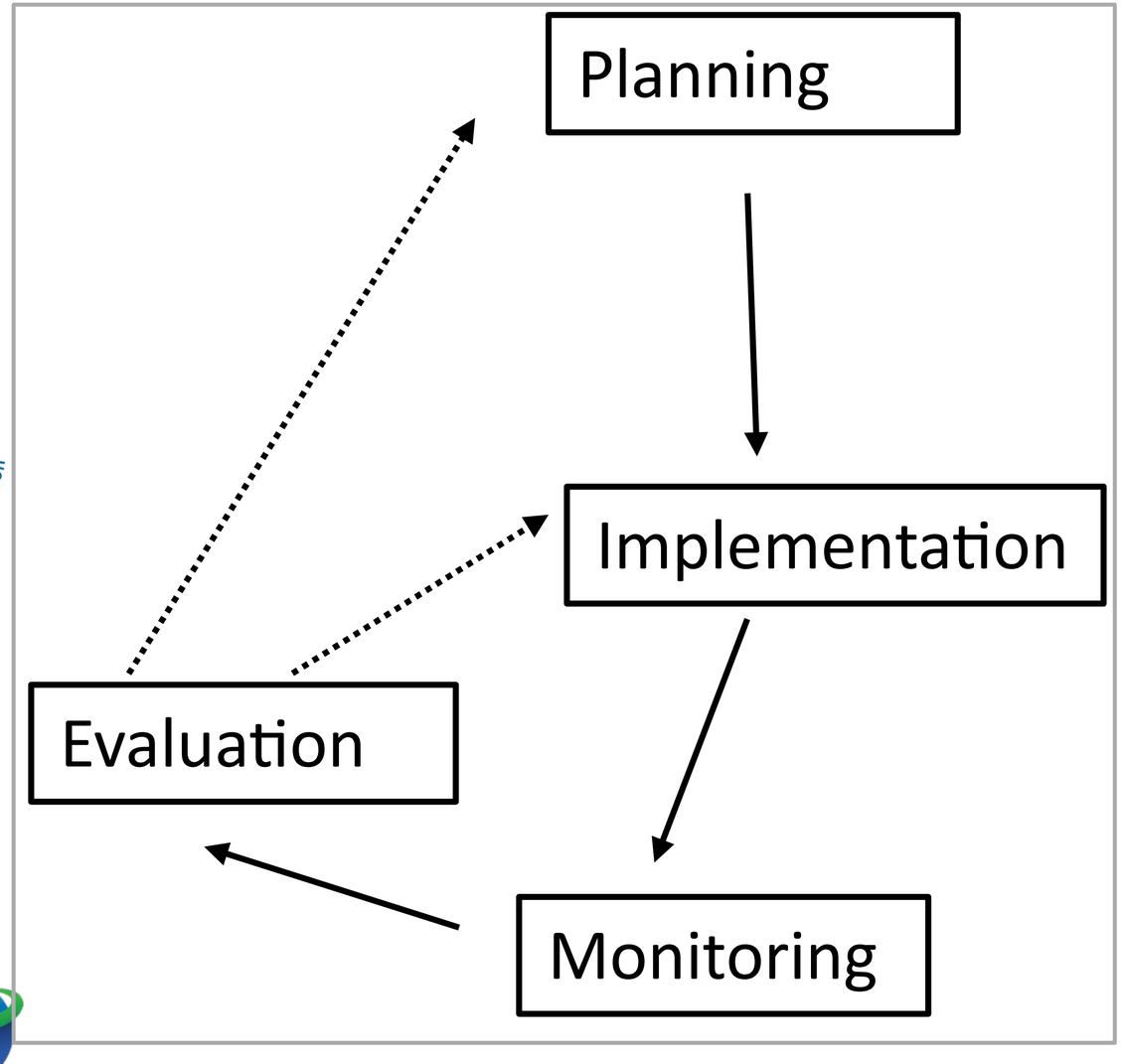


Why the Project

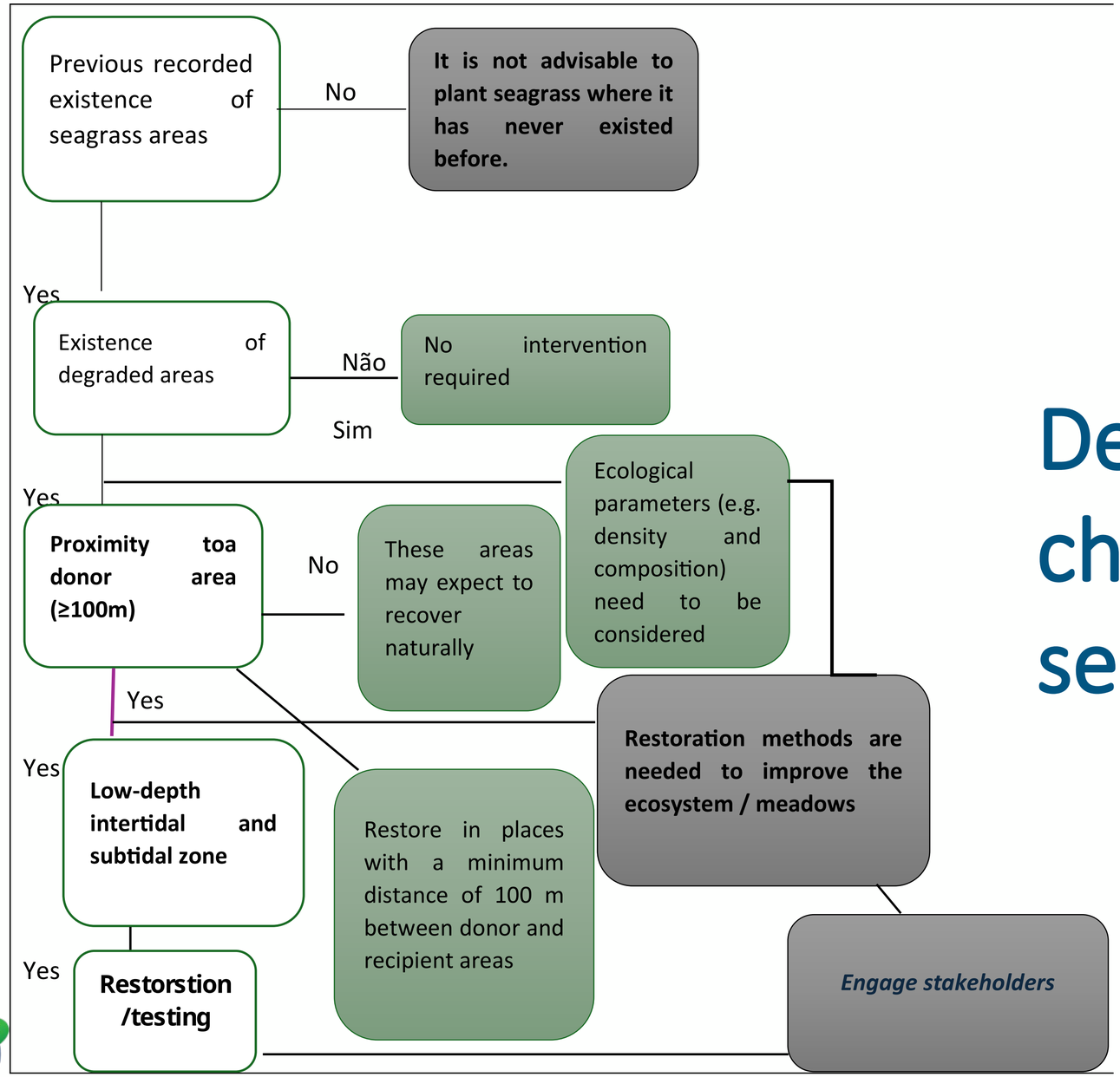
- **Partners:**

Partner Name	Role in the project	Resources partner provided
1.Ocean Revolution Mozambique	**implementer in Inhambane**, **restoration activity**; support macroinvertebrate fishery; **interface between communities and local government;** facilitation w. Manag plan; **reinforcement LMMAs** w. other actors>	boats f. field trip, vehicle
2.Kuwuka JDA	**interface between communities & local government**; facilitation with drafting Seagrass management plan; **project implementer**	staff time, advisory
3.UEM Social Science Faculty	**Strengthened the dialogue** environment between the Univ., communities and authorities; enabling environ. for **perception studies** and **drafting of seagrass management pla**n	staff time, advisory, co-supervision
4.InOM	support the **critical debate** related **with the restoration and livelihoods recovery**; **advisory on methodological approach**;	staff time, advisory

Restoration stages /procedures



Decision chart in the choice to restore seagrasses-WIO region



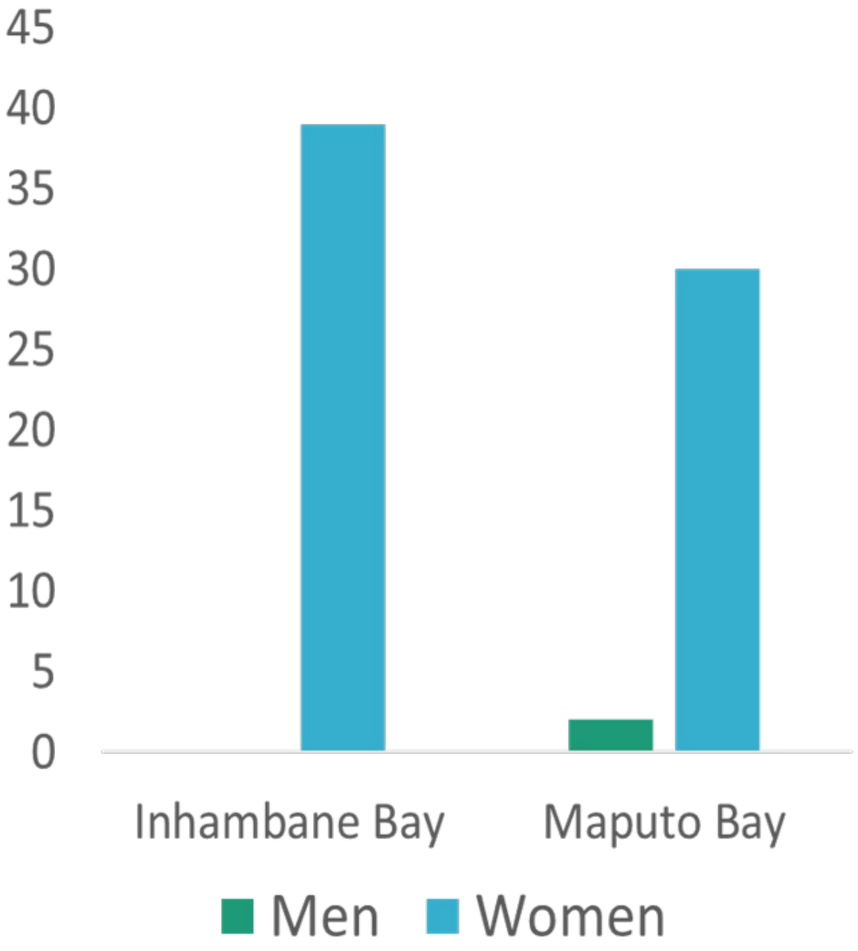
Cuambe et al, in prep.

Key Achievements

- Up to 5 ha of seagrass restorred at Inhaca 6 Inhambane
- Invertebrate fishery biodiverdsity documented
- , value chains and role of women documented
- Test restoration with several species
- Local CBO created
- Draft concept of a seagrass management

https://drive.google.com/file/d/1L6ttPOF5sDRavWLCPqIFuvvyDn16oO7Z/view?usp=drive_link

Seagrass shellfish fisheries



Maputo Bay

- N of species: 23
- N of gleaners: 80
- Estim. catch/week: **7.7 ton**

Inhambane Bay

- N of species: 11
- N of gleaners: 40
- Estim. catch/week: **7.6 ton**

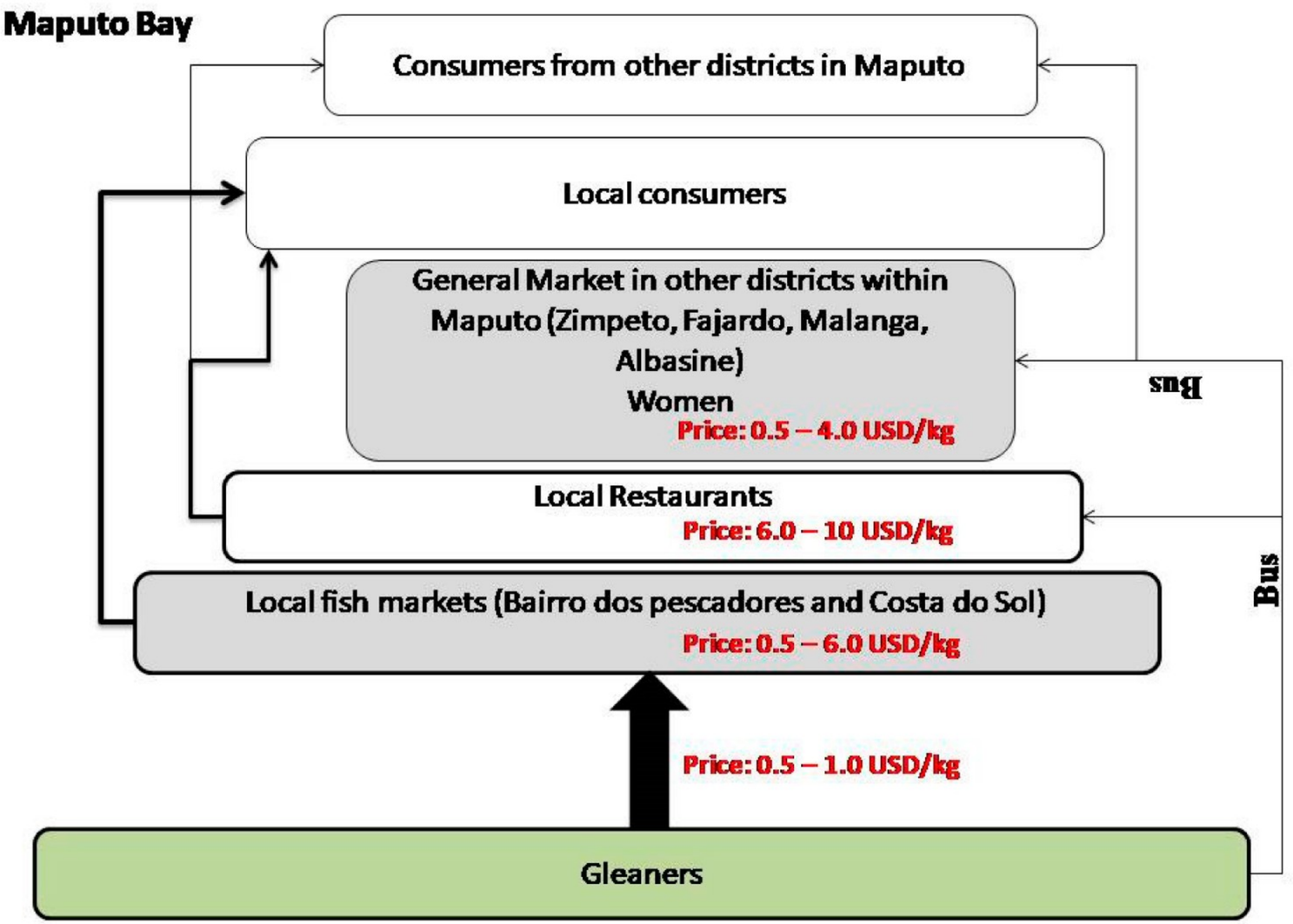
Seagrass fishery has a face of woman !
How vulnerable is a gleaner?
Link to invertebrate fisheries management

How can you halt degradation?

Value Chains, revenues, routines and role of woman

Value chain MB:

- 6 stakeholders
- 1 province
- + 6 marketplaces
- Restaurants



https://doi.org/10.3390/d14030170,

Chitará-Nhandimo et al 2022

WHY THE NEED FOR A PLATFORM AND NETWORK CONCERNING SEAGRASS RESTORATION ?

Goal setting and mutual engagement on seagrass restoration

1. To communicate around the restoration, monitoring, management, protection and conservation of seagrasses.
2. To meet periodically to coordinate dialogue around restoration work in a way that promotes transparency and mitigates confusion by encouraging open discussion and dissemination of seagrass science.
3. To discuss long-term ambitions of the network e.g. on restoration, challenges facing conservation of seagrass, etc.
4. Missing stakeholders in the network. Can you pinpoint?
5. To create hope and a unified community that welcomes open discussion, shares knowledge (both local and scientific) and breaks down the communication barriers between stakeholders and restoration implementers.

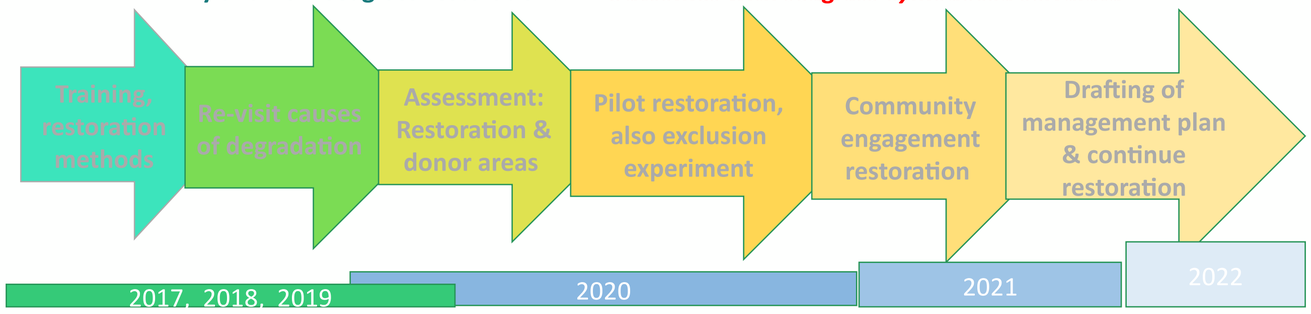
CBO A-TANYi CBO, Inhaca, MZ

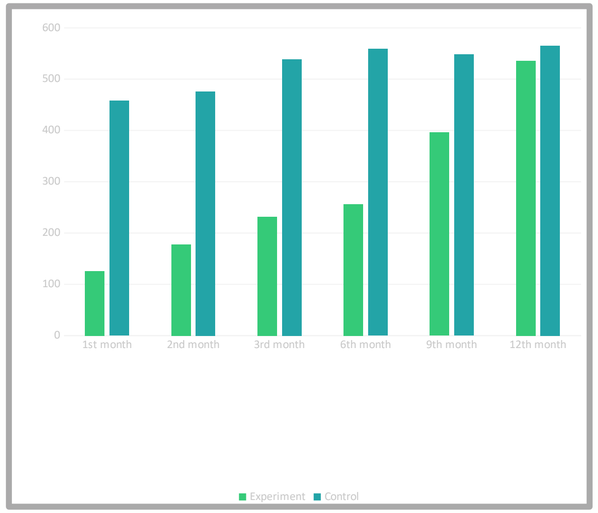
1. Association's charter;
2. Association's social bodies;
3. Alternative liveliihoods;
4. brainstroming on support

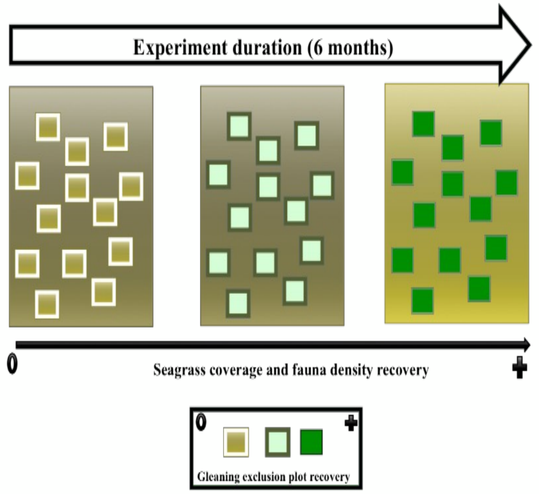
Passive Restoration *Nanozostera capensis*

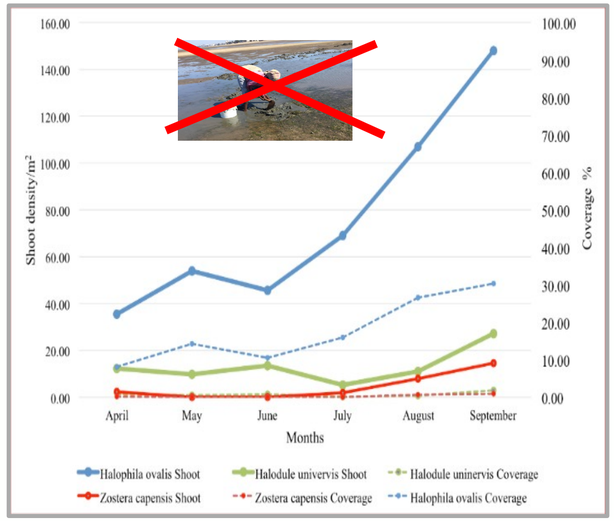
Why and how seagrass restoration?

Outcomes with seagrass *Cymodocea serrulata*



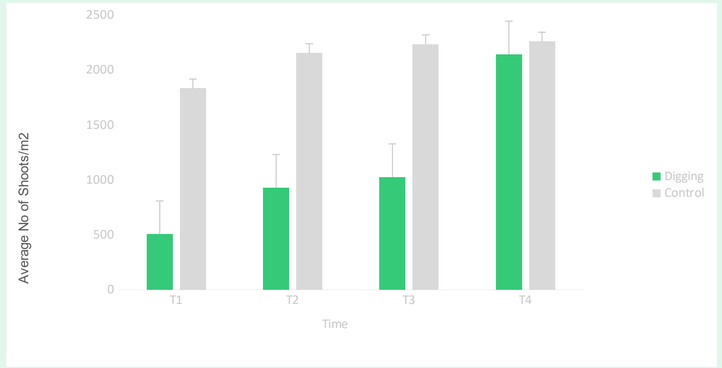




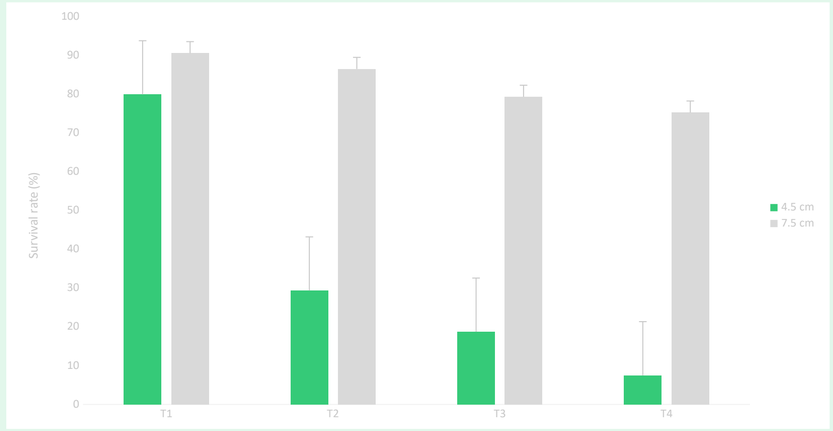


Bandeira et al 2021; Amone Mobuto et al, 2022; Fanoro et al. 2023.

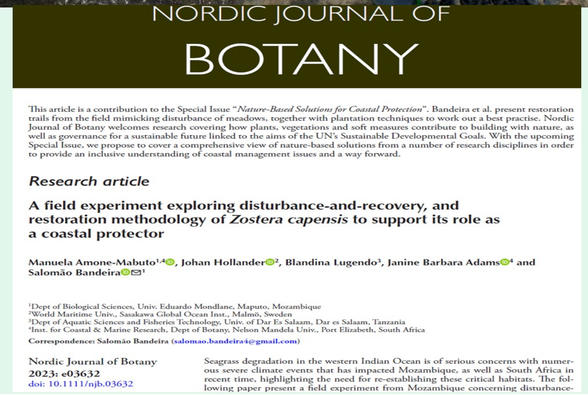
Field experiment, disturbance and recovery. Best plug (manual) method for *Zostera capensis*



Average seagrass shoot density (shoots/m^{-1}) in Digging and Control plots at each sampling occasion across T1-T4 (1, 3, 6, 12 months).



Average survival rate of *Z. capensis* using 4.5 cm versus 7.5 cm size plug.



NORDIC JOURNAL OF BOTANY

This article is a contribution to the Special Issue "*Nature-Based Solutions for Coastal Protection*". Bandeira et al. present restoration trails from the field mimicking disturbance of meadows, together with plantation techniques to work out a best practise. Nordic Journal of Botany welcomes research covering how plants, vegetations and soft measures contribute to building with nature, as well as governance for a sustainable future linked to the aims of the UN's Sustainable Developmental Goals. With the upcoming Special Issue, we propose to cover a comprehensive view of nature-based solutions from a number of research disciplines in order to provide an inclusive understanding of coastal management issues and a way forward.

Research article

A field experiment exploring disturbance-and-recovery, and restoration methodology of *Zostera capensis* to support its role as a coastal protector

Manuela Amone-Mabuto[1,4], Johan Hollander[2], Blandina Lugendo[3], Janine Barbara Adams[4] and Salomão Bandeira[1]

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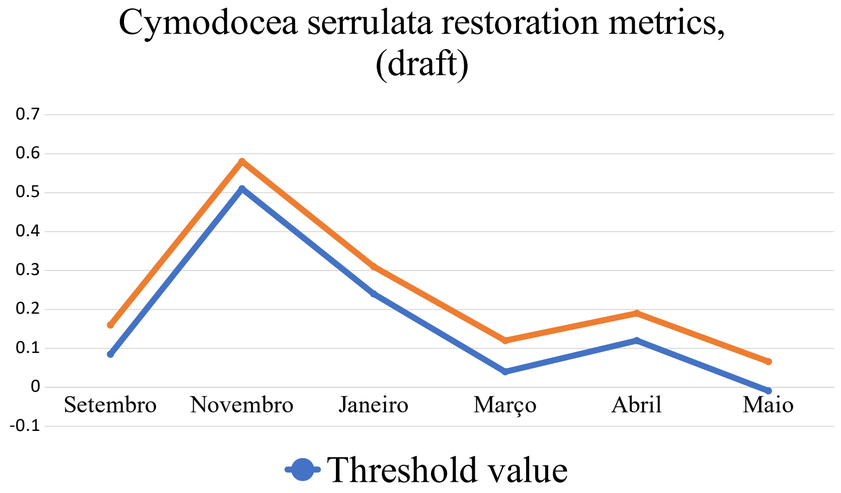
Seagrass degradation in the western Indian Ocean is of serious concerns with numerous severe climate events that has impacted Mozambique, as well as South Africa in recent time, highlighting the need for re-establishing these critical habitats. The following paper present a field experiment from Mozambique concerning disturbance-

Structural metrics concern the plants' morphology, density and cover; functional metrics concern the ecosystem services that the meadow provides.

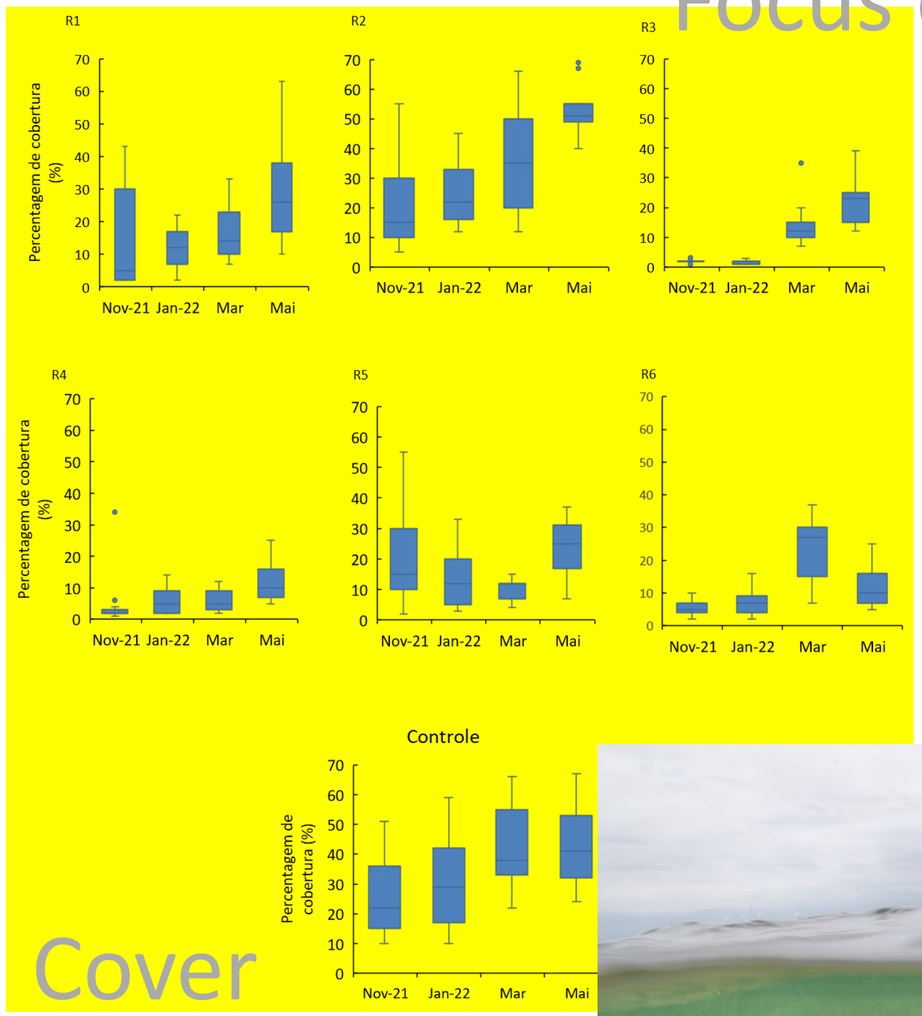
Functional metrics are used in year zero (before the project starts) and then from year five. This is to allow enough time for the ecological interactions needed for habitat development (ecosystem services).



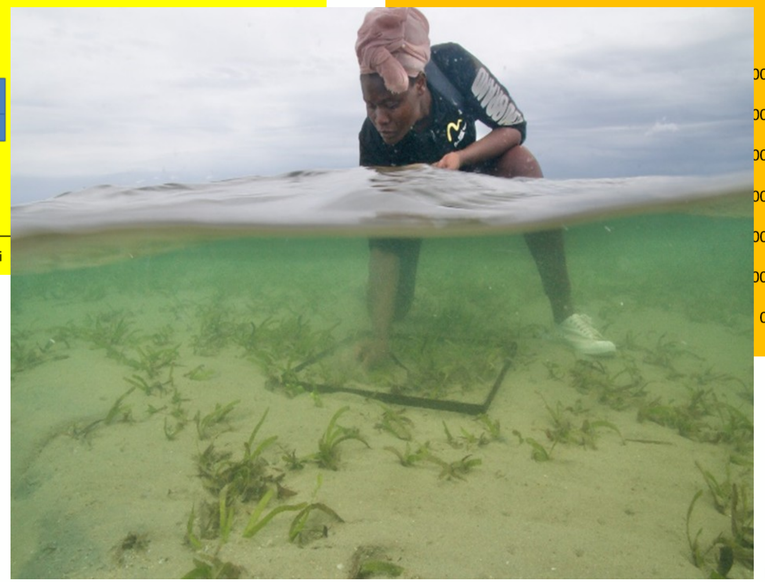
Oceana serrulata restoration at Inhaca is tangible & successful

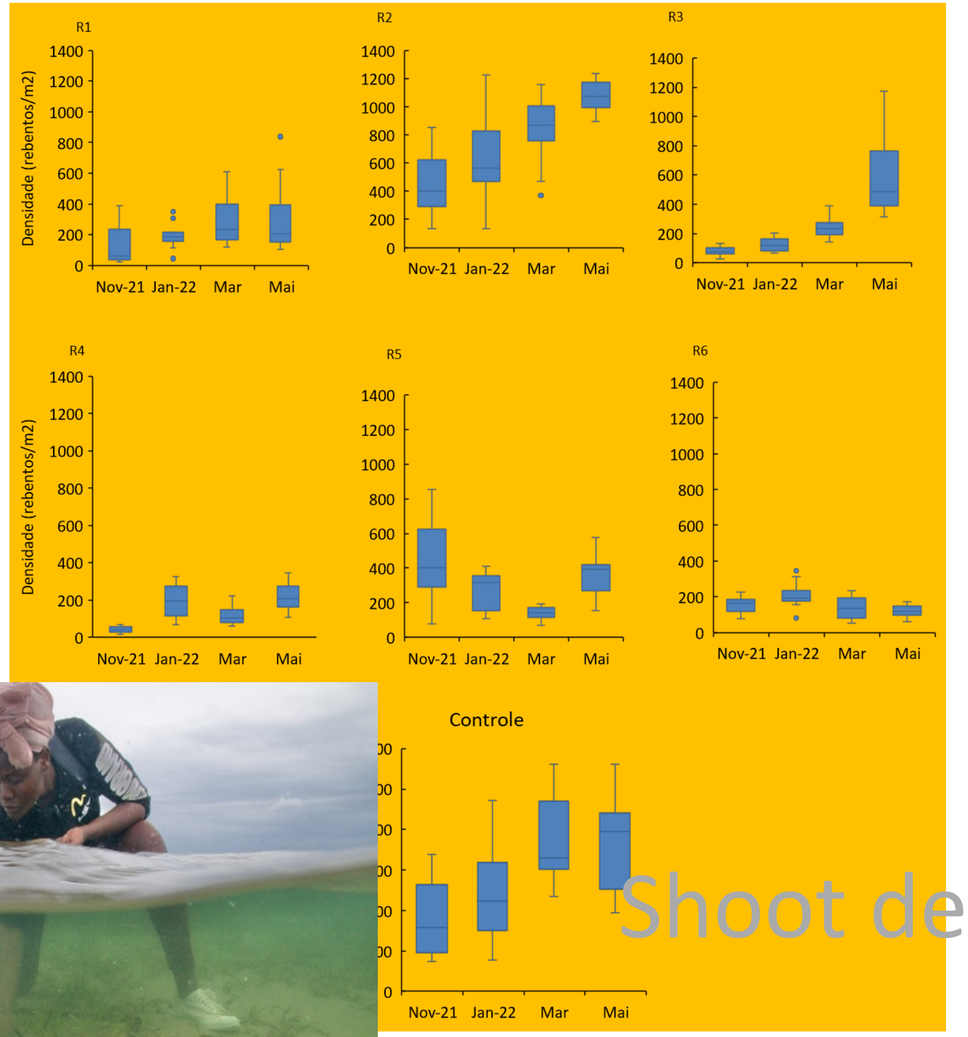
Over 400 000 modules restored, equivalente to aorund 5 ha

Focus on *Oceana serrulata*



Cover





Shoot density

Cuambe et al, MSc thesis

Google maps, 2021

Drone image,
May 2021

Lesson learnt

(10 m x 10 m plot)

1. Test and document seagrass restoration methodologies
2. **Piloting restoration**
3. Spread risks of failure (species, locations, seasons)
4. **Document plant and environmental parameters**
5. Engage social scientists & NGO to plan community based intervention
6. **Community sensitization, new understanding of alternative livelihoods**
7. Negociate, agreements for restoration
8. **Process for drafting a seagrass management plan**
9. Funding
10. **Post-graduate students**
11. Wider Blue carbon, NDC, GBF30X30

Vision towards sustainability of coastal communities:

-sustainable fisheries:
-destorting Value chains in support of most vulnerable, woman
-drafting a management plan for seagrass
-stakeholder network
-Alternative livelihoods (eco-tourism…)
-REPMAR (new regulation)
-Global platforms compliance

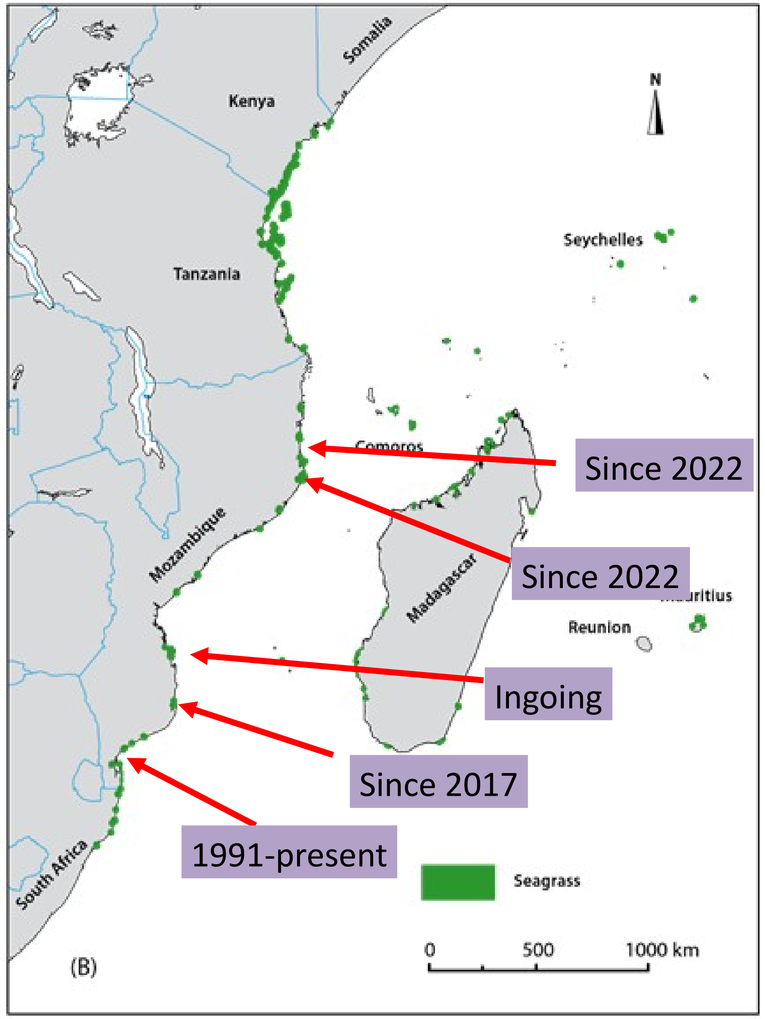
Restoration of *Thalassia hemprichii* and *Oceana serrulata*, Inhambane Bay

Project Sustainability

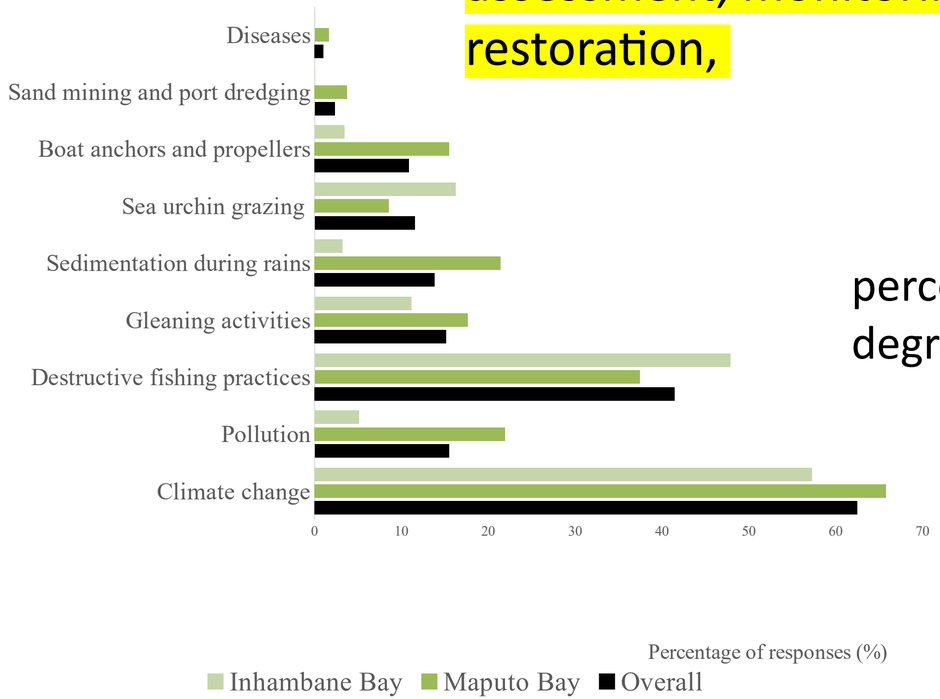
- Maputo National Park (MNP) together with a ppp of PPF is providing **addtional financial support to add 3 more hectares of seagrass**. (Support from BAF)
- **Direct oversight of Inhaca Marine Station**
- CBO ATanhi, created by WIOSAP has support from MNP.
- The **site is regularly visited** by students undertaking their thesis. The project has atracted funding to studants research (WIOMSA and AKDN/FCT)

https://drive.google.com/file/d/1L6ttPOF5sDRavWLCPqIFuvvyDn16oO7Z/view?usp=drive_link

Upscaling of seagrass restoration in Mozambique as linked with degradation



Sites with ongoing seagrass assessment, monitoring and restoration,



perception of degradation

Amone-Mabuto et al 2023

https://doi.org/10.1016/j.ocecoaman.2023.106811

Thank you!

Sádia Chitará-Nhandimo
Assucena Chissico,
Marlino Mubai,
António Sacramento Cabral,
Almeida Guissamulo,
Salomão Bandeira
Manuela amone-Mabuto
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25 years 1993 ~ 2018

OCEAN REVOLUTION MOÇAMBIQUE

Juventude Desenvolvimento e Advocacia Ambiental
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