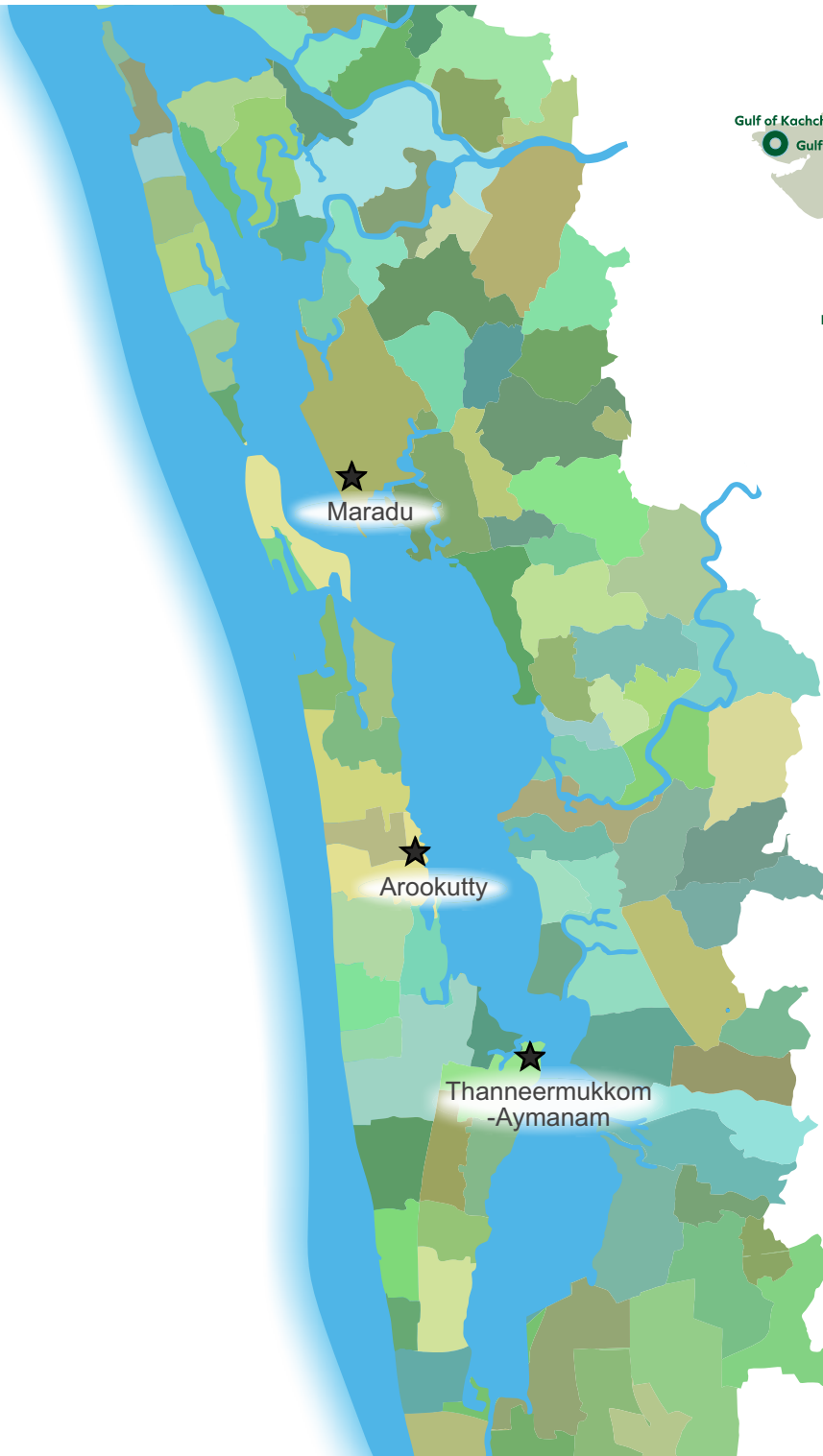


CRITICALLY VULNERABLE COASTAL AREAS C V C A

A Framework for Community Based Resource Management

Vembanad, Kerala 2016



CVCAs Identified in CRZ, 2011 Notification



The Policy Context

The Sustainable Development Goal (SDG) 14 emphasizes Conservation and Sustainable use of the oceans, seas and marine resources for sustainable development. Further, India's National Conservation Strategy and Policy Statement on Environmental and Development, 1992 and the National Environmental Policy, 2006 recognize the importance of multi stakeholder partnership in implementation of conservation plans for sustainable development of natural resources.

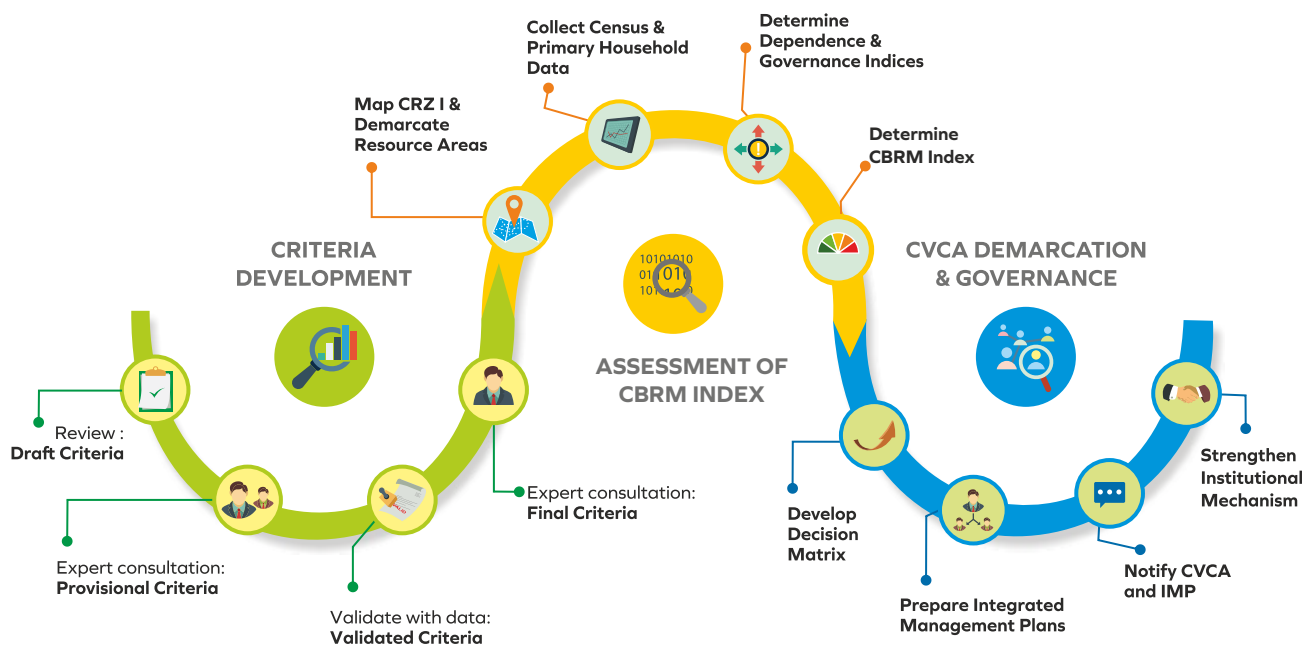
India has a long coastline of 7500 km including island territories, and encompasses total 78 districts in the 9 maritime states and 4 Union Territories. The coastal districts house 14.2% of India's total population, with an average population density of 513 persons per sq. km. There are 3288 marine fishing villages, with a fisher population of nearly 4 million. India has formulated enabling policies and enacted legislations for demarcation of community-managed areas to aid in conservation and sustainable use of ecologically sensitive areas (ESAs).

The Coastal Regulation Zone (CRZ), 2011 notified under the Environment (Protection) Act, 1986 has listed various coastal ecosystems (coral reefs, mangroves, seagrass, salt marshes); geo-morphological features (sand dunes, mudflats), habitats (turtle nesting sites, horse shoe crab habitats, bird nesting sites) and other areas (archaeological and heritage sites; national parks, sanctuaries, etc.) as ecologically sensitive areas (ESAs) or CRZ I areas. CRZ, 2011 [Section 4(a)] provides for notification of identified ESAs to be managed by the local community including fisher folk as Critically Vulnerable Coastal Areas (CVCAs).

The rationale for community participation is that it establishes a sense of community rights over ecosystems they are closely associated with, apart from development of better conservation policies and plans. This document provides a framework for demarcation of CVCAs which includes **a) Development of criteria; b) Assessment of Community Based Resource Management (CBRM) Index and c) Demarcation and Governance of CVCA.**

Coastal and marine resources and habitats (e.g. mangrove, coral reef, seagrass beds, salt marsh, turtle nesting & bird nesting sites, horseshoe crab habitat, geomorphological features etc.) in India cover an area of ~27,500 sq km, on which the coastal communities are highly dependent

FRAMEWORK FOR DEMARCATION OF CVCA



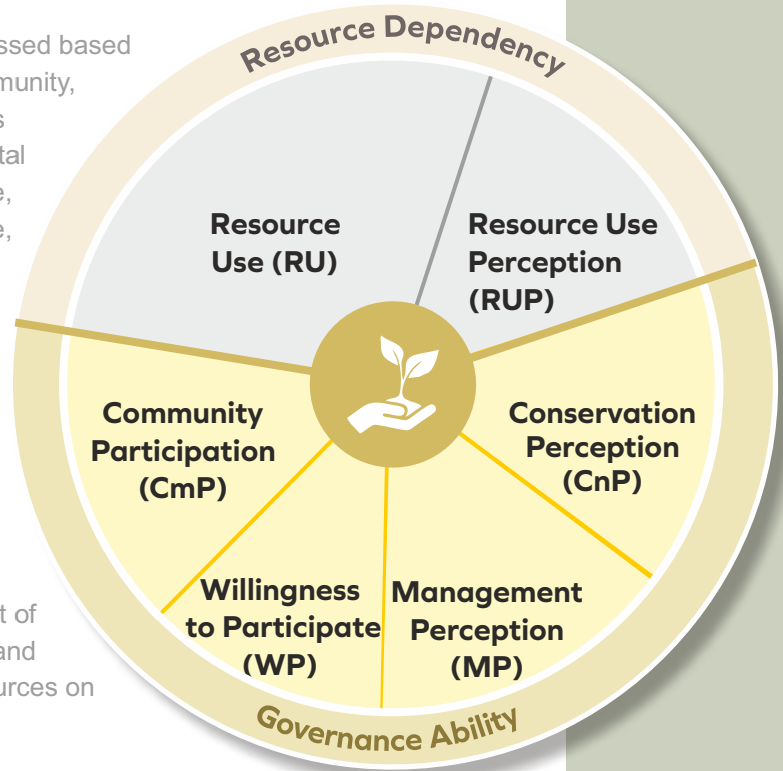
A

Development of Criteria for CBRM Index

The draft criteria for assessing CBRM were prepared by NCSCM through collation of relevant information and expert consultation. The CBRM index is assessed based on 32 specific indicators, representing SIX criteria, organized into TWO broad categories viz., Resource Dependency and Governance Ability of the Community. The internal consistency and reliability of survey instrument were tested statistically.

RESOURCE DEPENDENCY

- (i) **Resource Use Index:** It is assessed based on the resources used by community, distance to resources, products harvested, contribution of coastal resources to household income, historical resource dependence, perception on resource adequacy and pattern of resource use.
- (ii) **Resource Use Perception Index:** Qualitative aspects of resource use were captured by assessing the community perception on direct and indirect benefits of resources, their relative importance, extent of traditional users in the region, and effect of loss of access to resources on household livelihood.



GOVERNANCE ABILITY

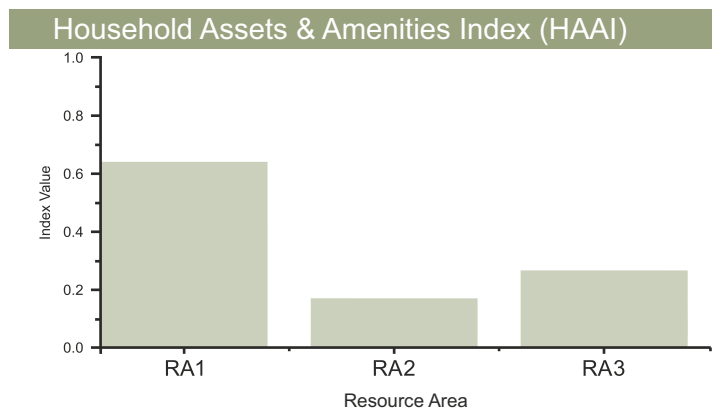
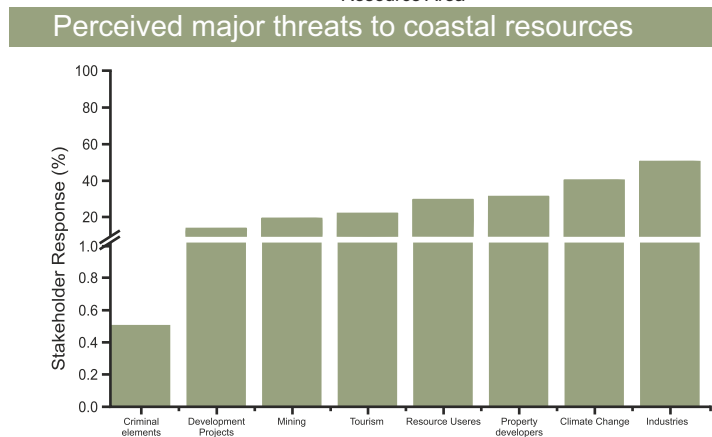
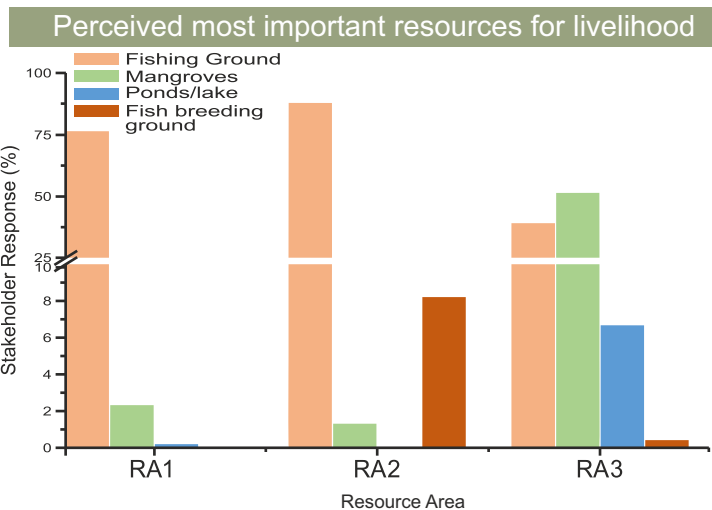
- (iii) **Community Participation Index:** This index captures attributes essential for community-based resource management, as perceived by its members. Existence of community-based organizations (CBOs), community cohesiveness, inequality among households, collective response to local issues, and inclination for collective management are key parameters assessed.
- (iv) **Willingness to Participate Index:** Households' willingness to be active partners in governance process is deduced based on their appreciation and inclination towards self-regulation, concern for collective issues, and degree of participation in CBOs.
- (v) **Management Perception Index:** Present status of resource management is taken as a proxy to assess community's ability to govern. The index is a function of awareness on regulations for conservation of coastal ESAs and agencies involved; implementation of penal provisions; and the community's perceived role in resource management.
- (vi) **Conservation Perception Index:** The index is a function of community perception about past and present ecosystem health status, natural and anthropogenic threats to ecosystems, concern for their future health and perception of optimal resource use. These indicators are indirect measures of community's conservation priorities.

Vembanad

Vembanad is the longest lake in India and the largest lake in the state of Kerala. The Vembanad wetland system covers an area of over 2033.02 km² thereby making it the largest wetland system in India. It is the largest of the three Ramsar Sites of Kerala. The lake is bordered by Alappuzha, Kottayam and Ernakulam districts. Vembanad bird sanctuary is located at Kumarakom and Pathiramanal, where a large number of tourists congregate during October-March every year, being the peak season for visiting these bird sanctuaries. Fishing and allied industries, tourism, coir retting, duck farming and agriculture are the major important livelihood activities on the lake.



- An android application for collection of social data from coastal households has been developed.
- Collected 1351 household data from coastal villages around three resource areas of Vembanad. The significant results are presented below:
 - A total of 86,522 households with a population of 3,53,690 lives around the resource areas of which 18% are from rural areas (Census, 2011).
 - In total, 99% of coastal community are resource dependent in Vembanad with highest resource dependent coastal community (100%) in Arookutty and Thanneermukkom-Aymanam resource areas.
 - Employment (84%) and income (80%) are the direct benefits mostly perceived by the resource dependent community in Vembanad while their most perceived non-harvest benefits include erosion protection (39%), natural beauty (20%) and water transport (13%).
 - Majority of the households (37%) prefer the State or Central government to manage the access to coastal resources. About 32% of them prefer local government bodies such as Panchayat or Gram Sabha to take such responsibility. Regional government (Taluk/District) is completely not preferred (0%) by the households.
 - Regarding the willingness to participate in resource management, 21% of the households have opined to participate.

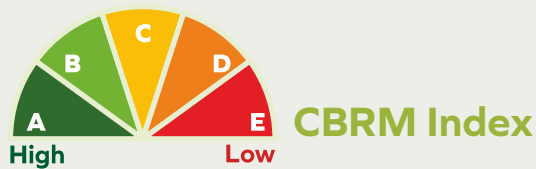


B

Assessment of CBRM Index

The CRZ I / Ecologically Sensitive Areas in Vembanad mapped in 1:25,000 scale were demarcated into three contiguous Resource Areas (RAs). CBRM index for each of the RAs were determined as per the framework is based on primary household surveys. The sampling frame for data collection comprised of 13 census villages (2011) located within 1 km along the perimeter of three identified RAs.

Sample size comprised of 1351 households representing different RAs. Data were collected by stratified random sampling using a customised android application. The geospatial data and audio/video files pertaining to the survey were integrated with the application and uploaded to the server. Resource dependency and Governance ability for each of the resource areas were calculated as a function of various indicators.



A
80-100%

Community's dependence on ESAs for their livelihood is very high; their inclination towards conservation of ESAs and willingness to participate in management is very high.

B
60-80%

Community's dependence on ESAs for their livelihood is high; their inclination towards conservation of ESAs and willingness to participate in management is high.

C
40-60%

Community's dependence on ESAs for their livelihood is moderate; their inclination towards conservation of ESAs and willingness to participate in management is fairly reasonable.

D
20-40%

Community is fairly dependent on ESAs for their livelihood; their inclination towards conservation of ESAs and willingness to participate in management is low.

E
0-20%

Community is not dependent on ESAs for their livelihood; their inclination towards conservation of ESAs and willingness to participate in management is very low.

The community based resource management (CBRM) index for a given resource area was determined as an average of resource dependence index and governance ability index. The resource areas were graded qualitatively into five categories (High to Low), against each of the indices.

Maradu

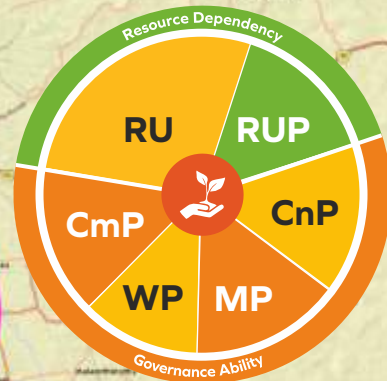
Resource Dependency

High dependency with the resources at close proximity; the rich fishing ground provides high yielding fishes and crustaceans consistently.

Governance Ability

Low governance ability with a balanced view of sustainable use and conservation of resources. The households prefer State/Central/local government to manage their resources.

RA1



Arookutty

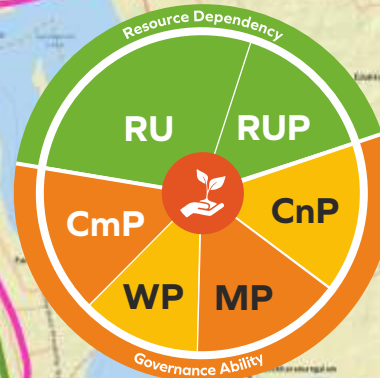
Resource Dependency

Highly dependent on fishing and fish breeding grounds for their employment, income, food and livelihood.

Governance Ability

Moderate inclination towards conservation and low governance; Majority perceive resource users themselves and climate change as major threats to their resources. Participatory management for sustainable management of resources is welcome.

RA2



Thanneermukkom-Aymanam

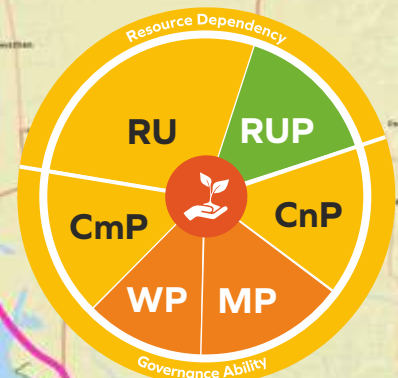
Resource Dependency

Moderate dependency; particularly on mangroves and fishing ground for fishes and bivalves; with increasing magnitude of new coastal resource users.

Governance Ability

Moderate governance ability; resource users do not strike a balance between exploitation and conservation; most of them perceive that local government and local community should manage their resources.

RA3



- Resource Area
- Mangroves and Mudflats

RU:Resource Use; **RUP:** Resource Use Perception; **CnP:** Conservation Perception; **MP:** Management Perception; **WP:** Willingness to Participate; **CmP:** Community Participation

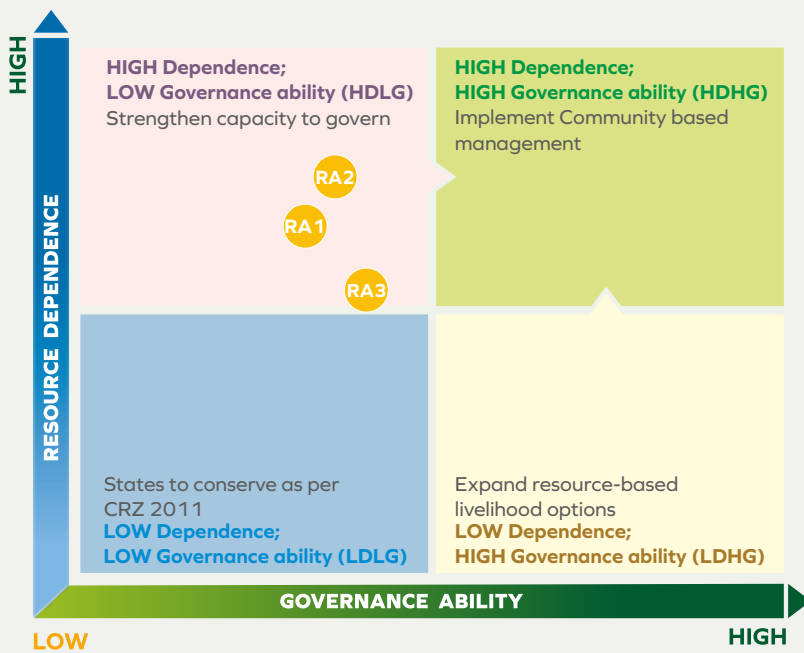
C

CVCA Demarcation and Governance

The dependency and governance ability indices, determined as per the framework, are plotted against each other in a decision matrix, in order to aid in planning interventions to expand areas under community management. The interventions and/or management actions to be undertaken by the State in respective Resource Areas are summarized in the matrix window. The resource areas are represented as circles in decision matrix. Colour of the circle represents the CBRM index value, and its location, the type of management intervention recommended.

Decision Matrix for Vembanad, Kerala

RA 1 Maradu RA 2 Arookutty RA 3 Thanneermukkom-Aymanam



Significant Results

RA1 (Maradu), RA2 (Arookutty) and RA3 (Thanneermukkom-Aymanam) are graded as HDLG and it is recommended to strengthen the capacity to govern since the dependency on the resources is high.

The Kerala State shall strive to elevate all the CVCAs/RAs in HDLG quadrant towards community-based resource management through appropriate interventions, over a period of time.

Integrated Management Plan

The integrated Management Plans (IMP) for different RAs in the CVCAs notified in the CRZ 2011 notification shall comprise of location-specific interventions, determined based on the qualitative status (high to low) of various indices used to measure community dependence and governance ability. CVCA Decision Matrix shall be discussed with the coastal community and other stakeholders so as to build confidence and sense of ownership among them.

NEXT STEPS

- Notify the CVCAs following MoEF&CC guidelines, in consultation with all stakeholders
- Develop Integrated Management Plans for CVCAs
- Build capacity and strengthen institutional structure for co-management of coastal ecosystems
- Expand the extent of community-managed coastal ESAs in the State

MAKING OF THE FRAME WORK

The draft criteria for CBRM index were developed through consultation with experts from various academic and research agencies viz., Madras Institute for Development Studies (MIDS), Chennai; Madras School of Economics (MSE), Chennai and MS Swaminathan Research Foundation (MSSRF), apart from the core scientists of NCSCM.

The framework was validated with actual data and finalized through expert consultation involving experts from SICOM, MoEF&CC, ICAR-National Centre for Agricultural Economics and Policy Research, New Delhi; ICAR-National Academy of Agricultural Research Management, Hyderabad; ICAR-Central Institute of Fisheries Education, Mumbai; ICAR-Central Marine Fisheries Research Institute, Kochi; Indian Statistical Institute, Regional Centre Chennai and Karnataka Veterinary, College of Fisheries, Mangalore.

The primary household data were collected from the villages adjoining the CVCAs listed in CRZ Notification 2011, using a tablet with customised android application in collaboration with ICAR-Central Marine Fisheries Research Institute (CMFRI), Kochi for Vembanad, Kerala.

CREDITS

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Tablet with survey application



Stakeholder consultation



Household data collection

