

BUILDING A BRIDGE OVER TROUBLED WATERS:

THE ETHNOBIOLOGY OF SMALL-SCALE MANGROVE FISHING IN GUINEA BISSAU



DeSIRA - MALMON PROJECT

<https://www.malmon-desira.com>



Malmon = Acronym

80% of people earn a living from agriculture in Guinea Bissau.

Rice is the main staple food.

- Resilience to **food insecurity** in times of **climate change**.
- Resilience of this farming system and of farmers practices, heralding **grassroots science** and **innovation capacity**.

Small-scale fishing linked to mangroves

Important **socio-economic activity**

Spatially

- Fish: mangrove river and mangrove swamps rice fields.
- Shell fish gathering: intertidal zone.

Seasonally

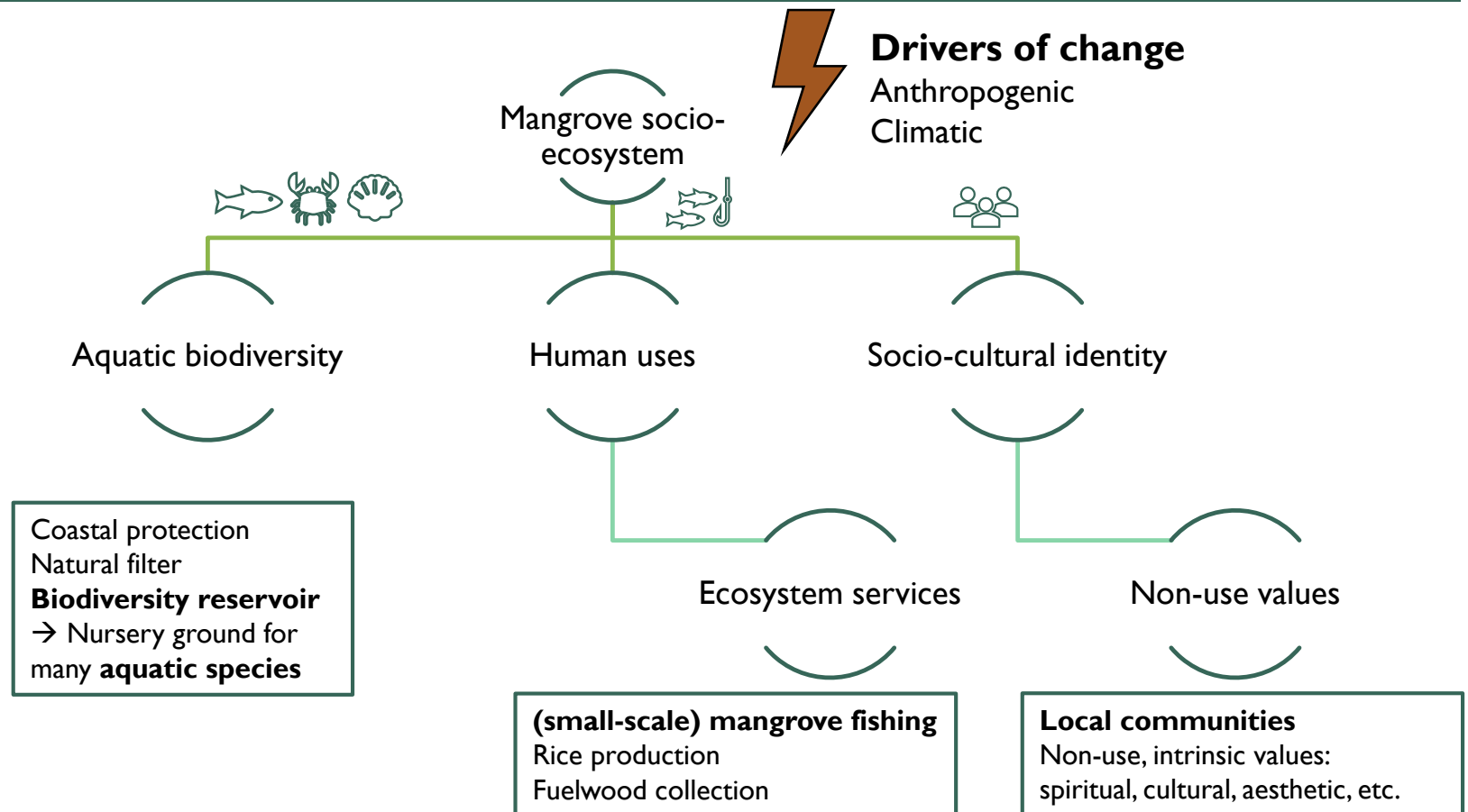
- Dry season.
- Rainy season.

Contribution to local people's livelihoods and well-being

Nutritional security

Fish and molluscs = 80% of total **protein intake** in the country.

MANGROVE SOCIO-ECOSYSTEM



LOCAL ECOLOGICAL KNOWLEDGE

Mangrove ecosystem services

Fishing in rice fields or in rivers surrounding the mangroves.

Local people rely on aquatic resources to sustain themselves (livelihoods and well-being)

Local ecological knowledge (LEK)

Daily interactions with local environment
Community social values

Each **ethnic group**:
characteristic way of land use and natural resource management

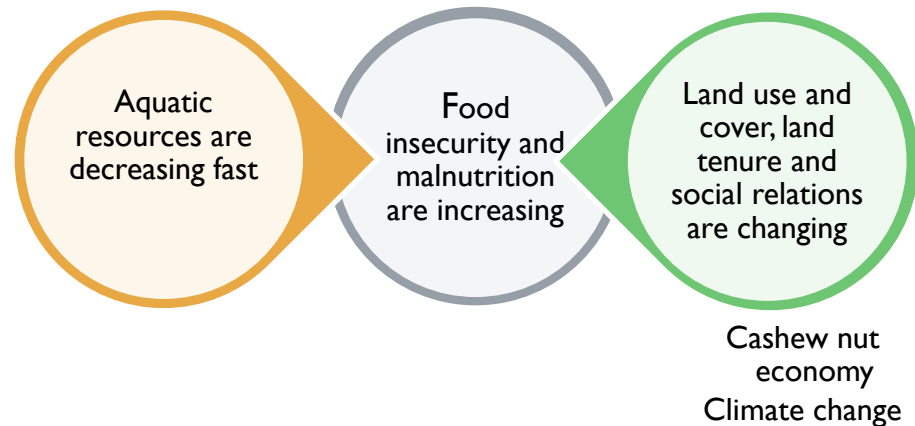
Natural resource management

More comprehensive image:

Culturally and environmentally appropriate.



DRIVERS OF CHANGE



- Understand drivers of changes and their impact on the aquatic biodiversity.
- Analyse and understand socio-economic dynamics, local attitudes and practices to anticipate the (future) drivers of change.
- **Sustainable use of mangrove aquatic biodiversity.**

RESEARCH QUESTIONS

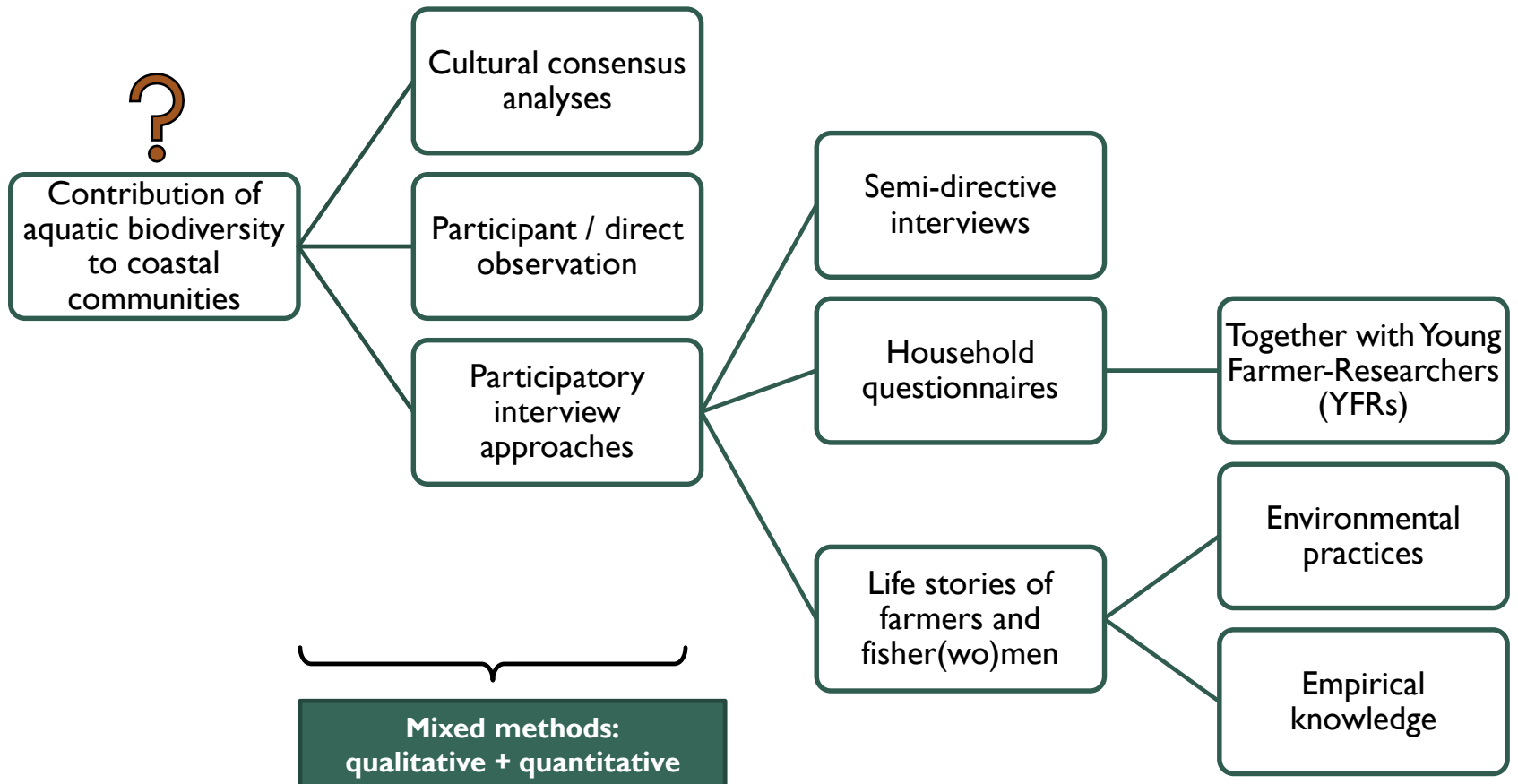
RQ 1. How do mangrove local users and farmers perceive the biodiversity associated with mangroves? What is the human-nature relationship?

RQ 2. What are according to local people the drivers of change to the biodiversity and to the whole mangrove socio-ecosystem?

RQ 3. How does it change their relationships with the mangrove, and notably the aquatic species?

RQ 4. What are local people's knowledge, practices and strategies to anticipate risks and adapt to the changes?

METHODOLOGY



OVERVIEW OF CASE STUDIES

Mangrove socio-ecosystems = Case studies

1. Elalab (Cacheu region – North)
2. Malafo (Oio region – North/East)
3. Cafine (Tombali region – South)



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2. Balanta

«Geba river» near Bissau

Pesticide use inside rice fields

Chinese project: «Djoto» fish *Pseudotolithus elongatus*



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3. Balanta

Cantanhez protected park
Women fish a lot
Fish smoking



IMPORTANT AQUATIC SPECIES 🐟

Bentana (Kriol)

Bentana

- *Sarotherodon melanotheron*
- *Coptodon guineensis*
- Etc.



Bentana brumelho

Red color

- *Hemichromis fasciatus*
- *Lutjanus goreensis*



Bentana di cova

“Black spotted”

- Pest = feeds on rice
- *Oreochromis niloticus*



Bentana fora (di mar)

- *Lobotes surinamensis*



IMPORTANT AQUATIC SPECIES



Mangrove oyster / Ostra

- *Crasostrea tulipa* / gasar



Mangrove crabs / Caranguis

- *Callinectes sapidus*
- Etc.



Shrimps / Camarão

- *Parapenaeus longirostris*
- *Penaeus kerathurus*
- *Penaeus notialis*



West African mud kreeper / Caramusse

- *Tympanotonus fasciatus*



Fiddler crab / Cacre

- *Afruca tangeri*

FISHING TECHNIQUES



Bow and arrow, harpoons

- Men: Inside small mangrove river
- «Flecha»: very old technique → no longer used

Fishing traps

- Mostly women: inside rice fields
- Armadilho, gamboa
- No fishing nets → More fish available → Fishing nets introduced by foreigners to GB → «watch and learn»

Fishing baskets made from palm

- Women and girls
- Inside rice fields and small mangrove river
- «scoop» water inside the basket to catch the fish
- Mud grabbing with hands

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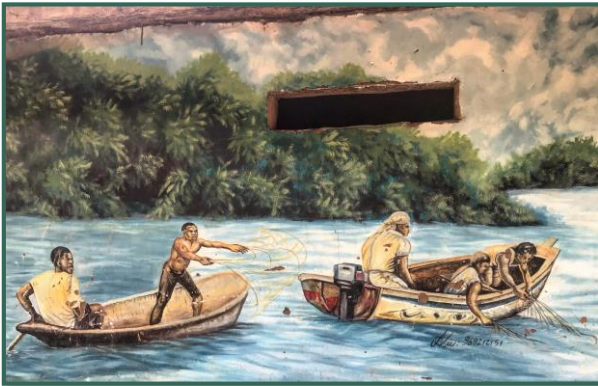
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FISHING TECHNIQUES



Redia Talha Rio

- Men with canoe
- «Chumbo»: rock at bottom of net + «Boia» to make it float + anchor
- During night: span the fishing net from one side of river to other side
- Next morning: collect the fish



Chumbo

Redia de lança

- Men: canals, mangrove river
- Fishing net that is thrown in the water and closed straight after so fish get trapped



Boia

Redia redonda / Round nets

- Women and girls
- Inside small creeks / canals of rice fields
- Scoop water in the fishing net and trap the fish species

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FISHING TECHNIQUES



Fishing hooks + line

- Boys: inside rice fields and connecting river with canoa
- Connected to stick
- Fish bait: caranguis or cacri



Hooks on bottom of fishing nets

- Men: inside mangrove river
- Multiple hooks spread over the fishing net
- Fish bait: caranguis or small fish

OTHER USES OF AQUATIC BIODIVERSITY



Dried internal parts (Cacheu and Oio region)

Barbo (*Polydactylus quadrifilis*)

- Senegalese merchants → Foreigners
- Stitches for hospital use



Clay pottery by women

Shell species and crustaceans such as caramusse, cacre

- Stamp the shells / carapace
- Pottery to be sold by women or home decoration



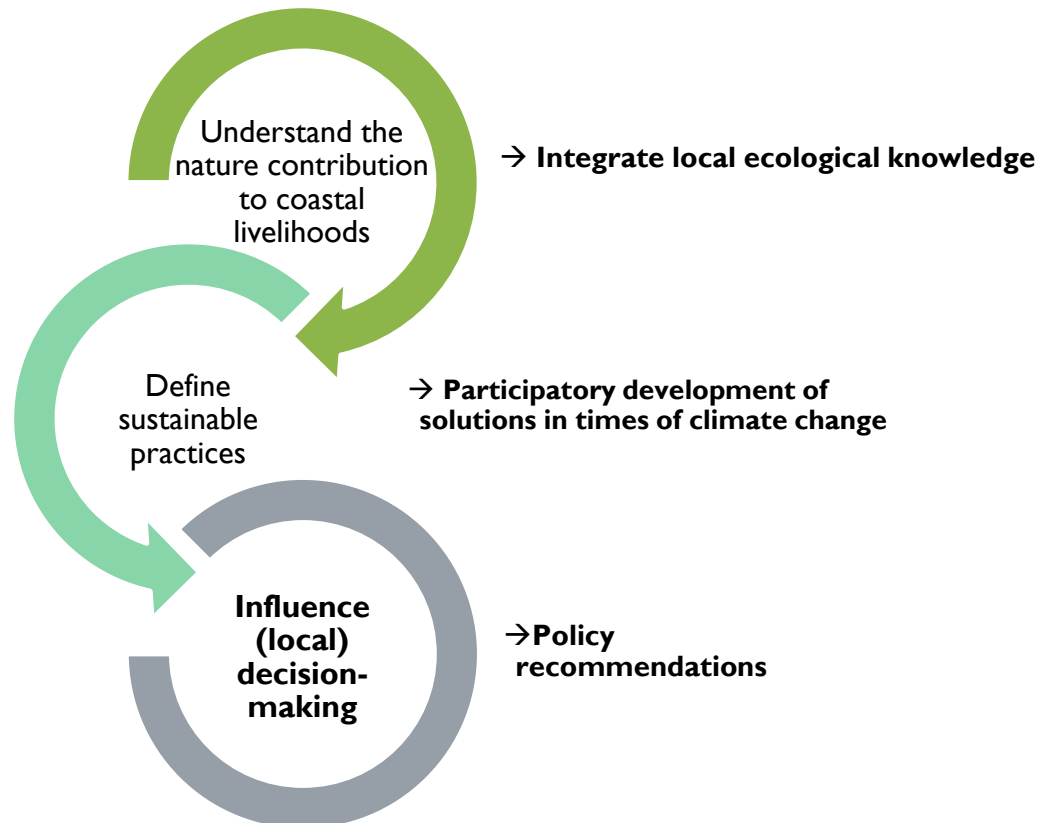
Home decoration

«Combe» / Clams (*Anadara* / *Senilia senilis*)

- «anti-slip» layer in bathroom / shower
- aesthetic values

CONCLUSIONS

How can mangrove local users and politicians manage and protect aquatic biodiversity while being socially inclusive?



THANK YOU FOR YOUR ATTENTION!

