

EAFM PLAN

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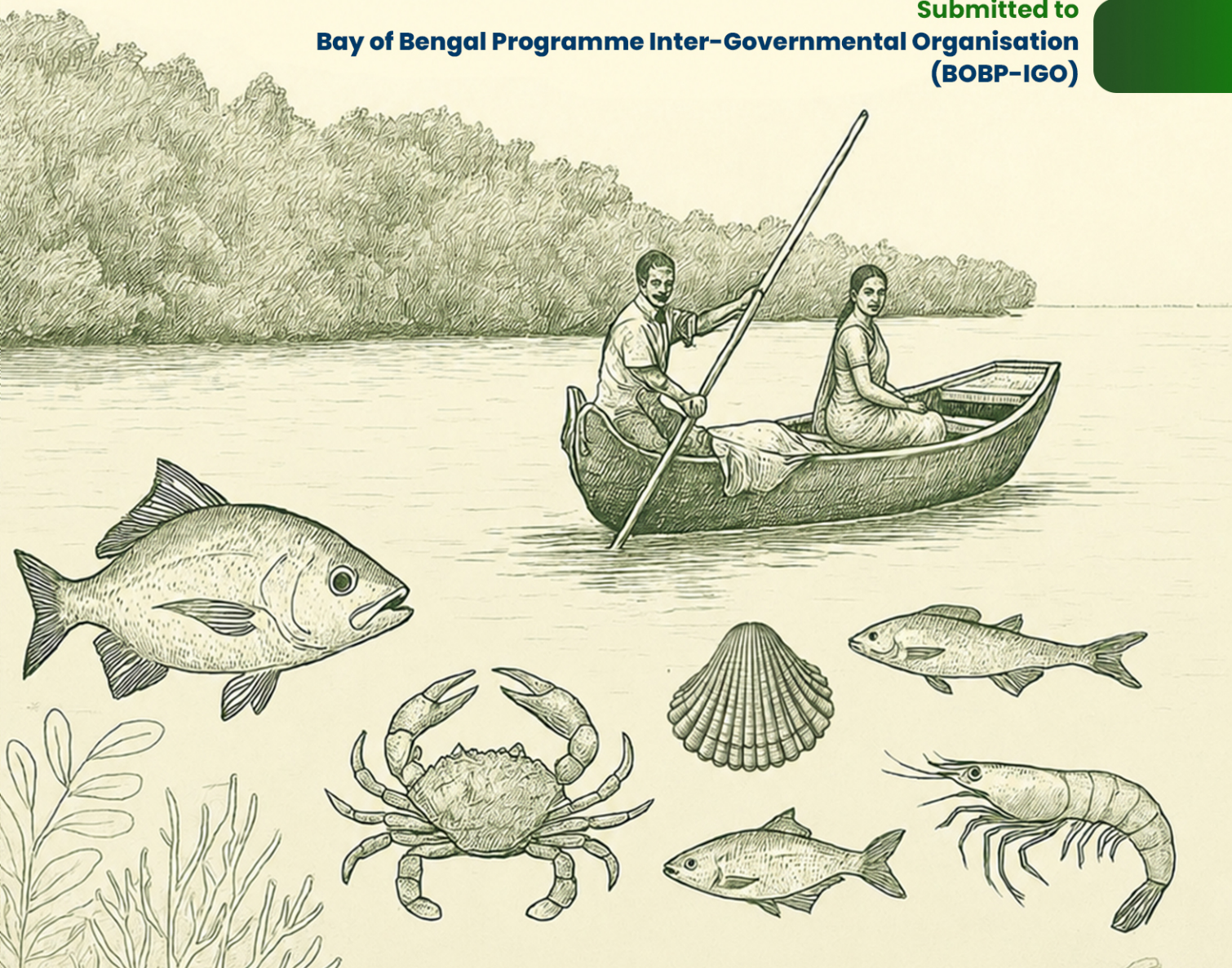
THE CORINGA

MANGROVE ECOSYSTEM FISHERY



BOBP

Submitted to
Bay of Bengal Programme Inter-Governmental Organisation
(BOBP-IGO)



Submitted By
ICAR-CENTRAL MARINE FISHERIES RESEARCH INSTITUTE (ICAR - CMFRI)
VISAKHAPATNAM REGIONAL CENTRE
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EAFM Plan for the Coringa Mangrove Ecosystem Fishery

Submitted to
**Bay of Bengal Programme Inter-Governmental Organisation
(BOBP-IGO)**

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Abbreviations & Acronyms

BOBLME	Bay of Bengal Large Marine Ecosystem Project
CBD	Convention on Biological Diversity
CBO	Community-Based Organization
CDP	Capacity Development Programmes
CMFRI	Central Marine Fisheries Research Institute
CRZ	Costal Regulation Zone
CSR	Corporate Social Responsibility
DFYWA	District Fishermen's Youth Welfare Association
EAFM	Ecosystem Approach to Fisheries Management
FFPO	Fish Farmers' Producer Organization
FIP	Fishery Improvement Project





FMP	Fishery Management Plan
FMU	Fishery Management Unit
GEF	Global Environment Facility
GI tag	Geographical Indication tag
ICAR	Indian Council of Agriculture Research
IGO	Inter-Governmental Organisation
MCS	Monitoring, Control, and Surveillance
MISHTI	Mangrove Initiative for Shoreline Habitats & Tangible Incomes
MMA	Marine Managed Area
MPEDA	Marine Products Export Development Authority
NABARD	National Bank for Agriculture and Rural Development
NCDC	National Cooperative Development Corporation
NFDB	National Fisheries Digital Platform
NGO	Non-Governmental Organization
OECM	Other Effective Area-based Conservation Measures
PM-MKSSY	Pradhan Mantri Matsya Kisan Samridhi Sah-Yojana
PMMSY	Pradhan Mantri Matsya Sampada Yojana
SHG	Self Help Group
UNDP	United Nations Development Programme
VFA	Village Fisheries Assistant



Executive summary

Coringa, the second largest mangrove ecosystem in India, supports rich fisheries comprising a variety of finfishes and shellfishes that provide a vital source of income for the dependent population. Yet, this rich ecosystem faces mounting issues and threats that degrade the health of the ecosystem and fisheries. These issues are being addressed for more than three decades using conventional management approaches. Ecosystem Approach to Fisheries Management (EAFM) is a broader and more inclusive approach that considers the ecosystem as a whole is a practical and effective means to manage fisheries holistically. Recognising this, the Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO) identified the Coringa Mangrove Ecosystem Fishery as the Fishery Management Unit (FMU) to implement EAFM under the Bay of Bengal Large Marine Ecosystem Project Phase II (BOBLME II). ICAR-Central Marine Fisheries Research Institute (CMFRI) was identified as the operational partner for preparing EAFM plan.

In association with Department of Fisheries, Andhra Pradesh, the BOBP-IGO and CMFRI conducted many stakeholder consultations, interviews and workshops and prepared a scoping report that led to preparation of EAFM plan for Coringa Mangrove Ecosystem Fishery.

The Vision of the Plan is “**Fishery sustainability achieved by balancing ecosystem health and community empowerment in Coringa**”. To support this vision, the plan is built around four primary goals based on the three components of EAFM

Goal 1: Sustainable fisheries in Coringa FMU achieved

Objective 1: Promote sustainable fishing practices

Goal 2: Improved ecosystem health in Coringa FMU

Objective 1: Explore the potential to designate Coringa Mangrove ecosystem as a Marine Managed Area (MMA)

Objective 2: Reduce the impact of human interventions

Goal 3: Enhanced livelihoods of fishermen in Coringa FMU

Objective 1: Enhance economic benefits

Objective 2: Improve social security





Goal 4: Improved governance in Coringa FMU

Objective 1: Strengthen governance and institutional coordination

Based on the needs and priorities of key stakeholders, a package of interventions (management measures) have been planned for each objective. The interventions are:

1. Collecting catch and effort data,
2. Developing Fishery Management Plans (FMPs) for mudcrab, shrimps, bivalves and gillnet fisheries,
3. Promoting responsible fishing practices,
4. Exploring designating Coringa Mangrove Ecosystem as Marine Managed Area and as Other Effective Area-based Conservation Measures (OECA),
5. Assessing the impact of mangrove plantation and suggesting improvement measures,
6. Developing plastic waste disposal plan,
7. Promoting mud crab fattening,
8. Ranching of bivalve seed,
9. Ecolabelling of mudcrab fishery,
10. Improving marketability of value-added products like dry fish, smoked shrimp etc.,
11. Registering Coringa smoked shrimp for GI tag,
12. Developing eco-tourism by engaging fisher-youth,
13. Assessing potential of blue carbon credits,
14. Improving access to finance & social support systems, including insurance,
15. Establishing co-management arrangement or increased participation of fishers and other stakeholders,
16. Engaging women in governance, and
17. Strengthening community awareness on ecosystem conservation, sustainable fishing, and recent developments in fisheries.

The plan implementation will be spearheaded by the Department of Fisheries, Government of Andhra Pradesh in association with Department of Forest, fisher associations, research organisations and other stakeholders. Co-management committee will be established at two





levels – one at the district level and another at the field level. The district level committee will be chaired by the District Collector of Kakinada and will include officials from Dept. of Fisheries, Govt. of Andhra Pradesh and Dept. of Forests, Govt. of Andhra Pradesh in addition to members from CBOs, local authorities, research institutions, etc. The field level committee would be chaired by the EAFM Site Coordinator from the Dept. of Fisheries and would be involved in the implementation of the EAFM plan in Coringa. The district committee would be more supervisory in nature.

- ◆ Implementation of the Plan will be taken up in two phases: Phase 1 – Tasks which can be initiated and completed within the BOBLME project period (December 2027)
- ◆ Phase 2 – Tasks which can be initiated during the project period, but will continue after the project period

Institutional linkages, timeline, finance mechanism and responsibilities have been identified in the Plan. Monitoring and Evaluation of the performance of EAFM implementation have been included as a part of the Plan. The challenges and risks have been identified and potential mitigation measures have been identified.





1.0 Introduction and scope of EAFM plan

1.1 Genesis of preparing the Plan

Coringa, the second largest mangrove ecosystem in India, supports rich fisheries comprising a variety of finfishes and shellfishes that provide a vital source of income for the dependent population. Yet, this rich ecosystem faces mounting issues and threats that degrade the health of the ecosystem and fisheries. These issues are being addressed for more than three decades using conventional management approaches. Ecosystem Approach to Fisheries Management (EAFM) is a broader and more inclusive approach that considers the ecosystem as a whole is a practical and effective means to manage fisheries holistically. Recognising this, the Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO) identified the Coringa Mangrove Ecosystem Fishery as the Fishery Management Unit (FMU) to implement EAFM under the Bay of Bengal Large Marine Ecosystem Project Phase II (BOBLME II). ICAR-Central Marine Fisheries Research Institute (CMFRI) was identified as the operational partner for preparing EAFM plan.

1.2 Approach for preparing the Plan

The project team from Visakhapatnam RC of ICAR-CMFRI carried out the following activities for collecting information and preparation of the draft EAFM plan for Coringa. These included:

- ◆ Site visits – Seven trips to Coringa as part of the initial scoping study as well as hamlet surveys on 28.04.2025, 30.04.2025, 26.06.2025, 22.08.2025, 25.09.2025, 23.12.2025 and 09.01.2026.
- ◆ Baseline data collection through primary surveys – July 2025 to January 2026
- ◆ Focus Group Discussions with stakeholders on 30.04.2025, 26.06.2025, 19.09.2025, 23.12.2025 and 09.01.2026
- ◆ EAFM training for project staff 11.11.2025 -14.11.2025
- ◆ Submission of Scoping Report to the BOBP-IGO on its endorsement in January 2026
- ◆ Stakeholder meeting to discuss the draft EAFM plan for Coringa – 12.02.2026
- ◆ Writeshop to prepare the draft Plan during 09-11 March 2026 in the Secretariat of BOBP-IGO.

1.3 Scope of the plan

The Coringa Mangrove Ecosystem (hereafter “Coringa”) is located in the delta of the Godavari River in Andhra Pradesh (Fig. 1). The Coringa mangroves are the second largest area of mangroves along the east coast of India. The area is rich in floral and faunal diversity, and





generates significant ecological and economic benefits such as shoreline protection, sustaining livelihoods and carbon sink services. It is situated at the confluence of Godavari River with Bay of Bengal in the Kakinada district of Andhra Pradesh, lying between 16°59'23" N, 82°18'16" E and 16°34'57" N, 82°18'38" E. The Coringa mangrove forests are currently protected as Coringa Wildlife Sanctuary.

Based on the BOBLME project inception workshop and discussions with stakeholders, the Coringa Fishery Management Unit for EAFM planning and implementation is defined as the 12 hamlets surrounding the Coringa mangrove forest, the creeks adjacent to these hamlets, the portion of Kakinada Bay adjacent to Coringa mangrove forest and Hope Island. The 12 hamlets included in the FMU are Chinnaboddu Venkatayyapalem, Peddaboddu Venkatayyapalem, Gadimoga, Laxmipathipuram, Chinnavalasala, Peddavalasala, Ramanapalem, Kothuru, Chollangi, Dindi, Chollangipeta, and Hope Island which falls across Kakinada Bay (Table 1). These hamlets are included in the FMU due to the high dependence of fishermen in these hamlets on the fisheries of Coringa. Though there are several other hamlets nearby, their dependence on Coringa fisheries is much less. This information was collected during the project inception workshop and during subsequent scoping work in the region.

The Coringa FMU covers a total area of 310.378 sq. km. Part of the FMU includes the Coringa Wildlife Sanctuary which falls under the administration of the Forest Department, Govt. of Andhra Pradesh as well as the waters in Kakinada Bay, just nearshore to Hope Island as well as the mangroves surrounding the hamlets. The FMU does not include the offshore waters of Kakinada and Hope Island; it is restricted only to the inshore waters and hence, offshore waters are beyond the scope of this work. This plan focuses on promoting sustainable fisheries through development and implementation of Fishery Management Plans for key resources and gillnet fisheries. Additionally, the plan focuses on improving the ecosystem health holistically which in turn will be beneficial for other resources in the FMU.

This plan was drafted by the project team at the Visakhapatnam RC of ICAR-CMFRI with funding support and guidance from BOBP-IGO. Dept. of Fisheries, Govt. of Andhra Pradesh was associated during the whole process of preparation of the EAFM plan. Relevant stakeholders in the FMU were consulted for preparing the plan and align with project goals and identify their needs and ensure regulatory compliance



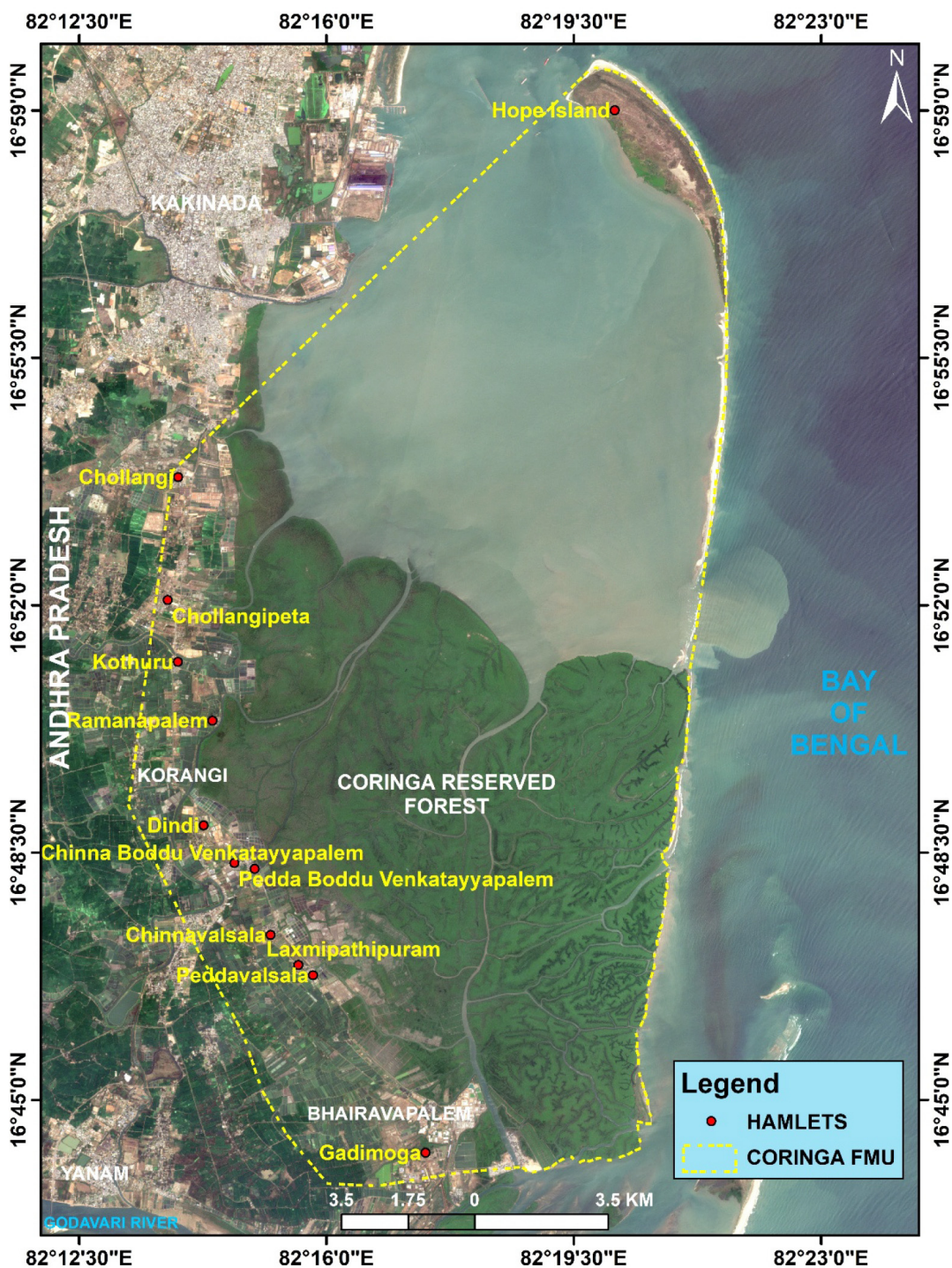


Fig.1: Map of the Coringa FMU; the FMU covers the Coringa Reserved Forest and 12 hamlets including Hope Island



2.0 Characteristics of Coringa Mangrove Ecosystem and Fisheries

The characteristics of Coringa Mangrove Ecosystem and Fisheries have been presented in detail in the Scoping Report. The following sections present the key information from the Scoping Report.

2.1 Coringa Mangrove Ecosystem

The Coringa mangroves are home to nearly 35 mangrove species, over 100 species of birds (including migratory and rare birds), and a large number of finfish and shellfish species. The area also supports endangered species like olive ridley turtles, fishing cats, and Indian smooth-coated otters (Savaliya et al., 2023). To the north of Coringa is Kakinada Bay, and further north is Hope Island. Ecologically, Coringa offers vital services, namely, shoreline protection, carbon sequestration, pollutant filtration, and flood attenuation. Moreover, the mangrove forest also serves as a site of recreation and ecotourism.

The communities surrounding Coringa, particularly from the nearby hamlets and Hope Island, are composed almost entirely of traditional fishing families. These communities lie on the ecological periphery, flanked by port activities on one side and industries on the other. These communities are facing increasing challenges to their livelihood security and are facing a number of serious challenges mainly:

- ◆ Habitat and Fishery Space Shrinkage
- ◆ Decline and Shift in Resource Use
- ◆ Fishery Sustainability Concerns
- ◆ Infrastructure Gaps and Hope Island Challenges
- ◆ Indifference to community knowledge
- ◆ Plastic and Domestic Waste Management
- ◆ Conservation Gaps

2.2 Profile of the fishery

In this section, we outline the prevalent fishery in the Coringa mangrove ecosystem FMU, along with details of craft, gear, operational profile and current management measures.

Catch and effort data

Fishermen in the Coringa FMU predominantly use motorized fishing crafts (boats with outboard motor) and a small percentage use non-motorized crafts. Table 1 gives number of fishing crafts from the 12 hamlets in the Coringa FMU. Though one hamlet does not have fishing crafts,





there are fishermen who harvest resources without any craft in that hamlet. Fishing crafts usually are of 8 m length and motor power ranges from 10 to 20 hp. Many crafts carry life jackets as safety equipment.

Table 1: Fishing crafts in the hamlets within the Coringa FMU (Source: Primary data collected from Village Sachivalayam)

Name of hamlet	Number of fishing crafts
Chinnaboddu Venkatayyapalem	155
Peddaboddu Venkatayyapalem	62
Gadimoga	186
Laxmipathipuram	75
Chinnavalsala	68
Peddavalsala	65
Ramanapalem	60
Kothuru	36
Hope Island	22
Dindi	24
Chollangipeta	57
Chollangi	0

Fishermen fish within and outside the FMU in the nearshore waters of the Bay of Bengal, off Kakinada. Earlier, the major fishing grounds were within the FMU, but with the decline in resource availability, the fishing grounds have now extended out of the FMU to nearly 6 km off Kakinada. However, for the purpose of this work, only fisheries within the FMU are considered. The dominant fishing gear used is gillnets and target groups include prawns, crabs, mullets and seabass (Table 2). Other targeted resources include mackerels, polynemids, hilsa, milkfish, croakers, etc. Fishing is carried out during the entire year (except during seasonal fishing ban, extreme weather and local festivals), and the highest fish availability is during September-December. On average, 10-15 kg fish are landed by each craft as indicated by fishermen during surveys.

Table 2: Key resources with the major fishing gears used in Coringa mangrove fishery

Species	Common name	Value (Rs. per kg)	Fishing gear used
<i>Mugil cephalus</i>	Mullet		Disco net for fish and prawns Stake net for fish and prawns Dip net for fish Drag net for fish and prawn Hook for crabs Lines for crabs and fish Oosa net for fish Jalugu net for fish
	Big	400/-	
	Small	250/-	
<i>Chanos chanos</i>	Milkfish	300/-	
<i>Muraenesox spp.</i>	Eels	300/-	
<i>Lates calcarifer</i>	Seabass	800/-	
<i>Clarias spp.</i>	Catfish	250/-	
<i>Tenualosa ilisha</i>	Hilsa	2000/-	
<i>Eleutheronema tetradactylum</i>	Indian salmon	800/-	
<i>Saurida spp.</i>	Lizardfish	500/-	
<i>Penaeus monodon</i>	Tiger shrimp	800/-	
<i>Penaeus indicus</i>	White shrimp	1000/-	
<i>Scylla serrata</i>	Mud crab	600/-	
<i>Portunus pelagicus</i>	Blue crab	600/-	
<i>Crassostrea spp.</i>	Oyster	200/-	
<i>Telescopium telescopium</i>	Horn snail	200/-	
<i>Anadara granosa</i>	Blood clam	300/-	
<i>Hemifusus spp.</i>	Sea snail	100/-	
<i>Cerithidea spp.</i>	Mud snail	100/-	
<i>Naticaspp.</i>	Sea snail	300/-	

2.3 Current management of Coringa Mangrove Ecosystem and fisheries—A part of the Coringa FMU is a Wildlife Sanctuary, the provisions of both Dept. of Forests and Dept. of Fisheries are applicable to the FMU, in addition to coastal zone regulations. The major management and/or conservation measures to which the FMU is subjected to are as follows:





- ◆ Wildlife and mangrove protection - The Coringa Wildlife Sanctuary (Coringa WLS) established in 1978 by Govt. of Andhra Pradesh vide G.O.Ms.No. – 484, Forests and Rural Development (For.III) Department dated 5-7-1978, is managed under the provisions of The Wildlife (Protection) Act 1972 and The Wildlife (Protection) Amendment Act 2022, which have strict restrictions on entry and activities inside a sanctuary. The protection of specific animal species under Schedule I and II of the Act are also applicable to the FMU, e.g. fishing cat protected under Schedule I, etc.
- ◆ Mangrove protection - The Coastal Zone Regulation Notification of 2019 (CRZ) under The Environment (Protection) Act, 1986 classifies Mangroves as Ecologically Sensitive Areas (ESAs) permitting only very limited activities in these areas. Additionally, provision of a 50-meter buffer zone along mangroves is also specified as CRZ-I (A) in case the mangrove cover is greater than 1,000 square meters. In such instances, if any mangroves are likely to be affected during the developmental process, three times the number of mangroves lost must be replanted as per the provisions of CRZ-2019 regulation. Further mangrove areas and mangrove ecosystems are also protected under the relevant provisions of the Forest Conservation Act, 1980.



Fig. 2: Motorized and non-motorized fishing crafts in Coringa FMU



- ◆ Fisheries management – The marine fisheries of Andhra Pradesh including that in Coringa are managed under the provisions of the Andhra Pradesh Marine Fisheries Regulation Act (APMFRA) 1985. Generic management measures including seasonal fishing ban, mesh size restriction, prohibition of destructive fishing methods, etc. are applicable to the FMU. The seasonal fishing ban for mechanized and motorized fishing fleets runs annually from April 15-June 14 and is the most common and widely implemented fishing management measure in the state. Mesh sizes below half inch is prohibited in the state as per the APMFRA; however, the implementation of mesh size is limited in the state. As the APMFRA is more than 40 years old it is currently under modification.
- ◆ *Informal management system (such as village elders and councils), which is well-developed in Coringa, should be highlighted here.*

2.4 Issues and threats

In this section, we detail the issues and threats to the Coringa FMU. Table 3 provides the list of high priority issues under ecological wellbeing, human wellbeing and good governance. The following sections deal with all identified issues and threats in the Coringa FMU. The issues pertaining to Coringa have been detailed in the Scoping Report, and this chapter focuses exclusively on fishery-related issues.

Table 3: Priority issues as identified in Coringa FMU

Ecological well being	Human well being	Good governance
Depletion of fishery resources, primarily mud crab and bivalves	Lack of additional economic benefits from fisheries	Lack of coordination between agencies
Pollution (industrial and plastic)	Poor social security for fishers	Absence of co-management arrangements

2.4.1 Ecological well being

1) Depletion of fishery resources:

Mud crab

Unsustainable harvest of mud crab: The mud crab *Scylla serrata* is a major shellfish resource found in Coringa FMU. Mud crabs in the region are harvested using traditional burrow extraction (thadu method), along with traps and hand-picking. Field evidence generated through primary surveys and direct interactions with fishers indicates clear changes in catch dynamics over the years, including reduced catch per unit effort (CPUE), altered size





structure, and a higher proportion of immature individuals in landings, all pointing to unsustainable harvesting. Fishers consistently reported that about a decade ago, 3–4 crabs constituted one kilogram, whereas current catches require 6–8 smaller crabs to make up the same weight, reflecting a marked decline in average size. The declining mean carapace width and rising fishing pressure affecting size at first maturity along with stagnation in catch quantity indicate growth and recruitment overfishing with growth overfishing appearing to be the more pronounced concern (Venkata Raju, et al., 2005; Bharathi, et al., 2017; MYLA, et al., 2017).

Further the continuous capture of berried (egg-bearing) females further threatens stock replenishment. Scientific studies emphasize that removal of breeding stock can significantly reduce recruitment and long-term productivity of crab populations. In addition, reduced average size in landings suggests low recruitment and impaired stock regeneration, a pattern widely reported in Indian estuaries and mangrove ecosystems.

Bivalves

Decline of blood clam & green mussel(Jasmin *et al*, 2023):

The bivalves population has declined due to two major reasons:

- (i) The estuarine creeks, mudflats, mangrove fringes, and shallow coastal waters provide critical habitats for molluscan resources such as blood clams and green mussels. While sedimentation is a natural process in deltaic systems, recent anthropogenic interventions have altered sediment quantity, quality, and distribution patterns. This imbalance has negatively impacted the benthic habitats supporting the blood clam resources. Green mussels require firm substrates such as rocks, shells, pilings, or other hard surfaces for byssal attachment. In the Coringa–Kakinada coastal stretch, elevated suspended solids increase turbidity, reducing primary productivity stability. Settled silt covers natural hard substrates, making them unsuitable for spat settlement. Thus the bivalve populations have declined due to habitat modification
- (ii) Indiscriminate collection of juvenile clams and mussels before they reach reproductive maturity as well as harvesting bivalves during peak spawning seasons reduced stock. As a result, spawning success was impacted, leading to declines in bivalve population. Thus removal of juveniles exacerbates the negative impact of sedimentation on the bivalve populations.





2) Expansion of mangrove area with habitat modification:

Remote sensing assessments indicate that mangrove cover in the Coringa FMU has expanded in recent decades, largely due to natural regeneration and plantation initiatives by the Department of Forest. However, this numerical increase in area does not necessarily equate to ecological health.

Significant habitat modifications due to infrastructure development, economic activities, sedimentation and intertidal mudflat exposure have the potential to reduce the services proffered by the mangroves, which is evident from the decline of juvenile fish, prawn nursery habitats, mudcrab population and roosting and nesting habitats of migratory and resident birds.

a) Decline in Productivity and Species Diversity

Although mangrove canopy cover may appear stable or increasing, ecosystem productivity shows localized declines in disturbed zones. Key impacts include:

- ◆ Reduction in juvenile fish and prawn nursery habitats
- ◆ Lower plankton productivity in silted creeks
- ◆ Decline in benthic faunal diversity

Habitat fragmentation and altered water exchange reduce nutrient cycling efficiency, leading to decreased biological output (Ezhilarasan et al., 2025; Sura, A., et al., 2025).

The above-mentioned factors emphasise the need for scientific assessment of the performance of mangrove plantation for providing recommendations to improve the measures.

2.4. 2 Human well-being

Coringa is vulnerable to a multitude of anthropogenic and environmental stressors affecting the livelihoods of coastal communities. Economic activities such as industrialization, port activities, aquaculture expansion and intense fishing practices; pollution due to oil spill, pollution from industries, domestic sewage; coastal erosion, climate change including frequent cyclones, and natural disasters have jointly impacted not only the ecological well-being, but also the human well-being in the FMU.

Developing livelihood opportunities in this situation requires a transition from extractive, high-impact activities to sustainable, restorative, and diversified economic activities. Key strategies include fostering sustainable aquaculture, community-based eco-tourism, value chain approach which reduce pressure on natural resources while improving community





resilience. Price volatility and dependence on export markets create economic uncertainty for small scale producers. Sustainable branding of Coringa based seafood and ecotourism linked to the mangrove sanctuary offers potential for diversified marketing strategies.

Communities do not possess adequate skills and knowledge. There is visible lack among the Coringa communities in post-harvest and value addition practices especially among the women who deal with post-harvest handling. Smoked shrimp and other smoked products are in high demand among consumers but are restricted to a niche market. With proper training and upgradation of skills, these products can be marketed to a wider consumer base.

Gender mainstreaming and developing social security are also critically important to enhance human well-being. Improving access to credit, insurance, and financial services supports the transition to new livelihood strategies, particularly for women who are undervalued in the fisheries sector.

2..4.3 Governance

- ◆ Multiple authorities involved: In the Coringa region, many agencies are involved in governance; the Coringa Wildlife Sanctuary falls under the Forest Department, fisheries are managed by the state Fisheries Department, port activities connect to authorities linked with Kakinada Port, pollution oversight rests with the Pollution Control Board, and coastal regulations involve separate coastal zone authorities. Each institution has its own mandate, but coordination gaps often result in overlapping responsibilities. This fragmentation can delay decision making.
- ◆ Conflicts: Conflicts in the Coringa region often arise between conservation authorities and local communities over access to mangrove resources. Restrictions within the wildlife sanctuary sometimes affect traditional fishing or fuelwood collection practices, leading to tensions. There are also disputes related to aquaculture expansion, land conversion, and industrial activities near ecologically sensitive zones. Balancing livelihood needs with environmental protection remains a central governance challenge in Coringa.
- ◆ Absence of co-management: In Coringa, decision making is largely top down, especially within protected sanctuary areas. Community participation in planning and monitoring remains limited, despite local fishers possessing valuable ecological knowledge of tidal cycles and breeding grounds. Though informal governance by combined heads of villagers exist, their say in policy matters is limited and restricted to conflict resolutions between fishers or villages. Without formal co-management frameworks that integrate community groups, conservation authorities, and local governments, governance lacks





shared ownership. This can weaken compliance and reduce long term sustainability of conservation measures.

- ◆ Inadequate fisheries monitoring and data gaps: Reliable, updated fisheries data specific to the Coringa Mangrove Ecosystem are not systematically collected. Due to this gap, the status of fisheries is not clearly understood and it is difficult to take informed decision-making.
- ◆ Insufficient Regulation of Aquaculture: Shrimp farming has expanded rapidly around Coringa, but regulatory oversight of pond siting, effluent treatment, and groundwater extraction remains uneven. Some farms operate without fully complying with environmental clearances or maintaining proper waste treatment systems. Salinity intrusion into adjacent lands and creeks has raised concerns among traditional farmers and fishers. Weak enforcement mechanisms and limited inspection capacity reduce the effectiveness of aquaculture guidelines meant to protect the estuarine ecosystem.
- ◆ Limited Funding & Capacity: Conservation management within the Coringa region often operates under budget constraints. Limited funds affect patrolling capacity, habitat restoration programs, community outreach, and scientific research initiatives.

Staff shortages and insufficient technical resources further constrain effective governance. When cyclones strike, restoration of damaged mangroves and infrastructure may depend on external project funding rather than sustained institutional capacity.

- ◆ Weak grievance redressal mechanisms: Local communities around Coringa frequently lack accessible, transparent mechanisms to raise environmental complaints or livelihood concerns. Without timely resolution, frustrations may escalate into conflicts between communities, industries, and authorities. Strengthening local level grievance platforms and participatory forums could transform governance into proactive stewardship of Coringa's coastal commons.





3.0 The Coringa EAFM plan

3.1 Vision

The EAFM plan for Coringa Mangrove Ecosystem Fishery intends to implement holistic management of the mangrove ecosystem-dependent fisheries through a combination of stakeholder participation, science-based advisories and effective governance. The plan aims to ensure that along with fisheries, the mangrove ecosystem as well as the habitat health is improved. Hence, the vision for the EAFM Plan for Coringa FMU is “**Fishery sustainability achieved by balancing ecosystem health and community empowerment in Coringa**”.

3.2 Co-management arrangements

To ensure that the tasks outlined in the Coringa EAFM plan are actualized and that the objectives are met, a Coringa co-management committee is to be formed. The co-management committee is to be established in two layers – one at the field level and another at the district level, to ensure that issues can be addressed effectively, with active participation of all stakeholders. The details of the co-management committee including its composition, roles and responsibilities are given in detail in Chapter 4.

3.3 Goals

1. Goal 1 - Ecological well-being: **Sustainable fisheries in Coringa FMU achieved**
2. Goal 2 - Ecological well-being: **Improved ecosystem health in Coringa FMU**
3. Goal 3 - Human well-being: **Enhanced livelihoods of fishermen in Coringa FMU**
4. Goal 4 - Good governance: **Improved governance in Coringa FMU**

3.4 Objectives

1. Goal 1 - Ecological well-being
 - ◆ Objective 1 - Promote sustainable fishing practices
2. Goal 2 – Ecological well-being
 - ◆ Objective 1 – Explore the potential to designate the ecosystem as a Marine Managed Area
 - ◆ Objective 2 - Reduce the impact of human interventions
3. Goal 3 – Human well-being
 - ◆ Objective 1 - Enhance economic benefits
 - ◆ Objective 2 - Improve social security



4. Goal 4 - Good governance

- ◆ Objective 1 - Strengthen governance and institutional coordination

3.5 Management Measures and Tasks

The management measures and tasks for meeting each objective can be taken up in 2 phases as given below:

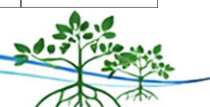
- ◆ Phase 1 – Tasks which can be initiated and completed within the BOBLME project period (Dec 2027)
- ◆ Phase 2 – Tasks which can be initiated during the project period, but will continue after the project period

Table 4: Management measures to achieve the objectives under the draft EAFM plan for Coringa FMU

Goal	Objective	Management measure	Task	Phase
Sustainable fisheries in Coringa FMU achieved	Promote sustainable fishing practices	Catch and effort data collection and implementation	Develop & implement data collection system, reporting & data sharing framework,	1
			Develop logsheet (fishermen), data forms/app (Sagarmitras/VFA-Field functionaries),	1
			Develop gender disaggregated data collection forms (hidden harvest)	1
			Implementation of data collection and implementation	2
		Develop and Implement Fishery Management Plans for mudcrab, shrimps, bivalves & gillnet fisheries	Assessment of shrimps, mudcrab, bivalves fisheries, and gillnet fisheries;	1
			Planning and stakeholder engagement;	1
			Prepare four (4) FMPs by developing goals, objectives, management measures including input and output controls,	1



			implementation plan and monitoring and evaluation. Implementation of FMPs	2
		Promote responsible fishing practices	Encourage registration of unregistered fishing crafts; Suggest measures for reducing juvenile capture such as minimum mesh size and minimum legal size; strengthen enforcement	1, 2
Improved ecosystem health in Coringa FMU	Designate the ecosystem as Marine Managed Area (MMA) and as Fishery OECM	Explore designating Coringa FMU as an MMA and as a Fishery OECM	Identify aspects of Coringa FMU which can be considered as inputs for designating it as MMA and Fishery OECM	1
			Consult relevant national and regional organisations	1
			Prepare document related to meet the objective	1
	Reduce the impact of human interventions	Assess the impact of mangrove plantation	Assess the impact of mangrove plantation following suitable methodology	1
			Consultation with communities	1
			Explore promoting Carbon Credit system for mangroves	1
		Develop plastic waste disposal plan	Assess plastic pollution in the FMU	1
			Arrange collaboration with authorised waste collectors/recyclers for collection and recycling of plastic waste (domestic and fishery-based)	1, 2
			Develop benefit scheme for the community	1, 2
Enhanced livelihoods of fisherwomen in Coringa FMU	Enhance economic benefits	Promote mud crab fattening	Identify unit locations, source of seed & feed	1
			Identify suitable fattening system, beneficiaries and scale of operation	1
			Identify markets and	1



			develop/improve marketing chains Prepare project proposal for funding Stock and rear seeds, monitor growth Assess the performance of fattening system	1 1, 2 1, 2
		Ranching of bivalve seed	Identify species and locations for ranching Backyard hatcheries to be set up as source of seeding material, beneficiary selection (women) Prepare project for funding Ranch the seeds Assess the performance by collecting samples and following standard methods	1 1, 2 1 2 2
		Ecolabelling of mudcrab fishery	Collate historical fishery information (catch, effort, stock assessments, secondary species, etc.) necessary for ecolabelling of the mud crab fishery Arrange conducting pre-assessment by an accredited third-party auditor and develop a Fishery Improvement Project (FIP)	1 1, 2
		Improve marketability of value-added products like dry fish, smoked shrimp etc.	Assess & select appropriate products, raw materials, techniques, potential markets Establish an FFPO	1 1
		Register for GI tag for Coringa smoked shrimp	Assess smoked shrimp production; Explore improved production; Follow GI tag registration requirements & protocol	1 1
		Develop eco-tourism	Identify fisher youth-centric eco-tourism initiatives Formal partnership with Dept of Forest	1 1





			Fishery-based tourism package	2
	Improve social security	Improve access to finance & social support systems, including insurance	Identify potential activities and sources of finance Communicate and assist the communities to improve access	1, 2 1, 2
Improved governance in Coringa FMU	Strengthen governance and institutional coordination	Establish co-management arrangement or increased participation of fishers and other stakeholders	Constitute the committee by consultation, prepare ToR (MCS focus), support its functioning	1
		Engage women in governance	Ensure >30% representation and leadership of women in co-management committee	1
		Capacity Development Programmes	Conduct CDPs on responsible fishing, livelihood improvement programmes, leadership by women	1, 2
		Strengthen community awareness on ecosystem conservation, sustainable fishing, and recent developments	Prepare the list of awareness programmes, agenda, beneficiaries, school children focussed material and programs	1, 2





EAFM PLAN for Coringa Mangrove Ecosystem Fisheries – IMPLEMENTATION GANTT CHART

Management Action	Year 1				Year 2			
	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
PROMOTE SUSTAINABLE FISHING PRACTICES								
Catch and effort data collection								
Implementation of data collection system (Phase 2)								
Fishery Management Plan for mudcrab, shrimps, bivalves & gillnet fisheries								
Implementation of FMPs (Phase 2)								
Promote responsible fishing practices Phase 1&2								
DESIGNATE THE ECOSYSTEM AS A MANAGED AREA								
Inclusion of Coringa FMU as an MMA and as a Fishery OECM								
REDUCING THE IMPACT OF HUMAN INTERVENTIONS								
Assessing the impact of mangrove plantation								
Develop a plastic waste disposal plan								
ENHANCE ECONOMIC BENEFITS								
Promote mud crab fattening								
Ranching of bivalve seed								
Ecolabelling of mud crab fishery								
Improve marketability of value-added products								
Register for GI tag for Coringa smoked shrimp								
Develop eco-tourism								
Assess potential of Blue Carbon Credits								
IMPROVE SOCIAL SECURITY								
Improve access to finance & social support systems, including insurance								
STRENGTHEN GOVERNANCE AND INSTITUTIONAL COORDINATION								
Establish co-management arrangement or increased participation of fishers and other stakeholders								
Engage women in governance								
Strengthen community awareness on ecosystem conservation, sustainable fishing, and recent developments								

 Sustainable Fishing
  MMA Ecosystem
  Impact Of Human Interventions
  Economic Benefits
  Social Security
  Governance



3.6 Expected outcomes

The expected outputs and outcomes from the implementation of the EAFM Plan are:

- 1) Regular data collection system developed and implemented – Fishery data collection in Coringa FMU is limited to short-term studies currently. For effective management of fishery resources in the FMU, comprehensive and continuous data on the fishery is required. The EAFM plan proposes to develop data collection proforma for fisheries data collection from fishermen (log sheets) as well as from enquiry (through Sagarmitras/Village Fisheries Assistants). Data collection will be disaggregated by gender for fisheries-related activities. Steps will be taken to integrate the data into the state's fisheries data system.
- 2) Fishery Management Plans implemented for four fisheries– The EAFM plan intends to develop Fishery Management Plans for mud crab, bivalve and shrimp fisheries as well as gillnet fisheries. FMPs are comprehensive assessments of fishery resources based on which a set of management measures will be developed and implemented for sustainable harvest of the resources. In Coringa Ecosystem, mud crabs, bivalves and shrimp populations are declining and implementing FMPs would ensure that these major resources are fished at sustainable levels. A Fishery Improvement Project (FIP) for the mud crab fishery in Coringa would also lead to sustainable harvest of the resource and improve its management, in order to achieve ecolabelling standards.
- 3) Healthy, plastic-free ecosystem established in Coringa – Healthy ecosystems support healthy resources. Currently the Coringa FMU has no waste disposal mechanism in place, with garbage accumulating across the FMU, which damages both the mangroves as well as the fishery resources. The plastic waste disposal plan will arrange removal of plastic wastes thereby improving the health of the ecosystem and its resources.
- 4) Livelihood of fishers enhanced – The EAFM plan includes several additional livelihood options for fishermen and women including crab fattening units and bivalve ranching as well as developing eco-tourism programs with involvement of local youth (to the extent permissible under CRZ I (A) provisions), which will improve livelihood of the community. A Fish Farmers' Producer Organization (FFPO) shall be established to improve marketability of fishery products from Coringa. The FFPO would have active fishermen, women fish vendors and smoked fish producers, entrepreneurs and traders as members. Eco-labelling of the mud crab fishery is expected to fetch premium prices for the resource. A GI tag for the smoked shrimp from Coringa will also add to the market value of the product, thereby improving the economic returns to the fishers. As the smoking of shrimp is a woman-dominant activity,





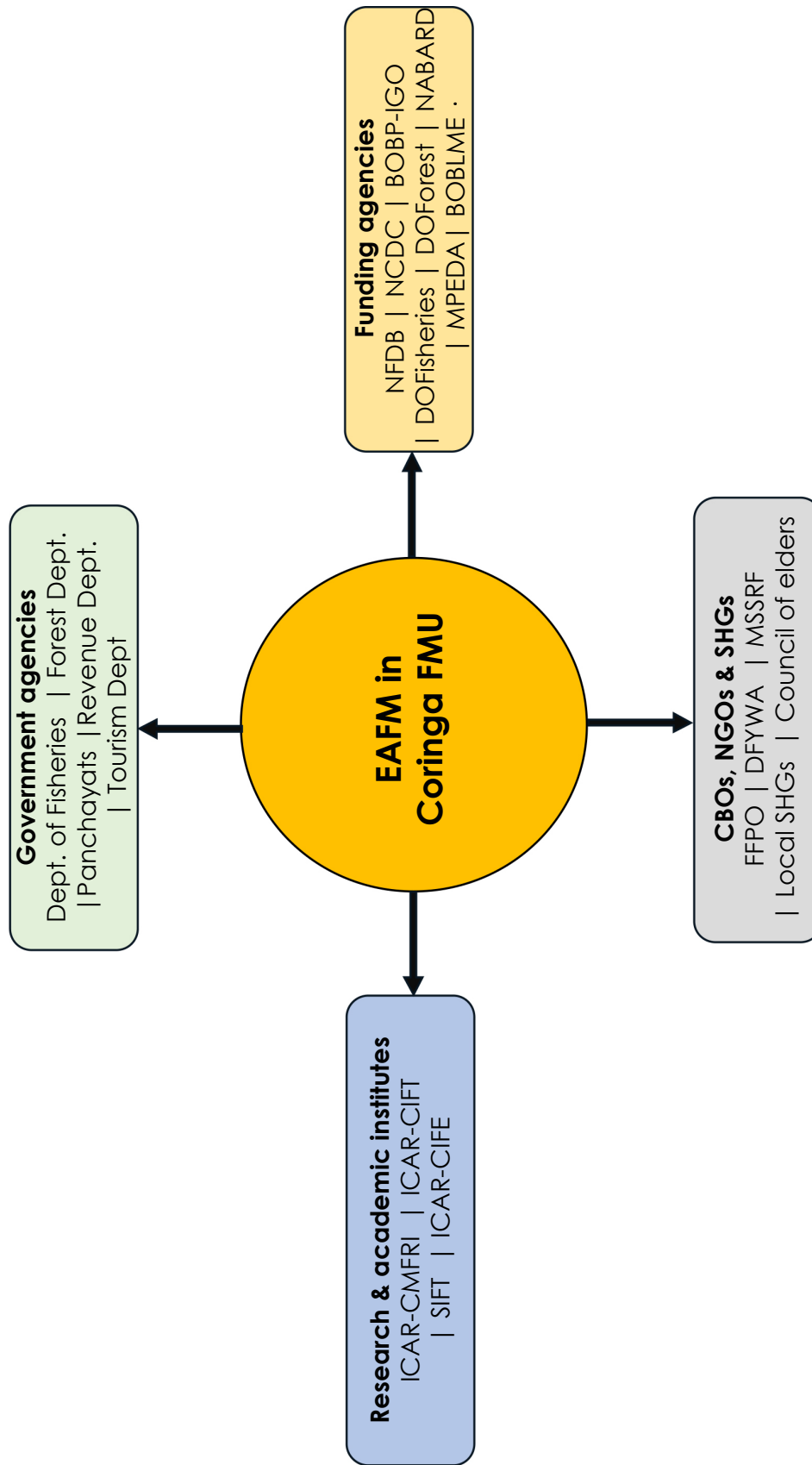
the enhanced market value of the product will help improve the economic status of the women and their families.

- 5) Co-management committee established for increased stakeholder involvement in decision-making and implementation– A co-management committee with representatives from the government, fishermen, local communities and research organizations shall be established. This committee would be the first of its kind in the region, where the relevant stakeholders shall be involved in the decision-making process and implementation. Women would find a significant part of the committee, thereby increasing their access to decision making.
- 6) Spatial management measures promoted syncing with global initiatives – Reports will be prepared to support designation of Coringa ecosystem as Marine Managed Area (MMA) and as "Other Effective Area-based Conservation Measure (OECM)" with specific reference to fisheries. OECMs are defined as "A geographically defined area other than a Protected Area, which is governed and managed in ways that achieve positive and sustained long-term outcomes for the in-situ conservation of biodiversity, with associated ecosystem functions and services and where applicable, cultural, spiritual, socio-economic, and other locally relevant values" (CBD, 2018). OECMs are a means of identifying and recognizing conservation efforts that take place outside the protected area. The Coringa ecosystem has the potential to be designated as a Fishery OECM when the proposed fishery management measures, which will operate in the area outside the Wildlife Sanctuary, are in place. The Coringa FMU and the Coringa WLS can also be considered as a Marine Managed Area (MMA). These measures will be taken up in consultation with relevant stakeholders including the fishers and international and regional organisations with a caution that the livelihoods of communities are not affected.

Promoting Blue Carbon Credits explored– Mangroves are significant sources of blue carbon sink and in order to conserve them, blue carbon credits can be developed as a market-based mechanism under Voluntary Carbon Markets. Blue carbon credits can be used to offset carbon emissions and can provide funds to local communities to manage and conserve mangroves. Govt. of India has a Mangrove Initiative for Shoreline Habitats & Tangible Incomes (MISHTI) scheme to fund mangrove plantation. Coringa mangroves being the second largest mangrove forests along the east coast of India can play a significant source of blue carbon credits by assessing and verifying carbon emission, moving to formal accounting systems, and exploring trading in carbon markets. Communities will be mobilised and reports will be prepared for promoting blue carbon credits. This initiative will be taken up in consultation with the Department of Forest.



3.7 Linkage map



3.8 Alignment of the Plan with seven principles of EAFM

The Coringa EAFM plan addresses the 7 principles of EAFM as follows:

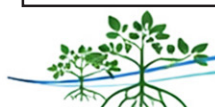
- 1) Good Governance - Strengthen coordination between Fisheries and Forest Departments; establish functional stakeholder-driven co-management
- 2) Appropriate Scale - FMU focused on 12 mangrove-dependent fishing villages; actions matched to local ecological, social and institutional capacity
- 3) Increased Participation - Coringa EAFM Co-management Committee with fishers, women SHGs, government agencies, NGOs & research institutions as active members will take joint decisions
- 4) Multiple Objectives - Simultaneous pursuit of healthier mangrove ecosystem, sustainable fisheries, and socio-economic and livelihood empowerment
- 5) Coordination & Cooperation - Coordinated decision making and enforcement by government agencies; centralized data sharing; inter-departmental cooperation in meeting the objectives
- 6) Adaptive Management – Regular review meetings; adjustment of actions based on data collected along the plan implementation; built-in flexibility for addressing emerging threats
- 7) Precautionary Approach - Fishing regulations and Fishery Management Plans enacted before ecological thresholds are crossed

3.9 Challenges and risks to implementation of Coringa EAFM Plan

This section deals with the existing challenges and potential risks that could impede the implementation of the Coringa EAFM plan. Many of the challenges shall be addressed during the interventions of the EAFM plan.

Table 5: Challenges and possible solutions

Challenge	Possible solution
Promoting inter-agency coordination	The EAFM co-management committee would ensure effective coordination between stakeholders for implementing the EAFM plan by collaborative activities for addressing specific issues, regular communication, building trust and regular updates on roles and responsibilities
Mainstreaming EAFM into the programmes of	The EAFM co-management committee and EAFM networking would effectively take steps to include EAFM in government





government agencies and communities	policies and programmes as well as conduct awareness building and capacity development programmes
Availability of funds, infrastructure, skills, manpower	Take steps in advance to attract funds from funding organisations for the identified activities, contact officials in the hierarchy to make available funds and manpower to execute the project; conduct regular capacity building programmes to those engaged in executing the programme
Proper understanding of EAFM	Conduct regular awareness and capacity building programmes
Perception on gender role	Gender-specific awareness programs and training to foster a perception change on gender roles

Table 6: Potential risks and mitigation measures

Risk	Possible mitigation measure
Extreme weather events would hamper project execution	Establish real-time information gathering, develop quick response, establish alertness and communication with project partners and communities
Man-made disasters e.g. oil spills	Quick communication, awareness regarding potential mishaps and mitigation plans specific to Coringa
Unintended consequences e.g. stakeholder conflicts	Address pros and cons of the perceptions of the stakeholders; understand their interests and agenda; clearly communicate and negotiate
Disease outbreak in resources	Improved surveillance, Diagnose the disease and identify the cause; Quick disease mitigation measures with community participation; establish expert intervention; reduce pressure of human and environmental stressors on the resources
Multi-purpose economic development schemes, construction of dams upstream may jeopardise meeting the objectives of the project	Analyse the context-specific baseline information on positive and negative impacts of multipurpose schemes on the project goals and objectives; find the threshold of balancing the contrasting goals; demonstrate the potential to maximise the benefits of project execution for both humans and environment in the given situation.



4.0 Implementation of the EAFM plan on Coringa Mangroves Ecosystem Fishery

4.1 Governance arrangements

Formation of a Coringa EAFM co-management committee: In line with the EAFM principles of good governance, increased participation, and coordination, a Coringa EAFM co-management committee shall be formally constituted at two levels – one at the field level and another at the district level. The co-management committee would serve as the central coordinating platform for implementing the Coringa EAFM plan integrating ecological restoration, fishery sustainability, and livelihood improvement. The Dept. of Fisheries shall operationalize the EAFM plan, and the co-management committee would function as the facilitator. By formalising this body, Coringa moves from fragmented governance toward a structured ecosystem-based fisheries management approach.

For effective functioning, the co-management committee shall be structured at two levels – one at the district level (EAFM District Committee) and another at the field level (EAFM Field Committee). The District Committee would be chaired by the District Collector of Kakinada (Table 7). The role of this committee would be to (i) To take appropriate decision on the recommendations of the field-level committee; (ii) Oversee implementation of EAFM plan, (iii) coordinate with line departments to implement the plan, and (iv) help mobilising funds for implementation. The District Committee shall meet every 6 months to review the implementation of the EAFM plan, suggest course correction if needed and resolve issues that cannot be addressed by the field committee. The district committee shall spearhead seeking funds from various sources also would be the link between the Field Committee and funding agencies.. The audit of finances of the EAFM plan would also be the responsibility of the district committee. All meetings of the district committee should be convened by the Member Secretary, who will be the record keeper of all the documents of the district committee. The district committee should strive to have many women in the committee.

The EAFM field committee would have operational role and be more involved with the field implementation of the EAFM plan in Coringa FMU. The field committee would be chaired by the EAFM Site Coordinator from the Department of Fisheries, Government of Andhra Pradesh (Table 7). For implementing the EAFM plan, the field EAFM committee will facilitate and execute the tasks related to (i) sustainable utilization of resources, (ii) effective and transparent decision making, (iii) improve enforcement of rules and regulations, (iv) strengthen MCS system, (v) facilitate coordination between departments, (vi) empower the communities including gender equality, (vii) optimise economic benefits, (viii) address social conflicts, and (ix) help mobilising financial resources.





The EAFM field committee will meet once in three months, convened by the Member Secretary. Minutes of the meeting will be submitted to the district-level committee for approval. Implementation of approved activities will be executed by the field-level committee. The finance for implementing EAFM activities would be vested with the field committee, though final audit would be done by the district committee. This would ensure quick availability of funds, spent responsibly.

To ensure that women are part of the decision making process, the field EAFM committee shall have at least 30% women members.

In addition to EAFM implementation, the EAFM committees shall oversee a centralized Coringa Data Repository, which is essential for Monitoring, Control and Surveillance systems and for informed decision making. This repository would be a compilation of fisheries data, mangrove health assessments, compliance records, and socio-economic indicators with a focus on collecting gender-disaggregated data. The EAFM framework specifically highlights monitoring, surveillance, and data sharing as core objectives. Standardized protocols for data collection and sharing among the Fisheries and Forest Departments, research institutions, and local stakeholders would reduce duplication and close information gaps. Transparent data access would also strengthen trust among stakeholders and support adaptive management through periodic review of ecological and livelihood benchmarks.

Table 7: Composition of the Coringa co-management committee

SI No	Co-Management Committee Members	Role
	District level (Kakinada)	
1.	District Collector	Chairperson
2.	Forest Department (DFO-District Forest Officer)	Vice Chairperson
3.	Fisheries Department (DFO-District Fisheries Officer)	Member Secretary
4.	EAFM State Co-ordinator – Joint Director of Fisheries	Member
5.	Representative of Pollution Control Board	Member
6.	Principal State Institute Of Fisheries Technology – SIFT, Kakinada	Member
7.	ICAR – Central Institute of Fisheries Education,	
	Kakinada Centre Officer-In-charge	Member

	Field level (Coringa)	
1.	EAFM Site Co-ordinator – Fisheries Development Officer (FDO, Tallarevu)	Chairperson
2.	Forest Range Officer (FRO)	Vice Chairperson
3.	Mandal Parishad Development Officer (MPDO)	Member
4.	Tahsildar, Tallarevu	Member Secretary
5.	Marine Fishermen Co-operative Society – MFCS President	Member
6.	Representatives from fishing community – 5 members (at least 2 women mandatorily)	Member
7.	ICAR – Central Marine Fisheries Research Institute (ICAR-CMFRI)	Member
8.	Representative of District Fishermen's Youth Welfare Association (DFYWA) – NGO	Member
9.	Representative of Self-Help Groups	Member
10.	Village Elder (1) (as nominated by Dept. of Fisheries)	Member
11.	Panchayat Secretary (1) (as nominated by Dept. of Fisheries)	Member
12.	Trade representative	Member

4.2 Planning cycle and timeframe

The tasks in phase 1 are expected to be completed within the project period, whereas tasks in phase 2 extend beyond the project period. The co-management committee shall continue through the two phases of the project. To ensure that activities and interventions introduced under this EAFM plan are continued beyond the BOBLME project period, an exit strategy has been proposed for each task as detailed in Table 8.

4.3 Communication and coordination

Communication and coordination a stakeholders is essential for successful implementation of EAFM. In the Coringa FMU, the EAFM field committee will be the primary body to ensure that all matters related to Coringa are communicated with all stakeholders including local communities, government agencies, research institutions, SHGs, CBOs, etc. At the district level, the EAFM district committee would take the main responsibility of coordination at the district and/or state level as well as with funding agencies.





4.4 Financing

Getting sufficient funds is essential for operationalizing any EAFM plan. Coringa being a mangrove area, it attracts a lot of attention from funding agencies. Showcasing the merits of the Coringa EAFM plan and its potential implementation by the EAFM committees is essential to convince funding agencies to provide finance. Funding sources might include:

- ◆ Government schemes - In India there are several funding schemes both at the Union Govt. as well as the State governments. The EAFM plan could be proposed for funding support under the PMMSY and PM-MKSSY schemes of the Govt. of India.
- ◆ Development agencies - NABARD, BOBP-IGO, UNDP-GEF
- ◆ CSR funds - Corporates like Reliance which have a major presence in the Godavari delta as well as other oil companies operating in the same area
- ◆ Donors - Philanthropic donors, NGOs, etc.

Table 8: Time frame and approximate funds requirements under the two phases of EAFM plan implementation

Tasks	Phase	Implementing agency	Support agency	Funding source	Funds required in INR (indicative)
Develop & implement data collection system, reporting & data sharing framework,	I	CMFRI, Fisheries Dept.	DFYWA	BOBLME project of BOBP	3.5 lakhs
Develop logsheet (fishermen), data forms/app (Sagarmitras/VFA-Field functionaries),	I	CMFRI, Fisheries Dept.	DFYWA		
Develop gender disaggregated data collection forms (hidden harvest)	I	DFYWA, other NGOs	Fisheries Dept.		



Implementation of data collection systems	II	Fisheries Dept	-	Fisheries Dept.	
Assessment of shrimps, mud crab, bivalves fisheries, and gillnet fisheries;	I	CMFRI,	FFPO		
Planning and stakeholder engagement;	I	Fisheries Dept.	DFYWA, CBOs	BOBLME project of BOBP	2.0 lakhs
Prepare four (4) FMPs by developing goals, objectives, management measures including input and output controls, implementation plan and monitoring and evaluation.	I	CMFRI	Fisheries Dept.		
Implementation of FMPs	II	Fisheries Dept.	-	Fisheries Dept.	
Encourage registration of unregistered fishing crafts; Suggest measures for reducing juvenile capture such as minimum mesh size and minimum legal size; strengthen enforcement	I, II	Fisheries Dept.	-	DoF	
Identify aspects of Coringa FMU which can be considered as inputs for designating it as	I	Fisheries Dept., Forest Dept.	CMFRI		2.0 lakhs

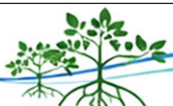




MMA and Fishery OECEM Consult relevant national and regional organisations Prepare document related to meet the objective	I			BOBLME project of BOBP	
Assess the impact of mangrove plantation following suitable methodology Consultation with communities Explore promoting Carbon Credit system for mangroves	I	Forest Dept.	CMFRI		2.0 lakhs
	I			Dept of Forest	2.0 lakhs
	II				1.0 lakh
Explore integration with Govt. of India schemes e.g. MISHTI scheme					
Assess plastic pollution in the FMU Arrange collaboration with authorised waste collectors/recyclers for collection and recycling of plastic waste (domestic and fishery-based) Develop benefit scheme for the community	I	MPDO	Fisheries Dept.		
	I		CBOs	Dept of Forest & Gol schemes like Swachch Bharat	5.0 lakhs
	I, II				
Identify unit locations for crab fattening, source of seed & feed	I	Fisheries Dept., CMFRI	FFPO		

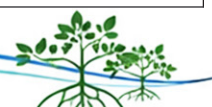


Identify suitable fattening system, beneficiaries and scale of operation Identify markets and develop/improve marketing chains Prepare project proposal for funding Stock and rear seeds, monitor growth Assess the performance of fattening system	I I I I, II I, II			NFDB/NABARD	20.0 lakhs
Identify species and locations for bivalve ranching Backyard hatcheries to be set up as source of seeding material, beneficiary selection (women) Prepare project for funding Ranch the seeds Assess the performance by collecting samples and following standard methods	I I, II I I, II I, II	Fisheries Dept., CMFRI	FFPO	NFDB/NABARD	20.0 lakhs
Collate historical fishery information (catch, effort, stock assessments, secondary species, etc.) necessary for ecolabelling of the mud crab fishery Arrange conducting pre-assessment by an accredited third-party auditor and develop a Fishery Improvement Project (FIP)	I I, II	CMFRI, Fisheries Dept.	=	BOBLME project of BOBP MPEDA/Exporters Assn	2.0 lakhs 10.0 lakhs





Assess & select appropriate products, raw materials, techniques, potential markets Establish an FFPO	I	Fisheries Dept.,	CMFRI	BOBLME project of BOBP	2.0 lakhs
	I				
Assess smoked shrimp production; Explore improved production Follow GI tag registration requirements & protocol	I I	FFPO, Fisheries Dept.	CIFT, CMFRI	NFDB/NCDC/NABA RD	3.0 lakhs
Identify fisher youth-centric eco-tourism initiatives Formal partnership with Dept of Forest Fishery-based tourism package	I I II	DFYWA, Tourism Dept.	CBOs	Gol schemes for tourism development	5.0 lakhs
Identify potential activities and sources of finance Communicate and assist the communities to improve access	I, II I, II	Fisheries Dept.	-	BOBLME project of BOBP	1.0 lakh
Constitute co-management committee by consultation, prepare ToR (MCS focus), support its functioning Ensure >30% representation and leadership of women in co-management committee	I I	Fisheries Dept.	CMFRI	BOBLME project of BOBP	2.0 lakhs
Conduct CDPs on responsible fishing, livelihood improvement programmes,	I, II	Fisheries Dept.	CMFRI	BOBLME project of BOBP &	3.0 lakhs





leadership by women				DoF	
Prepare the list of community awareness programmes, agenda, beneficiaries, school children focussed material and programs	I, II			BOBLME project of BOBP & DoF	3.0 lakhs





5.0 Monitoring and Evaluation

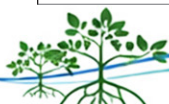
The performance of EAFM plan implementation can be gauged with a Monitoring and Evaluation framework. For the Monitoring and Evaluation framework, a set of indicators are needed for each objective, to measure the impact. In this section we present a set of indicators for each management measure to assess if the objectives are met.

Table 9: Indicators to assess the progress on achieving each management measure

Goal	Objective	Management measure	Task	Baseline	Target
Sustainable fisheries in Coringa FMU achieved	Promote sustainable fishing practices	Catch and effort data collection	Develop & implement data collection system, reporting & data sharing framework, Develop logsheet (fishermen), data forms/app (Sagarmitras/VF A-Field functionaries), Develop gender disaggregated data collection forms (hidden harvest) Implementation of data collection systems	No data collection system in place exclusively for Coringa fisheries	One data collection system developed and implemented; 100% coverage of FMU wrt fishery data collection
		Develop Fishery Management Plans for mudcrab, shrimps, bivalves & gillnet fisheries	Assessment of shrimps, mudcrab, bivalve fisheries, and gillnet fisheries; Planning and stakeholder engagement;	No FMP	4 FMPs developed, one implemented

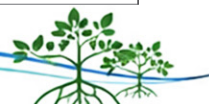


Goal	Objective	Management measure	Task	Baseline	Target
			Prepare four (4) FMPs by developing goals, objectives, management measures including input and output controls, implementation plan and monitoring and evaluation. Implementation of FMPs		
		Promote responsible fishing practices	Encourage registration of unregistered fishing crafts; Suggest measures for reducing juvenile capture such as minimum mesh size and minimum legal size; strengthen enforcement	No data on minimum mesh size Some unregistered crafts are operating in the fishery	Data to suggest Minimum mesh size collected and analysed 100% crafts in the fishery are registered
Improved ecosystem health in Coringa FMU	Designate the ecosystem as a Managed Area	Inclusion of Coringa FMU as an MMA and as a Fishery OECM	Identify aspects of Coringa FMU which can be considered as inputs for designating it as MMA and Fishery OECM Consult relevant national and regional organisations	No OECM and/or MMA documentation	One document on OECM and/or MMA



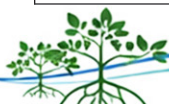


Goal	Objective	Management measure	Task	Baseline	Target
			Prepare document related to meet the objective		
	Reducing the impact of human interventions	Assessing the impact of mangrove plantation	Assess the impact of mangrove plantation following suitable methodology Consultation with communities	No data on fishermen's perception of mangroves	Data on fishermen's perception of mangroves; one standard method identified to assess impact of mangrove reforestation patterns
		Develop a plastic waste disposal plan	Assess plastic pollution in the FMU Arrange collaboration with authorised waste collectors/recyclers for collection and recycling of plastic waste (domestic and fishery-based) Develop benefit scheme for the community	No waste disposal scheme	One waste disposal scheme for Coringa
Enhanced livelihoods of fishermen in Coringa FMU	Enhance economic benefits	Promote mud crab fattening	Identify unit for mud crab fattening, source of seed & feed	No crab fattening units	At least 6 crab fattening units across 4 hamlets of Coringa



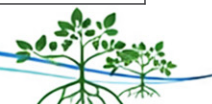


Goal	Objective	Management measure	Task	Baseline	Target
			Identify suitable fattening system, beneficiaries and scale of operation Identify markets and develop/improve marketing chains Prepare project proposal for funding Stock and rear seeds, monitor growth Assess the performance of fattening system		
		Ranching of bivalve seed	Identify species and locations for bivalve ranching Backyard hatcheries to be set up as source of seeding material, beneficiary selection (women) Prepare project for funding Ranch the seeds Assess the performance by collecting samples and		





Goal	Objective	Management measure	Task	Baseline	Target
			following standard methods		
		Ecolabelling of mudcrab fishery	Collate historical fishery information (catch, effort, stock assessments, secondary species, etc.) necessary for ecolabelling of the mud crab fishery Arrange conducting pre-assessment by an accredited third-party auditor and develop a Fishery Improvement Project (FIP)	No ecolabelling of mud crab fishery in Coringa	Ecolabelling of mud crab fishery in Coringa
		Improve marketability of value-added products like dry fish, smoked shrimp etc.	Assess & select appropriate products, raw materials, techniques, potential markets Establish an FFPO	No FFPO	One FFPO
		Register for GI tag for Coringa smoked shrimp	Assess smoked shrimp production; Explore improved production Follow GI tag registration	No targeted training programs for women on smoked shrimps No GI tag documentat	5 targeted training programs for women on smoked shrimps Documentat ion on GI



Goal	Objective	Management measure	Task	Baseline	Target
			requirements & protocol	ion	tag
		Develop eco-tourism	Identify fisher youth-centric eco-tourism initiatives Formal partnership with Dept of Forest Fishery-based tourism package	No fisher youth-centric tourism initiatives	Fisher youth-centric tourism initiatives (at least one)
		Assess potential of Blue Carbon Credits	Explore promoting Carbon Credit system for mangroves Explore integration with Govt. of India schemes e.g. MISHTI scheme	No documentation on blue carbon	Documentation on blue carbon
	Improve social security	Improve access to finance & social support systems, including insurance	Identify potential activities and sources of finance Communicate and assist the communities to improve access	No list of financial sources	List of finance sources for stakeholders of Coringa
Improved governance in Coringa FMU	Strengthen governance and institutional coordination	Establish co-management arrangement or increased participation of fishers and other stakeholder	Constitute co-management committee by consultation, prepare ToR (MCS focus), support its functioning	No co-management committee	Co-management committee at two levels





Goal	Objective	Management measure	Task	Baseline	Target
		s			
		Engage women in governance	Ensure >30% representation and leadership of women in co-management committee Conduct CDPs on responsible fishing, livelihood improvement programmes, leadership by women	No co-management committee	Co-management committee at two levels with women members
		Strengthen community awareness on ecosystem conservation, sustainable fishing, and recent developments	Prepare the list of community awareness programmes, agenda, beneficiaries, school children focussed material and programs	No awareness programs in schools	3 awareness programs for school children



References and further reading:

Alongi, D. M. (2009). *The energetics of mangrove forests*. Springer.

Bharathi, V., Chakravarty, M.S. and Ganesh, P.R.C., 2017. Sex ratio and reproductive performance of the female mud crab *Scylla serrata* (Forsk.) in Coringa mangroves, Andhra Pradesh, India. *Asian Journal Science Technology*, 8(9), pp.5529-5538.

Beverton, R. J. H., & Holt, S. J. (1957). *On the dynamics of exploited fish populations*. Chapman & Hall.

BOBP-IGO. (2023). "Status of coastal and marine resources of the Bay of Bengal: Country report—India." BOBP Report No. 179.

CIFOR-ICRAF Mangrove Monitoring Programme Final Report (2023-2025): "Carbon stocks and sedimentation patterns in Coringa Wildlife Sanctuary."

Coastal Livelihood Enhancement through Ecosystem Approach to Fisheries Management (CLEEFAM) Report, CMFRI (2023). Technical Report Series No. 158.

Ezhilarasan, P., Panda, U.S., R. S, P.R., Vijay, A., Kumaraswami, M., Jinoj, T.P.S. and Murthy, M.R., 2025. Zooplankton community changes across the Coringa mangrove and adjacent waters of east coast of India: insights into habitat-specific interactions with environmental changes. *Environmental Monitoring and Assessment*, 197(7), p.826.

FAO. (2003). *The ecosystem approach to fisheries*. FAO Technical Guidelines for Responsible Fisheries No. 4, Suppl. 2. Food and Agriculture Organization of the United Nations.

FAO. (2010). *Ecosystem approach to fisheries management: Training course*. FAO Fisheries and Aquaculture Technical Paper No. 520. Food and Agriculture Organization of the United Nations.

FAO. (2018). *The state of world fisheries and aquaculture 2018: Meeting the sustainable development goals*. Food and Agriculture Organization of the United Nations.

Gosling, E. (2015). *Marine bivalve molluscs* (2nd ed.). Wiley-Blackwell.

Hilborn, R., & Walters, C. J. (1992). *Quantitative fisheries stock assessment: Choice, dynamics and uncertainty*. Chapman & Hall.

ICAR–Central Marine Fisheries Research Institute (CMFRI). (Various years). *Annual reports*. ICAR-CMFRI, Kochi, India.





ICAR–Central Marine Fisheries Research Institute (CMFRI). (Various years). *Marine fisheries census reports*. ICAR-CMFRI, Kochi, India.

Jasmin, F., Santosh N. Bhendekar, Geetha Sasikumar and Pattnaik, P. 2023. Status of blood clam fishery of Kakinada Bay, Bay of Bengal. XVI ASC, In: Book of Abstracts, XVI Agricultural Science Congress and ASC Expo, Transformation of Agri-food systems for achieving sustainable development goals. National Academy of Agricultural Sciences, New Delhi and ICAR-Central Marine Fisheries Research Institute, Kochi, 10-13 October 2023, Kochi, India, 720 p.

Jennings, S., Kaiser, M. J., & Reynolds, J. D. (2001). *Marine fisheries ecology*. Blackwell Science.

King, M. (2007). *Fisheries biology, assessment and management* (2nd ed.). Blackwell Publishing.

Kumar, R., & Pattanaik, C. (2020). "Fishery resources and livelihood patterns in Coringa mangrove ecosystem, Andhra Pradesh, India." *Indian Journal of Marine Sciences*, 49(12), 1876-1885.

Muralidhar, M., et al. (2021). "Impact of climate change on Coringa mangrove ecosystem: Projection and adaptation strategies." *Environmental Monitoring and Assessment*, 193(4), 235.

MYLA, S.C., Tirumani, V.B. and Paturi, R.C.G., 2017. Body weight, carapace length and width relationship and condition factor of the mud crab *Scylla serrata* (Forsk.) in mangrove ecosystem. *Notulae Scientia Biologicae*, 9(3), pp.338-343.

Newell, R. I. E. (2004). Ecosystem influences of natural and cultivated populations of suspension-feeding bivalve molluscs: A review. *Journal of Shellfish Research*, 23(1), 51–61.

Pillai, V. N., & Mohamed, K. S. (2008). Bivalve fisheries and culture in India. In K. S. Mohamed et al. (Eds.), *Status of exploited marine fishery resources of India*. ICAR-CMFRI.

Ramsar Site Designation Technical Documentation (2025): "Ecological character and conservation priorities of Coringa Wetlands."

Sasekumar A, Chong VC, Leh MU, D'Cruz R (1992) Mangroves as a habitat for fish prawns. *Hydrobiologia* 247: 195–207

Satyanarayana, B., et al. (2022). "Structure, composition and diversity of mangrove forests in the Coringa Wildlife Sanctuary, Andhra Pradesh, India." *Journal of Coastal Conservation*, 26(1), 15.

Selvam, V., et al. (2024). "Mangrove restoration success factors: Case studies from Coringa Wildlife Sanctuary." *Restoration Ecology*, 32(2), 113-128.





Socio-Economic Study by Indian Bird Conservation Network (2025): "Community dependency patterns on mangrove resources in Coringa-Kakinada Bay complex."

Sura, A., Panda, U.S., Ramakrishnan, S., Munnoor, K., Vijay, A., De La Puente, S., Berg, P.R., Nicolai, A.H., Narayanaswamy, B.E. and Ramanamurthy, M.V., 2025. Potential sources of impacts linked to ciliate epibiont occurrence on the macrobenthic invertebrates in the Coringa Mangrove Ecosystem: Preliminary documentation. *Environmental Science and Pollution Research*, 32(31), pp.18995-19007.

The Hindu. 2025. Asian Waterbird Census 2025: Coringa, adjoining wetlands emerge prime feeding habitat for 106 avian species. *The Hindu*, January 2025. Available at: <https://www.thehindu.com/news/national/andhra-pradesh/asian-water-bird-census-2025-coringa-adjoining-wetlands-emerge-prime-feeding-habitat-for-106-avian-species/article69151255.ece>

Venkata Raju, G., Medley, P. and Walmsley, S., 2005. Report on the ParFish Case Study Project Undertaken for the Stock Assessment of Mud Crab Fishery of Coringa Mangroves in Andhra Pradesh, India. Marine Resources Assessment Group Ltd, London, UK.

Walters, C. J., & Martell, S. J. D. (2004). *Fisheries ecology and management*. Princeton University Press.





Report on the stakeholder meetings and primary surveys done at Coringa

I) Baseline data collection through primary surveys – July 2025 to January 2026

- ✦ Questionnaires used: Three questionnaires were used for the primary surveys (Attached as separate files). The first one was for collection of data on administration, the second one was for changes in the fishery and the third was for quantitative data for the scoping report.
- ✦ Sample size: Over 10 people surveyed per hamlet, mainly men. Women surveyed were few and either included fisherwomen or female staff (Village Fishing Assistant) of the Sachivalayam. Only 11 women were surveyed totally for primary data collection.
- ✦ A demographic breakup is not available
- ✦ Information was not collected on differently abled, marginalized group participants
- ✦ Most of the information collected through primary surveys were used as inputs in the scoping report. Some of the inputs particularly those related to fisheries were used in the final EAFM plans.

II) Focus Group Discussions with stakeholders on 30.04.2025, 26.06.2025, 19.09.2025, 23.12.2025 and 09.01.2026



Dates of FGD	30.04.2025	26.06.2025	19.09.2025	23.12.2025	09.01.2026
How many FGD were held? Total number of participants? Women?	Two; Main FGD involved around 10 men and no women; second FGD at a shrimp smoking unit with 2 women who operate the unit	Six FGDs in hamlet involving over five men per FGD; One FGD at Mandal Revenue Office and One FGD at Gram Sachivalayam	One FGD involving two women and four men related to crab fishing and trade; one FGD involving one woman and two men related to shrimp smoking	One FGD with 4 officials of the Forest Dept.; no women	One FGD; 35 people including 15 women
Any women only FGD?	1; at a prawn smoking unit with 2 women who operate the unit	No	No	No	No
Specifically, what questions were asked, what points were raised with respect to women's issues? Any specific points to note?	No women-specific issues were discussed	No	No	No	Women were concerned regarding livelihood options for their children and wanted tourism initiatives to be started in Coringa; they wanted their children to lead the tourism initiatives
How have these been used as inputs in the EAFM plans	NA	NA	NA	NA	Yes it has been included in the EAFM plan





**ICAR- Central Marine Fisheries Research Institute
Visakhapatnam Regional Centre, Visakhapatnam 530003.**

**Bay of Bengal Large Marine Ecosystem Project Phase II
Planning and Implementing Ecosystem Approach to Fisheries Management**

Baseline information for the Coringa FMU.

1. Local Administration: (Please mention at Village, Mandal and District level).

Village Level Administration

1. What is the structure of administration at the Village level? (No of members and designations)
2. Who heads the village administration, and what are their key responsibilities?
3. What role does the Panchayat Secretary play in local governance?
4. Any fishermen members of panchayats? If yes, specify their role:

Mandal Level Administration

1. What is the structure of administration at the Mandal level? (Hierarchical arrangement- Designation, number, location)
2. Who heads the Mandal administration, and what are their key responsibilities?
3. What role does the Mandal Revenue Officer (Tahsildar) play in local governance?
4. How are Panchayat Raj Institutions integrated into the formal administrative structure?
5. What support does the government provide to Village and Ward Secretariats?

District Administration

1. What is the structure of administration at the district level? (Hierarchical arrangement- Designation, number, location)
2. How is law and order managed at the district level?
3. How is inter-departmental coordination managed within a district?
4. How often do review meetings take place at the district level?

2. Fisheries Administration (Please mention at ecosystem level, district level and state level).

1. What is the structure of fisheries administration in your area (Hierarchical arrangement- Designation, number, location)?
2. What are the key responsibilities of your department/unit in fisheries governance?





3. Which institutions (Govt., NGOs, Cooperatives) are actively involved in fisheries management in your area?
4. Is there a coordination mechanism among various stakeholders (e.g., between fisheries department., Panchayats, SHGs, etc.)?
 - a. % Yes
 - b. % No
 - c. If yes, please describe it briefly:
5. Are you aware of the key fisheries laws and regulations applicable in your area?
 - ◆ Yes
 - ◆ NoIf yes, list the major ones:
6. How effectively are these laws enforced at the local level?
 - ◆ Very Effective
 - ◆ Somewhat Effective
 - ◆ Not Effective
7. What are the major regulatory challenges in your jurisdiction (e.g., illegal fishing, licensing, pollution)?
8. What support is provided to fishers in terms of:
 - a) Input supply (seed, feed, fuel, boats, nets, engines)
 - b) Infrastructure (harbours, cold storage, roads)
 - c) Capacity building/training
 - d) Financial aid or insurance
9. Are there any ongoing state or central schemes for fisheries development?
 - ◆ Yes
 - ◆ NoIf yes, mention the key schemes and their effectiveness:
10. How are beneficiaries identified and supported under these schemes?
11. Are there any issues in the implementation of government schemes (e.g., delays, awareness, corruption)?





12. Are Fishermen Cooperatives/FFPOs/SHGs active in your area?

- ◆ Yes
- ◆ No

If yes, mention their role and effectiveness:

Are there any representatives in these cooperatives nominated by the Government? If yes, please specify their role:

13. How are local communities involved in fisheries decision-making and resource management?

14. What are the top 3 challenges you face in fisheries administration in your area?

15. What policy, administrative or technical reforms would you recommend for improving fisheries administration?

3. Environment / Forest Administration: (Please mention at ecosystem level, district level and state level)

1. What is the administrative structure of the Forest/Environment Department in your area? (Hierarchical arrangement- Designation, number, location)?
2. What are your department's core functions in relation to environmental protection and forest conservation?
3. How many staff are deployed under your jurisdiction? Are there any gaps in staffing or resources?
4. What types of forests exist in your area (e.g., Reserve Forests, Protected Forests, Social Forestry)?
5. What are the key forest management activities undertaken? i%
- ◆ Afforestation/Reforestation
- ◆ Forest Fire Management
- ◆ Wildlife Conservation
- ◆ Community Forestry
- ◆ Anti-Encroachment Measures
- ◆ Eco-tourism
6. Are Joint Forest Management Committees (JFMCs) active in your area?
- ◆ Yes





◆ No

If yes, describe their role and effectiveness:

7. Are there issues like encroachments, illicit felling, or forest degradation? Please elaborate.
8. What are the key environmental regulations enforced in your area (e.g., Water Act, Air Act, Forest Conservation Act, Environmental Protection Act)?
9. Are there regular environmental monitoring or pollution control activities? If yes, who conducts them and how frequently?
10. Is the Andhra Pradesh Pollution Control Board (APPCB) involved in your region's activities? In what capacity?
11. Are there any state/district-level initiatives addressing climate change mitigation or adaptation?
12. Has your department undertaken any actions related to:
 - a) Carbon sequestration projects
 - b) Watershed/soil conservation
 - c) Renewable energy integration
 - d) Climate-resilient afforestation
13. How are local communities, SHGs, NGOs, or tribal groups involved in forest/environmental programs?
14. Is there inter-departmental coordination with Revenue, Panchayat, Agriculture, or Rural Development departments for land or forest issues?
15. What are the key State/Central schemes currently active?
16. How effective are these schemes in terms of:
 - a) Fund utilization
 - b) Timely implementation
 - c) Impact on conservation goals
17. Are there issues in fund allocation, release, or monitoring?
18. What are the major challenges you face in environmental/forest administration in your area?
19. What improvements or reforms (policy, administrative, technical) would you recommend?





20. Any best practices or successful models you'd like to highlight?

5. Other corresponding Government Departments e.g.: Tourism / MCS etc. (Please mention at ecosystem level, district level and state level)

1. What is the structure of other Government departments administration in your area (Hierarchical arrangement- Designation, number, location)?
2. What are the key responsibilities of departments?

5. Advisories / influencers in the Coringa ecosystem:

S.No	Advisories / influencers	Name	Area of Interest
1	Academic / Research Institutes		
2	NGO		
3	SHG		
4	Local leaders / advisors / influencers		
5	Others		

Place:

Signature of the Enumerator

Date:

Name:



Change in fisheries and habitat in Coringa Mangrove Ecosystem

Central Marine Fisheries Research Institute

(Indian Council of Agricultural Research)

Village name:

District name:-

1. Name and address of the respondent with phone number:-

Age of the respondent:_____ and years of experience in fishing/fishing related activities:_____

2. Are they associated with fisheries in any way? How?

3. Is there change in the type and quantity of fish availability in recent years? Yes/No.

If yes, what is the change?

4. In your opinion, what are the major problems facing fisheries?

Sl no	Problems facing fisheries	Rank
1	Overfishing	
2	Juvenile Exploitation	
3	Habitat destruction	
4	Climate change	
5	Others(specify)	

5. Is there any fish species migrated from other places to your areas? If yes, please mention the place from where and fish species.

6. Did you make any major changes in your craft and gear in the last 10 years? If yes, what changes?

7. Please suggest some measures to improve fish availability and income from fisheries?

1. Mesh size increase
2. Reduce juvenile exploitation
3. Ban period for certain months (which months)
4. Others (please mention)





8. Are you following any measure to reduce fuel consumption? If yes, what is it?
9. Are there any major changes to habitat in Coringa mangrove ecosystem? What are these changes?
10. Do you think these changes have affected fish availability in Coringa? How?
11. What measures would you suggest to improve habitat in Coringa?
12. Will planting more mangroves help to improve Coringa ecosystem and fish availability?

Date:../../2025

Place:-

Name and address of the enumerator:-



Data to be collected for scoping report of Coringa mangrove

Detail	Chinn abod du	Pedd abod du	Gadi mog a	Laxmip athipur am	Chinn avals ala	Pedda valasa la	Rama napal em	Kot hur u	H op e Isl and	Cho llan gi	Di n di
Populati on											
Number of fishing crafts: 1) Type- Mot/No n mot 2)Lengt h 3)Materi al 4)Hp 5)Eqpt 6)Sea safety eqpt											
Fishing gear 1)Type 2)Mesh size 3)Materi al											
Fishing area											
Distanc e from shore											
Season of fishing											
Total fish catch annual											
Target species names											
Change s in fisheries											
% of people in:											





1) Fisheries											
2) Agriculture											
3) Aquaculture											
4) Post harvest											
5) Livestock											
6) Use of mangrove as firewood											
7) Tourism											
8) Traders											
9) Others											
Number of:											
1) Boat owners											
2) Labourers											
3) Traders											
4) Others											
5) Unemployed											
Main market for selling fish											
Distance to market											
Highest household income per month											
Lowest household income per month											
Number of houses											



in highest income											
Number of houses in lowest income											
% of loans from: 1) Banks 2) SHGs 3) Unorganized sector 4) Insurance											
Govt schemes list (e.g. fishing ban relief, etc)											
Cooperative membership (numbers)											
Membership in SHGs (numbers)											
Gender ratio											
Number of women headed households											
Role of fishermen in (%): 1) Fishing 2) Fish vending 3) Fish											





processi ng 4)Fisher es Mgt 5)Other employ ment 6)Unem ployme nt											
Number of: 1)School s and other educati on institutio ns 2)Hospit als 3)Com munity halls 4)Fish landing centre 5)Auctio n hall 6) Transpor t facilities 7)Ice plant 8)Fish storage/ processi ng facility											
ITK											
Any informal fisheries manag ement plan											





