

# **INTEGRATED FISHERIES DEVELOPMENT PLAN FOR COASTAL ZONE MANAGEMENT PLAN 2019, KERALA**

## ***EXECUTIVE SUMMARY***



**Department of Fisheries  
Government of Kerala**

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# **INTEGRATED FISHERIES DEVELOPMENT PLAN FOR CZMP 2019**

***(Kerala State Fisheries Department)***

## **Executive Summary**

Kerala has a coastline of 590 km with a continental shelf area of 38700 sq. km., Exclusive Economic Zone of 218536 sq. km. It has a significant marine fisheries sector that has long been an important source of occupation and livelihood for the coastal population of the State besides contributing to its food and nutritional security. It is estimated that about 8 lakh people, living in 222 fishing villages along the seacoast, earn their livelihood from capture and allied works in marine fisheries. More than 2 lakhs inland fishers are living in 113 inland fishing villages in addition to thousands of fish farmers. Kerala fisheries sector contributes around 1.80% to the total GDP and its contribution to primary sector is about 14%. Export of marine products has set an ever time record of Rs 5919.02 crores during the year 2017-18.

Coastal Regulation Zone (CRZ) Notifications by MoEF & CC issued originally in 1991 and subsequently reissued in 2011 and 2019 “with a view to conserve and protect the unique environment of coastal stretches and marine areas, besides livelihood security to the fisher communities and other local communities in the coastal areas and to promote sustainable development based on scientific principles taking into account of the dangers of natural hazards, sea level rise due to global warming’’. The notification intends to make the coastal zone less congested by restricting activities for which shore frontage is not essential and restricting constructions for people other than fishers and other traditional coastal communities.

The Department of Environment and Climate Change is preparing the Coastal Zone Management Plan (CZMP) 2019 for the State as per CRZ notification, 2019 for its implementation. Almost all the development and other activities in the coastal zone will be regulated as per the CZMP 2019 as and when it is approved. The Fisheries Department has been asked to provide its inputs for inclusion in the CZMP for which a draft CZMP 2019 has been forwarded. The Fisheries Department constituted a Committee vide, G.O. (Rt.) No. 290/2021/F&PD dated 11.06.2021, to formulate the suggestions of the Department for consideration and inclusion in the CZMP from a fishers’ perspective.

The draft CZMP has been prepared for each district. It consists of land use maps, Coastal Zone Management Plan (CZMP) maps and a report of which the latter two are received in the Department. The land use maps provide information on landforms such as pokkali/kaipad (filtration ponds), beaches, water bodies, mudflats, etc., Environmentally Sensitive Areas (ESAs) like mangroves, turtle breeding grounds, etc., and coastal infrastructure and settlements. It gives spatial distribution of different CRZ categories and associated details in map form. The CZMP map is based on land use maps. The report gives descriptive details on various aspects such as methodology, CRZ categories, various reference and regulation lines, etc.

The coastal areas including the banks of estuaries and backwaters where CRZ regulations are applicable are spread over 10 districts – Kasaragod, Kannur, Kozhikkode, Malappuram, Thrissur, Ernakulam, Alappuzha, Kollam, Thiruvananthapuram and Kottayam. There are 245 coastal gram panchayats, 36 coastal municipalities and 5 coastal municipal corporations where CRZ regulations are applicable. The draft CZMP gives the CZMP maps and reports for each of the 10 districts. It has 87 maps in 1:25,000 scale. The CZMP maps consists of HTL, LTL, various regulation lines (20 m, 50 m, 100 m, 200 m and 500 m lines from HTL), hazard line, buffer zone for mangroves, CRZ-IA (ESAs -mostly mangroves, turtle breeding grounds), CRZ IB (inter tidal zones in which pokkali/kaipad areas are also included), CRZ-II (CRZ areas in developed areas where the built up area is more than 50%), CRZ-III A (CRZ areas in undeveloped areas such as gram panchayats with density of population > 2161), CRZ-III B (CRZ areas in undeveloped areas with density of population < 2161), CRZ-IV A (sea and bed up to 12 nm - Territorial waters), and CRZ IV B (inland water bodies and its bed having a minimum of 5 ppt. salinity). Tourism plan is also attached to each of the district CZMPs.

Any regulation which influence the livelihood of the coastal population especially fishers should respect the traditional and customary rights of the fisher and other coastal communities. It also has to consider the essential elements of their living like fishing, housing and associated infrastructures to pursue their livelihood activities.

The draft CZMP 2019 has been reviewed from the perspective of Fisheries, Fishers and other traditional coastal communities. It was decided to prepare the response to the CZMP 2019 in the form of an Integrated Fisheries Development Plan (IFDP). The different sectors to be addressed

in the IFDP were deliberated by the Committee and sectoral reports were prepared by the members. The different sectors considered are Housing and Rehabilitation, Punargeham project, Social and Fisheries infrastructure development, Fisheries development, Aquaculture development, Tourism and Fisheries sub plan, Eco-restoration and management plan for *Pokkali* and *Kaipad*, Coastal protection, climatic change, mitigation and adaptation, Blue economy, marine special planning, fisheries management and Expected inter sectoral conflicts/overlaps.

The IFDP is prepared based on an evaluation of the draft CZMP with respect to the CRZ 2019 notification and the sectoral reports. Recommendations on the most relevant issues which have direct linkage with the coastal area and the coastal communities which need to be addressed in the draft CZMP are listed below. The IFDP report which is expected to be part of the CZMP may be referred for details. The Committee also felt that certain issues relevant to the coastal zone and fishery sector have to be addressed by the Fisheries Department. These are listed as a continuation of the recommendations.

#### **RECOMMENDATIONS FOR INCORPORATION INTO CZMP**

The draft CZMP 2019 needs to include more details with respect to fisheries and fishers and their traditional rights. Some of the components to be included in the CZMP as per the CRZ notification and guidelines for preparation of CZMP are missing in the draft CZMP. These are identified. There are few aspects which are to be addressed by the Fisheries Department. These are listed separately. The recommendations to the DoECC and KCZMA are expected to be incorporated in the CZMP 2019. The recommendations are:

1. The traditional communities in the coastal zone including the fisher folk belong to ecosystem people whose livelihood is closely connected with the coastal zone, its resources and processes. Their traditional and customary rights are part of their livelihood and must be protected in the CZMP.
2. The different components and recommendations in the CZMP should not have any adverse impact on livelihood and settlement plan of the coastal fisher folk. The **Integrated Fisheries Development Plan for CZMP 2019 (for CRZ 2019)** details the fishermen settlement areas, its associated infrastructure facilities, model fishing village,

Fishing Harbors and Fish Landing Centers, etc. The plan needs further development considering the entire fishing villages of the State.

3. Details such as roads, hospitals, etc. are further to be mapped for addressing the long term requirements of housing and other settlement needs of the fishing community and be included in CZMP. As directed in the CRZ notification the existing authorized developments on the seaward side are also to be demarcated and included.
4. In the CRZ 2019, Annexure IV under Guidelines for preparation of Coastal Zone Management Plans, in para 5(iii) the State government is directed to prepare ‘detailed plans for long term housing needs of coastal fishing communities in view of expansion and other needs, provisions for basic services, including sanitation, safety and disaster preparedness’. This approach is expected to provide safe, hygienic, clean, community friendly and environment friendly settlement regions for the coastal community taking into consideration their occupational needs also. This has not been properly projected in the draft CZMP 2019.
5. A draft model ‘fishing village settlement plan’ for Arattupuzha detailing the parameters to be included is attached as annexure to the report. It is recommended that such settlement plans be prepared for all marine and inland fishing villages in the State to form part of CZMP 2019. This has to be done preferably for fishing villages by the concerned local bodies with the support of different departments including Environment and Climate Change, Town Planning, and Fisheries, Integrated Rural Technology Centre (IRTC) and in consultation with the coastal communities.
6. Coastal areas like Arattupuzha are barrier beaches which are highly prone and most vulnerable to climate change impacts and sea level rise similar to many other barrier coasts along the Kerala coast. Any management plan for such coast should take into account of the climate change impacts, increase in extreme events and sea level rise.
7. Considering the issues and problems arising in coastal belts due to climate change such as coastal erosion and salinity ingression in water bodies, long term projects for livelihood activities in Fisheries, Agriculture and Animal Husbandry to ameliorate and adapt to these ill effects are to be formulated and included in the CZMP in addition to safe housing.

8. Features like Pokkali/ Kaipad (filtration ponds), beaches, mudflats, etc. which are vital for fisheries and fishers, are categorized along with intertidal zones as CRZ- IB. Hence these features are not identifiable from the CZMP maps. It is suggested that these may be either incorporated in the CZMP or provide the land use maps of the coastal zone (where these are expected to be demarcated) based on which the CZMP maps are prepared, for reference and for formulating management action plans. A further verification and scrutiny of the Fishery Department is needed once these are made available.
9. Beaches need to be demarcated clearly so that beach management plans could be prepared for beach conservation as directed in the CRZ notification. This will help to implement the direction in the notification (Annexure 1, para 1.9(iii)(b)) that ‘when permissible activities are taken up on the beaches if loss of beach in the neighborhood is predicted, necessary beach nourishment to compensate for the losses shall be undertaken by the project authorities’.
10. The CRZ notification has a very important role in the restoration and conservation of Pokkali/ Kaipad. The Coastal Zone Management Plan (CZMP) prepared as per CRZ 1991 notification considered Pokkali/ Kaipad as fish breeding areas and the 100 m CRZ adjoining the pokkali fields were categorized as CRZ IA which was also a No Development Zone (NDZ). Such a categorization put the traditional coastal communities into great difficulties. This categorization continued till January 2019 when the CZMP as per CRZ 2011 was approved. The CZMP 2011 does not categorise banks adjoining Pokkali/ Kaipad as CRZ IA. Pokkali/ Kaipad are shown as intertidal zones and categorized as (CRZ IB). Many of fishery related infrastructure are permitted on the banks of Pokkali/ Kaipad with this re-categorisation.
11. An amendment brought for CRZ 2011 notification vide S.O. 1422 (E) dated 1<sup>st</sup> May 2020 may change the CRZ categorization of Pokkali/ Kaipad and adjoining banks significantly. It redefines HTL (High Tide Line) such that ‘in case there exists a bund or a sluice gate constructed in the past, prior to the date of CRZ notification 1991, such that the HTL shall be restricted up to the line along the bund or the sluice gate and in such a case, area under mangroves arising due to saline water ingress beyond the bund or sluice gate shall be classified as CRZ-IA irrespective of the extent of the area beyond the bund or sluice

gate. Such areas under mangroves shall be protected and shall not be diverted for any developmental activities'. Though this has not been notified for CRZ 2019, the NCZMA has recommended in its 42nd meeting dated 23-03-2021 that this modification for CRZ 2011 may be made applicable to CRZ 2019. Hence another notification is expected soon incorporating the above modification in CRZ 2019. The present draft CZMP 2019 may be modified accordingly limiting the HTL adjoining Pokkali/ Kaipad, based on sluices as existed on 19 February 1991. The information on sluices as existed on 19 February 1991 may be mapped and made available for modification of the HTL in the draft CZMP 2019. This may be accompanied by Pokkali/Kaipad management plan for its conservation and sustainable use.

12. Pokkali/ Kaipad management plan is needed for conserving this important coastal ecosystem considering its ecosystem services to the community and biodiversity. A model draft management plan is attached with this report for reference which may be further fine tuned with stakeholder consultations including coastal communities, local self government institutions, and fisheries department.
13. In many Pokkali/Kaipad areas mangroves are growing when such fields are kept fallow for a few years. With the prevailing provisions in the CRZ notification restoration of these unused Pokkali/ Kaipad field for its intended use is difficult. The Pokkali/Kaipad management plan could also address this. The CZMP 2019 may mention that the mangroves grown over the years in unused pokkali fields may be permitted to be replanted in the peripheries so as to allow restoration of these for pokkali fields to its original use.
14. Many parts of coastline of Kerala are prone to severe coastal erosion. Eroding locations which may require management interventions may be shown in the CZMP or in the accompanying land use maps where appropriate shoreline management plans for the protection of the coast have to be undertaken based on scientific studies.
15. The No Development Zone (NDZ) for CRZ IIIA is 50 m while it is 200 m for CRZ IIIB. Considering the peculiar settlement pattern of fishermen in the coastal zone, the fisher community was constantly requesting to reduce the NDZ for ensuring the protection of traditional and customary rights of the fisher community who are “**ecosystem people**”.

Accordingly the re-categorization of CRZ III into CRZ IIIA and CRZ IIIB has been introduced in CRZ 2019 notification. This categorization as given in the CRZ 2019 notification is not fully reflected in the draft CZMP. The CRZ III categorization into CRZ IIIA and CRZ IIIB as given in the draft CZMP needs a relook.

16. On verifying the draft CZMP 2019, it was observed that the density of population for identifying CRZ IIIA has been carried out by taking the entire village area as against the provision in the notification to consider the density of population of the CRZ III area. By definition CRZ III covers only land part. Village area now taken consists of CRZ I, CRZ II, CRZ III and CRZ IV. It is recommended that DoECC may follow the direction in the Notification and revisit the categorization of CRZ IIIA and CRZ IIIB by recalculating the density of population taking the area of CRZ III alone for the purpose. Such a calculation of density of population may bring many more panchyats under CRZ IIIA. Accordingly the NDZ will be reduced to 50 m in these panchayats also without allowing people of other interest encroaching to the coastal zone.
17. Panchayati Raj system being very strong in Kerala it is recommended that all the computations and other depictions in the CZMP may also be based on panchayat, municipality and corporations (LSG Institutions) which is imperative in the wake of 73<sup>rd</sup> and 74<sup>th</sup> Constitution amendment.
18. The DoECC/ KCZMA may also provide guidelines for construction of dwelling units in the NDZ in association with fisheries and other departments, local bodies and expert organisations.
19. Construction and reconstruction of dwelling units of traditional coastal communities including fisher folk are permissible in CRZ including NDZ (as per para 5.3(ii) of the notification), incorporating necessary disaster management provisions and proper sanitation arrangements. Guidelines for the above may be incorporated in the CZMP report. Tourism plans attached with the draft report may be reworked taking this aspect also.
20. Environment Management Plans for ESAs (as listed in the CRZ 2019 notification in para 2.1.1) may be prepared and made part of the CZMP (para 2.1.1 (b) of CRZ 2019 notification). The listed ESAs include the Biodiversity rich Mangroves, Coral reefs, Fish



Sanctuaries, Turtle nesting grounds and biologically active mud flats. Beach management plans required as per CRZ notification (Annexure 1 para 1.9(iii)(c)) may also be included. A timeline for these may be indicated in the CZMP.

21. Mangrove areas have been categorized as those in private property, in public places, under Forest Department and a buffer zone for mangroves with area more than 1000 sq.m except in private property. This information is not readily available in the CZMP maps or reports. It is requested that these information may be provided as a table in the report. This information is very important for the Fisheries Department for managing mangroves for fisheries and biodiversity enrichment, as intended in the CRZ notification.
22. While preparing the Integrated Management Plan for Critically Vulnerable Coastal Areas (CVCA) such as Vembanad Lake which is considered as an area requiring special attention under CRZ notification, provision for fish farming and aquaculture activity, measures to prevent and mitigate pollution and measures to control reclamation of the lake should be incorporated. This may be done in consultation with the Fisheries Department. The IMP (Integrated Management Plan) for Vembanadu may be attached with CZMP or a plan for its preparation may be detailed in the CZMP report with a timeline.
23. For preparing the management plans for Vembanadu, Management Action Plan (MAP) prepared by CWRDM for Vembanadu and Ashtamudi, the Ashtamudi Management Plan by NCESS and the Kayal Commission report for Vembanadu by Kerala Sasthra Sahithya Parishat may be taken as examples, protecting all the rights of traditional communities.
24. Fishing and fishery Zones (including *thozhilidangal*), Fish Sanctuaries and Fish Breeding Grounds both in the sea and backwaters/estuaries should be incorporated in CZMP. Coastal aquaculture and mariculture zones, mussel and oysters farming zones, Sea weed farming, Pen culture of fish etc. and potential zones, proposed zones for Marine park or bio reserves may also be shown in the CZMP. Areas suitable to mariculture and coastal aquaculture should be included in the CZMP. In CRZ-IVA and CRZ-IVB, provisions for utilizing the same for cage fish farming and other kinds of aquaculture activities with the participation of fishermen should be included in the CZMP. Coastal Aquaculture activities like brackish water fish/shrimp farming in tide fed saline wetlands, cage

farming of fish, rack/raft and long line farming of mussel and oysters, Sea weed farming, Pen culture of fish etc. are major thrust areas identified for the development of aquaculture in the state. Areas and localities suitable for the development of the above mentioned farming activities may be specified in the CZMP of the respective Districts. (Details are given in the Report and attached Annexures).

25. Zones identified for *Punargaeham* resettlement and potential zones for resettlement may be shown in the CZMP
26. Cyclone shelters, road network, etc. for enabling disaster management may be shown in the CZMP as directed in the CRZ notification.
27. In the CRZ notification, 2019 several relaxations in regulations are allowed for development and promotion of coastal tourism activity. The benefits granted to tourism activity in the CRZ may be implemented with the stake of fishermen so that the income generated through tourism developmental activity will be beneficial to the downtrodden and marginalized coastal community. So provisions to implement tourism development activity with the stake of fishermen should be incorporated in the CZMP. The approach to be followed is given in the report and annexure (Tourism and Fisheries sub plan).
28. Tourism development should not obstruct approach of fishermen to sea and also should not affect their settlement, fishing and fishery zones like *thozhilidangal*, landing areas, net mending centres, traditional fish processing, etc. The Tourism plans now attached with the draft CZMP of each district may be reworked in consultation with the Fisheries Department so that conflicts with fishing and fishery zones, aquaculture zones, fish & turtle breeding grounds, Fish sanctuaries, settlement zones, IIMPs for islands, EMPs for ESAs, etc. are considered and conflicts avoided. Tourism plans may be attached with CZMP 2019 only after such reworking based on consultations with Fisheries Department is done.
29. Tourism plan for CZMP needs to ensure promotion of biodiversity conservation and for promoting tourism potential in CRZ I through involvement of traditional local community. Mangrove “*safari*” and guided tour projects may be implemented through traditional local community, especially fisher women as a livelihood activity. This can be extended to all possible PESCA activities

30. Traditional fisher folk, especially educated youth with due participation of women from the fishing village may be trained for being part of urban beach tourism such as fishing village visits, adventure water sports, rescue support for near shore water sports, performing the traditional fishing methods like operation of beach seines, angling etc. This may be extended to backwater aquaculture sites such as cage culture for high value fishes, rope culture of mussels and oysters, prawn farming, Pokkali/Kaipad, etc. The above should be reflect in the CZMP.
31. Considering the need and potential of tourism options emerging out of biodiversity conservation and related activities, the government of Kerala has formulated an integrated aqua park project at Puthuvypin of Ernakulam district. This may be incorporated in the CZMP and shown in the CZMP map as an area for ecotourism where project components that are allowable in mangrove zone may be undertaken.
32. Home stay as a tourism activity is recommended in the CRZ notification, guidelines for which could be formulated and attached to the CZMP report.
33. The 20 m CRZ for backwater islands will become effective only when Integrated Island Management Plan (IIMP) is prepared. Hence there is an urgent need for preparation of IIMPs for backwater islands. This may be attached with CZMP or a plan for its preparation may be detailed in the CZMP report.
34. A common IIMP is not apt for all islands as variation of extent is there from very small to very large islands. There should be a separate or cluster based management plan for these islands.
35. Criteria for identifying islands must be redefined so as to include barrier islands and spits like Alappad, Arattupuzha, Vypin Island, Western Kochi to Chellanam stretch and Valiyaparamba Grama Panchayat in Kannur, etc. An Integrated Island Management Plan (IIMP) for these should consider various livelihood needs of the local community and there should be an inbuilt mechanism in the IIMP which prohibits migration or settlement of people other than traditional coastal communities to coastal zone and which would not permit activities those do not require shore frontage. Barrier islands and spits like the ones mentioned above are highly prone and most vulnerable to climate change impacts and sea level rise. Any management plan for such coast should take into account of the

climate change impacts, increase in extreme events and sea level rise. Preparation of IIMP may be done in consultation with the Fisheries Department.

36. Coastal infrastructures already developed and being developed by the department are to be demarcated in the CZMP to avoid future issues with regard to implementation, maintenance, rehabilitation, up gradation and mitigation measures. There are twenty five fishing harbors and seventy three Fish Landing Centres in the state. All the major fishing harbors are expected to be developed to international standards and may be shown in the CZMP.
37. The Environment Department, KCZMA and the Fisheries Department have to keep a close watch on various developments under blue economy policy of the Govt. of India such as 'Sagaramala project' so that adverse impacts on fisheries, livelihood and rights of traditional coastal communities, coastal ecosystems are minimized to an acceptable level. Environmental rules especially CRZ rules should not be diluted for permitting activities under blue economy.
38. Coastal and Marine Spatial Plans (CMSP) envisaged under Blue Economy will be an extension of the CZMP 2019 into the Territorial waters, Exclusive Economic Zone and the High Seas. The CMSP envisages ecosystem and activity based approaches to zoning that can strategically and comprehensively balance the location, type, and intensity of ocean user groups, or sectors, across the seascape. The fishery related spatial zones when marked under this programme may be included in the CZMP when these are prepared and made available. It is the responsibility of the Fisheries Department, the Environment Department and KCZMA to ensure that the livelihood rights of traditional coastal communities are protected and conflicts and overlaps avoided in CMSP.
39. Compared to survey boundary lines, the HTL lines are marked thicker. Increased thickness makes it difficult to make accurate assessment of distances from these lines and verification of HTL also becomes difficult. Hence the thickness of HTL may be reduced, similar to that of survey plot lines.
40. Local level CZMP in 1:4000/ 1:5000 with all the details as directed in the CRZ 2019 notification is needed for the implementation of the notification which is required for the

public to understand and use it for taking decisions on activities in the CRZ area. Hence time line may be given for the preparation of local level CZMP in the report.

41. In the CZMP of Kannur district water logged areas are shown as intertidal zones in few places. Locations are given in the report. This may be corrected.
42. There are issues of demarcation of HTL along the inner bunds of aquaculture farms in Dharmadam, Pinarayi, Eranholi panchayats and Thalassery municipality areas. The same type issues are there in Cherukunnu, Kannapuram, Ezhome, Pattuvam village areas and along Kuppam river sides also (Map No KL 69, KL 70 and KL 74). This needs to be modified considering the demarcation of HTL along the outer bund of the farms. Many existing aquaculture farms are shown as Mangrove Buffer zone which will prevent its further developmental activities. This may also be addressed.

### **RECOMMENDATIONS TO FISHERIES DEPARTMENT**

Many of the suggestions in the IFDP have to be carried forward with positive interventions and actions by the Fisheries Department. Some of the major recommendations are listed below:

1. As directed in the in the CRZ 2019, the State government (Fisheries department) may take initiative to prepare ‘detailed plans for long term housing needs of coastal fishing communities in view of expansion and other needs, provisions for basic services, including sanitation, safety and disaster preparedness’. The Fisheries Department together with Integrated Rural Technology Centre (IRTC), Town Planning Department and respective local bodies may take up the preparation of settlement plans for all fishing villages which could be implemented by KSCADC through local bodies. An outline for a model fishing village and its settlement plan is provided in the IFDP report.
2. ‘Punergeham’ is a programme imbibing the spirit of the CRZ notification to reduce the impact of coastal erosion by moving settlements very close to the shoreline to safer places. This has to be further pursued. It may require a change in its operational aspects. The financial support given to traditional coastal communities has to be modified by considering the differential land and property prices. It is required to be reworked considering the minimum area and facilities required for a reasonably comfortable

dwelling unit for a four member family, with the help of experts. The community also requires an assurance that the property surrendered to the government should be used only for fishery related and community required facilities and never used for non fishery related activities. This was also the consensus in the stakeholder meeting convened by the Hon'ble Minister for Fisheries.

3. There is a need for scientific management of Pokkali/ Kaipad coastal ecosystem for its sustainable use and conservation considering the continuous decline in its extent, its importance as a major economic resource for the coastal communities, the importance as a rich biodiversity hub, the multifaceted ecosystem services, the pressure due to changes in land use, sea level rise due to climate change, etc. The Fisheries Department has to take the initiative for developing a management plan for Pokkali/Kaipad. A model draft management plan is attached with the IFDP report for reference which may be further strengthened with stakeholder consultations including coastal communities, local self government institutions, Department of Agriculture etc. and implemented.
4. The Fisheries department may provide guidelines regarding setting up and maintenance of peeling sheds, ice plants, fish processing units in the CRZ, especially in the NDZ, so that permanent hard structures are not constructed in the beach, pollution is controlled and ground water use is regulated.
5. Considering the various impacts of fishing harbours on coastal stability, coastal ecosystems and morphology and fisheries, it is imperative to make an assessment of the functional and ecological performance of fishing harbours already constructed. An assessment of the need for more fishing harbours may be made based on the performance assessment study. Many of the stakeholders expressed the need for such an approach for new and existing fishing harbours.
6. Department of Fisheries has to ensure ease of accessibility to each of the fishing harbours from all the fishing villages which are serviced by a particular harbour. There should also be a mechanism to solve conflicts between users of different coastal regions.
7. It is observed that the construction of the breakwaters for fishing harbours have destabilised the adjoining shoreline causing coastal erosion on its down drift side. The Department of Fisheries/Harbour Engineering Department may look into the feasibility of

better designs that may allow sand bypassing to the down drift side. The possibility of redesigning the existing fishing harbours to minimise the adverse impacts on shore stability may also be considered while modernizing existing harbours. It may be noted that the CRZ 2019 notification requires project proponents compensate any loss of beach due to developmental activities (Annexure 1, para 1.9(iii)(b))

8. Fisheries department may identify critical areas of erosion and assess the probable reasons for erosion in each critical location with the support of respective local body and experts and ensuring community involvement. This will also help accurate validation of the various set of data currently available which sometimes provide conflicting estimates. This may be updated regularly since the nature and extent of erosion can change depending on the coastal processes and human interventions.
9. Department of Fisheries may take initiative through KSCADC and Harbour Engineering Department to generate baseline data required for coastal development plans and design of coastal protection measures in collaboration with expert institutions.
10. A proper methodology may be followed to select appropriate coastal protection measure (soft, hard or hybrid) for each critically eroding location, especially those close to fishing harbours. The Central Water Commission (CWC) guidelines could be helpful in this.
11. Any construction on active beaches will have adverse impacts on shore stability. Care should be taken to ensure that various constructions for fish landing centres and other facilities are not carried out in active beaches.
12. Identify PESCA tourism activities suited for traditional coastal communities including fishers and empower and equip them for such activities
13. Empower traditional coastal communities, especially women to take part and manage ecotourism activities in CRZ I areas such as mangroves, beaches, fish sanctuaries, etc. and CRZ IV areas such as coastal waters and backwaters
14. Proper guidelines for facilitating home stay in CRZ areas may be worked out with input from stakeholders and tourism department.
15. The Department of Fisheries have to keep a close watch on various developments such as ‘Sagaramala Project’, and mining in the coastal zone and coastal waters, under the Blue Economy policy of Govt. of India so that adverse impacts on fisheries, livelihood and

rights of traditional coastal communities, coastal ecosystems are minimized to an acceptable level. Environmental rules especially CRZ rules should not be diluted for permitting activities under blue economy.

16. Coastal and Marine Spatial Plans (CMSP) envisaged under Blue Economy may demarcate spatial boundaries for different activities along the coast and the seas. This should not encroach on fishing and fishery zones and the living and occupational space of traditional coastal communities. State's right on Coasts and fishery resources need to be protected. The Department of Fisheries may ensure that the livelihood rights of fishers and other traditional coastal communities are protected while preparing the CZMP.

The Integrated Fisheries Development Plan and its annexures provide details about all the above recommendations. The report and annexures may be referred while considering the above recommendations.

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