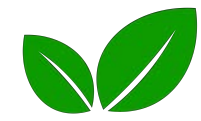


# Indigenous and ecosystem-based solutions in SEPLS management amid overlapping predicaments in the Sundarbans, Bangladesh



Rashed Al Mahmud Titumir, Bayezid Khan and Md. Shah Paran



# SEPLS of the Bangladesh Sundarbans



- The Sundarbans mangrove forest in Bangladesh is the **largest contiguous mangrove forest** in the world.
- Indigenous people and local communities (IPLCs) in the Sundarbans have **adopted various innovative and participatory local approaches and actions** to manage the socio-ecological production.

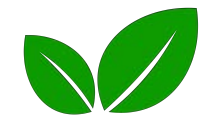


# SEPLS of the Bangladesh Sundarbans

## Bangladesh Sundarbans is full of Biodiversity

- 334 species of vegetation
- 49 species of mammals (Including Famous Royal Bengal Tiger)
- 53 species of reptile
- 120 species of bird
- 8 species of amphibians
- 300 species of fish

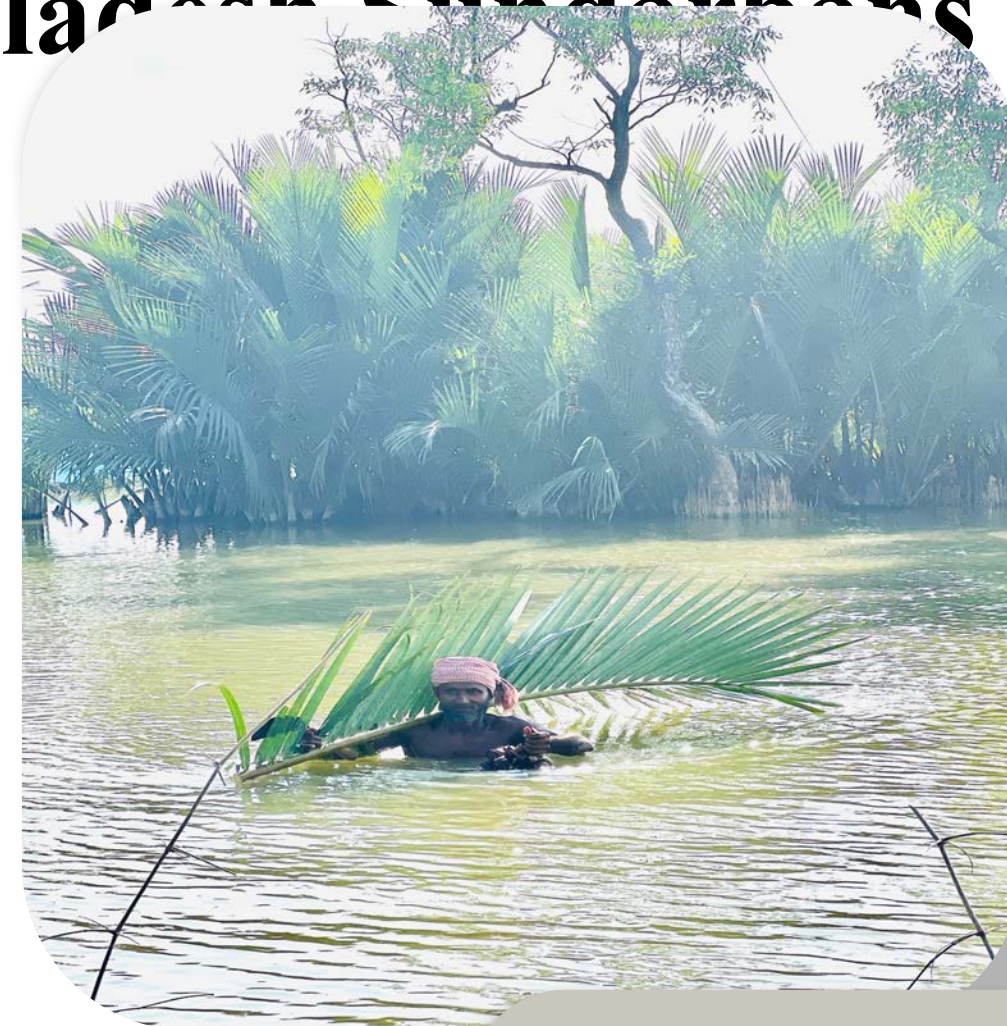




# SEPLS of the Bangladesh Sundarbans

## Traditional Resource User Groups

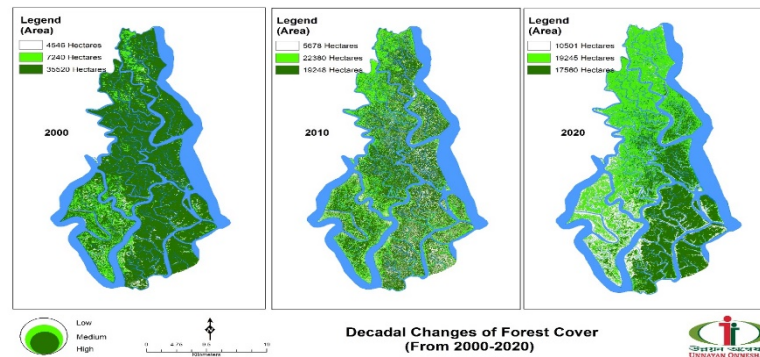
- 3.5 million people directly or indirectly depend for livelihood
- Bawali (Wood Cutter and **Nypa Palm collector**)
- Mouwali (Honey Collector)
- Jele (Fisher man)
- Chunari (Snail and Oyster Collector)
- Prawn fry collector/ Crab farmer





## Problems

- The mangrove forests are losing biodiversity resources due to anthropogenic pressures including climate change.
- Overlapping crises of covid-19, biodiversity loss, climate change, and increased cost of living.



## Project aim

- The project aimed to identify feasible indigenous and ecosystem-based solutions in (SEPLS) management, applying the multiple-evidence-based (meb) participatory approach.





## Methodology (Activities)

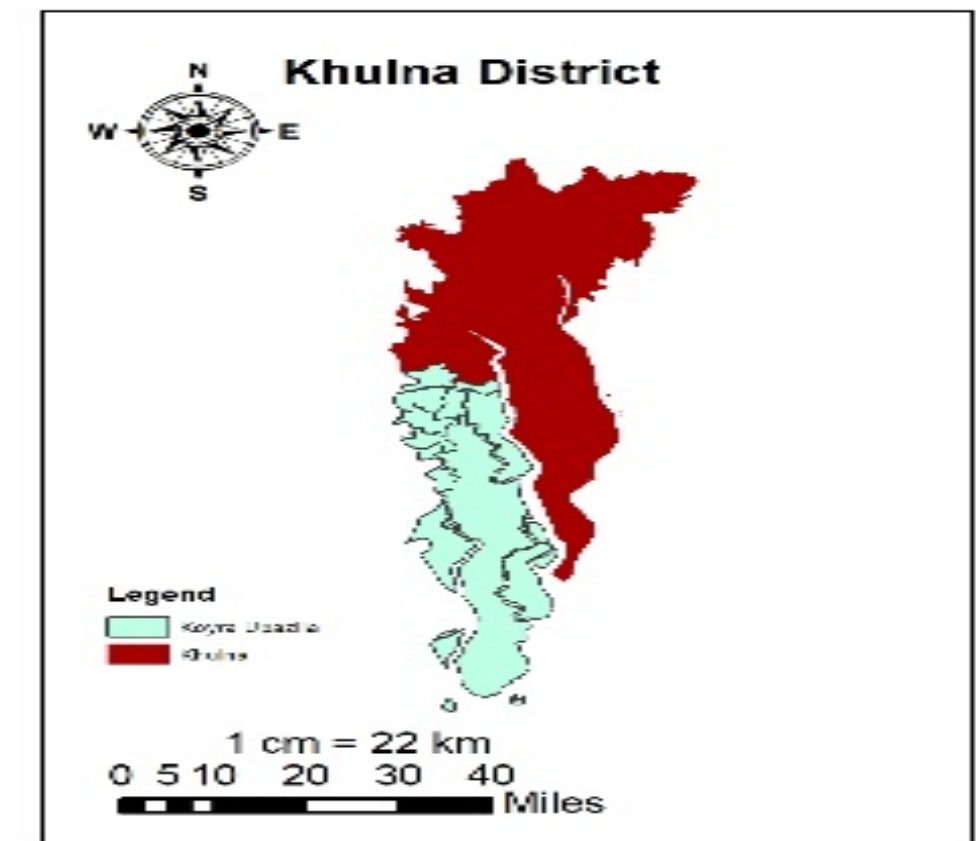
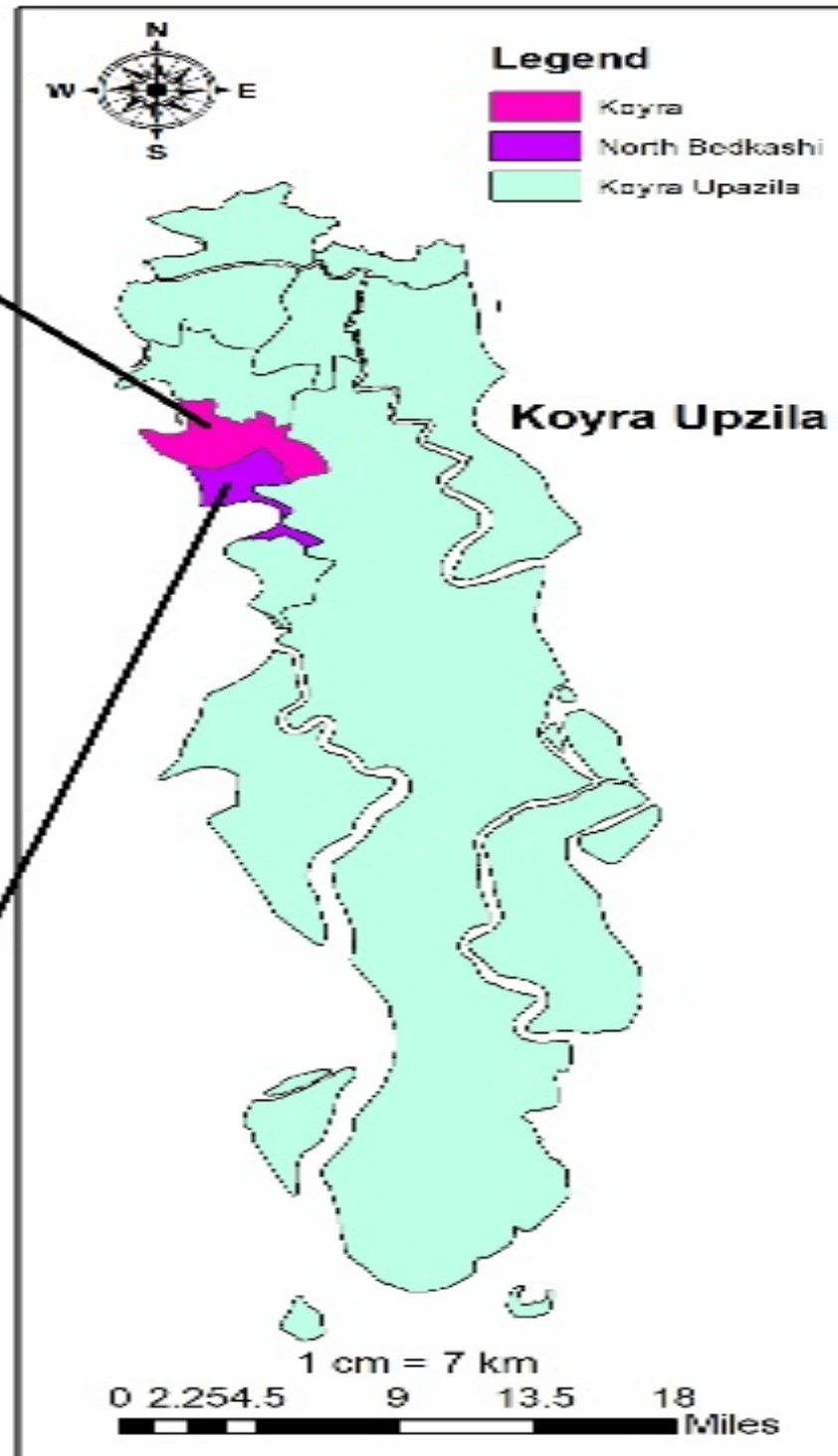
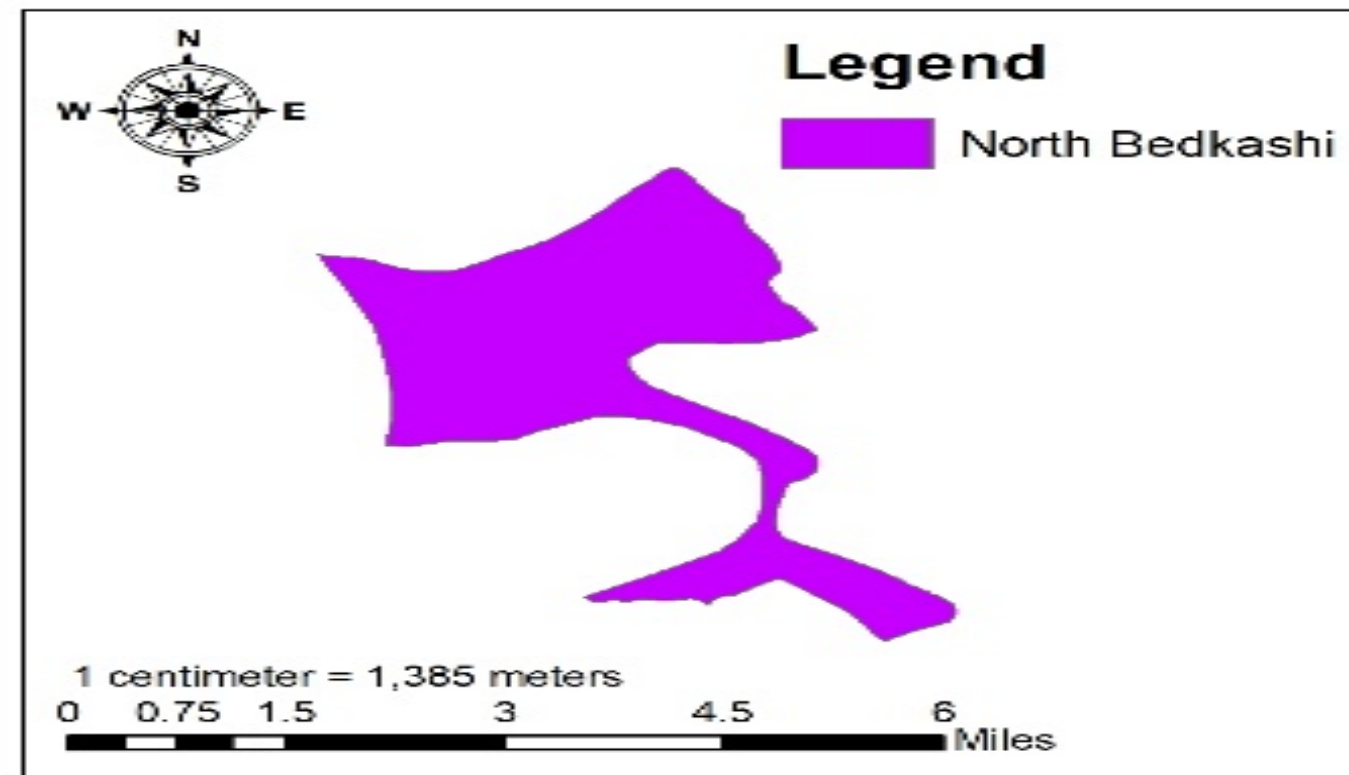
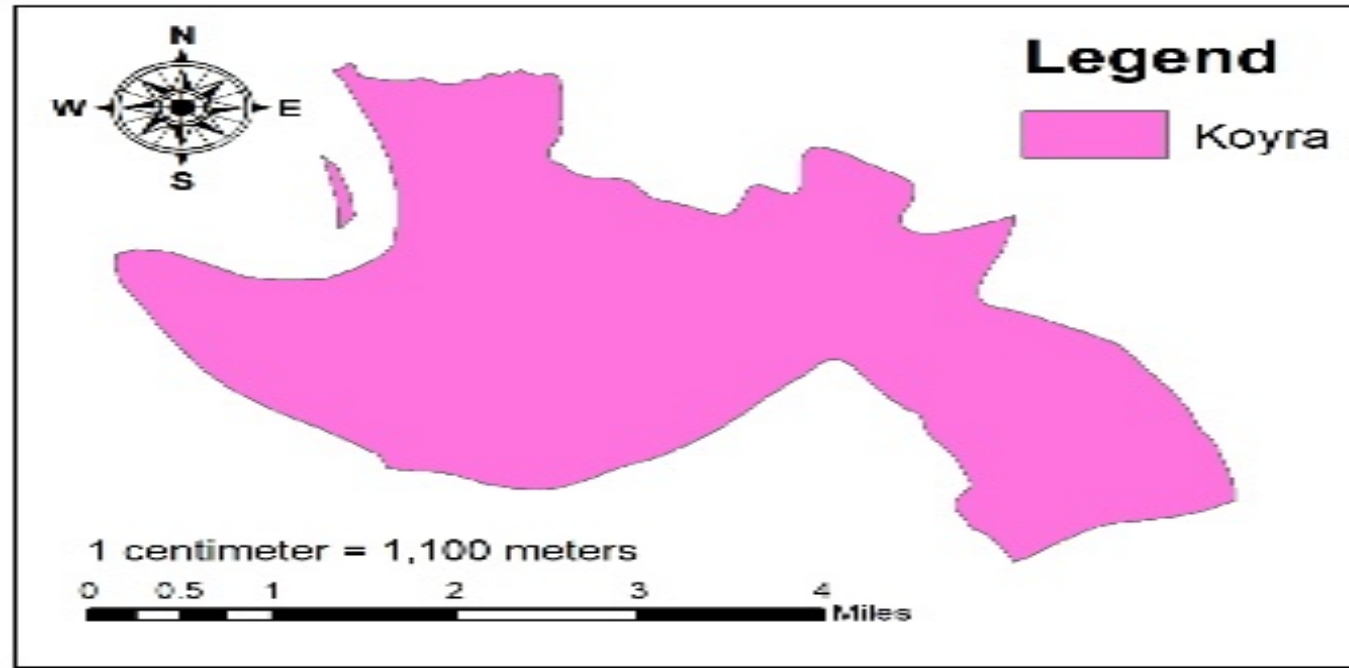
- **Systematic consultations** to identify: vulnerability, regenerative capacity, status of income and standard of living, low-impact lifestyles, and sustainable production and consumption practices (e.g. ILK-based best practices)
- **Involved 30 indigenous communities.**
- **Consultative workshops** were conducted in two forest peoples' cooperatives:
- Conducted a **situation analysis**, and analysed causes of vulnerability and community action and capacity

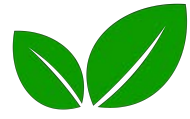




# Study Area

## Map of the Koyra and North Bedkashi





## State of Biodiversity and Ecosystem: Major barriers or constraints to achieve the nature-positive society by 2030

The availability of fish in the water bodies has become significantly reduced. Trees have declined. Sea level rise is evident than before.

Salinity rate has increased and all those created a huge anthropogenic pressure on biodiversity.

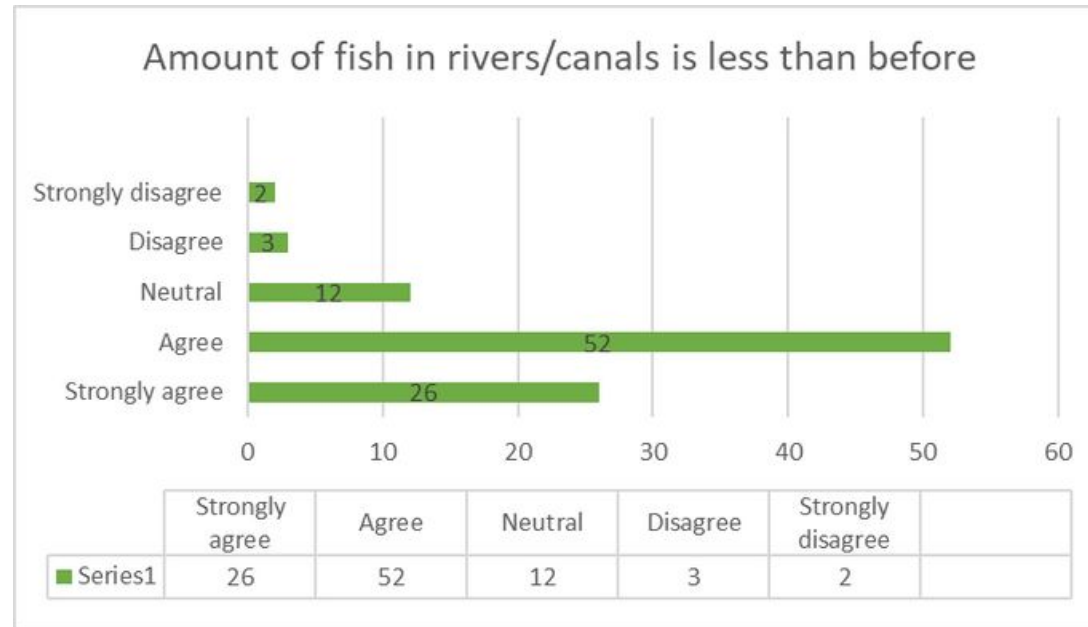


Figure 8. Decreasing trend of fish available in rivers than before.

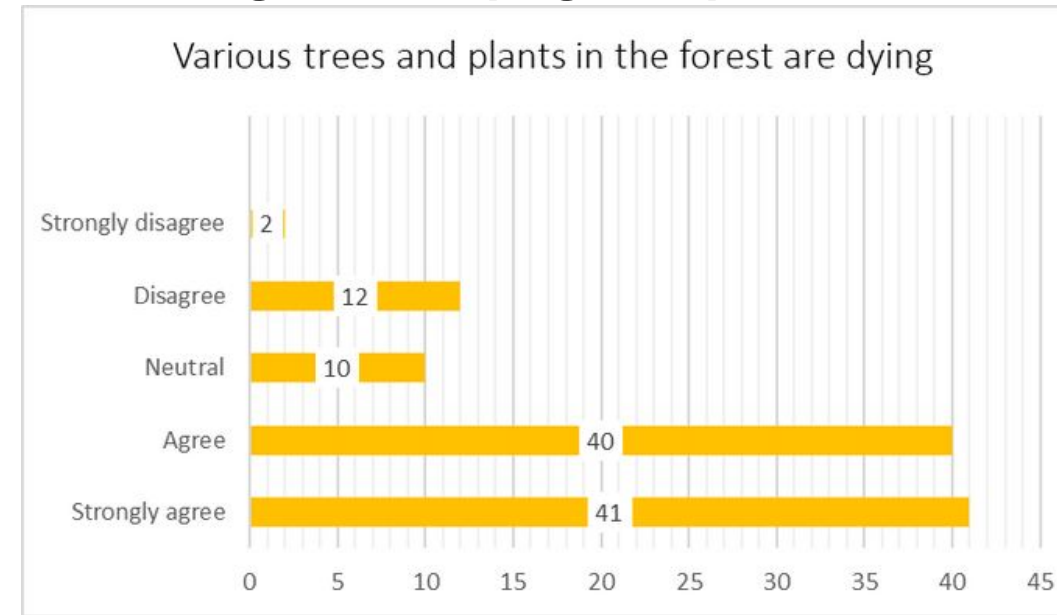


Figure 9. Decreasing trend of various trees available in forest.

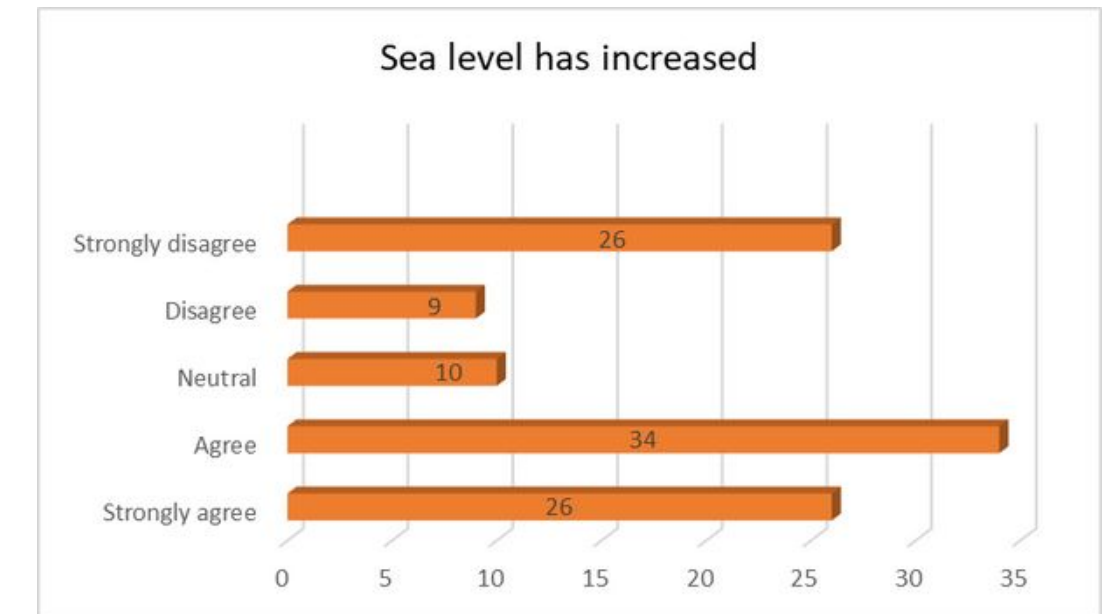


Figure 10. Change in Sea Levels.

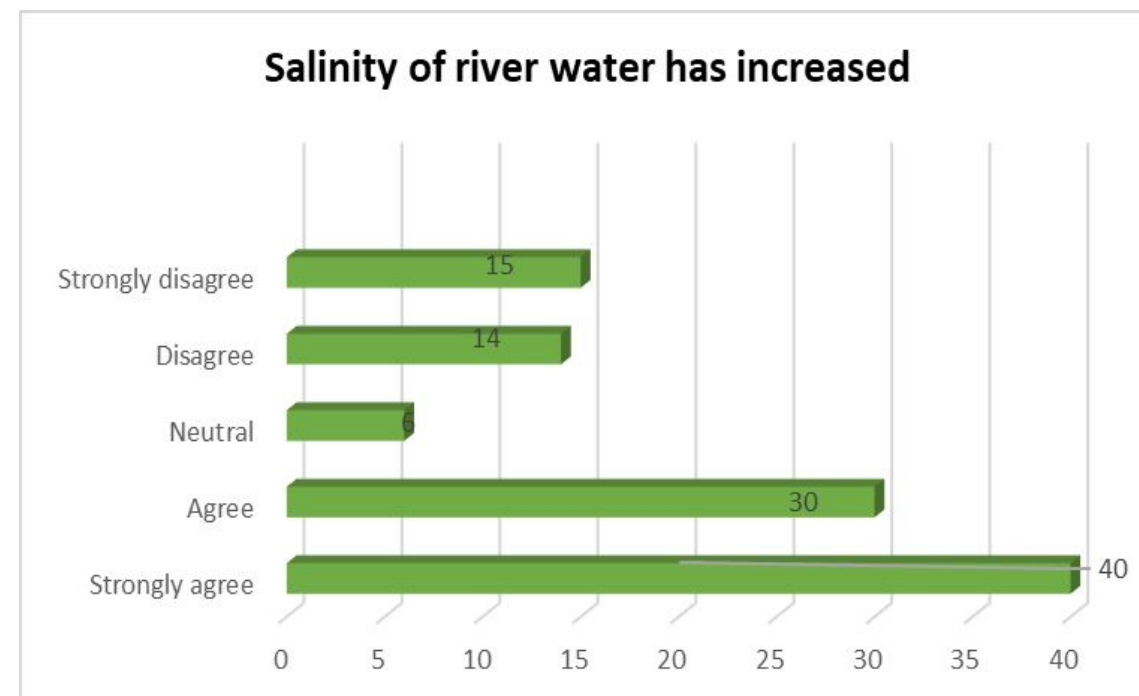
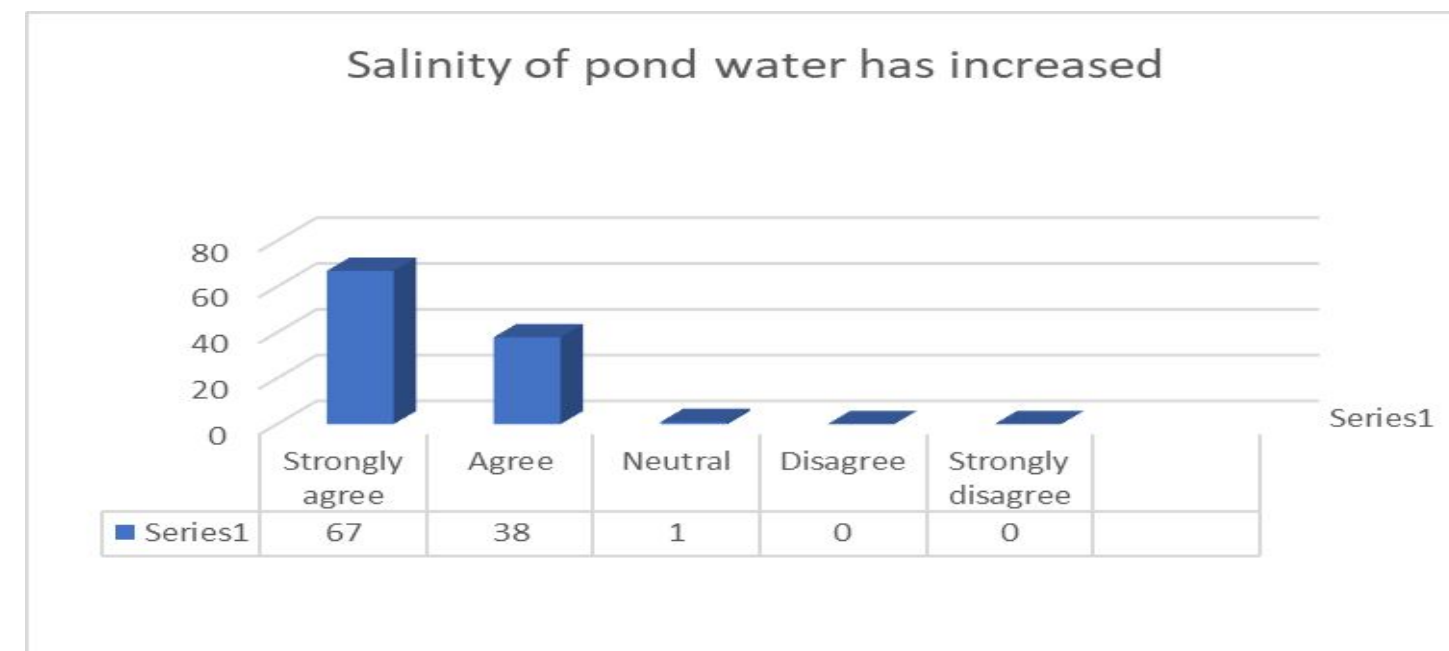
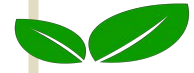


Figure 11. Increased salinity in rivers and ponds.







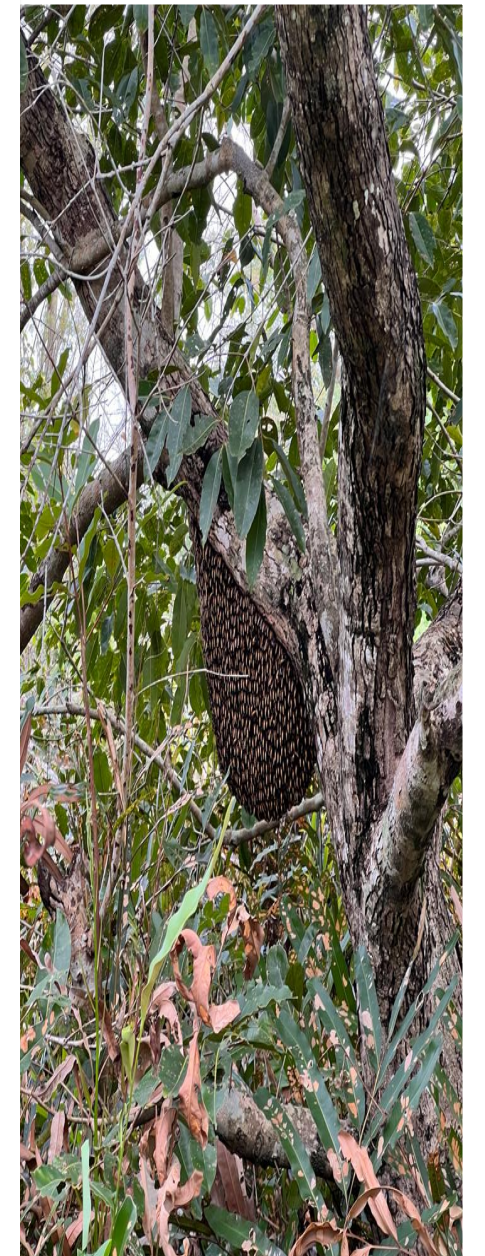
# Constraints: Change in lives and livelihoods

Indicators of vulnerability	COVID -19	Climate change	Biodiversity loss	Cost of living
Sub-indicators	Added extra burden in basic needs	Sea level rise	Decreasing Trends of Crop & harvesting	Strain in Food expenses
Sub-indicators	Lost means of livelihood	Change in rainfall	Decreasing Trends of Fish Availability	Strain Clothing
Sub-indicators	No alternative work	Victim of Displacement	Decreasing Trends of Trees Availability	Strain Health cost
Sub-indicators	Restriction to access to forest	Temperature Rising	Decreasing Trends of Forest Land Area	Spend out savings
Sub-indicators	Compromised	High Salinity	Decreasing Trends of Vegetation Area	Unaffordability of Educational expense



## Result 1- Strategy of Mangrove restoration as a means of multiple risk reduction strategy of livelihood insecurity, biodiversity loss and climate change

- Mangrove as buffer against tidal surges, sea level rise and coastal erosion
- Mangroves as natural carbon sequestration agent
- Unique physiological, ecological, and adaptive characteristics
- Sundarbans thus act as safeguarding of community people





## Result 2 -Approach and means: Effective Integrated, inclusive and localised actions: Promotion of Traditional Knowledge and practices

- Developing the culture of cultivation in each inch land
- Potential of integrated farming (Crab and Duck)
- Community-Based Mangrove Agro Aqua Silvi (CMAAS) Culture
- Strengthening the cooperatives by increased activities

### Community based innovations

Community based Innovation	Livelihood insecurity reduction	Regenerative capacity of Sundarbans and wellbeing	Bio-diverse adaptation to climate change	Wellbeing of nature and human being
Innovation in agriculture: rice cultivation in high place to keep away from salinity	Plantation next to house	Sediment deposition	Cultivation of Mangrove Trees	Freedom of choice and action
Integrated farming crab and duck	Riverside plantation	Prolific plant Life	Maintenance of Mangrove Trees	Security
Community-Based Mangrove Agro Aqua Silvi (CMAAS) Culture	Working and assisting with the forest department against illegal poaching	Land restoration	Restoration of mangroves	Good social relations
Strengthening the cooperatives by increased activities	Working to stop illegal and stop logging	Erosion minimizing	Steer clear of fishing in delicate places.	Good health
Utilizing each inch land for cultivation	Working to stop illegal fishing with nets	Diverse species interactions	Maintain the ecosystem's food web	Multicultural Tapestry

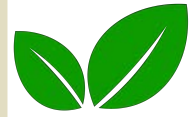




## Result 3 (A)- Suggested Actions for biodiversity restoration required for the Nature-Positive Society



			Actions taken	Means of verification	Link to wellbeing of nature and human beings	
	Loss of biodiversity	Gain of biodiversity			GBF (Target)	SDG
Cost of living	- Communities reliant on non-sustainable methods fish breeding sites.	- Honeybee Farming - Ecotourism	-provide alternative income sources and empower communities	Traditional Knowledge	15,16	12
Climate change	-rising temperature -decrease water level	-increase species that can withstand salt -increase opportunistic predators	- Preservation and Rehabilitation of Mangroves -	Traditional Knowledge	3,4,12,18,20	Indirect
Biodiversity loss	-decrease trees -decrease biotic life -decrease Flora & fauna	-Coastal Protection -Sanctuary for Biodiversity	-Mangrove Reforestation - Management of Sedimentation	Both Traditional Knowledge and Non-traditional Knowledge	2,4,10,11	15



## Result 3 (B)-Suggested Actions for the adaptation to climate change required for the Nature-Positive Society

	Climate change vulnerability	Actions taken	Means of reduction of vulnerability	Link to wellbeing of nature and human beings	
				GBF	SDG
Cost of living	<ul style="list-style-type: none"> <li>-Become homeless for natural disaster</li> <li>-food shortage</li> <li>-heath problem</li> <li>-problems in transportation and irrigation</li> </ul>	<ul style="list-style-type: none"> <li>-Agri and/or social forestry (in some areas)</li> <li>- Conversion of wetlands to crop land</li> <li>-Raising house above normal flood level</li> </ul>	Traditional Approaches	2,4,10,11	15
Climate change	<ul style="list-style-type: none"> <li>-sea level rise</li> <li>-salinity intrusion</li> <li>-uneven rainfall</li> </ul>	<ul style="list-style-type: none"> <li>-Participatory strategy</li> </ul>	Traditional Approaches	13,21,22	Indirect
Biodiversity loss	<ul style="list-style-type: none"> <li>-loss of mangrove plant</li> <li>-loss fish species</li> <li>-extinct number of species</li> </ul>	<ul style="list-style-type: none"> <li>- Increasing species breeding sites.</li> <li>- biodiversity monitoring network among cooperative members</li> <li>-Assisting forest department to monitor vegetation management</li> </ul>	Traditional Approaches	3,4,12,18,20	Indirect

## Conclusions

- The Sundarbans act as **a natural wall against climate change**, protecting against storms, cyclones, and other natural hazards.
- Protecting and restoring mangrove biodiversity can **maximize their capacity for carbon storage and enhance their ability to mitigate climate change.**
- The elimination of livelihood insecurity is achieved by working with targets 12, 18, and 20, and indirectly following the SDGs which also **leads to achieving the targets Kunming-Montreal Global Biodiversity Framework to lead a better life in the Sundarbans.**
- By implementing above strategies, the Sundarbans can enhance resilience to climate change, protect its biodiversity, and improve the livelihoods of the communities dependent



**Thank You!**