

Marine Habitat Improvement for Selected Indian Coastal Landscapes

Deepak Samuel V. Ph.D.
NCSCM, Chennai

1

 GEF Small Grants Programme

GEF SGP OP8

Core Goal: Generating measurable Global Environmental Benefits (GEBs) through community-led conservation, ecological restoration, and sustainable socio-economic development.

2

Strategic Framework

Operational Phase 8 (OP8) aligns community-based action with global environmental commitments and Sustainable Development Goals (SDGs).

3

GEF Focal Areas under OP8

- ✓ **Biodiversity Conservation:** Safeguarding endangered species, habitats, and indigenous ecosystems.
- ✓ **Climate Mitigation & Resilience:** Promoting clean energy access and building resilient local livelihoods.
- ✓ **Land Degradation & Agro-ecology:** Restoring soil productivity, forest cover, and sustainable farming.
- ✓ **Chemicals & Waste:** Reducing plastic pollution and managing harmful persistent organic pollutants.

4

 GEF SGP OP8 • East Coast Landscape

Strategy Set 1: Odisha & West Bengal

Targeted landscape strategy focusing on coastal resilience, blue carbon restoration, species protection, and institutional empowerment across the Bay of Bengal coastline.

5

East Coast Landscape Context

The Odisha & West Bengal coastal corridor represents a globally unique socio-ecological zone comprising the Sundarbans, Mahanadi Delta, Bhitarkanika, and Chilika Lake.

6

Sustainable Production & Fisheries



Resilient Farming

Promoting climate-smart agricultural practices including organic farming and integrated rice-fish systems suited for saline coastal soils.



Eco Aquaculture

Establishing biodiversity-friendly aquaculture practices that minimize chemical inputs and reduce coastal wetland conversion.



Sustainable Fisheries

Improving estuarine and marine fisheries management through ghost-net retrieval programs and protection of juvenile fish stocks.

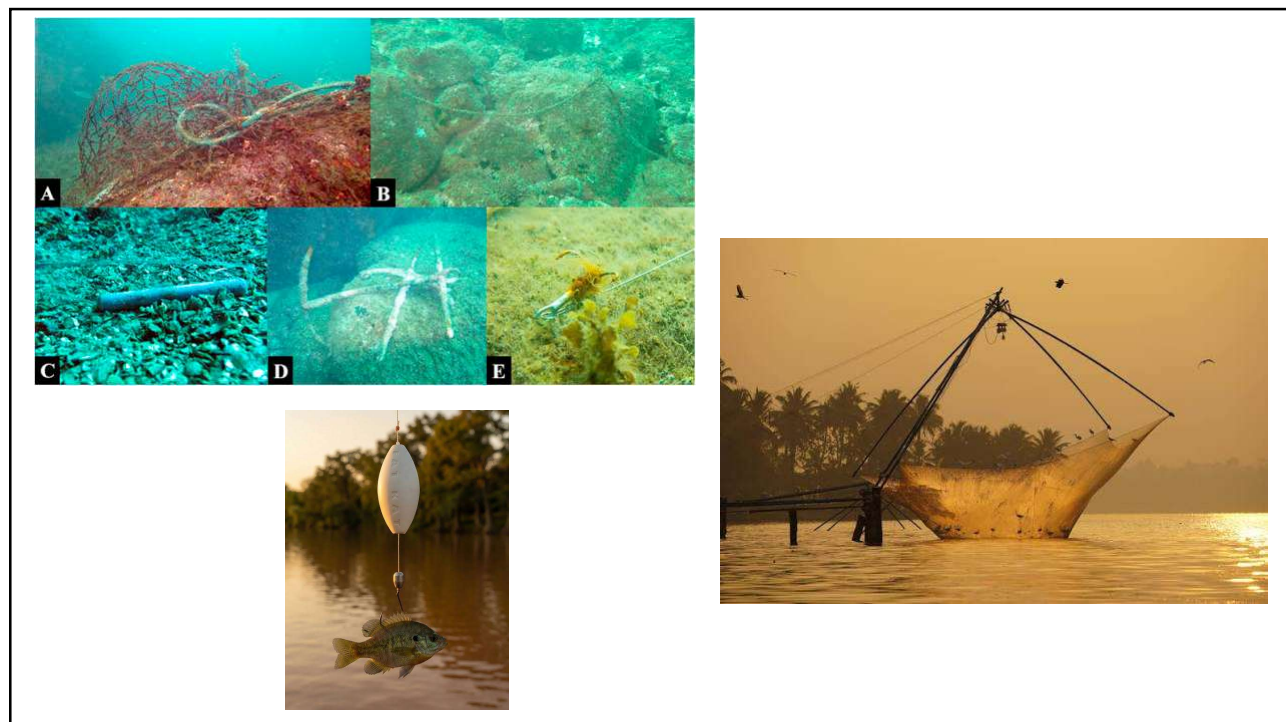
7



Harina Khuri



8



9

| Species Protection & Clean Energy

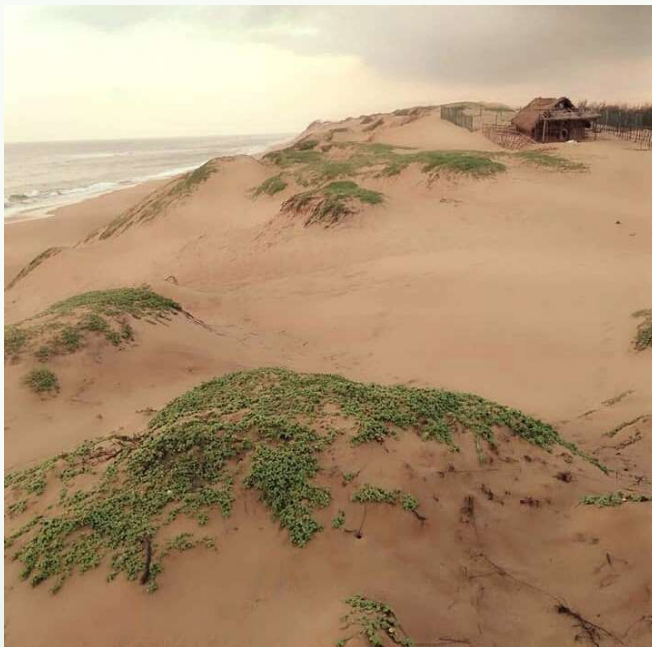
- ✓ **Olive Ridley Turtles:** Protection of mass nesting beaches and reduced accidental bycatch along Odisha coast.
- ✓ **Horseshoe Crabs & Tigers:** Conservation of critical estuarine spawning sites and Royal Bengal Tiger habitats.
- ✓ **Decentralized Solar:** Adoption of solar-powered aerators, fish dryers, and water pumps for production activities.
- ✓ **Green Energy Access:** Reducing reliance on fossil fuels in remote island and estuarine communities.



10



11



Subfamily: Tachypleinae

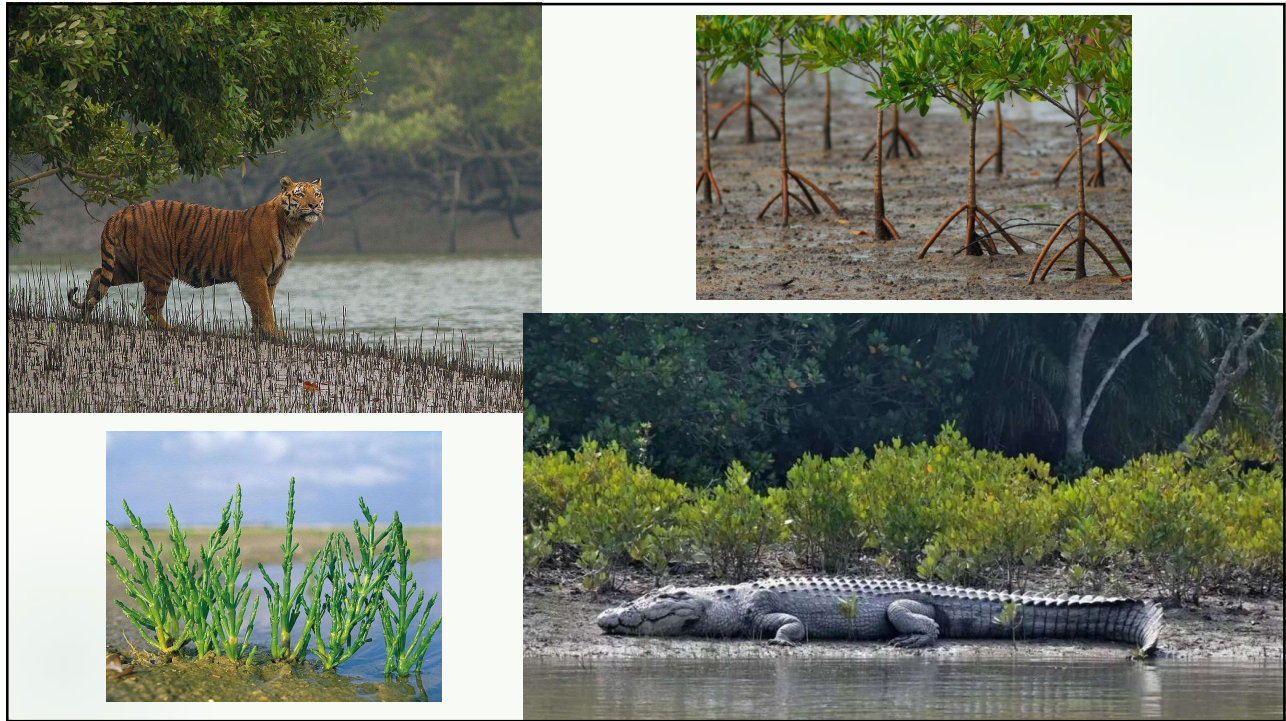


Carcinoscorpius rotundicauda
(Mangrove Horseshoe Crab)

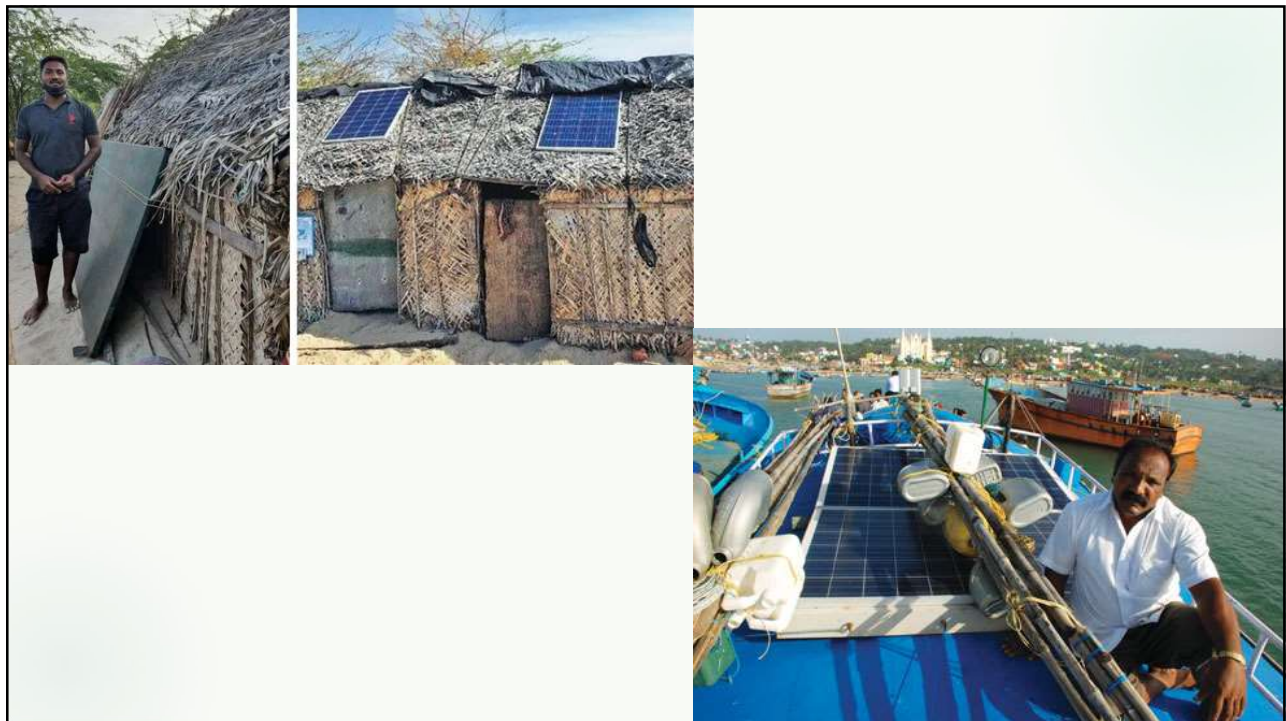


Tachypleus gigas
(Indo-Pacific Horseshoe Crab)

12



13



14

Ecosystem & Blue Carbon

Community-Led Restoration: Priority action focuses on restoring vulnerable coastal wetlands, estuaries, and tidal mudflats across the East Coast.

Mangrove Re-vegetation: Expanding mangrove cover to build natural storm buffers and sequester blue carbon.

Ecosystem Services: Enhancing coastal biodiversity while safeguarding shoreline communities against intense storm surges.



15

East Coast Proposal Matrix

Pillar	Key Strategic Actions	Target Metrics / Institutions
Ecosystems & Blue Carbon	Mangrove, estuary, and mudflat restoration	2,000 ha land restored
Production & Fisheries	Organic farming, rice-fish systems, ghost-net removal	15,000 ha under improved practices
Species & Energy	Turtle/Tiger habitat protection & solar dryers/aerators	Key coastal species & clean energy access
Governance & Inclusion	Capacity building for BMCs, FPOs, and Women SHGs	Grassroots institutions strengthened

16

| Institutional Capacity Building

- ✓ **Biodiversity Management Committees (BMCs):** Strengthening local governance for People's Biodiversity Registers (PBRs).
- ✓ **Farmer Producer Organisations (FPOs):** Enhancing market linkage and value addition for climate-resilient organic produce.
- ✓ **Women's Self-Help Groups (SHGs):** Empowering female-led micro-enterprises in eco-tourism, fish processing, and clean energy.
- ✓ **Local Leadership:** Building technical and administrative capacity for direct long-term stewardship.



17

GEF SGP OP8 • West Coast Landscape

| Strategy Set 2: Goa & Karnataka

Integrated landscape & seascape interventions targeting coastal agro-ecosystems, estuarine biodiversity, Western Ghats corridors, and community-based eco-enterprises.

18

West Coast Geographical Scope

Covering key coastal and estuarine zones across North & South Goa alongside Uttara
Kannada, Udupi, and Dakshina Kannada in Karnataka.

19

Goa: Khazan Agro-Ecosystems

Traditional Sluice Gate Engineering: Revitalizing ancient saline-resistant agro-ecosystems through community maintenance of bunds and sluice gates.

Integrated Saline Agriculture: Combining organic brackish-water aquaculture with flood-tolerant local rice varieties.

Climate Resilience: Protecting low-lying coastal villages from rising sea levels and tidal surges.



20

Goa Regional Focus Areas



Khazan Landscapes

Restoring sluice gates, dykes, and drainage canals to revive traditional coastal farming and aquaculture systems.



Lateritic Plateaus

Community stewardship over biodiversity-rich plateau ecosystems, endemic flora, and ephemeral seasonal wetlands.



Mining Rehabilitation

Restoring coastal and estuarine river systems degraded by legacy sand or mineral mining to improve water quality.

21



GOA'S NATIVE KORGUT GETS A BASMATI TWIST

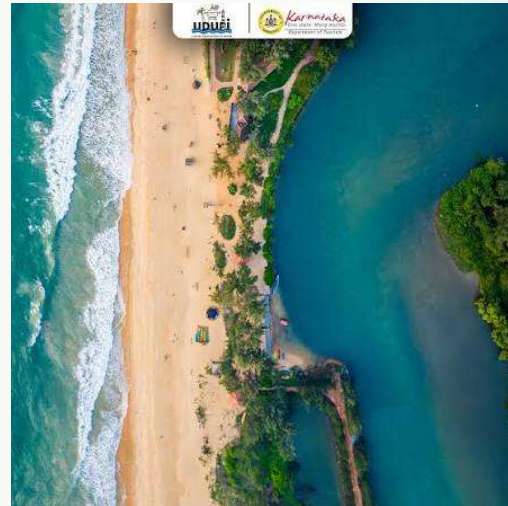
AMCHE GOA



22

Karnataka: Estuaries & Ghats

- ✓ **Aghanashini Ramsar Site:** Protecting pristine estuarine mudflats and mangrove habitats in Uttara Kannada.
- ✓ **Sustainable Shellfish Enterprise:** Supporting women-led sustainable clam, oyster, and mussel harvesting and processing.
- ✓ **Western Ghats Corridors:** Restoring sacred groves and critical wildlife migration corridors through native tree plantation.
- ✓ **Eco-Tourism & Clean Coast:** Promoting Blue Flag beach stewardship and plastic waste management.



23

Karnataka Regional Focus Areas



Forest Corridors

Restoring wildlife corridors and sacred groves in Western Ghats fringes (Uttara Kannada, Udupi, Dakshina Kannada) with endemic species.



Shellfish Enterprises

Developing sustainable harvesting, hygienic processing, and value-addition for estuarine clams and oysters at Aghanashini.



Blue Flag Stewardship

Upgrading waste management and community eco-tourism standards at Kasarkod and Padubidri certified beaches.

24

RAJASTHAN (Orans (e.g., Khejarli))
Grazing grounds, water sources; Bishnoi conservation ethos.

MAHARASHTRA (Devrais (e.g., Amboli Devrai))
Medicinal plant biodiversity, linked to local gods.

KARNATAKA (Devvara Kadu)
Forest deities' habitats and rare wildlife conservation.

KERALA Kavus (e.g., Iringole Kavu)
Biodiversity hubs linked with Theyyam rituals.

HIMACHAL PRADESH (Dev Van)
Himalayan flora protection tied to local deity worship.

MEGHALAYA (Law Kyntang)
Sacred spaces preserved by Khasi tribes are central to local animistic traditions.

ODISHA (Jahera)
Abodes of village deities, ensuring community-based protection.

TAMIL NADU (Puthupet Sacred Grove)
Revered for native flora and rituals for local deities.

© PMF IAS

Issues with Sacred Grove

Lack of Legal Recognition

Cultural decline

Climate Change

Encroachment

Need for a Policy

- 1 Biodiversity Conservation
- 2 Cultural Preservation
- 3 Ecological Services
- 4 Community Livelihoods
- 5 Government Emphasis

Way Forward

Survey & Legal Protection: Map and designate groves as protected areas or community reserves.

Community Empowerment: Uphold **Forest Rights Act 2006** and offer incentives for sustainable management.

Conservation Efforts: Promote indigenous plantations and create buffer zones for protection.

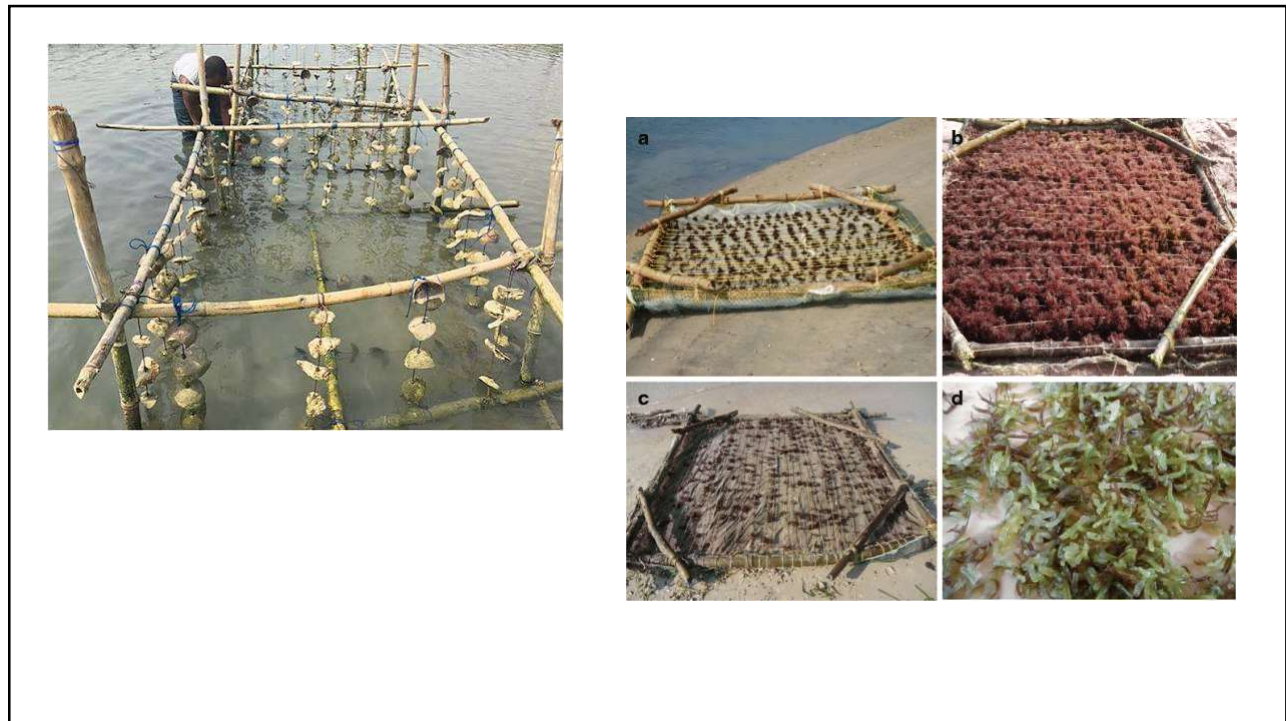
Cultural Revival: Encourage festivals, rituals, and educational awareness about groves.

Policy Integration: Align conservation with schemes like **CAMPA** and **Green India Mission**.

Public-Private Partnerships: Engage NGOs and private entities for restoration

25

26



27



28

Cross-State Strategic Interventions



Non-Violent Conflict Mitigation

Implementing community-driven early-warning alerts, solar fencing, and acoustic deterrents along Western Ghats forest fringes to minimize human-wildlife conflict.



Nature-Based Coastal Defense

Establishing community-managed native plant nurseries (*Ipomea pes-caprae*, *Spinifex*) to stabilize vulnerable sand dunes and reduce shoreline erosion.

West Coast Proposal Matrix

Region	Target Ecosystems / Sites	Key Strategic Actions
Goa (North & South)	Khazan lands, Lateritic plateaus, Estuarine rivers	Sluice gate restoration, organic saline farming, sand mining rehab
Karnataka (Uttara Kannada)	Aghanashini Ramsar Site, Kasarkod Beach	Sustainable shellfish value chain, Blue Flag beach waste management
Karnataka (Udupi & Dakshina Kannada)	Western Ghats corridors, Padubidri Beach	Sacred grove restoration, native tree planting, coastal eco-tourism
Cross-State Projects	Forest fringes & coastal sand dunes	Early warning conflict mitigation systems, dune plant nurseries

Core NGO Selection Criteria



Innovation & Scalability

Priority for community-driven, low-cost models that can be easily replicated across coastal landscapes and upscaled to policy levels.



Government Convergence

High evaluation score for proposals aligning with national missions: **MISHTI** (mangroves), **PMMSY** (fisheries), or **Green India Mission**.



Co-Financing Leverage

Demonstrated ability to leverage state government schemes, district mineral funds (DMF), or Corporate Social Responsibility (CSR) partnerships.

31

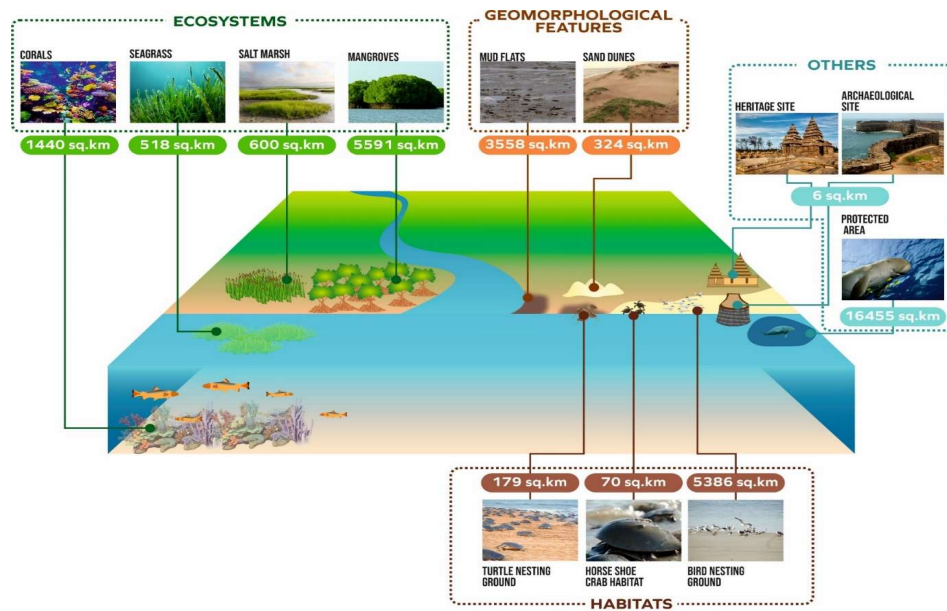
Proposal Scoring Framework

Pillar / Criterion	Key Requirements	Evaluation Weight
Gender & Social Inclusion	35%+ funds to women groups (East), mandatory BMC/FPO roles (West)	25%
Institutional Ownership	Direct partnership with Gram Panchayats, BMCs, JFMCs, or Fish FPOs	20%
Innovation & Scalability	Replicable community-led eco-solutions with clear scaling path	20%
Government Convergence	Alignment with MISHTI, PMMSY, Green India Mission, or MGNREGA	20%
M&E & Co-financing	Metrics tracked (ha, CO2e, gender) + CSR/State co-funding match	15%

32

33

Ecologically Sensitive Areas along Indian Coastline



34



Thank you !

Image courtesy : Wikipedia

35



Questions?

deepak@ncscm.res.in
deepak.s.ocean@gmail.com

36