Indian Marine Fisheries Code

Guidance on a marine fisheries management model for India

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INDIAN MARINE FISHERIES CODE:

GUIDANCE ON A MARINE FISHERIES MANAGEMENT MODEL FOR INDIA

K. Sunil Mohamed, K. Vijayakumaran, P.U. Zacharia, T.V. Sathianandan, G. Maheswarudu, V. Kripa, R. Narayanakumar, Prathibha Rohit, K.K. Joshi, T. V. Sankar, Leela Edwin, K Ashok Kumar, Bindu J, Nikita Gopal and Pravin Puthra

ICAR - Central Marine Fisheries Research Institute
Post Box No. 1603, Ernakulam North P.O.,
Kochi-682 018 I Kerala I India
www.cmfri.org.in

&

ICAR - Central Institute of Fisheries Technology
CIFT Junction, Willingdon Island, Matsyapuri P.O.,
Kochi-682 029 I Kerala I India
www.cift.res.in

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www.cmfri.org.in

E-mail: director@cmfri.org.in
Tel: +91 484 2394867
Fax: +91 484 2394909

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Preface

India's marine fisheries are at a turning point; the rapid increase in yields witnessed during the first 60 years of independence has slowed down and the scope for increase in yields from new unexploited and underexploited fish stocks and grounds seems limited. The situation calls for urgent measures to sustain the production close to the target potential yield of 4.41 million tonnes. These measures would mean implementation of science based fisheries management and regulations. Although much has been accomplished by way of research and development in marine fisheries in India, the transformation and implementation of the outcome of these studies into effective management of marine fisheries resources of the country has been a shortcoming so far. The FAO brought out the Code of Conduct for Responsible Fisheries (FAO-CCRF) in 1995 to serve as a guidance for countries for a sound and effective management of fisheries resources. This FAO-CCRF has not been put into practice in India, althrough there are some compliances.

Scientists of the CMFRI and CIFT, two of India's major fisheries research institutes, have come together to develop a guidance on how the code can be put into practice in the country. Aptly named as Indian Marine Fisheries Code (IMFC), it is expected to give an impetus to bring about a sea change in the manner in which marine fisheries is managed in the country. The IMFC explains in detail each sub-article of the FAO-CCRF and provides information on how the article can be implemented and by whom. The IMFC further proposes several new bodies which are necessary to place fisheries management in the country on an unassailable footing. It is expected that all fisheries management bodies in the country, both at central and state levels would find the IMFC as a useful guidance for the future.

A. Gopalakrishnan
Director CMFRI

C.N. Ravisankar
Director, CIFT

Contents

Glossary of Terms

Active fisherman	A fisherman who actually spends major part of his working time in fishing and fishing related activities. (Distinguished as full time and part-time).
Adaptive management	Management involving active response to new information or the deliberate manipulation of fishing intensity or other aspects in order to learn something of their effects within a stock, several sub-stocks (can be regarded as experimental units), in which alternative strategies (different fishing intensities or combination of techniques, for example) are applied.
Agenda 21	A non-binding, voluntarily implemented action plan of the United Nations with regard to sustainable development tabled at the UN Conference on Environment and Development (UNCED) held in Rio de Janeiro, Brazil, in 1992. It is an action agenda for the UN, other multilateral organizations, and individual governments around the world that can be executed at local, national, and global levels in the 21st Century. It has been affirmed and modified at subsequent UN conferences.
Ancillary Fisheries Research Institutes	Institutes in India which have a subsidiary mandate in marine fisheries research 1. Central Institute of Brackishwater Aquaculture 2. Central Institute of Fisheries Nautical and Engineering Training 3. Centre for Marine Living Resources & Ecology 4. Marine Products Export Development Authority 5. National Institute of Oceanography
Artisanal fishery (Traditional fishery)	A small-scale, low cost and labour intensive sector of the marine fishery comprising mainly of non-mechanised or motorised fishing units engaged in near-shore fishing using indigenous fishing technologies and catering to the local markets.
Binding agreements	International agreements other legal instruments which are binding on the signatory states. (Hard laws)
Biodiversity (Biological diversity)	The variety of living material in terms of genes, species and ecosystems within a given area.
Area beyond national jurisdiction (ABNJ)	The area of the sea outside the exclusive economic zones where coastal states have no jurisdiction (a form of global commons)
Area under national jurisdiction	The area of the sea within exclusive economic zones including the territorial sea where coastal states have total sovereignty and the rest of the EEZ where the states have sovereign right over the resources.

Biological sustainability (Bio-ecological sustainability)	A state where the current catch level can be maintained indefinitely and the stock size do not change from year to year. This catch level may be at an optimal or sub-optimal level (see also maximum sustainable yield)
Biological reference point	Particular value of stock size, catch, fishing effort and fishing mortality which may be used as a goal in fisheries management.
Biomass	The sum of weights of individuals in a fish stock.
Break-even	The point where revenue equals costs.
Bycatch	The part of the catch that is taken incidentally along with the target species, and of which some (trash fish) may be discarded.
Cancun Declaration	1992 Cancun conference on Responsible Fishing called on FAO to prepare a Code of Conduct.
Catch	Amount of fish caught; the product of applying effort to fish stock. Catch include both the landed and discarded if any.
Catchability coefficient (q)	The proportion of the total stock caught by one unit of fishing effort.
Catch quota	The maximum catch permitted to be taken from a fishery; such a limit applied to the total catch from a fishery is often referred to as a global quota (as distinguished from individual quota).
Cephalopods	Molluscs (having feet on head) consisting of squids, cuttlefish and octopus; having good value in the export market.
Closure	Banning of fishing during particular times or seasons (temporal closure) or in particular areas (spatial closure) or combination of both.
Co-management (Cooperative management)	Either informal or legal arrangements between government representatives, community groups and other user groups, to take responsibility for and manage a fishery resource and/ or its environment on a cooperative basis.
Committee on Fisheries (COFI)	A subsidiary body of the FAO Council, established by the FAO Conference at its Thirteenth Session in 1965. The Committee presently constitutes the only global inter-governmental forum where major international fisheries and aquaculture problems and issues are examined and recommendations addressed to governments, regional fishery bodies, NGOs, fish workers, FAO and international community, periodically on a world-wide basis. Used as a forum in which global agreements and non-binding instruments were negotiated. Membership is open to any FAO Member and non-Member eligible to be an observer of the Organization. Representatives of the UN, UN bodies and specialized agencies, regional fishery bodies, and international NGOs participate in the debate, but without the right to vote.

Compliance agreement (FAO)	Agreement to promote compliance with international conservation and management measures by fishing vessels on the high seas, 1993, which, according to FAO Conference resolution 15/93, paragraph 3, forms an integral part of the Code.
Continental shelf (or shelf)	The gently sloping sea bottom from the shore to a depth of 200 m (distinguished from continental slope, which is the sea bottom from 200 to 2000, m).
Core Marine Fisheries Research Institute	Institutes in India which have a primary mandate in marine fisheries research 1. Central Marine Fisheries Research Institute 2. Central Institute of Fisheries Technology 3. Fisheries Survey of India
Craft	Any type of boat or boat-like floating constructions used for carrying men and material for fishing.
Critical habitat	Habitats (a place where a species normally lives) that are crucial in the life cycle of a marine species, typically nursery and spawning areas, such as estuaries, mangroves, seagrass meadows and reefs.
Crustaceans	Invertebrate animals with jointed external skeleton; including crabs, lobsters, shrimps, prawns etc.
Decommissioning	The policy of withdrawing the boat (capital) from the fishery.
Demersal	Sinking or lying on the bottom; generally used to denote the fish present at or near bottom, relatively slow moving and comparatively slow growing (e.g. flat fish, goatfish, croakers etc.).
Density	The number or weight of organisms (or any other entity) per unit area or volume.
Discard	Difference between catch and landing.
Ecologically Sustainable Development (ESD)	Use of the environment that aims to meet present needs without compromising the ability of the future generations having the same privilege; development based on the sustainable use of both species and ecosystems, the maintenance of essential ecological processes and the preservation of biological diversity.
Economic sustainability	Those who harvest the resource are earning sufficient returns for their investment and labour and, other things equal, will remain in the fishery in the long run.
Environmentally safe fishing (gear)	A gear designed to capture targeted species without catching any unwanted species or juveniles and without damaging the habitat. (see *selective fishing*)
Effort	The combined level of inputs employed in the fishery; usually expressed in terms of time fished (e.g. days).

Exclusive Economic Zone (EEZ)	The zone of coastal sea from baseline to 200 nautical miles where the coastal states have sovereign rights over the living and nonliving resources and are responsible for judicious management of the resources. This zone constitutes the area of national jurisdiction.
Finfish	Fishes (vertebrate, teleost) with fins (as distinguished from shellfish)
Fisheries regulations	Controls designed to restrict either effective fishing effort (input controls) or total catch (output controls) to predefined limits in a fishery.
Fishery	An area of fishing activity generally geographically based; encompass an entire stock or set of stocks that are exploited by fishing. Several fisheries can be superimposed upon each other if they are characterised by different gears fishing different stocks within the same geographical area.
Fishing mortality	The mortality that is caused by fishing.
Flag State	The state under whose laws a fishing/commercial vessel is registered or licensed. The flag state has the authority and responsibility to enforce regulations over vessels registered under its flag including inspection, and issuing certificates on safety and prevention of pollution
Gear	A gadget used for capturing fish or other aquatic organisms (e.g. nets, lines, pots etc.).
Gillnet	A vertical wall of net (in wide range of mesh size) kept at a stipulated depth in the water column, by a combination of floats and sinkers and capturing fish by gilling (entangling); Gill-netter is a boat engaged in operation of gill net
Ghost fishing	Continued entanglement and mortality of fish by an abandoned or lost fishing gear with no benefit.
Growth overfishing	A level of fishing in which young recruits entering the fishery are caught before they grow to an optimum marketable size; a level beyond that required to maximize yield (or value) per recruit.
Highly migratory fish	Fish species which undertake ocean migrations and also have wide geographic distributions, and usually denotes tuna and tuna-like species, shark, marlin and swordfish. [The United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks addresses the issues of HMS]
Hull	The streamlined outer part of the body of the boat touching the water below and covered by a near-flat deck from above (housing engine, storage areas and tanks, crew cabins etc. within)

Inboard motored (IBM)	The motor of the boat is fixed inside the hull of the boat, with or without shelter, and propeller is positioned to the rear underwater of the hull through a relatively short shaft. Transmission is direct and rudder control is directly using a bar at the aft of the boat.
Incentive (Crew share)	Share of the revenue given to the crew of the boat.
Individual transferable quota (ITQ)	A catch limit or quota allocated to an individual fishermen, who then has a guaranteed share (which may be either harvested or traded) of the TAC of a particular resource.
Industrial fishery	The sector of the marine fishery characterized by medium or large-scale, mechanised fishing units and involving modern energy intensive technologies in harvest, storage, post-harvest processing; catering to export and domestic markets.
Input controls	Limitations on the amount of fishing effort, restrictions on the number, type and size of fishing vessels or fishing gear, or on the fishing areas or fishing times in a fishery.
Joint-venture	A partnership between foreign and local fishers.
Landing centre	A place (generally waterfront) where boats are brought to land their catch.
Larva (*Pl.* Larvae)	The early life history stages between the time of hatching of egg and transformation to a juvenile, the latter a miniature replica of the adult.
Marine protected areas (MPA)	A marine reserve, park or other area protected from uncontrolled human access and use by the application of various restrictions on activities, development and exploitation.
Maximum economic yield (MEY)	The yield above which the revenue generated by a marginal increase in effort is less than the cost of that increase; the point at which profits earned in excess of those needed to cover all fishing costs is maximized.
Maximum sustainable yield (MSY)	is the largest long-term average catch or yield that can be taken from a stock under prevailing ecological and environmental conditions. It is the maximum use that a renewable resource can sustain without impairing its renewability through natural growth and reproduction. A constant long-term MSY is not a reality in most fisheries, where stock sizes vary with strength of year classes moving through the fishery.
MARPOL	International convention for the prevention of pollution from ships, 1973 modified by protocols laid down in 1978.

Mechanized boat	The motor of the boat is fixed inside the hull of the boat, with shelter, and propeller is positioned to the rear underwater of the hull through a relatively longer shaft. Transmission is through gearbox, which allows use of power for winch operation. Rudder control is indirect using a steering wheel in the wheelhouse of the boat.
Minimum mesh size	The smallest size of the mesh permitted in nets and traps; imposed on the basis that smaller individuals will escape unharmed.
Mortality rate	The percentage of individuals in a population that die within a time interval (contrast to survival rate).
Multi-species multi-gear fishery	A fishery characterized by several species being harvested simultaneously by a single gear type; different gear types are applied to harvest the several species in different combinations.
Natural mortality	The mortality caused by natural factors such as senility, diseases, predation etc.
Open access fishery	A fishery with no restriction on the number of fishers or fishing units; an unmanaged fishery.
Outboard Motored (OBM)	The motor of the boat is removable and is fixed at the hind portion of the hull and propeller is attached to the engine proper with or without a shaft. Transmission is direct and rudder control is by tilting and turning the engine on its pivotal base.
Overcapitalization	Capital employed in the fishery is over and above that which is optimal in either an economic or biological sense. (see also decommissioning and overexploitation).
Overexploitation	Occurs when the fishery is producing less than it possibly could in terms of profits or catch as the stock is less than the optimal stock size.
Pelagic	Pertaining to open ocean, generally denoting fishes dwelling in the upper layers of the water column, relatively fast moving, fast-growing and often shoal forming (e.g. sardine, mackerel, tuna etc.). Distinguished as neretic (shallow pelagic zone over continental shelf), epipelagic (surface to 100 m depth), mesopelagic (200 to 1000 m depth) etc.
Plankton	Small floating organisms that drift more or less passively with ocean currents (distinguished from nekton which actively swim in the water), generally classified as phytoplankton (plant) and zooplankton (animal).
Phytoplankton	Microscopic (unicellular) plant life that floats in the ocean and forms the primary food for many animals, including fish.

Precautionary approach	A safe strategy adopted (based on the available information) in the absence of adequate information on resource status to arrive at the exact strategy for management of resources.
Predator	An animal that captures and eats other animals (Carnivorous).
Port State	The state in whose port a vessel (of any flag) is registered for operation.
Quota	A limit on the weight of fish that may be caught in a particular stock or area; a bag limit is the quota (usually in numbers of fish caught) applied to recreational fisheries.
Recruitment	The addition of young to a fish stock.
Recruitment overfishing	A level of fishing in which the adult stock is reduced to the extent that recruits produced are insufficient to maintain the population.
Rent	The return to owner of the factor of production.
Revenue	Value of the catch that is landed.
Rio Declaration	Rio de Janeiro (1992) a global agenda for action in supporting sustainable development. Protection of the ocean, all kind of seas, including enclosed and semi enclosed seas and coastal areas and the protection, rational use and development of their living resources.
Sensitivity analysis	Analysis involving varying the key parameters in a model and assessing the impact of changes in the parameters on the model solution.
Selective fishing gear	A gear designed to capture a set of targeted species without catching any unwanted species.
Shellfish	Aquatic invertebrate animals having outer shell or inner bone-like structure (like crab, shrimp, lobster, oyster, squid etc.)
Stakeholder	An individual or a group that has an interest in a resource and its use.
State	A nation or a country as often denoted as 'Coastal State', 'Member State' etc. (distinguish the usage of 'maritime state' which means a province of a 'Coastal State'). In particular, 'State' include European Community (Art.1.4)
Straddling stock	Stock or stocks of associated species occurring both within the Exclusive Economic Zone and in an area beyond and adjacent to the zone. [The United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks addresses the issues of Conservation of Straddling Stock]

Subsistence fishery	A fishery in which indigenous people catch fish for their own consumption.
Survival rate	The percentage of individuals in a population that survive over a time interval (contrast to mortality rate)
Target species	A species for whose capture a fishing gear (operation) is designed (e.g. shrimp in the case of shrimp trawl); but a redundant term in a multi-species fishery
Traditional fisherman	Those who are fishermen by birth and fishing as their ancestral occupation.
Traditional fisheries\ Artisanal fisheries (FAO)	Traditional fisheries involving fishing households (as opposed to commercial companies), using relatively small amount of capital and energy, relatively small fishing vessels (if any), making short fishing trips, close to shore, mainly for local consumption.
Traditional fishing zone	A marine area in which a group of people living on the adjacent coast has exclusive rights to fish on a subsistence basis.
Trawling	A bag-like conical net towed in water at bottom (bottom trawling) or column (mid-water trawling) and kept open by otter board (otter trawling) or by two boats (bull trawling); Trawler is a mechanised boat engaged in operation of trawl net
Technology creep	A gradual increase in the efficiency of fishing gear and methods, which results in increase in effective fishing effort.
Total allowable catch (TAC)	The maximum catch allowed (equal to the sum of ITQs) from a fishery in accordance with a specified management plan. For most quota management stocks, the total allowable catch is set at a level that either moves the stock towards, or maintains the stock at or above a biomass level that can support the maximum sustainable yield
Total mortality	The sum of natural and fishing mortality
Transboundary	Species or ecosystems spread in the political boundaries of two or more States.
UNCLOS	The *United Nations Convention on the Law of the Sea* (of 10 December 1982) is the most important international legal instrument providing the framework and basis for most of the issues of marine resources.
Voluntary agreements	International agreements other legal instruments not binding but voluntary (Soft laws)

Acronyms Used

AAI	Aquaculture Authority of India
ABNJ	Area Beyond National Jurisdiction
ALDFG	Abandoned, Lost or otherwise Discarded Fishing Gears
AR	Artificial Reefs
ASC	Aquaculture Stewardship Council
BAP	Best Aquaculture Practices
BMP	Best Management Practice
BOBP-IGO	Bay of Bengal Programme - Inter Governmental Organization
BRICS	Brazil Russia India China South Africa
CAA	Coastal Aquaculture Authority
CBA	Capture Based Aquaculture
CBD	Convention on Biodiversity
CBF	Culture Based Fisheries
CCAMLR	Convention on Conservation of Antarctic Marine Living Resources
CCRF	Code of Conduct for Responsible Fisheries
CFC	Chlorofluorocarbon
CIBA	Central Institute of Brackishwater Aquaculture
CICEF	Central Institute of Coastal Engineering for Fishery
CIFA	Central Institute of Freshwater Aquaculture
CIFNET	Central Institute of Fisheries Nautical Engineering &Training
CIFRI	Central Inland Fisheries Research Institute
CIFT	Central Institute of Fisheries Technology
CITES	Convention on International Trade in Endangered Species of Wild Flora and Fauna
CMFRI	Central Marine Fisheries Research Institute
CMLRE	Centre for Marine Living Resources and Ecology
CMS	Convention on Migratory Species
CODEX	Codex Alimentarius Commission
COFI	Committee on Fisheries of FAO
CRZ	Coastal Regulation Zone
CSIR	Council of Scientific and Industrial Research

CVCA	Critically Vulnerable Coastal Areas
CZMA	Coastal Zone Management Authority
DADF	Department of Animal husbandry, Dairying and Fisheries
DARE	Department of Agricultural Research & Education
DCFR	Directorate of Coldwater Fisheries Research
DFC	District Fisheries Council
DOF	Department of Fisheries
EAFM	Ecosystem Approach to Fisheries Management
EBFM	Ecosystem Based Fisheries Management
EBSA	Ecologically or Biologically Significant Marine Areas
EEZ	Exclusive Economic Zone
EIA	Environment Impact Assessment
EIC	Export Inspection Council
EPA	Environmental (Protection) Act, 1986
ETP	Endangered Threatened and Protected Species
FAD	Fish Aggregating Device
FAO	Food and Agriculture Organization
FMC	Fishery Management Council
FDC	Fisheries Development Commissioner
FMP	Fishery Management Plan
FSI	Fishery Survey of India
FSSAI	Food Safety Standards Authority of India
GoI	Government of India
GoM	Gulf of Mannar
GoM-FMC	Gulf of Mannar Sea Fisheries Management Council
HACCP	Hazard Analysis Critical Control Point
HCFC	Hydrochloroflurocarbon
HCR	Harvest Control Rule
ICAR	Indian Council of Agricultural Research
ICES	International Council for the Exploration of the Sea
ICSF	International Collective in Support of Fishworkers
IGO	Inter-Governmental Organization

ILO	International Labour Organization
IMFC	Indian Marine Fisheries Code
IMO	International Maritime Organization
INCOIS	Indian National Centre for Ocean Information Services
IOTC	Indian Ocean Tuna Commission
IWPA	Indian Wildlife (Protection) Act, 1972
MARPOL	International Convention for the Prevention of Pollution from Ships
MCS	Monitoring, Control & Surveillance
MEA	Multilateral Environmental Agreements
MEW	Marine Enforcement Wing
MFRA	Marine Fisheries Regulation Act
MoA & FW	Ministry of Agriculture and Farmers Welfare
MoC	Ministry of Commerce
MoD	Ministry of Defense
MoEA	Ministry of External Affairs
MoEF&CC	Ministry of Environment, Forest and Climate Change
MoES	Ministry of Earth Sciences
MoFP	Ministry of Food Processing
MoHRD	Ministry of Human Resource Development
MoL	Ministry of Law
MoS	Ministry of Shipping
MPEDA	Marine Products Export Development Authority
MSY	Maximum Sustainable Yield
NAPC	National Aquatic Products Council
NBAI	National Biodiversity Authority of India
NCSCZM	National Centre for Sustainable Coastal Zone Management
NCZMA	National Coastal Zone Management Authority
NEAS-FMC	North Eastern Arabian Sea Fisheries Management Council
NFDB	National Fisheries Development Board
NGO	Non-Government Organization
NIFPHATT	National Institute of Fisheries Post Harvest Technology & Training

nm	Nautical Mile
NMFMC	National Marine Fisheries Management Council
NPMF	National Policy on Marine Fisheries
NWBOB-FMC	North-West Bay of Bengal Fisheries Management Council
OIE	World Organisation for Animal Health
PB	Palk Bay
PB-FMC	Palk Bay Fisheries Management Council
PSMA	Port State Measures Agreement
RFMO	Regional Fisheries Management Organization
SAARC	South Asian Association for Regional Corporation
SCZMA	State Coastal Zone Management Authority
SEAI	Seafood Exporters Association of India
SEAS-FMC	South Eastern Arabian Sea Fisheries Management Council
SFC	State Fisheries Council
SFD	State Fisheries Department
SMRSD	Stratified Multistage Random Sampling Design
SPS	Sanitary and Phytosanitary
SSF guideline	Securing Sustainable Small-scale Fisheries guideline
SWBOB-FMC	South-West Bay of Bengal Fisheries Management Council
TAC	Total Allowable Catch
TBT	Technical Barriers to Trade
TOR	Terms of References
TURF	Territorial User Rights for Fishing
UNCED	United Nations Conference on Environment and Development
UNCLOS	United Nations Convention on the Law of the Sea
UNFSA	United Nations Fish Stock Agreement
VAP	Value Added Products
VFC	Village Fisheries Council
VME	Vulnerable Marine Ecosystem
VMS	Vessel Monitoring System
WTO	World Trade Organization
WWF	World Wide Fund for Nature
ZSI	Zoological Survey of India

Chapter-1

Introduction

According to the Living Blue Planet Report[1] the state of the global marine fisheries is grave and worrying. The global fishing fleet is 2-3 times larger than what the oceans can sustainably support. In other words, people are taking far more fish out of the ocean than can be replaced by those remaining. As a result, 31 per cent of global fish stocks are classified as overfished and a further 58 per cent as fully exploited, with no ability to produce greater harvests[2].

The situation in India is a little different. As a developing nation the country's marine fisheries are in the process of attaining full development. India's marine fish production has increased more than seven times, from 0.53 million tonnes in 1950 to 3.9 million tonnes in 2012, even as exports of marine fish and fish products increased from Rs. 35 crores in 1970 to Rs. 33,000 crores in 2014. About 80-88% of the estimated potential yield of 4.41 million tonnes[3] are under exploitation. A recent national assessment of fish stock status indicates that 74% of the resources studied are in healthy condition[4] with few stocks in depleted and collapsed status. The resources support the livelihoods of nearly 4 million fisher folk having 0.99 million active fishers[5]. There are about 239,000 fishing crafts engaged in marine capture fisheries, of which 59,000 are mechanized crafts, 76,000 motorized and the rest non-mechanized. In mechanized sector, there are about 29,000 trawlers. Though fishing is concentrated mainly in the depth zone up to 100 m, trawlers operate up to 400 m depth zone[4].

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[1] WWF, 2015. Living blue planet report. Species, habitats and human well-being. Eds. Tanzer, J et al. WWF, Gland, Switzerland. 68 pp.

[2] FAO, 2016. The State of World Fisheries and Aquaculture 2016. Contributing to food security and nutrition for all. Rome. 200 pp.

[3] Anonymous, 2011. Report of the Working Group for Revalidating the Potential of Fishery Resources in the Indian Exclusive Economic Zone. New Delhi. DAHDF.

[4] Sathianandan, T V, Jayasankar, J, Kuriakose, S, Mini, K G and Mathew, W T ,2011. Indian marine fishery resources: optimistic present, challenging future. Indian Journal of Fisheries, 58 (4). pp. 1-15.

[5] CMFRI , 2012. Marine Fisheries Census 2010 Part I India. CMFRI, Kochi and Ministry of Agriculture, Krishi Bhavan, New Delhi.

In India, recent stock assessment of exploited fisheries have indicated that most fish stocks are being exploited close to MSY level, some overexploited and few underexploited[6,7]. However, it appears that for many of the local, small, tropical, short–lived species short–term fluctuations are not very significant, even if it is caused by excessive fishing pressure[8]. Because of the biological characteristics of the species, the situation is reversed very soon naturally. The fished taxa diversity in Indian marine fisheries is high with 667 species landed in the country in 2012 using about 30 craft-gear combinations[9]. #Worm et al.[10] in their global assessment noted that rates of recovery were positively correlated with fish diversity as enhanced recovery was noted when fishers switch more readily among target species, potentially providing overfished taxa with a chance to recover. In the tropics, the fluctuation in abundance of fish stocks in the absence of reduction in effort appears to be a function of their inherent biological capacities such as fast growth, high fecundity and speedy regeneration times[8].

In spite of these biological advantages, the marine fisheries in India is beset with seemingly insurmountable problems. A recent assessment puts average overcapacity to the tune of 56% across different gears and states. This varies from a high 430% in the mechanized sector to a low 18% in motorized sector. This overcapacity in the result of Fish competition and an controlled expansion of fleets. For example the expansion of vessel and gear sizes and inefficient increase in engine capacity in most fishing fleets in India. This overcapacity has happened because of lack of controls and lack of clear direction and policy in harvesting of natural marine living resources.

Much earlier, recognizing that fisheries all over the world were in a similar quagmire, the FAO Committee of Fisheries Meeting in 1991 called for more responsible practices and better management. The 1992 Cancun Conference on Responsible Fishing called on FAO to prepare a Code of Conduct. The technical consultations during 1992-1995 lead to adoption of a Code of Conduct for Responsible Fisheries (CCRF) by FAO Conference of Member Governments on 31st October, 1995.

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[7]Pillai, N. G. K. 2011. Marine Fisheries and Mariculture in India. In: Marine Fisheries and Mariculture in India. Narendra Publishing House, pp. 1-326.

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[10]Worm B, Barbier EB, Beaumont N, Duffy JE, Folke C, Halpern BS, Jackson JB, Lotze HK, Micheli F,Palumbi SR, Sala E, Selkoe KA, Stachowicz JJ, Watson R. 2006. Impacts of biodiversity loss on ocean ecosystem services. Science. 314(5800):787-90.

The principal goals of CCRF are:

- Sustainable benefits from fisheries in terms of food, employment, trade and economic well-being for people throughout the world
- Provides principles and standards applicable to the conservation, management and development of all fisheries

The Code is voluntary and the main actors are all members and non-members of FAO, fishing entities, sub-regional, regional and global organizations, governmental or non-governmental, and all other interested stakeholders concerned with fisheries resources and fish trade. There are 12 main articles in the Code with 221 sub-articles. The subject area of 12 main articles of the Code and the number of sub-articles under each are given in table below.

Article #	Area	Number of sub-articles
Article 1:	Nature and Scope of the Code	4
Article 2:	Objectives of the Code	-
Article 3:	Relationship with Other International Instruments	2
Article 4:	Implementation, Monitoring and Updating	4
Article 5:	Special Requirements of Developing Countries	2
Article 6:	General Principles	19
Article 7:	Fisheries Management	46
Article 8:	Fishing Operations	52
Article 9:	Aquaculture Development	22
Article 10:	Integration of Fisheries into Coastal Area Management	15
Article 11:	Post-Harvest Practices and Trade	35
Article 12:	Fisheries Research	20
12	**Total**	**221**

The objective of the Code is to establish principles, criteria and guidance to facilitate the exploitation and utilization of fisheries resources in a responsible and sustainable manner. Under Article 4, Implementation, Monitoring and Updating, the Code calls for all entities and persons concerned with the conservation, management and utilization of resources and trade in fish and fishery products to collaborate in the fulfilment and implementation of the objectives and principles contained in the Code. FAO, in accordance with its role within the United Nations system, will monitor the application and implementation of the Code and its effects on fisheries. The Code also calls for special attention to the capacity of developing countries to implement the recommendations of this Code, and where appropriate, encourages financial, technical and scientific assistance to enhance the ability of those countries to implement the code as well as to develop their own fisheries[11,12].

In Article 7, fisheries management, States and all those engaged in fisheries management should, through an appropriate policy, legal and institutional framework, adopt measures for the long-term conservation and sustainable use of fisheries resources. Given in Article 8 is the principle that, States should ensure that only fishing operations allowed by them are conducted within waters under their jurisdiction that these operations are carried out in a responsible manner, maintaining a record of all authorizations to fish, regularly updated statistical data and within the framework of sub-regional or regional fisheries management organizations or arrangements, cooperate to establish systems for monitoring, control and surveillance. States should enhance the knowledge and skills of fishers, and where appropriate their professional qualifications, through education and training programs. Article 11 affirms that States should provide appropriate laws and regulations relating to post harvest practices and fish trade to enable responsible fish utilization and responsible international trade in fishery products in accordance with the World Trade Organization (WTO) Agreement.

The Code is a wide ranging living document and even after 20 years, its relevance is indisputable. The FAO and other international agencies periodically conduct evaluations on the implementation status of the code in several countries. A global assessment[13] by the Fisheries Centre, University of British Columbia has also evaluated

[11] FAO, 1995.Code of Conduct for Responsible Fisheries. FAO Rome, 49 pp.
[12] FAO, 2011.Code of Conduct for Responsible Fisheries. FAO Rome, 91 pp.
[13] Pitcher, T.J., Kalikoski, D. and Pramod, G. (eds),2006 . Evaluations of Compliance with the UN Code of Conduct for Responsible Fisheries. Fisheries Centre Research Reports 14(2).

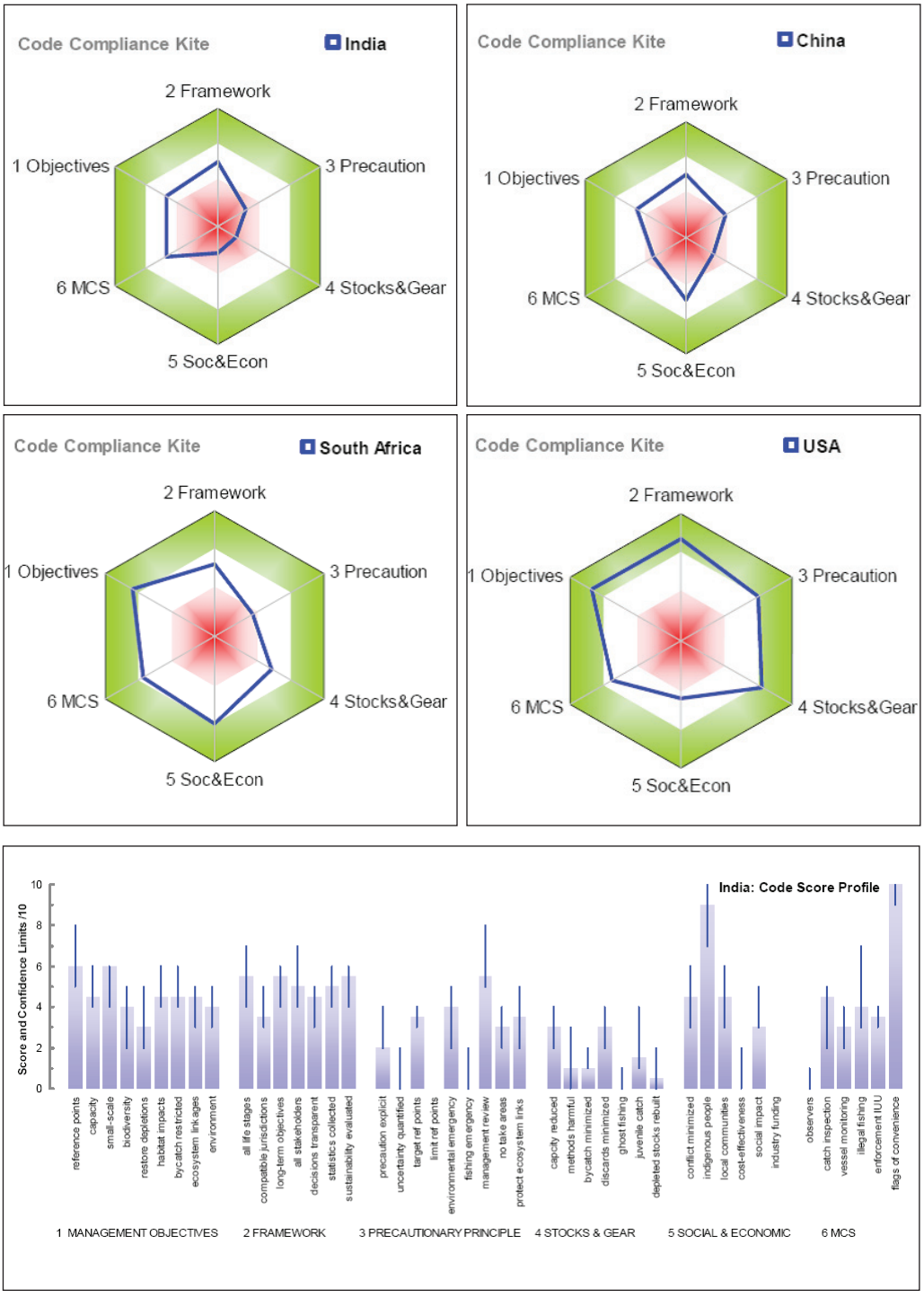

Fig. 1. Code compliance Quadilateral - 4 sides - 2 pair of equel length of selected countries and India's detailed scores for compliance (bar diagram). Source Varkey et al., 2006[14]

India's compliance to the Code, particularly Article 7[14]. The evaluation kite diagram for India (Fig.1) shows the overall scores for each of the six evaluation fields in relation to good scores (green shading) and fail scores (red shading). Fields 1 to 3 (top) express intentions, while fields 4 to 6 (lower) cover implementation. A comparison of compliance is made with China, South Africa (both BRICS nations) and the USA. India's scores are optimistically high for intention and poor for implementation. In MCS (monitoring, control and surveillance) India scores marginally better than China because of the catch monitoring system that is in place. Recent assessments on compliance are of Article 8 in the state of Kerala[15] and of Article 7 on bagnet fisheries in Maharashtra[16].

The Code has also been translated into several Indian languages, and a number of awareness campaigns for fishers and fishery managers have been made by several agencies[17,18]. In spite of this, Varkey *et al.*[14] have opined that many fisheries scientists in India seem unaware of many of the fisheries management concepts detailed in the Code articles. Apart from the limited awareness campaigns and rather in frequent assessments on implimentation, no serious attempts have been made to bring fisheries management in India on to a sound footing through adoption of the Code. A critical appraisal of the fisheries management system in India by the World Bank[19] indicated low compliance to CCRF article 7 and a poor fisheries management score of 2/6. The report further states that India could improve its performance in terms of national policy and management systems, particularly for inshore waters where we see the highest concentration of fishers, vessels and conflict.

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[14] Varkey D, Ganapathiraju P. and Pitcher T. J. (2006). An estimation of compliance of the fisheries of India with article 7 (fisheries management) of the FAO (UN) code of conduct for responsible fishing. 28 pages in Pitcher, T. J., Kalikoski, D. and Pramod, G.(eds) Evaluations of Compliance with the FAO (UN) Code of Conduct for Responsible Fisheries. Fisheries Centre Research Reports 14 (2). University of British Columbia, Vancouver.

[15] Sunil S. A., P. M. Krishnan, J. Jayasankar, Asha Landge and Latha Shenoy. 2014. Evaluation of Compliance of Marine Fisheries of Kerala. Fish Technology 51 (2014) : 167 – 172.

[16] Kumawat, T, Shenoy, L, Chakraborty, S. K. Deshmukh, V. D. and Raje, S. G. 2015. Compliance of bag net fishery of Maharashtra coast, India with Article 7 of the FAO Code of Conduct for Responsible Fisheries. Marine Policy, 56. pp. 9-15.

[17] Yadava, Y. 2000. Report of the National Workshop on the Code of Conduct for Responsible Fisheries. Bay of Bengal Programme, Chennai, India,23 pp.

[18] Ramachandran, C. 2002. ഉത്തരവാദിത്വപര മത്സ്യബന്ധന പെരുമാറ്റച്ചട്ടം . (FAO Code of Conduct for Responsible Fisheries)(Malayalam translation). Project Report. CMFRI, Kochi.

[19] World Bank , 2010. India Marine Fisheries: Issues, opportunities and transitions for sustainable development. Report No. 54259-IN. 101p.

Current Regulatory Regime

Like many developing countries, India's fisheries are governed by a plethora of government agencies. According to the Seventh Schedule of the Constitution of India, which specifies subjects and jurisdiction of the Union and State Governments, the responsibility for fisheries and marine habitats is spread over several Ministries and agencies at the Central and State levels. In the Union Government, Ministries of Agriculture, Commerce and Industry, Environment and Forests, Food Processing Industries and Defence play important roles in the fisheries sector. See infographic (Fig.2) adapted from ICSF.

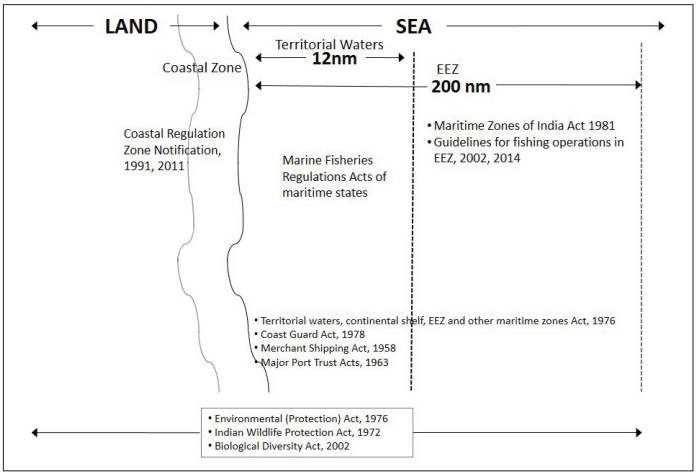

Fig. 2. Infographic on acts and regulations impacting marine fisheries in the EEZ, territorial waters and land. Adapted from ICSF, Chennai

The regulatory instruments governing marine fisheries (Marine Fisheries Regulation Acts – MFRAs) in the territorial waters (up to 12 nautical miles) of the 9 maritime states are in place. These were enacted by the maritime states based on a model bill that the Union Government circulated in 1979. These have also been amended from time to time and new acts have also been put in place by some maritime states (see Fig. 3). However, most MFRAs are outdated since amendments have not kept pace with the dynamic nature of fisheries.

The area beyond the 12-nautical mile territorial sea up to 200 nautical miles from the baseline, as well as major fishing harbours, fishing vessel industry, seafood export trade, and marine and inland research and training are on List I, or the Union List, which place them under the jurisdiction of the Union Government. However, except for certain guidelines for operating Indian flagged imported fishing vessels, there are no

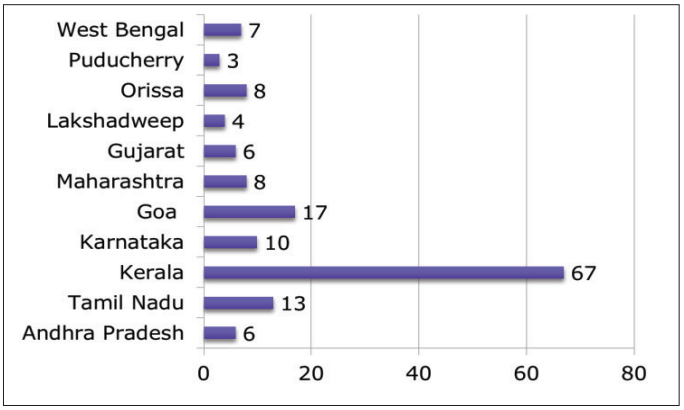

Fig. 3. Number of fisheries legislations/amendments passed by different maritime states of India (data source ICSF, Chennai)

comprehensive rules and regulation governing this area.

Other areas related to fisheries, such as the protection of wild animals including endangered species of wild fauna (for example, whale shark, marine turtles, several species of bivalves and gastropods) and flora (for example, mangroves), protection of coastal zone and marine biodiversity, and prevention of land-based sources of pollution are on List III, or the Concurrent List, which places the responsibility on both the Union and the State Governments. List III also includes all ports other than major fishing harbours.

According to the World Bank[19] the current fisheries legal framework in India is far from comprehensive; it contains a number of gaps, is outdated in many areas, not fully consistent with India's international obligations, and focused on foreign access and development, with less emphasis on fisheries management. Very clearly, there is no system in place to translate the fishery management advisories brought forth by the fishery research institutions into rules and regulations for sustainable management. The CCRF gives guidance to States on how to go about putting a system and practice in place for effective fisheries administration.

Considering these inadequacies, implementing the CCRF would pave way for a just, equitable and sustainable fisheries administration system in the country which is in tune with global standards. It is in this context that present effort is made on developing an Indian Marine Fisheries Code (**IMFC**) which will help India operationalize the FAO-CCRF.

Chapter-2

APPROACH AND METHODS

Approach

Recognizing the practical issues in implementing the Code at the ground level, several countries have adapted the CCRF in their own way. Notable among these attempts are that made by the USA, Cambodia, Philippines and Australia. The commonest of these attempts was to take the essential message of the FAO Code and develop a country-specific code. On the other extreme is the adoption of the Code with slight modifications here and there and deletion of certain seemingly unimportant portions. In such attempts, there is a likelihood of missing some of the components of the FAO CCRF.

Understanding these eventualities, the authors in their first meeting thoroughly discussed the matter and came to a consensus on the approach to be adopted for adapting the code to the Indian situation. The approach agreed upon by the members was unique in many ways as could be understood from the salient features listed below:

1. The FAO-CCRF as a whole has to be considered as it is as the template for the Indian Code for implementation.

2. The original articles shall not be altered or removed.

3. Against each article and sub article there would be brief descriptive answer to the following questions:

    a) ***How*** this article would be implemented on ground?

    b) ***What*** would be the standards applied?

    c) ***Who*** would be responsible for implementing the articles?

4. A council based fisheries management regime would be mooted as the basis for implementation of the adapted CCRF.

5. The Institutions and linkages necessary for this shall be prepared and appended to the document.

Methods

The FAO-CCRF had conveniently treated the different subject areas in different articles. This segregation was taken advantage of by the authors in allocating the articles to appropriate expert member for preparing the draft document. Thus in the first meeting itself the following responsibilities were assigned to the members as given Table-1.

Table 1. Details of theArticles of the code and the experts assigned to prepare the draft.

Article –Topic	Responsibility of
Article 3. Relationship with other international instruments	K. Vijayakumaran
Article 5. Special requirements of developing countries	
Article 4. Implementation monitoring and updating	T. V. Sathianandan
Article 6. General Principles	Prathibha Rohit
Article -7. Fisheries Management	K.S. Mohamed, P.U. Zacharia, T.V. Sathianandan
Article 8. Fishing Operations	R. Narayanakumar
Article 9. Aquaculture development	G. Maheshwarudu
Article 10. Integration of fisheries into coastal area management	V. Kripa
Article 11. Post-harvest practices and trade	K.K. Joshi T. V. Sankar K . Ashok Kumar Leela Edwin Bindu J. Nikita Gopal Pravin Puthra
Article - 12. Fisheries Research	P.U. Zacharia

The members prepared the draft documents as assigned and one by one they were thoroughly discussed by the committee and finalized after incorporating the comments and suggestions. In addition to the inputs from the members, consultation with a team of scientists from CIFT was also carried out for getting a correct picture on articles related to fishing operations as well as post-harvest practices and trade. Altogether eight meetings of 1-3 day duration were convened over a period of one year. All members attended and contributed significantly by their intervention.

Similarly the responsibility for preparing different addendums to the document was shared by the authors. On completion of the drafts of main body as well as addendums a consolidated draft document was prepared and communicated to a couple of external experts for review and comments.

The results of the joint consultations and discussions which led to the development of this document is presented in table format in different chapters starting from Article 3. In the standards column, where there are no specific standards, it was kept blank. Article 1 which deals with the nature and scope of the Code and Article 2 which outlines the objectives of the Code are not presented in this format, but plainly stated as such for the sake of completeness.

Subsequent to the development of the draft document, expert consultations were done as per below Table. The outcomes of the consultations and expert reviewers were again circulated among members and based on their comments, all possible changes were incorporated in the document.

No.	Expert Domain	Number of consultations
1	Marine fisheries research and management	6
2	ICAR headquarters – DDG (Fy)/ADG (M.Fy)	2
3	Directors of ICAR fisheries research institutes	6
4	Department of Animal husbandry Dairying & Fisheries	3
5	Fisheries governance departments	12
6	National Biodiversity Authority	1
7	Ministry of Environment, Forests & Climate Change	2
8	Ministry of Earth Sciences	2
9	National Institute of Oceanography	1
10	Non-Governmental Organizations	6
11	Fishermen association/ trade union leaders	10

This document envisages to moot a Council based system of fisheries management with the creation of several new regulatory bodies for sustainable fisheries governance. The first is the National Marine Fisheries Management Council (**NMFMC**) which would be an apex national co-management body which would have under it several councils at the regional, state, district and village levels. The details of this body with regard to its structure and functioning are given in Annex 1. The second new body is the National Aquatic Products Council (**NAPC**), the details of which are provided in Annex 2. This document also redefines the role and scope of the present Coastal Aquaculture Authority as Aquaculture Authority of India (**AAI**), the details of which are given in Annex 3.

A glossary of terms and acronyms used are provided in the beginning for ease in following the text.

Chapter-3

Article 1: Nature and scope of the Code*

1.1 This Code is voluntary. However, certain parts of it are based on relevant rules of international law, including those reflected in the United Nations Convention on the Law of the Sea of 10 December 1982. The Code also contains provisions that may be or have already been given binding effect by means of other obligatory legal instruments amongst the Parties, such as the Agreement to Promote Compliance with International Conservation and Management Measures by Fishing Vessels on the High Seas, 1993, which, according to FAO Conference resolution 15/93, paragraph 3, forms an integral part of the Code.

1.2 The Code is global in scope, and is directed toward members and nonmembers of FAO, fishing entities, sub-regional, regional and global organizations, whether governmental or non-governmental, and all persons concerned with the conservation of fishery resources and management and development of fisheries, such as fishers, those engaged in processing and marketing of fish and fishery products and other users of the aquatic environment in relation to fisheries.

1.3 The Code provides principles and standards applicable to the conservation, management and development of all fisheries. It also covers the capture, processing and trade of fish and fishery products, fishing operations, aquaculture, fisheries research and the integration of fisheries into coastal area management.

1.4 In this Code, the reference to States includes the European Community in matters within its competence, and the term fisheries applies equally to capture fisheries and aquaculture.

*Note: Material adopted from FAO, 1995.Code of Conduct for Responsible Fisheries. FAO Rome, 49 pp.

Chapter-4

Article 2: Objectives of the Code*

Article 2: Objectives of the Code*

a) Establish principles, in accordance with the relevant rules of international law, for responsible fishing and fisheries activities, taking into account all their relevant biological, technological, economic, social, environmental and commercial aspects;

b) Establish principles and criteria for the elaboration and implementation of national policies for responsible conservation of fisheries resources and fisheries management and development;

c) Serve as an instrument of reference to help States to establish or to improve the legal and institutional framework required for the exercise of responsible fisheries and in the formulation and implementation of appropriate measures;

d) Provide guidance which may be used where appropriate in the formulation and implementation of international agreements and other legal instruments, both binding and voluntary;

e) Facilitate and promote technical, financial and other cooperation in conservation of fisheries resources and fisheries management and development;

f) Promote the contribution of fisheries to food security and food quality, giving priority to the nutritional needs of local communities;

g) Promote protection of living aquatic resources and their environments and coastal areas;

h) Promote the trade of fish and fishery products in conformity with relevant international rules and avoid the use of measures that constitute hidden barriers to such trade;

i) Promote research on fisheries as well as on associated ecosystems and relevant environmental factors; and

j) Provide standards of conduct for all persons involved in the fisheries sector.

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*Note: Material adopted from FAO, 1995.Code of Conduct for Responsible Fisheries. FAO Rome, 49 pp.

Chapter-5

Article 3: Relationship with other international instruments

ARTICLE 3. RELATIONSHIP WITH OTHER INTERNATIONAL INSTRUMENTS

Article/ Subsection	How	Standard	Who
3.1 The Code is to be interpreted and applied in conformity with the relevant rules of international law, as reflected in the United Nations Convention on the Law of the Sea, 1982. Nothing in this Code prejudices the rights, jurisdiction and duties of States under international law as reflected in the Convention.	Creating expert groups /advisory group with members drawn from academic institutions and policy think-tanks, proficient in the UNCLOS and relevant international laws include representation from the expert group in the delegation to the meetings /sessions of the international Conventions and meeting. Establishing Advanced Study Centers in selected Law Universities and promoting liberal analysis of the provisions and rights as per law and ground realities. Embarking on legal education at the national level to the provincial government functionaries responsible for the enactment and implementation of the domestic laws.	As per the provisions of the UNCLOS	NMFMC (See annex 1 for details) With the support from Core Marine Fisheries Research Institutions and relevant Ministries such as MoEF&CC, MoEA, MoES, Law Ministry and MoHRD
3.2. The Code is also to be interpreted and applied: a) In a manner consistent with the relevant provisions of the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks; b) In accordance with other applicable rules of international law, including the respective obligations of States pursuant to international agreements to which they are party; and c) In the light of the 1992 Declaration of Cancun, the 1992 Rio Declaration on Environment and Development, and Agenda 21 adopted by the United Nations Conference on Environment and Development (UNCED), in particular Chapter 17 of Agenda 21, and other relevant declarations and international instruments.	Same as 3.1 Including experts on migratory fish stocks on special discussions related to the relevant conventions Promoting regional studies on migratory species under the leadership of India Including relevant subjects in the curriculum of fisheries education at the national level Publicizing the implications and obligations of the country being a party to the various international instruments Representing the various forums with expert delegations who could articulate the country's position The provisions with respect to special status of developing coastal states (Art-5) in availing technical and funding support from available sources has to be used.	As mandated in the instruments	NMFMC With the support from CMFRI/FSI/ CIFE and RFMOs

Chapter-6

Article 4: Implementation, monitoring and updating

ARTICLE 4. IMPLEMENTATION, MONITORING AND UPDATING

Article/ Subsection	How	Standard	Who
4.1.1. All members and non-members of the FAO, fishing entities and relevant sub regional, regional and global organizations, whether governmental or non-governmental, and all persons concerned with the conservation, management and utilization of fisheries resources and trade in fish and fishery products should collaborate in the fulfillment and implementation of the objective and principles contained in this Code.	The National Marine Fisheries Management Council through DADF will facilitate the collaboration between various agencies in fulfilling the implementation of objectives and principles of CCRF.	CCRF	NMFMC, DADF, State Councils, Regional Councils etc.
4.1.2. FAO, in accordance with its role within the United Nations system, will monitor the application and implementation of the Code and its effect on fisheries and the Secretariat will report accordingly to the Committee on Fisheries (COFI). All States, whether member or non-members of FAO, as well as relevant international organizations, whether governmental or non-governmental should actively cooperate with FAO in this work.	As a responsible member of FAO India would cooperate in monitoring and implementation of the Code.	CCRF	NMFMC
4.1.3. FAO, through its competent bodies, may revise the Code, taking into account developments in fisheries as well as reports to COFI on the implementation of the Code.	The NMFMC would give necessary feedback and assistance for periodic revision of the Code.	CCRF	NMFMC
4.1.4. States and international organizations, whether governmental or non-governmental, should promote the understanding of the Code among those involved in fisheries, including, where practicable, by the introduction of schemes which would promote voluntary acceptance of the Code and its effective application.	Having voluntarily accepted the Code, India, through the NMFMC would device mechanisms to promote the understanding of the Code among those involved in fisheries and this will be implemented by DADF through state DOFs.	CCRF	NMFMC / DADF DOF od all maritime states

Chapter-7

Article 5: Special requirements of developing countries

ARTICLE 5 – SPECIAL REQUIREMENTS AS A DEVELOPING COUNTRY

Article/ Subsection	How	Standard	Who
5.1. The capacity of developing countries to implement the recommendations of this Code should be duly taken into account.	Taking note of the capacity gap, the central and State Ministries / Departments concerned with the implimentation of the Code must intervene appropriately in the negotiations claiming special status and relaxations wherever applicable.		DADF DOF of all maritime states
5.2 In order to achieve the objectives of this Code and to support its effective implementation, countries, relevant international organizations, whether governmental or non-governmental, and financial institutions should give full recognition to the special circumstances and requirements of developing countries, including in particular the least-developed among them, and small island developing countries. States, relevant intergovernmental and non-governmental organizations and financial institutions should work for the adoption of measures to address the needs of developing countries, especially in the areas of financial and technical assistance, technology transfer, training and scientific cooperation and in enhancing their ability to develop their own fisheries as well as to participate in high seas fisheries, including access to such fisheries.	Invoking the special status, invite support and funding from development agencies and technical support from relevant agencies to promote capacity building among the provincial functionaries. Translating the national experience to regional initiatives for the benefit of similarly placed developing coastal states and building consensus on regional management initiatives in the overall spirit of South-South cooperation. Representing the various forums with expert delegations who could articulate the country's position and express solidarity with developing coastal states and small island nations to underline their special status with respect to the right on resources.		DADF and State fisheries Departments with support from IGOs and Core Marine Fisheries Research Institutions. MoEA on issues of international significance

Chapter-8

Article 6: General principles

ARTICLE 6. GENERAL PRINCIPLES

Article/ Subsection	How	Standard	Who
6.1 States and users of living aquatic resources should conserve aquatic ecosystems. The right to fish carries with it the obligation to do so in a responsible manner so as to ensure effective conservation and management of the living aquatic resources.	Adopting appropriate measures of conservation and management of aquatic ecosystems.	Global standards in fisheries management and conservation.	NMFMC, DADF, Core Marine Fisheries Research Institutions DOF of all maritime states
6.2 Fisheries management should promote the maintenance of the quality, diversity and availability of fishery resources in sufficient quantities for present and future generations in the context of food security, poverty alleviation and sustainable development.	By formulating a comprehensive national fishery management policy which should be revised every ten years, ensuring sustainable exploitation and utilization, duly taking in to account the livelihood and food security.	Global standards in fisheries management and conservation.	NMFMC, DADF
6.3 States should prevent overfishing and excess fishing capacity and should implement management measures to ensure that fishing effort should be commensurate with the productive capacity of the fishery resources and their sustainable utilization. Measures to rehabilitate populations as far as possible and when appropriate.	By building mechanisms in Core Marine Fisheries Research Institutions to monitor continuously the sustainable yields and fishing capacities in the country. In case of overcapacity the competent authorities should design and implement schemes of license buy-back, alternate livelihood etc.	Global standards in fisheries management and conservation.	Core Marine Fisheries Research Institutions, DADF, DOF of all maritime states.
6.4 Conservation and management decisions for fisheries should be based on the best scientific evidence available, also taking into account traditional knowledge of the resources and other habitat, as well as relevant environmental, economic and social factors. States should assign priority to undertake research and data collection in order to improve technical and scientific knowledge of fisheries including their interaction with ecosystem. In recognizing the trans-boundary nature of any aquatic ecosystem, Sates should encourage bilateral and multilateral cooperation in research, as appropriate.	By entrusting the Core Marine Fisheries Research Institutions to generate necessary scientific information to formulate conservation and management measures. By encouraging Core Marine Fisheries Research Institutions to undertake bilateral and multilateral research on issues of trans-boundary nature.	Globally accepted fisheries research methodologies.	NMFMC, DADF, Core Marine Fisheries Research Institutions, RFMOs and IGOs.

Article/ Subsection	How	Standard	Who
6.5 States and sub-regional and regional fisheries management organizations should apply a precautionary approach widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment, taking account of the best scientific evidence available. The absence of adequate scientific information should not be used as a reason for postponing or failing to take measures to conserve target species, associated or dependent species and non-target species and their environment.	By making provisions in the MFRAs and other relevant instruments for applying precautionary approach even in the absence of adequate scientific information.		NMFMC, DADF, Core Marine Fisheries Research Institutions.
6.6 Selective and environmentally safe fishing gear and practices should be further developed and applied, to the extent practicable, in order to maintain biodiversity and to conserve the population structure and aquatic ecosystems and protect fish quality. Where proper selective and environmentally safe fishing gear and practices exist, they should be recognized and accorded a priority in establishing conservation and management measures for fisheries. States and users of aquatic ecosystems should minimize waste, catch of non-target species, both fish and non-fish species, and impacts on associated or dependent species.	By entrusting the Core Marine Fisheries Research Institutions to conduct research on selective and environmentally safe fishing practices. By making provisions in the MFRAs and other relevant instruments for encouraging use of those gears which minimizes waste and non-target species.		NMFMC, DADF, Core Marine Fisheries Research Institutions.
6.7 The harvesting, handling, processing and distribution of fish and fishery products should be carried out in a manner which will maintain the nutritional value, quality and safety of the products, reduce waste and minimize negative impacts on the environment.	The protocols developed by Core Marine Fisheries Research Institutions for handling, processing and distribution of fish and fishery products should be implemented by the FSSAI and strictly followed by fishers, seafood exporters and traders.	International seafood standards and FSSAI standards.	Core Marine Fisheries Research Institutions, FSSAI, Fishers, seafood exporters and traders.

Article/ Subsection	How	Standard	Who
6.8 All critical fisheries habitats in marine and fresh water ecosystems, such as wetlands, mangroves, reefs, lagoons, nursery and spawning areas, should be protected and rehabilitated as far as possible and where necessary. Particular effort should be made to protect such habitats from destruction, degradation, pollution and other significant impacts resulting from human activities that threaten the health and viability of the fishery resources.	Core Marine and ancillary fisheries research institutions should identify critical fisheries habitats and design instruments for their protection and rehabilitation (CVCA, EBSA). The competent authorities should incorporate these protection plans into respective rules, regulations and acts.		Core Marine and ancillary fisheries research institutions. NMFMC, MoEF &CC, DOF of all maritime states.
6.9 States should ensure that their fisheries interests, including the need for conservation of the resources, are taken into account in the multiple uses of the coastal zone and are integrated into coastal area management, planning and development.	Though the existing CRZ rules recognize the fishery interests, there are no adequate representation of fishery stakeholders in the process of planning development. NMFMC must ensure adequate representation of the fisher community in CRZ planning process. The fishery interests must be safeguarded with priority in the multiuser context of coastal area development. Also refer 10.4.		NMFMC MoEF&CC
6.10 Within their respective competences and in accordance with international law, including within the framework of sub regional or regional fisheries conservation and management organizations or arrangements, States should ensure compliance with and enforcement of conservation and management measures and establish effective mechanisms, as appropriate, to monitor and control the activities of fishing vessels and fishing support vessels.	By incorporating provisions for a satellite based Vessel Monitoring System and establishing a fishing vessel license control in the MFRAs.		NMFMC, DADF, DOF of all maritime states.

Article/ Subsection	How	Standard	Who
6.11 States authorizing fishing and fishing support vessels to fly their flags should exercise effective control over those vessels so as to ensure the proper application of this Code. They should ensure that the activities of such vessels do not undermine the effectiveness of conservation and management measures taken in accordance with international law and adopted at the national, sub regional, regional or global levels. States should also ensure that vessels flying their flags fulfill their obligations concerning the collection and provision of data relating to their fishing activities.	By incorporating provisions in the existing and new legal instruments to ensure compliance to conservation and management measures as enunciated in the Code and for engaging observers onboard to ensure collection and reporting of catch data as well as compliance to the Code.		NMFMC, DADF, MoS, MoD
6.12 States should, within their respective competences and in accordance with international law, cooperate at sub regional, regional and global levels through fisheries management organizations, other international agreements or other arrangements to promote conservation and management, ensure responsible fishing and ensure effective conservation and protection of living aquatic resources throughout their range of distribution, taking into account the need for compatible measures in areas within and beyond national jurisdiction.	By ensuring sub-regional, regional and global cooperation in conservation and management of aquatic resources within the EEZ and ABNJ.		NMFMC, DADF, RFMOs, IGOs.
6.13 States should, to the extent permitted by national laws and regulations, ensure that decision making processes are transparent and achieve timely solutions to urgent matters. States, in accordance with appropriate procedures, should facilitate consultation and the effective participation of industry, fish-workers, environmental and other interested organizations in decision making with respect to the development of laws and policies related to fisheries management, development, international lending and aid.	The competent authorities should ensure that all policies, rules, regulations and acts enunciated by the state to ensure conservation and management of fishery resources should be placed on a website with full and free public access and feedbacks. Provision for public participation in the NMFMC is also indicated in 7.1.1.		NMFMC, DADF, DOF of all maritime states

Article/ Subsection	How	Standard	Who
6.14 International trade in fish and fishery products should be conducted in accordance with the principles, rights and obligations established in the World Trade Organization (WTO) Agreement and other relevant international agreements. States should ensure that their policies, programmes and practices related to trade in fish and fishery products do not result in obstacles to this trade, environmental degradation or negative social, including nutritional, impacts.	Since India is a signatory to the WTO, trade in fish and fishery products should be fully compliant with provisions of the WTO agreements.		MoC, DADF
6.15 States should cooperate in order to prevent disputes. All disputes relating to fishing activities and practices should be resolved in a timely, peaceful and cooperative manner, in accordance with applicable international agreements or as may otherwise be agreed between the parties. Pending settlement of a dispute, the States concerned should make every effort to enter into provisional arrangements of a practical nature which should be without prejudice to the final outcome of any dispute settlement procedure.	A fisheries disputes redress cell should function within the NMFMC to provide technical information on an urgent basis to the bilateral committees convened by the MoEA to settle inter-State disputes.		NMFMC, DADF, MoEA
6.16 States, recognizing the paramount importance to fishers and fish farmers of understanding the conservation and management of the fishery resources on which they depend, should promote awareness of responsible fisheries through education and training. They should ensure that fishers and fish farmers are involved in the policy formulation and implementation process, also with a view to facilitating the implementation of the Code.	Core Marine and ancillary fisheries research institutes should conduct programmes aiming for creating awareness among fishers and fish farmers about responsible fishing and farming. The fisheries management council system would have places for fishers and fish farmers in the decision making process.		NMFMC, DADF, Core Marine and ancillary fisheries research institutes, Fishermen organizations DOF of all maritime states

Article/ Subsection	How	Standard	Who
6.17 States should ensure that fishing facilities and equipment as well as all fisheries activities allow for safe, healthy and fair working and living conditions and meet internationally agreed standards adopted by relevant international organizations.	MFRAs should have provisions for minimum standards of health and safety measures of crew on board fishing crafts in line with ILO Convention No. 188.	ILO standards.	DOF of all maritime states, DADF, MoA&FW
6.18 Recognizing the important contributions of artisanal and small- scale fisheries to employment, income and food security, States should appropriately protect the rights of fishers and fish workers, particularly those engaged in subsistence, small-scale and artisanal fisheries, to a secure and just livelihood, as well as preferential access, where appropriate, to traditional fishing grounds and resources in the waters under their national jurisdiction.	The MFRAs of all maritime states have zoned preferential and exclusive access for small scale fishers and this should be strictly implemented by employing the VMS. This would be similar to the internationally acclaimed TURFs. Provisions of VG-SSF should be adapted and adopted.		DOF of all maritime states, DADF
6.19 States should consider aquaculture, including culture-based fisheries, as a means to promote diversification of income and diet. In so doing, States should ensure that resources are used responsibly and adverse impacts on the environment and on local communities are minimized.	Core Marine and ancillary institutions should develop packages and standards for culture-based fisheries, and extend the technology to fishers through DOFs.		Core Marine and ancillary fisheries institutions, DOF of all maritime states.

Chapter-9

Article 7: Fisheries management

ARTICLE 7. FISHERIES MANAGEMENT

Article/ Subsection	How	Standard	Who
7.1 General			
7.1.1 States and all those engaged in fisheries management should, through an appropriate policy, legal and institutional framework, adopt measures for the long-term conservation and sustainable use of fisheries resources. Conservation and management measures, whether at local, national, sub regional or regional levels should be based on the best scientific evidence available and be designed to ensure the long-term sustainability of fishery resources at levels which promote the objective of their optimum utilization and maintain their availability for present and future generations; short-term considerations should not compromise these objectives.	The country should have a comprehensive National Policy on Marine Fisheries (NPMF) encompassing all aspects of sustainable use of marine fisheries resources, with provision to review and revise the same every 10-years. The country should establish the necessary legal and institutional framework for implementing the policies. A NATIONAL MARINE FISHERIES MANAGEMENT COUNCIL (NMFMC) functioning under the DADF in the MoA &FW would frame the appropriate policy and legal framework for the long-term conservation and sustainable use of fisheries resources. Institutional framework available in the country is the DADF under the Central MoA & FW and the Department of Fisheries of all maritime states. Support in terms of science, policy, education and fisheries management guidance is provided by institutions such as CMFRI, FSI, CIFT and fisheries universities and colleges. The NMFMC would meet at least once a year to review policies and legal issues (See Annex 1 for details).	Based on • The best scientific evidence available. • Long-term sustainability of fishery resources. • Optimum utilization so as to maintain their availability for present and future generations. • Ensuring livelihood security.	The NPMF would be framed by the NMFMC. The NMFMC would be comprised of Directors of CMFRI, FSI and CIFT and senior officials of the DADF and headed by the Secretary (Fy). There would be 25 members for NMFMC in the following manner: Chair • Secretary (Chair) • JS (Fy) • DDG (Fy), ICAR • Director, CMFRI, • Director, CIFT, • DG, FSI, • Directors of fisheries of all maritime states and UTs • 3 subject experts • 4 fishermen association representatives • FDC as member secretary

Article/ Subsection	How	Standard	Who
7.1.2 Within areas under national jurisdiction, States should seek to identify relevant domestic parties having a legitimate interest in the use and management of fisheries resources and establish arrangements for consulting them to gain their collaboration in achieving responsible fisheries.	The NMFMC incorporates relevant domestic parties in its constitution and also has mechanisms for wider consultations, in particular the sub-regional management bodies such as: NEAS FMC – Gujarat, Maharashtra, Daman and Diu SEAS FMC – Goa, Karnataka Lakshadweep and Kerala GOM FMC – Tamil Nadu, PB FMC – Tamil Nadu, SWBOB FMC – Tamil Nadu, Puducherry, Andhra Pradesh NWBOB FMC – Odisha, West Bengal AS FMC – Andaman and Nicobar The area between 12 and 200 nm of Indian seas is under national jurisdiction. In this area, DADF would entrust implementation of rules and regulations governing fisheries to the respective maritime state.	All management councils would be participatory in nature with representation of all stakeholders including research organizations and NGOs.	The likely domestic interest groups are: MoA/ICAR MoEF&CC MoC MoES Fisher groups Seafood traders Community groups NGOs
7.1.3 For trans-boundary fish stocks, straddling fish stocks, highly migratory fish stocks and high seas fish stocks, where these are exploited by two or more States, the States concerned, including the relevant coastal States in the case of straddling and highly migratory stocks should cooperate to ensure effective conservation and management of the resources. This should be achieved, where appropriate, through the establishment of a bilateral, sub regional or regional fisheries organization or arrangement.	The country is party to relevant RFMOs such as IOTC, IWC and CCAMLR. The country should moot the establishment of other regional bodies addressing the conservation and management of shared resources of the Arabian Sea and Bay of Bengal.	As given in FAO guidance for RFMOs.	DADF with support from Core Marine Fisheries Research Institutions.

Article/ Subsection	How	Standard	Who
7.1.4 A sub regional or regional fisheries management organization or arrangement should include representatives of States in whose jurisdictions the resources occur, as well as representatives from States which have a real interest in the fisheries or the resources outside national jurisdictions. Where a sub-regional or regional fisheries management organization or arrangement exists and has the competence to establish conservation and management measures, those States should cooperate by becoming a member of such organization or a participant in such arrangement, and actively participate in its work.	Already member of one relevant RFMOs in the region and have mooted creation of 2 additional RFMOs.		DADF with support from Core Marine Fisheries Research Institutions.
7.1.5 A State which is not a member of a sub-regional or regional fisheries management organization or is not a participant in a sub-regional or regional fisheries management arrangement should nevertheless cooperate, in accordance with relevant international agreements and international law, in the conservation and management of the relevant fisheries resources by giving effect to any conservation and management measures adopted by such organization or arrangement.	Already member of relevant RFMOs in the region.		DADF with support from Core Marine Fisheries Research Institutions.

Article/ Subsection	How	Standard	Who
7.1.6 Representatives from relevant organizations, both governmental and non-governmental, concerned with fisheries should be afforded the opportunity to take part in meetings of sub-regional and regional fisheries management organizations and arrangements as observers or otherwise, as appropriate, in accordance with the procedures of the organization or arrangement concerned. Such representative should be given timely access to the records and reports of such meetings, subject to the procedural rules on access to them.	The relevant government fisheries research organizations are CMFRI, FSI and CIFT. The relevant sub-regional fisheries departments of maritime states. The DADF would maintain a roster of relevant NGOs in the sector and call them for meetings on a rotation basis. The DADF would maintain a roster of relevant fishermen associations and organizations.		DADF
7.1.7 States should establish, within their respective competences and capacities, effective mechanisms for fisheries monitoring, surveillance, control and enforcement to ensure compliance with their conservation and management measures, as well as those adopted by sub-regional or regional organizations or arrangements.	<u>Fisheries Monitoring</u> Exploited resources within and outside EEZ would be monitored by CMFRI. Exploitable resources within and outside EEZ would be monitored by FSI. <u>Surveillance</u> By maritime states. This information should be available to fisheries monitoring agencies and DADF on a quarterly basis. <u>Control</u> Harvest control rules which encompass all aspects of exploitation for which the draft rules would be framed by DADF in consultation with NMFMC. These would be appropriately modified regionally by maritime states for implementation through MFR Acts.	<u>Monitoring</u> The catch estimates would be made through a robust scientific sampling design, maintaining the standard error within 20%. For exploitable stock monitoring, state of the art acoustics and swept area methods would be applied.	DADF CMFRI FSI CIFT DOF of all maritime states Coast Guard

Article/ Subsection	How	Standard	Who
	Enforcement All maritime states would have Marine Enforcement Wing (MEW) to ensure compliance of harvest control rules.	Surveillance Through state of the art VMS systems using satellites. Control MSY levels Enforcement Patrolling intensity to be maintained at or more than 10 days per month.	
7.1.8 States should take measures to prevent or eliminate excess fishing capacity and should ensure that levels of fishing effort are commensurate with the sustainable use of fishery resources as a means of ensuring the effectiveness of conservation and management measures.	The harvest control rules (HCR) would be explicit in having measures to prevent building excess fishing capacity.	Regional optimum fleet sizes for different fisheries to be determined on the basis of MSY levels.	NMFMC Core Marine Fisheries Research Institutions, DADF DOF of all maritime states.
7.1.9 States and sub-regional or regional fisheries management organizations and arrangements should ensure transparency in the mechanisms for fisheries management and in the related decision-making process.	Transparency would be ensured by appropriate media releases and by having websites at national, regional, sub-regional and local levels containing all relevant information. The websites would also be in appropriate regional languages.		NMFMC DADF Core Marine Fisheries Research Institutions, DOF, all maritime states.

Article/ Subsection	How	Standard	Who
7.1.10 States and sub-regional or regional fisheries management organizations and arrangements should give due publicity to conservation and management measures and ensure that laws, regulations and other legal rules governing their implementation are effectively disseminated. The bases and purposes of such measures should be explained to users of the resource in order to facilitate their application and thus gain increased support in the implementation of such measures.	Appropriate media campaigns would have to run with material developed by the DADF and approved by the NMFMC in all relevant languages. Material support for such media campaigns would have to be taken from Core Marine Fisheries Research Institutes. Contact and awareness programmes would have to be run by DOF, all maritime states.	Global fisheries management standards.	NMFMC DADF Core Marine Fisheries Research Institutions, DOF of all maritime states.
7.2 Management Objectives			
7.2.1 Recognizing that long-term sustainable use of fisheries resources is the overriding objective of conservation and management, States and sub-regional or regional fisheries management organizations and arrangements should, inter alia, adopt appropriate measures, based on the best scientific evidence available, which are designed to maintain or restore stocks at levels capable of producing maximum sustainable yield, as qualified by relevant environmental and economic factors, including the special requirements of developing countries.	All documents including MFR Acts would set out management objective in line with the FAO CCRF. All policy statements would have a vision statement in line with the FAO CCRF as the preamble. All exploited stocks would be assessed and their long-term sustainable yields would be estimated, and this would form the basis for HCRs.	Global fisheries management standards.	NMFMC DADF DOF of all maritime states Core Marine Fisheries Research Institutions.

Article/ Subsection	How	Standard	Who
7.2.2 Such measures should provide *inter alia* that: a) Excess fishing capacity is avoided and exploitation of the stocks remains economically viable; b) The economic conditions under which fishing industries operate promote responsible fisheries; c) The interests of fishers, including those engaged in subsistence, small-scale and artisanal fisheries, are taken into account; d) Biodiversity of aquatic habitats and ecosystems is conserved and endangered species are protected; e) Depleted stocks are allowed to recover or, where appropriate, are actively restored; f) Adverse environmental impacts on the resources from human activities are assessed and, where appropriate, corrected; and g) Pollution, waste, discards, catch by lost or abandoned gear, catch of non-target species, both fish and non-fish species, and impacts on associated or dependent species are minimized, through measures including, to the extent practicable, the development and use of selective, environmentally safe and cost effective fishing gear and techniques.	The MFR Act and relevant acts relating to environment and fisheries, both at the national level and that at the maritime state level, should contain text declaring or aiming to that given in the first column. The DADF would seek the help of the Core Marine Fisheries Research Institutes through sub-committees of the NMFMC to get appropriate text.	The Core Marine Fisheries Research Institutes would continuously use and upgrade the text and approach using international best practices modified to suit a more complex tropical multispecies fisheries system.	NMFMC DADF Core Marine Fisheries Research Institutions, DOF of all maritime states.

Article/ Subsection	How	Standard	Who
7.2.3 States should assess the impacts of environmental factors on target stocks and species belonging to the same ecosystem or associated with or dependent upon the target stocks, and assess the relationship among the populations in the ecosystem.	The research projects of the CMFRI would address impact of environmental factors on target and non-target stocks and assess and/ or model the relationship among populations in the ecosystem keeping in view the concept of EBFM/EAF.	Research methodology would be in tune with current international best practices.	CMFRI
7.3 Management framework and Procedures			
7.3.1 To be effective, fisheries management should be concerned with the whole stock unit over its entire area of distribution and take into account previously agreed management measures established and applied in the same region, all removals and the biological unity and other biological characteristics of the stock. The best scientific evidence available should be used to determine, *inter alia*, the area of distribution of the resource and the area through which it migrates during its life cycle.	The area of distribution of all major marine fish stocks have to be determined by the CMFRI and FSI. The CMFRI's research projects would take this into account while formulating regional FMPs. Stock units have to be determined in an unambiguous manner using the best tools in genetics.		Core Marine and ancillary Fisheries Institutions.
7.3.2 In order to conserve and manage transboundary fish stocks, straddling fishstocks, highly migratory fish stocks and high seas fish stocks throughout their range, conservation and management measures established for such stocks in accordance with the respective competences of relevant States or, where appropriate, through sub-regional and regional fisheries management organizations and arrangements, should be compatible. Compatibility should be achieved in a manner consistent with the rights, competences and interests of the States concerned.	A roster of transboundary fish stocks would have to be maintained by the DADF based on the advice of the CMFRI and FSI. FMPs developed for transboundary fish stocks by CMFRI would be compatible with those of the RFMOs.	RFMO guidelines.	DADF Core Marine Fisheries Research Institutions.

Article/ Subsection	How	Standard	Who
7.3.3 Long-term management objectives should be translated into management actions, formulated as a fishery management plan or other management framework.	Practical FMPs would be developed by the CMFRI for each maritime state keeping in view the long-term objective set out in the MFRAs.	Ensure compatibility of long-term objective and FMPs.	CMFRI and DOF of all maritime states
7.3.4 States and, where appropriate, sub-regional or regional fisheries management organizations and arrangements should foster and promote international cooperation and coordination in all matters related to fisheries, including information gathering and exchange, fisheries research, management and development.	This should be done through the respective RFMOs and in cases like the small ecosystems of GoM and PB, bilateral fisheries management organization with Sri Lanka should be created. A similar arrangement should be made with Bangladesh.	RFMO guidelines.	NMFMC DADF
7.3.5 States seeking to take any action through a non-fishery organization which may affect the conservation and management measures taken by a competent sub-regional or regional fisheries management organization or arrangement should consult with the latter, in advance to the extent practicable, and take its views into account.	The DADF should establish a consultative mechanism whereby the views of the RFMOs are taken into account.	RFMO guidelines.	DADF
7.4 Data gathering and management advice			
7.4.1 When considering the adoption of conservation and management measures,the best scientific evidence available should be taken into account in order to evaluate the current state of the fishery resources and the possible impact of the proposed measures on the resources.	The NMFMC and DADF would adopt conservation and management advice from CMFRI, FSI and CIFT based on up-to-date information.	Best practices in scientific conservation and management of marine fish stocks	NMFMC DADF CMFRI FSI CIFT

Article/ Subsection	How	Standard	Who
7.4.2 Research in support of fishery conservation and management should be promoted, including research on the resources and on the effects of climatic, environmental and socio-economic factors. The results of such research should be disseminated to interested parties.	Research on fishery conservation and management would be done by the following institutions: CMFRI – exploited resources FSI – exploitable resources CIFT – harvest and post-harvest technologies The research programmes of these core institutions should encompass research on the resources and on the effects of climatic, environmental and socio-economic factors with appropriate mechanisms for dissemination of research results.	Global best practices in fisheries research	CMFRI FSI CIFT
7.4.3 Studies should be promoted which provide an understanding of the costs, benefits and effects of alternative management options designed to rationalize fishing, in particular, options relating to excess fishing capacity and excessive levels of fishing effort.	The core research institutions (CMFRI, FSI and CIFT) should have research projects addressing cost-benefit analysis of alternate management options and design of methods to rationalize fishing effort.	Research methodology in tune with current international best practices	CMFRI FSI CIFT
7.4.4 States should ensure that timely, complete and reliable statistics on catch and fishing effort are collected and maintained in accordance with applicable international standards and practices and in sufficient detail to allow sound statistical analysis. Such data should be updated regularly and verified through an appropriate system. States should compile and disseminate such data in a manner consistent with any applicable confidentiality requirements.	The Stratified Multi-stage Random Sampling Design (SMRSD) developed by CMFRI would be the method of choice for estimating the fish catch and effort with sufficient taxonomic resolution. The CMFRI should submit this data in the required resolution to DADF for facilitating mandatory transmission of data to regional and global databases. The existing system should be strengthened by adopting a log-sheet and observer based estimation.	The SMRSD estimate would keep the error of the estimate to within 20%.	CMFRI DADF

Article/ Subsection	How	Standard	Who
7.4.5 In order to ensure sustainable management of fisheries and to enable social and economic objectives to be achieved, sufficient knowledge of social, economic and institutional factors should be developed through data gathering, analysis and research.	The CMFRI and CIFT should have research project addressing social, economic and institutional aspects of marine fisheries. The outputs of these projects should be fed into the policies being developed by NMFMC.	Globally accepted standard protocols of data collection and analysis.	CMFRI CIFT NMFMC
7.4.6 States should compile fishery-related and other supporting scientific data relating to fish stocks covered by sub regional or regional fisheries management organizations or arrangements in an internationally agreed format and provide them in a timely manner to the organization or arrangement. In cases of stocks which occur in the jurisdiction of more than one State and for which there is no such organization or arrangement, the States concerned should agree on a mechanism for cooperation to compile and exchange such data.	The existing data collection and dissemination system should be strengthened to cater to the needs of RFMOs.	Internationally agreed formats.	CMFRI FSI DADF
7.4.7 Sub-regional or regional fisheries management organizations or arrangements should compile data and make them available, in a manner consistent with any applicable confidentiality requirements, in a timely manner and in an agreed format to all members of these organizations and other interested parties in accordance with agreed procedures.	The DADF should ensure that the RFMOs disseminate to its members the compiled information in a responsible manner adhering to confidentiality requirements.	Protocols of confidentiality.	DADF

Article/ Subsection	How	Standard	Who
7.5 Precautionary approach			
7.5.1 States should apply the precautionary approach widely to conservation, management and exploitation of living aquatic resources in order to protect them and preserve the aquatic environment. The absence of adequate scientific information should not be used as a reason for postponing or failing to take conservation and management measures.	The CMFRI should identify the fish stocks on which adequate scientific information is not available and for which the precautionary approach for conservation and management is necessary.	International best practices on precautionary principles of fish stock management.	CMFRI
7.5.2 In implementing the precautionary approach, States should take into account, inter alia, uncertainties relating to the size and productivity of the stocks, reference points, stock condition in relation to such reference points, levels and distribution of fishing mortality and the impact of fishing activities, including discards, on non-target and associated or dependent species as well as environmental and socio-economic conditions.	For implementing the precautionary approach, the FMPs developed by CMFRI should consider uncertainties related to biological, environmental and socio-economic factors and give priority to conserving the productive capacity of stocks.	International best practices on precautionary principles of fish stock management.	CMFRI
7.5.3 States and sub-regional or regional fisheries management organizations and arrangements should, on the basis of the best scientific evidence available, inter alia, determine: a) Stock specific target reference points, and, at the same time, the action to be taken if they are exceeded; and b) Stock specific limit reference points and, at the same time, the action to be taken if they are exceeded; when a limit reference point is approached, measures should be taken to ensure that it will not be exceeded.	Recognizing the multi species, multi gear situation of the fisheries in the country, the CMFRI should develop appropriate multi species target and limit reference points. Appropriate management measures should be recommended by CMFRI in the FMPs in situations where the multi species stock approaches the limit reference points. The advisories so developed should form the basis of the technical measures in MFRAs of maritime states.		CMFRI

Article/ Subsection	How	Standard	Who
7.5.4 In the case of new or exploratory fisheries, States should adopt as soon as possible cautious conservation and management measures, including, inter alia, catch limits and effort limits. Such measures should remain in force until there are sufficient data to allow assessment of the impact of the fisheries on the long-term sustainability of the stocks, whereupon conservation and management measures based on that assessment should be implemented. The latter measures should, if appropriate, allow for the gradual development of the fisheries.	The FSI and CMFRI should develop cautious conservation and management measures (catch and effort limits) for new and emerging fisheries such that the fisheries is developed in a gradual manner.		FSI CMFRI
7.5.5 If a natural phenomenon has a significant adverse impact on the status of living aquatic resources, States should adopt conservation and management measures on an emergency basis to ensure that fishing activity does not exacerbate such adverse impact. States should also adopt such measures on an emergency basis where fishing activity presents a serious threat to the sustainability of such resources. Measures taken on an emergency basis should be temporary and should be based on the best scientific evidence available.	The Core Marine Fisheries Research Institutions should intervene with necessary conservation and management advisories in the event of adverse natural phenomena in a timely manner.		Core Marine Fisheries Research Institutions , NMFMC DOF of all maritime states
7.6 Management measures			
7.6.1 States should ensure that the level of fishing permitted is commensurate with the state of fisheries resources.	The CMFRI should periodically determine optimum fleet size, based on which all maritime state DOFs should take steps to control effort. Although difficult, the CMFRI may move towards setting TACs for all important fish stocks.		NMFMC CMFRI DOFs

Article/ Subsection	How	Standard	Who
7.6.2 States should adopt measures to ensure that no vessel be allowed to fish unless so authorized, in a manner consistent with international law for the high seas or in conformity with national legislation within areas of national jurisdiction.	The DADF and DOFs of all maritime states should ensure the following with respect to authorization to fish in waters of national jurisdiction and ABNJ: 1. Registration of fishing vessels for operation in national waters and ABNJ. 2. License to fish using particular gears in national waters and ABNJ. 3. All gears operated should conform to the specifications stipulated in the law and should be licensed.	National and international laws as declared by RFMOs.	DADF DOF of all maritime states
7.6.3 Where excess fishing capacity exists, mechanisms should be established to reduce capacity to levels commensurate with the sustainable use of fisheries resources so as to ensure that fishers operate under economic conditions that promote responsible fisheries. Such mechanisms should include monitoring the capacity of fishing fleets.	The fishing capacities should be assessed and monitored by CMFRI. In those fisheries having excess fishing capacity, the NMFMC would draw up an effort (vessel) buy-back schemes for implementation by the respective maritime states.		CMFRI DOF of all maritime states
7.6.4 The performance of all existing fishing gear, methods and practices should be examined and measures taken to ensure that fishing gear, methods and practices which are not consistent with responsible fishing are phased out and replaced with more acceptable alternatives. In this process, particular attention should be given to the impact of such measures on fishing communities, including their ability to exploit the resource.	Destructive fishing practices have to be identified by CIFT and CMFRI and the impacts of such gears on fish stocks and habitat quantified. Such practices/gears are to be phased out and replaced with more acceptable alternatives by the DOFs.		CIFT CMFRI DOF of all maritime states

Article/ Subsection	How	Standard	Who
7.6.5 States and fisheries management organizations and arrangements should regulate fishing in such a way as to avoid the risk of conflict among fishermen using different vessels, gear and fishing methods.	The DOFs of maritime states should initiate action to set up village/district and state level councils. The village/district/state councils should work out modalities for regulating fishing so as to avoid conflict among fishers.		DOF of all maritime states Local Councils CMFRI CIFT
7.6.6 When deciding on the use, conservation and management of fisheries resources, due recognition should be given, as appropriate, in accordance with national laws and regulations, to the traditional practices, needs and interests of indigenous people and local fishing communities which are highly dependent on fishery resources for their livelihood.	Livelihood issues of local fishing communities should be given priority while implementing conservation and management measures.		DADF MoEF&CC MoES
7.6.7 In the evaluation of alternative conservation and management measures, their cost-effectiveness and social impact should be considered.	The CMFRI and CIFT should initiate research projects to evaluate the cost-effectiveness and social impact of alternative conservation and management measures.	Standard protocols of socio-economic impact assessment.	CMFRI CIFT
7.6.8 The efficacy of conservation and management measures and their possible interactions should be kept under continuous review. Such measures should, as appropriate, be revised or abolished in the light of new information.	The CMFRI should periodically review the efficacy of conservation and management measures and propose suitable advice for revision/abolition.		CMFRI

Article/ Subsection	How	Standard	Who
7.6.9 States should take appropriate measures to minimize waste, discards, catch by lost or abandoned gear, catch of non-target species, both fish and non-fish species, and negative impacts on associated or dependent species, in particular endangered species. Where appropriate, such measures may include technical measures related to fish size, mesh size or gear, discards, closed seasons and areas and zones reserved for selected fisheries, particularly artisanal fisheries. Such measures should be applied, where appropriate, to protect juveniles and spawners. States and sub-regional or regional fisheries management organizations and arrangements should promote, to the extent practicable, the development and use of selective, environmentally safe and cost effective gear and techniques.	The Core Marine Fisheries Research Institutions should develop advisories on technical measures such as legal fish size, mesh size of gear, gear size discards, closed seasons and areas and zones reserved for selected fisheries, particularly artisanal fisheries and measures to minimize wastes. This information should be passed on to the respective fisheries councils. Further, these specifications must be incorpoarted in to the laws by DOF's of maritime srates.		NMFMC Core Marine Fisheries Research Institutions DOF of all maritime states
7.6.10 States and sub-regional and regional fisheries management organizations and arrangements, in the framework of their respective competences, should introduce measures for depleted resources and those resources threatened with depletion that facilitate the sustained recovery of such stocks. They should make every effort to ensure that resources and habitats critical to the well-being of such resources which have been adversely affected by fishing or other human activities are restored.	The DADF and DOFs of maritime states should introduce measures for recovery and rebuilding of depleted and threatened stocks with necessary inputs and guidance from CMFRI.		DADF, DOF of all maritime states CMFRI

Article/ Subsection	How	Standard	Who
7.7 Implementation			
7.7.1 States should ensure that an effective legal and administrative framework at the local and national level, as appropriate, is established for fisheries resource conservation and fisheries management.	The existing legal and administrative framework should be reviewed and strengthened for ensuring conservation and management with inputs from Core Marine Fisheries Research Institutions.		DADF DOF of all maritime states Core Marine Fisheries Research Institutions.
7.7.2 States should ensure that laws and regulations provide for sanctions applicable in respect of violations which are adequate in severity to be effective, including sanctions which allow for the refusal, withdrawal or suspension of authorizations to fish in the event of non-compliance with conservation and management measures in force.	The existing legal instruments should be reviewed to incorporate necessary penal clauses of adequate severity with appropriate strengthening of the enforcement machinery.	International best practices.	DADF DOF of all maritime states
7.7.3 States, in conformity with their national laws, should implement effective fisheries monitoring, control, surveillance and law enforcement measures include, where appropriate, observer programmes, inspection schemes and vessel monitoring systems. Such measures should be promoted and, where appropriate, implemented by sub regional or regional fisheries management organizations and arrangements in accordance with procedures agreed by such organizations or arrangements.	The aspect of MCS have to be incorporated in to the national fisheries laws in conformity with international practices including VMS and observer programmes.	International best practices.	DADF DOF of all maritime states

Article/ Subsection	How	Standard	Who
7.7.4 States and sub-regional or regional fisheries management organizations and arrangements, as appropriate, should agree on the means by which the activities of such organizations and arrangements will be financed, bearing in mind, *inter alia*, the relative benefits derived from the fishery and the differing capacities of countries to provide financial and other contributions. Where appropriate, and when possible, such organizations and arrangements should aim to recover the costs of fisheries conservation, management and research.	The DADF should make provisions for contributions to the regional and sub-regional organizations as required. Guidelines may be developed by the NMFMC to levy a cess from production units to meet the cost of conservation, management and research on a long term basis.		DADF
7.7.5 States which are members of or participants in sub regional or regional Fisheries management organizations or arrangements should implement internationally agreed measures adopted in the framework of such organizations or arrangements and consistent with international law to deter the activities of vessels flying the flag of non-members or non-participants which engage in activities which undermine the effectiveness of conservation and management measures established by such organizations or arrangements.	The DADF with the support of DOFs of maritime states must ensure compliance with the agreed measures adopted by the RFMOs.		DADF DOF of all maritime states

Article/ Subsection	How	Standard	Who
7.8 Financial institutions			
7.8.1 Without prejudice to relevant international agreements, States should encourage banks and financial institutions not to require, as a condition of a loan or mortgage, fishing vessels or fishing support vessels to be flagged in a jurisdiction other than that of the State of beneficial ownership where such a requirement would have the effect of increasing the likelihood of non-compliance with international conservation and management measures.	The DADF and the MOF should issue necessary directives to the Banking and Financial Institutions for adhering to this requirement.		DADF MoF

Chapter-10

Article 8: Fishing operations

ARTICLE 8. FISHING OPERATIONS

Article/ Subsection	How	Standard	Who
1.1 Duties of all States			
8.1.1 States should ensure that only fishing operations allowed by them are conducted within waters under their jurisdiction and that these operations are carried out in a responsible manner.	The fishing operations in India are under the jurisdiction of the union Ministry (12-200 nm) and the maritime states (up to 12 nm). While MFRA's are in place to regulate fisheries within state jurisdiction, there is a legal vaccum with regard to the area under central jurisdiction. A central MFRA needs to be enacted for this purpose. The MFRAs are to be periodically reviewed and updated with inputs from the Core Marine Fisheries Research Institutions using the council based management systems	Should be developed based on FAO Guidelines.	NMFMC DADF DOF of all maritime states. Core Marine Fisheries Research Institutions.
8.1.2 States should maintain a record, updated at regular intervals, on all authorizations to fish issued by them.	Records in paper and digital form of craft and gear licensing should be maintained by DOFs of maritime states and DADF. This information should be made available to the public. By amending the existing laws to incorporate provision for gear licensing apart from the craft licensing.	REalCraft database.	DADF DOF of all maritime states.

Article/ Subsection	How	Standard	Who
8.1.3 States should maintain, in accordance with recognized international standards and practices, statistical data, updated at regular intervals, on all fishing operations allowed by them.	The CMFRI collects statistics of fish catch and effort from all maritime states based on Stratified Multi-stage Random Sampling Design (SMRSD). These estimates should be passed on to all maritime states and DADF within the shortest period but not later than six months. In course of time, with improved literacy among fishermen, practice of keeping log-book should be encouraged.	SMRSD	CMFRI DADF DOF of all maritime states
8.1.4 States should, in accordance with international law, within the framework of sub-regional or regional fisheries management organizations or arrangements, cooperate to establish systems for monitoring, control, surveillance and enforcement of applicable measures with respect to fishing operations and related activities in waters outside their national jurisdiction.	India should cooperate in sub-regional or regional initiatives for MCS in areas beyond its national jurisdiction.		DADF MoD
8.1.5 States should ensure that health and safety standards are adopted for everyone employed in fishing operations. Such standards should be not less than the minimum requirements of relevant international agreements on conditions of work and service.	MFRAs should have provisions for minimum standards of health and safety measures of crew on board fishing crafts in line with ILO Convention No. 188.	ILO Convention No. 188.	DADF DOF of all maritime states
8.1.6 States should make arrangements individually, together with other states or with the appropriate international organization to integrate fishing operations into maritime search and rescue systems.	India should cooperate in regional initiatives for establishing maritime search and rescue systems.		DADF MoD MEA Coast Guard

Article/ Subsection	How	Standard	Who
8.1.7 States should enhance through education and training programmes the education and skills of fishers and, where appropriate, their professional qualifications. Such programmes should take into account agreed international standards and guidelines.	The DOFs of all maritime states should initiate short duration training course on navigation and sea safety for all the fishermen. This certificate training can be imparted by the CIFNET with funding from DADF.	International guidelines on navigation and sea safety	DADF DOF of all maritime states CIFNET
8.1.8 States should, as appropriate, maintain records of fishers which should, whenever possible, contain information on their service and qualifications, including certificates of competency, in accordance with their national laws.	The existing system of fishermen biometric cards should be upgraded with information on qualifications (Certificate), experience, competency etc.		DADF DOF of all maritime states
8.1.9 States should ensure that measures applicable in respect of masters and other officers charged with an offence relating to the operation of fishing vessels should include provisions which may permit, *inter alia*, refusal, withdrawal or suspension of authorizations to serve as masters or officers of a fishing vessel.	By modifying the existing rules (MFRAs etc.) to include provisions for necessary penal actions for masters or officers who violate the rules related to fishing.		DADF DOF of all maritime states.
8.1.10 States, with the assistance of relevant international organizations, should endeavor to ensure through education and training that all those engaged in fishing operations be given information on the most important provisions of this Code, as well as provisions of relevant international conventions and applicable environmental and other standards that are essential to ensure responsible fishing operations.	The Core Marine Fisheries Research Institutions shall assist the maritime states with necessary communication tools and education programmes for informing all those engaged in fishing on the important provisions of the Code as well as provisions of relevant international conventions and applicable environmental and other standards that are essential to ensure responsible fishing operations. The Code should be translated to all Indian regional languages as appropriate.		Core Marine Fisheries Research Institutions with DADF funding.

Article/ Subsection	How	Standard	Who
8.2 Flag State duties			
8.2.1 Flag States should maintain records of fishing vessels entitled to fly their flag and authorized to be used for fishing and should indicate in such records details of the vessels, their ownership and authorization to fish.	The existing laws (MFRAs) have to be modified to have provisions for keeping records of authorized fishing vessels with necessary details.		DADF DOF of all maritime states
8.2.2 Flag States should ensure that no fishing vessels entitled to fly their flag fish on the high seas or in waters under the jurisdiction of other States unless such vessels have been issued with a Certificate of Registry and have been authorized to fish by the competent authorities. Such vessels should carry on board the Certificate of Registry and their authorization to fish.	The existing laws have to incorporate provisions for issuing necessary Certificate of Registry by the competent authorities to fish in EEZ and ABNJ. If Indian flagged vessels obtain permission from other nations to fish in their waters, this permission has to be informed to the DADF prior to starting operations.	Port State Measures.	DADF MoS
8.2.3 Fishing vessels authorized to fish on the high seas or in waters under the jurisdiction of a State other than the flag State, should be marked in accordance with uniform and internationally recognizable vessel marking systems such as the FAO Standards Specifications and Guidelines for Marking and Identification of Fishing Vessels.	The existing laws have to be modified or new laws introduced to have provisions for vessel marking system in accordance with the international systems.	FAO guidelines.	DADF DOF of all maritime states MoS
8.2.4 Fishing gear should be marked in accordance with national legislation in order, that the owner of the gear can be identified. Gear marking requirements should take into account uniform and internationally recognizable gear marking systems.	The existing MFRAs have to be modified to include provisions for gear marking and licensing.	International gear marking standards.	DADF DOF of all maritime states

Article/ Subsection	How	Standard	Who
8.2.5 Flag States should ensure compliance with appropriate safety requirements for fishing vessels and fishers in accordance within international conventions, internationally agreed codes of practice and voluntary guidelines. States should adopt appropriate safety requirements for all small vessels not covered by such international conventions, codes of practice or voluntary guidelines.	A new fishing vessels act (covering all types of fishing crafts in the country) has to be introduced to comply with safety and operational requirements of all fishing vessels and fishers in accordance with international conventions.	International fishing vessel safety standards.	DADF DOF of all maritime states
8.2.6 States not party to the Agreement to Promote Compliance with International Conservation and Management Measures by Vessels Fishing in the High Seas should be encouraged to accept the Agreement and to adopt laws and regulations consistent with the provisions of the Agreement.	India should be party to this international agreement		DADF
8.2.7 Flag States should take enforcement measures in respect of fishing vessels entitled to fly their flag which have been found by them to have contravened applicable conservation and management measures, including, where appropriate, making the contravention of such measures an offence under national legislation. Sanctions applicable in respect of violations should be adequate in severity to be effective in securing compliance and to discourage violations wherever they occur and should deprive offenders of the benefits accruing from their illegal activities. Such sanctions may, for serious violations, include provisions for the refusal, withdrawal or suspension of the authorization to fish.	The MFRAs have to be modified to enhance the sanctions and punishments for violating the rules and regulations for conservation and management of the nation's fish resources. Such sanctions should be of appropriate severity and for serious violations, include provisions for the refusal, withdrawal or suspension of the authorization to fish.		DADF DOF of all maritime states

Article/ Subsection	How	Standard	Who
8.2.8 Flag States should promote access to insurance coverage by owners and charterers of fishing vessels. Owners or charterers of fishing vessels should carry sufficient insurance cover to protect the crew of such vessels and their interests, to indemnify third parties against loss or damage and to protect their own interests.	In the proposed fishing vessels act provision should be made for insurance cover to protect fishing vessel and the crew and also to indemnify third parties against loss or damage.		DADF DOF of all maritime states
8.2.9 Flag States should ensure that crew members are entitled to repatriation, taking account of the principles laid down in the "Repatriation of Seafarers Convention (Revised), 1987, (No.166)".	The proposed fishing vessels act should take into account the principles laid down in the Repatriation of Seafarers Convention.		DADF DOF of all maritime states
8.2.10 In the event of an accident to a fishing vessel or persons on board a fishing vessel, the flag State of the fishing vessel concerned should provide details of the accident to the State of any foreign national on board the vessel involved in the accident. Such information should also, where practicable, be communicated to the International Maritime Organization.	In the proposed fishing vessels act, rules should be made to provide details of any accident to the State of any foreign national on board the vessel involved in the accident and to IMO.		DADF DOFof all maritime states
8.3 Port State duties			
8.3.1 Port States should take, through procedures established in their national legislation, in accordance with international law, including applicable international agreements or arrangements, such measures as are necessary to achieve and to assist other States in achieving the objectives of this Code, and should make known to other States details of regulations and measures they have established for this purpose. When taking such measures a port State should not discriminate in form or in fact against the vessels of any other State.	The proposed act for 12-200 nm zone should include this provision. The regulatory provisions of these instruments should be made available in official websites for general access.	PSM guidelines of FAO (2016)	DADF DOF of all maritime states

Article/ Subsection	How	Standard	Who
8.3.2 Port States should provide such assistance to flag States as is appropriate, in accordance with the national laws of the port State and international law, when a fishing vessel is voluntarily in a port or at an offshore terminal of the port State and the flag State of the vessel requests the port State for assistance in respect of non-compliance with sub regional, regional or global conservation and management measures or with internationally agreed minimum standards for the prevention, of pollution and for safety, health and conditions of work on board fishing vessels.	DADF in consultation with MoS should develop guidance on port state duties in accordance with national and international laws to comply with this article.	PSM guidelines of FAO (2016).	DADF, MoS
8.4 Fishing operations			
8.4.1 States should ensure that fishing is conducted with due regard to the safety of human life and the International Maritime Organization International Regulations for Preventing Collisions at Sea, as well as International Maritime Organization requirements relating to the organization of marine traffic, protection of the marine environment and the prevention of damage to or loss of fishing gear.	The MFRAs should be amended to introduce a new section on fishing operations wherein safety of human life as incorporated in guidelines of the International Maritime Organization Regulations for Preventing Collisions at Sea is covered.	International Maritime Organization guidelines.	DADF DOF of all maritime states.
8.4.2 States should prohibit dynamiting, poisoning and other comparable destructive fishing practices.	The existing MFRAs have provisions for prohibiting dynamiting and poisoning. However, there is no updating of destructive fishing practices which are on the increase. The core fisheries research institutions should periodically guide the DADF and DOFs of all maritime state on the prevalence of such practices, which then should be prohibited by amending the law.		DADF DOF of all maritime states. Core fisheries research institutes

Article/ Subsection	How	Standard	Who
8.4.3 States should make every effort to ensure that documentation with regard to fishing operations, retained catch of fish and non-fish species and, as regards discards, the information required for stock assessment as decided by relevant management bodies, is collected and forwarded systematically to those bodies. States should, as far as possible, establish programmes, such as observer and inspection schemes, in order to promote compliance with applicable measures.	Currently there is a system existing in the country for collection of fishery data by the maritime states and supplying to the central Ministry. However, due to the diverse and extensive nature of marine fisheries of the country which is unmatched in any part of the world, the data collected does not satisfy the requirement of stock assessment. CMFRI is the only agency having a scientific robust system (SMRSD) to collect such data as needed for stock assessment exercises with sufficient taxonomic resolution. Since CMFRI is collecting robust data on catch, discards and effort in all maritime states, these states may discontinue the current practice, and the staff involved may be redeployed for collection of inland fisheries and aquaculture data which is at present very weak. The CMFRI should initiate on a trial basis at selected centres a log-sheet based fishery data collection system which would in the long-run strengthen the SMRSD system. The existing system should be upgraded with observer and inspection programmes to promote compliance measures and quality assurance.		DADF CMFRI DOF of all maritime states
8.4.4 States should promote the adoption of appropriate technology, taking into account economic conditions, for the best use and care of the retained catch.	The DADF and DOF of all maritime states should periodically get updates from CIFT and other agencies to develop necessary guidance on post-harvest technology for application in various stages of on-board handling and post-harvest processing.		DADF DOF CIFT NGOs

Article/ Subsection	How	Standard	Who
8.4.5 States, with relevant groups from industry, should encourage the development and implementation of technologies and operational methods that reduce discards. The use of fishing gear and practices that lead to the discarding of catch should be discouraged and the use of fishing gear and practices that increase survival rates of escaping fish should be promoted.	The DADF and DOF of all maritime states should obtain from CIFT the technologies for bycatch reduction as well as utilization of low value fish and promote adoption by the harvest and post-harvest units. Appropriate incentives should be given to the harvest and post-harvest units which adopts BRDs and utilize low value fish.		DADF CIFT NGOs DOF of all maritime states
8.4.6 States should cooperate to develop and apply technologies, materials and operational methods that minimize the loss of fishing gear and the ghost fishing effects of lost or abandoned fishing gear.	The CIFT should promote development of biodegradable materials for fishing gear, create awareness about the harmful effects of discarding nets and DADF and DOF should give incentives for bringing ghost nets obtained during fishing operation.		DADF CIFT DOF of all maritime states NGOS
8.4.7 States should ensure that assessments of the implications of habitat disturbance are carried out prior to the introduction on a commercial scale of new fishing gear, methods and operations to an area.	New gears developed by the institutions and fishermen have to be evaluated by CIFT on their impacts on stocks and habitats before being approved for commercial fishing. Necessary provisions have to be made in the MFRAs and NMFRA for this task.		DADF CIFT DOF of all maritime states
8.4.8 Research on the environmental and social impacts of fishing gear and, in particular, on the impact of such gear on biodiversity and coastal fishing communities should be promoted.	DADF should provide funding support to promote research on the social and environmental impact of fishing gears.		DADF Core Marine Fisheries Research Institutions.

Article/ Subsection	How	Standard	Who
8.5 Fishing gear selectivity			
8.5.1 States should require that fishing gear, methods and practices, to the extent practicable, are sufficiently selective so as to minimize waste, discards, catch of non-target species, both fish and non-fish species, and impacts on associated or dependent species and that the intent of related regulations is not circumvented by technical devices. In this regard, fishers should cooperate in the development of selective fishing gear and methods. States should ensure that information on new developments and requirements is made available to all fishers.	CIFT should develop highly selective fishing gears with appropriate stakeholder participation. DOF of maritime states should promote selective fishing gears by creating awareness and providing incentives for use of selective fishing gears.		DADF CIFT DOF of all maritime states NGOS
8.5.2 In order to improve selectivity, States should, when drawing up their laws and regulations, take into account the range of selective fishing gear, methods and strategies available to the industry.	MFRAs have to incorporate necessary provisions for promoting selective fishing gears.		DADF DOF of all maritime states
8.5.3 States and relevant institutions should collaborate in developing standard methodologies for research into fishing gear selectivity, fishing methods and strategies.	R & D on selective fishing gear technologies and strategies are being carried out by CIFT. DADF should support this activity by strengthening national and international collaboration.		DADF CIFT
8.5.4 International cooperation should be encouraged with respect to research programmes for fishing gear selectivity, and fishing methods and strategies, dissemination of the results of such research programmes and the transfer of technology.	DADF and CIFT should explore and facilitate international cooperation and collaborative research in fishing gear selectivity and also in dissemination of information and transfer of technology.		DADF CIFT

Article/ Subsection	How	Standard	Who
8.6 Energy optimization			
8.6.1 States should promote the development of appropriate standards and guidelines which would lead to the more efficient use of energy in harvesting and postharvest activities within the fisheries sector.	CIFT should develop and DADF should promote appropriate standards and guideline for the efficient use of energy in harvest and post-harvest of fish.	International guidelines on energy efficiency	DADF CIFT
8.6.2 States should promote the development and transfer of technology in relation to energy optimization within the fisheries sector and, in particular, encourage owners, charterers and managers of fishing vessels to fit energy optimization devices to their vessels.	CIFT should develop and DADF should promote development of energy efficient technologies in fisheries and facilitate transfer of such technologies. Appropriate incentive should be given for the harvest and post-harvest units for adoption of energy efficient technologies.		DADF CIFT
8.7 Protection of the aquatic environment			
8.7.1 States should introduce and enforce laws and regulations based on the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 relating thereto (MARPOL 73/78).	The proposed Fishing Vessels Act should incorporate provisions of the MARPOL as applicable to the class of vessels in consultation with MoS.	MARPOL protocols	DADF MoS
8.7.2 Owners, charterers and managers of fishing vessels should ensure that their vessels are fitted with appropriate equipment as required by MARPOL 73/78 and should consider fitting a shipboard compactor or incinerator to relevant classes of vessels in order to treat garbage and other shipboard wastes generated during the vessel's normal service.	The CIFT should develop guidance on treatment and disposal of garbage on board fishing vessels and this has to be incorporated into the proposed new Fishing Vessel Act. DADF and DOF of maritime states should create awareness among owners of fishing vessels and encourage responsible garbage management onboard fishing vessels.	MARPOL protocols	CIFT DADF DOF of maritime states

Article/ Subsection	How	Standard	Who
8.7.3 Owners, charterers and managers of fishing vessels should minimize the taking aboard of potential garbage through proper provisioning practices.	DADF and DOF of maritime states should create awareness among owners of fishing vessels to minimize the taking aboard of potential garbage through appropriate provisioning practices.	MARPOL protocols	CIFT DADF DOF of all maritime states
8.7.4 The crew of fishing vessels should be conversant with proper shipboard procedures in order to ensure discharges do not exceed the levels set by MARPOL. 73/78. Such procedures should, as a minimum, include the disposal of oily waste and the handling and storage of shipboard garbage.	DADF should ensure that the training programme being conducted by CIFNET for fishing crew should include curriculum for proper handling, storage and disposal of garbage onboard.		DADF CIFNET
8.8 Protection of the atmosphere			
8.8.1 States should adopt relevant standards and guidelines which would include provisions for the reduction of dangerous substances in exhaust gas emissions.	The CIFT should develop suitable standards and guidelines for reduction of emission of greenhouse gases by fishing vessels. The standards have to be incorporated into the proposed Fishing Vessel Act.		CIFT DADF DOF of all maritime states
8.8.2 Owners, charterers and managers of fishing vessels should ensure that their vessels are fitted with equipment to reduce emissions of ozone depleting substances. The responsible crew members of fishing vessels should be conversant with the proper running and maintenance of machinery on board.	DADF should ensure that the proposed Fishing Vessels Act incorporates provisions for reduction of ozone depleting substances. The training programs envisaged for crew by CIFNET should include this aspect.		DADF CIFNET

Article/ Subsection	How	Standard	Who
8.8.3 Competent authorities should make provision for the phasing out of the use of chlorofluorocarbons (CFCs) and transitional substances such as hydro chlorofluorocarbons (HCFCs) in the refrigeration systems of fishing vessels and should ensure that the shipbuilding industry and those engaged in the fishing industry are informed of and comply with such provisions.	MoS has regulated use of CFCs and transtitional substances in ship building and time-bound replacement of these substances are in place. The same provisions are to be incorporated in the proposed Fishing Vessel Act.	Merchant Shipping Act	DADF DOFs MoS
8.8.4 Owners or managers of fishing vessels should take appropriate action to refit existing vessels with alternative refrigerants to CFCs and HCFCs and alternatives to Halons in firefighting installations. Such alternatives should be used in specifications for all new fishing vessels.	MoS has regulated use of CFC causing refrigerants and time bound replacement of the CFCs and HCFCs are in place. The same provision to be applied in the proposed Fishing Vessel Act.	Merchant Shipping Act	DADF DOFs MoS
8.8.5 States and owners, charterers and managers of fishing vessels as well as fishers should follow international guidelines for the disposal of CFCs, HCFCs and Halons.	DADF should ensure that the training programs envisaged for owners, operators, managers and engineers include topics on disposal of all environmentally harmful substances.	International standards of disposal	DADF CIFNET
8.9 Harbours and landing places for fishing vessels			
8.9.1 States should take into account, inter alia, the following in the design and construction of harbours and landing places: a) safe havens for fishing vessels and adequate servicing facilities for vessels, vendors and buyers are provided; b) adequate freshwater supplies and sanitation arrangements should be provided;	DADF should develop standards and guidelines in consultation with CICEF with regard to items a-e and make it available in the public domain. DADF should ensure that appropriate liaison is maintained with major and minor port authorities and maritime boards for effective adherence to the standards.		DADF CICEF DOF of all maritime states Port Authorities Maritime Boards

Article/ Subsection	How	Standard	Who
c) waste disposal systems should be introduced, including for the disposal of oil, oily water and fishing gear; d) pollution from fisheries activities and external sources should be minimized; and e) arrangements should be made to combat the effects of erosion and siltation.	Every fishing harbour should have a fishing harbour management committee in which all stakeholders are involved for collective decision making.		
8.9.2 States should establish an institutional framework for the selection or improvement of sites for harbours for fishing vessels which allows for consultation among the authorities responsible for coastal area management.	DADF should develop an institutional framework with the involvement of CICEF for ensuring compliance to the fishing port guidelines. Every fishing harbor should have a fishing harbor management committee in which all stakeholders are involved for collective decision making.		DADF CICEF DOF of all maritime states Port Authorities Maritime Boards CZMA
8.10 Abandonment of structures and other materials			
8.10.1 States should ensure that the standards and guidelines for the removal of redundant offshore structures issued by the International Maritime Organization are followed. States should also ensure that the competent fisheries authorities are consulted prior to decisions being made on the abandonment of structures and other materials by the relevant authorities.	DADF through CICEF should develop standards and guidelines in accordance with the IMO for removal of redundant coastal and offshore structures. An appropriate consultative mechanism with the local fishermen organizations and DOF should be put in place for ensuring compliance to the standards.	IMO Standard	DADF CICEF DOF of all maritime states

Article/ Subsection	How	Standard	Who
8.11 Artificial reefs and fish aggregation devices			
8.11.1 States, where appropriate, should develop policies for increasing stock populations and enhancing fishing opportunities through the use of artificial structures, placed with due regard to the safety of navigation, on or above the seabed or at the surface. Research into the use of such structures, including the impacts on living marine resources and the environment, should be promoted.	DADF should develop in consultation with CMFRI, appropriate standards and guidelines for design deployment and management of artificial reefs and FADs. CMFRI should undertake focused research on the impact of such structure on the fish stocks and environment and provide timely advisories.		DADF CMFRI
8.11.2 States should ensure that, when selecting the materials to be used in the creation of artificial reefs as well as when selecting the geographical location of such artificial reefs, the provisions of relevant international conventions concerning the environment and safety of navigation are observed.	The guidelines should specify the materials for FADs and ARs and the suitable locations for deployment based on the research outputs and international conventions.	International conventions on navigation and safety	DADF CMFRI DOF of all maritime states
8.11.3 States should, within the framework of coastal area management plan, establish management systems for artificial reefs and fish aggregation devices. Such management systems should require approval for the construction and deployment of such reefs and devices and should take into account the interests of fishers, including artisanal and subsistence fishers.	The management of FADs and ARs should be brought under the proposed Council based fisheries management.		DADF VFC DFC SFC CMFRI DOF of all maritime states
8.11.4 States should ensure that the authorities responsible for maintaining cartographic records and charts for the purpose of navigation, as well as relevant environmental authorities, are informed prior to the placement or removal of artificial reefs or fish aggregation devices.	The DADF and DOF of all maritime states should communicate the locations of ARs and FADs to the office of the Surveyor General for necessary updating of the hydrographic charts.		DADF Surveyor General of India DOF of all maritime states

Chapter-11

Article 9: Aquaculture development

ARTICLE 9. AQUACULTURE DEVELOPMENT

Article / Subsection	How	Standard	Who
9.1- RESPONSIBLE DEVELOPMENT OF AQUACULTURE, INCLUDING CULTURE-BASED FISHERIES, IN AREAS UNDER NATIONAL JURISDICTION			
9.1.1 States should establish, maintain and develop an appropriate legal and administrative framework which facilitates the development of responsible aquaculture.	There exists a framework, legal instruments and administrative setup in place for the responsible coastal aquaculture. Similar framework and instruments does not exist for the Inland aquaculture and mariculture. The scope and jurisdiction of CAA has to be expanded to accommodate the inland and marine aquaculture with setting up of adequate administrative machinery and modifying the nomenclature as appropriate [suggestion: Aquaculture Authority of India (AAI)]. For evolving such an expanded regulatory framework and institutional mechanisms for responsible aqua-farming, the technical details have to be worked out by the concerned core research organizations and trade promotional agencies.	International best management practices in aquaculture.	Coastal Aquaculture Authority and DADF, Fisheries Research Institutes (CIFRI,CIFA, DCF, CIBA and CMFRI), MPEDA and DOF of all maritime states
9.1.2 States should promote responsible development and management of aquaculture, including an advanced evaluation of the effects of aquaculture development on genetic diversity and ecosystem integrity, based on the best available scientific information.	The CAA is established with an objective of promoting coastal aquaculture in a responsible manner. However mechanisms to evaluate the effects of aquaculture development on genetic diversity and ecosystem integrity are to be strengthened by the newly created AAI*. The Core Marine and Ancillary Fisheries Research Institutions should take up this as a priority area for research so as to generate the best scientific information for development of BMPs. *see Annex 3 for details about the suggested AAI.	Best Management Practices in aquaculture	AAI, DADF, Core Marine and Ancillary Fisheries Research Institutions, MPEDA and DOF of all maritime states

Article / Subsection	How	Standard	Who
9.1.3 States should produce and regularly update aquaculture development strategies and plans, as required, to ensure that aquaculture development is ecologically sustainable and to allow the rational use of resources shared by aquaculture and other activities.	The ToR of AAI should incorporate the provisions for regular update of strategies and plans for ecologically sustainable aquaculture and rational use of shared resources. In doing so, the AAI should also consider the standards developed by Best Aquaculture Practices (BAP) and Aquaculture Stewardship Council (ASC) .	AAI and CRZ regulations. BAP and ASC standards.	AAI, DADF, Core Marine and Ancillary Fisheries Research Institutions, MPEDA and DOF of all maritime states
9.1.4 States should ensure that the livelihoods of local communities, and their access to fishing grounds, are not negatively affected by aquaculture developments,	The ToR of AAI should incorporate the provisions for creating mechanisms for ensuring livelihood of local communities and passage and unobstructed access to fishing grounds for fishers development. Potential zones for aquaculture development are to be identified, protecting livelihoods of local fishing communities and their access to fishing grounds. Use of aquaculture resources by other sectors are to be identified and co-operation should be promoted among them to avoid conflicts in resource use.		AAI, DADF DOF of all maritime states
9.1.5 States should establish effective procedures specific to aquaculture to undertake appropriate environmental assessment and monitoring with the aim of minimizing adverse ecological changes and related economic and social consequences resulting from water extraction, land use, discharge of effluents, use of drugs and chemicals, and other aquaculture activities.	Necessary procedures for assessment and monitoring of the ecological and social impacts of water extraction, land use, effluent discharge, use of drugs and chemicals and other aquaculture activities have to established by the AAI. Expertise should be developed to conduct risk analysis, environment impact assessment and monitoring in aquaculture.	Global standards in EIA of aquaculture.	AAI, DADF, Core Marine and Ancillary Fisheries Research Institutions, MPEDA and DOF of all maritime states

Article / Subsection	How	Standard	Who
9.2- Responsible development of aquaculture including culture- based fisheries within transboundary aquatic ecosystems			
9.2.1 States should protect transboundary aquatic ecosystems by supporting responsible aquaculture practices within their national jurisdiction and by cooperation in the promotion of sustainable aquaculture practices.	Establish necessary mechanism to study the transboundary implication of different practices in aquaculture and adopt responsible measures for managing the impact on the ecosystem, seeking cooperation of neighbouring states. Transboundary ecosystems should be identified and co-management plans should be formulated with neighbouring countries to ensure sustainable aquaculture practices.		NMFMC, AAI, DADF
9.2.2 States should, with due respect to their neighbouring states and in accordance with international law, ensure responsible choice of species, siting and management of aquaculture activities which could affect transboundary aquatic ecosystems.	Planning and aquaculture development in transboundary ecosystems should be in consultation with International organisations.	UNCLOS FAO	NMFMC, BOBP, AAI, DADF
9.2.3 States should consult with their neighbouring states, as appropriate, before introducing non-indigenous species into transboundary aquatic ecosystems.	Precautionary measures will be taken in consultation with neighbouring countries to protect native animal and plant biodiversity in transboundary ecosystems while introducing non-indigenous species.		NMFMC, BOBP, AAI, DADF
9.2.4 States should establish appropriate mechanisms, such as data bases and information networks to collect, share and disseminate data related to their aquaculture activities to facilitate cooperation on planning for aquaculture development at the national, sub regional, regional and global level.	Database will be developed and updated periodically to maintain information regarding aquaculture activities in transboundary ecosystems. Occurrence of notifiable diseases and newly emerging diseases in aquaculture facilities will be informed to neighbouring countries immediately.	OIE guidelines	NMFMC, BOBP, AAI, DADF Fisheries Research Institutes (CIFRI,CIFA, DCF, CIBA and CMFRI)

Article / Subsection	How	Standard	Who
9.2.5 States should cooperate in the development of appropriate mechanisms, when required, to monitor the impacts of inputs used in aquaculture.	Guidelines will be formulated and implemented to ensure quality control in use of all aquaculture inputs.	FAO guidelines	AAI, DADF, Fisheries Research Institutes (CIFRI,CIFA,DCF, CIBA and CMFRI) and DOF of all maritime states
9.3- USE OF AQUATIC GENETIC RESOURCES FOR THE PURPOSE OF AQUACULTURE INCLUDING CULTURE-BASED FISHERIES			
9.3.1 States should conserve genetic diversity and maintain integrity of aquatic communities and ecosystems by appropriate management, In particular, efforts should be undertaken to minimize the harmful effects of introducing non native species or genetically altered stocks used for aquaculture including culture-based fisheries into waters, especially where there is a significant potential for the spread of such non-native species or genetically altered stocks in to waters under the jurisdiction of other states as well as waters under the jurisdiction of the state of origin. States should, whenever possible, promote steps to minimize adverse genetic, disease and other effects of escaped farmed fish on wild stocks.	Stricter controls should be imposed on introduction of non-native species in to local ecosystem. Guidelines should be formulated and implemented for the development and use of genetically modified organisms and other products of biotechnology to ensure human safety and environmental protection. Focus should be made on the proactive research to minimize the harmful effects of introducing genetically modified organisms and non-native species in to local ecosystems. Guidelines should be formulated and implemented for accreditation and licensing of sources and labelling of such genetically modified organisms.		AAI, DADF, Fisheries Research Institutes (CIFRI,CIFA,DCF, CIBA and CMFRI) and DOF of all maritime states
9.3.2 States should cooperate in the elaboration, adoption and implementation of international code of practice and procedures for introductions and transfers of aquatic organisms.	Appropriate guidelines will be formulated, taking into consideration of international code of practice and procedures for introduction and transfers of aquatic organisms. Research will be promoted to evaluate the impact of introduced organisms on native organisms and precautionary measures will be taken to avoid possible adverse impacts.	Guidelines of ICES code of practice, 2005	AAI, DADF, Fisheries Research Institutes (CIFRI,CIFA,DCF, CIBA and CMFRI) and DOF of all maritime states

Article / Subsection	How	Standard	Who
9.3.3 States should, in order to minimize risks of disease transfer and other adverse effects on wild and cultured stocks, encourage adoption of appropriate practices in the genetic improvement of broodstock, the introduction of non-native species, and in the production, sale and transport of eggs, larvae or fry, broodstock or other materials. States should facilitate the preparation and implementation of appropriate national codes of practice and procedures to this effect.	Strategies will be formulated to breed and produce seed for restocking in natural waters and for genetic improvement of farming species. National code of practice and procedures will be formulated and implemented in production, sale and transport of eggs, fry, broodstock and other live materials and for introduction of non-native species. Research will be promoted on genetics of wild and hatchery bred populations including establishment of gene banks.		AAI, DADF, Fisheries Research Institutes (CIFRI,CIFA, DCF, CIBA and CMFRI) and DOF of all maritime states
9.3.4 States should promote the use of appropriate procedures for the selection of broodstock and the production of eggs, larvae and fry.	Guidelines will be formulated for proper collection of broodstock and seed from wild and for proper handling of incidental catch. Private sector will be encouraged for maintenance of broodstock and seed production of cultivable species. Research will be promoted on development of broodstock of economically viable cultivable species.		AAI, DADF, Fisheries Research Institutes (CIFRI,CIFA,DCF, CIBA and CMFRI) and DOF of all maritime states
9.3.5 States should, where appropriate, promote research and, when feasible, the development of culture techniques for endangered species to protect, rehabilitate and enhance their stocks, taking into account the critical need to conserve genetic diversity of endangered species.	Endangered species will be identified and listed. Gene banks will be established for these species to conserve genetic diversity. Research will be promoted for development of culture techniques for these species for seed production and restocking in to their habitat (conservation mariculture).		CIFRI, CIFA, DCF, NBFGR, CMFRI, MoEF, DADF and NFDB.

Article / Subsection	How	Standard	Who
9.4.1 States should promote responsible aquaculture practices in support of rural communities, producer organizations and fish farmers	Responsible aquaculture practices will be promoted by evolving standards for each aquaculture practice following international standards.	BAP, GAP standards	CIFRI, CIFA, DCF, CMFRI, MPEDA and DOF of all maritime states While the research institutes should develop standards and guidelines, the AAI should approve the standards and monitor its implementation
9.4.2 States should promote active participation of fish farmers and their communities in the development of responsible aquaculture management practices	Periodic stakeholder meetings will be conducted to consider their views and problems in development of responsible aquaculture management practices and updating them regularly.		CIFRI, CIFA, DCF, CMFRI, AAI and DOF of all maritime states
9.4.3 States should promote efforts which improve selection and use of appropriate feeds, feed additives and fertilisers, including manures.	Standards have to be developed for feeds, feed additives, fertilizers and manures. Research will be promoted to identify appropriate feeds, feed additives, fertilizers and manures and results will be extended to aqua farmers.	FAO guidelines	CIFRI, CIFA, DCF, CMFRI, AAI, DADF and DOF of all maritime states
9.4.4 States should promote effective farm and fish health management practices favouring hygienic measures and vaccines. Safe, effective and minimal use of therapeutants, hormones and drugs, antibiotics and other disease control chemicals should be ensured.	Guidelines will be formulated to ensure effective farm and fish health management practices, suggesting the usage of hygienic practices and appropriate vaccines, therapeutics, hormones, drugs and antibiotics to control diseases.	FAO guidelines	CIFRI, CIFA, DCF, CMFRI, AAI, DADF and DOF of all maritime states

Article / Subsection	How	Standard	Who
9.4.5 States should regulate the use of chemical inputs in aquaculture which are hazardous to human health and the environment	Chemical inputs in aquaculture which are hazardous to human health and the environment are to be listed and banned. Farmers will be advised about the adverse effects of banned substances and strict monitoring on usage of these chemical inputs will be made.	FAO guidelines	CIFRI, CIFA, DCF, CMFRI, AAI, DADF and DOF of all maritime states
9.4.6 States should require that the disposal of wastes such as offal, sludge, dead or diseased fish, excess veterinary drugs and other hazardous chemical inputs does not constitute a hazard to human health and the environment.	Guidelines will be formulated and strict monitoring done in the disposal of wastes such as offal, sludge, dead or diseased fish, excess veterinary drugs and other hazardous chemical inputs.	FAO guidelines	CIFRI, CIFA, DCF, CMFRI, AAI, DADF and DOF of all maritime states
9.4.7 States should ensure the food safety of aquaculture products and promote efforts which maintain product quality and improve their value through particular care before and during harvesting and on-site processing and in storage and transport of the products.	To ensure food safety, farmers will be advised to follow appropriate methods of culture practice, harvesting, storage and transporting methods of aquaculture products and processors will be advised to use appropriate processing methods for aquaculture products.	HACCP, Guidelines of Codex committee on fish and fishery products. FSSAI guidelines	CIFT, AAI, DADF and DOF of all maritime states

Chapter-12

Article 10: Integration of fisheries into coastal area management

ARTICLE 10. INTEGRATION OF FISHERIES INTO COASTAL AREA MANAGEMENT

Article / Subsection	How	Standard	Who
10.1 Institutional framework			
10.1.1 States should ensure that an appropriate policy, legal and institutional framework is adopted to achieve the sustainable and integrated use of the resources, taking into account the fragility of coastal ecosystems and the finite nature of their natural resources and the needs of coastal communities.	The country has put in place the CRZ notification under the EPA-1986 which provides legal and institutional framework for protection and sustainable use of coastal resources and well being of communities. There are limitations and drawbacks in the existing system with respect to fishermen which needs to be addressed.		MoEF&CC
10.1.2 In view of the multiple uses of the coastal area, States should ensure that representatives of the fisheries sector and fishing communities are consulted in the decision-making processes and involved in other activities related to coastal area management planning and development.	There exists a NCZMA with one representative from fishermen association, and no representation from Fisheries Research Institutions. The representation to fishermen has to be increased to at least four positions covering the artisanal, motorized and mechanized sectors and the fish farmers. Furthermore, there should be at least one representation from marine fisheries research institutions. A similar constitution should be afforded to the respective state CZMAs.		MoEF&CC

Article / Subsection	How	Standard	Who
10.1.3 States should develop, as appropriate, institutional and legal frameworks in order to determine the possible uses of coastal resources and to govern access to them taking into account the rights of coastal fishing communities and their customary practices to the extent compatible with sustainable development.	The CRZ notification 2011 which was reviewed in 2016 has limited provisions to meet these requirements.		MoEF&CC
10.1.4 . States should facilitate the adoption of fisheries practices that avoid conflict among fisheries resources users and between them and other users of the coastal area.	The village fishing council system under the NMFMC would ensure that there is documentation and promotion of fishing practices which are not conflicting with each other and other sectors.		VFC DFC SFC NMFMC
10.1.5 States should promote the establishment of procedures and mechanisms at the appropriate administrative level to settle conflicts which arise within the fisheries sector and between fisheries resource users and other users of the coastal area.	The village fishing council system under the NMFMC would ensure that there is: • Clear linkages between different fisher groups in the fisheries councils for conflict resolution. • Implementable plan of action to reduce open access issues and inter sectorial conflicts are to be drafted.		VFC DFC SFC NMFMC

Article / Subsection	How	Standard	Who
10.2 Policy measures			
10.2.1 States should promote the creation of public awareness of the need for the protection and management of coastal resources and the participation in the management process by those affected.	The MoEF&CC should have public awareness wing to facilitate creating awareness on protection and management of coastal resources and ensure participation of affected communities in the management process.		MoEF&CC
10.2.2. In order to assist decision-making on the allocation and use of coastal resources, States should promote the assessment of their respective value taking into account economic, social and cultural factors.	Ecosystem services and economic valuations specific to each region to be made by core fisheries research institutions.	Global standards	Core Marine Fisheries Research Institutions.
10.2.3. In setting policies for the management of coastal areas, States should take due account of the risks and uncertainties involved.	Uncertainties have to be identified and risk analysis carried out for each policy and management options in the CRZ.	Standard methods of risk analysis.	Core fisheries Research Institutions.
10.2.4. States, in accordance with their capacities, should establish or promote the establishment of systems to monitor the coastal environment as part of the coastal management process using physical, chemical, biological, economic and social parameters.	The Core Marine and Ancillary Fisheries Research Institutions have within their mandates provisions for monitoring the physical, chemical, biological, economic and social parameters in part or whole. However, to synthesize the whole information, a network should be formed to develop a comprehensive database available to central and state agencies. There is lack of reference to this important aspect in the CRZ-2011.		Core Marine and Ancillary Fisheries Research Institutions and universities in collaboration with state and central environmental agencies.

Article / Subsection	How	Standard	Who
10.2.5. States should promote multidisciplinary research in support of coastal area management, in particular on its environmental, biological, economic, social, legal and institutional aspects.	The Core Marine and Ancillary Fisheries Research Institutions should carry out multidisciplinary research in support of coastal area management, in particular on its environmental, biological, economic, social, legal and institutional aspects. Funding for this research work may be provided.		Core Marine and Ancillary Fisheries Research Institutions and universities, MoEF&CC
10.3 Regional cooperation			
10.3.1 States with neighbouring coastal areas should cooperate with one another to facilitate the sustainable use of coastal resources and the conservation of the environment.	The existing platforms of RFMOs and IGOs and in addition the bilateral agreements between neighboring States should be strengthened to facilitate sustainable use of coastal resources, particularly on environmental impacts of fishing practices.		MoEF&CC MoA&FW MEA
10.3.2. In the case of activities that may have adverse transboundary environmental effect on coastal areas, State should a) provide timely information and, if possible, prior notification to potentially affected States; b) Consult with those States as early as possible.	The existing platforms of regional cooperative bodies, RFMOs and IGOs and in addition the bilateral agreements between neighboring States should be made use to create mechanisms for mutual exchange of environmental information.		MoEF&CC MoA&FW/DADF MEA
10.3.3. State should cooperate at the sub-regional level and regional level in order to improve coastal area management.	The existing platforms of regional cooperative bodies, RFMOs and IGOs and in addition the bilateral agreements between neighboring States should be used to strengthen coastal area management.		MoEF&CC MoA&FW/DADF MEA

Article / Subsection	How	Standard	Who
10.4 Implementation			
10.4.1 States should establish mechanisms for cooperation and coordination among national authorities involved in planning, development, conservation and management of coastal areas.	The proposed NMFMC is having representatives of all relevant stakeholders concerned with coastal zone management and should evolve suitable mechanisms for cooperation and coordination with CZMA.		NMFMC MoEF&CC CZMA
10.4.2 States should ensure that the authority or authorities representing the fisheries sector in the coastal management process have the appropriate technical capacities and financial resources.	By ensuring participation of qualified fisheries personnel in the CZMA and by allocating sufficient funds for their functions.		MoEF&CC

Chapter-13

Article 11: Post-harvest practices and trade

ARTICLE 11. POST-HARVEST PRACTICES AND TRADE

Sl.No	Article / Subsection	How	Standard	Who
11.1	**Responsible Fish Utilization**			
11.1.1	States should adopt appropriate measures to ensure the right of consumers to safe, wholesome and unadulterated fish and fishery products.	The proposed NAPC (see Annex 2 for details) will codify all the standards for providing quality foods with the help of the guidelines drafted by FSSAI.	The standards recommended by the Food Safety Standards Authority of India (FSSAI) may be followed.	NAPC, CIFT, DADF DOF of all maritime States
11.1.2	States should establish and maintain effective national safety and quality assurance systems to protect consumer health and prevent commercial fraud.	FSSAI should be empowered with powers to levy penalties in addition to inspection.	FSSAI and WHO standards.	DADF, DOF, and Health Departments
11.1.3	States should set minimum standards for safety and quality assurance and make sure that these standards are effectively applied throughout the industry. They should promote the implementation of quality standards agreed within the context of the FAO/WHO Codex Alimentarius Commission and other relevant organizations or arrangements.	NAPC should give guidelines for food fish safety, which will be implemented by FSSAI.	FAO/WHO standards Codex	NAPC, DADF, DOF, CIFT
11.1.4	States should cooperate to achieve harmonization, or mutual recognition, or both, of national sanitary measures and certification programmes as appropriate and explore possibilities for the establishment of mutually recognized control and certification agencies.	Harmonization of all Standards in Phyto-sanitary requirements of WTO agreements.	As committed under World trade agreements.	NAPC, CIFT, DADF

Sl.No	Article / Subsection	How	Standard	Who
11.1.5	States should give due consideration to the economic and social role of the post-harvest fisheries sector when formulating national policies for the sustainable development and utilization of fishery resources .	Economic and social aspects of post-harvest sector would be addressed by CIFT through its research projects, the outputs of which will feed into the national policy.		CIFT
11.1.6	States and relevant organizations should sponsor research in fish technology and quality assurance and support projects to improve post-harvest handling of fish, taking into account the economic, social, environmental and nutritional impact of such projects	The CIFT already addresses these through projects focusing on aspects of the socio economics and nutrition.		CIFT
11.1.7	States, noting the existence of different production methods, should through cooperation and by facilitating the development and transfer of appropriate technologies, ensure that processing, transporting and storage methods are environmentally sound.	CIFT should list and constantly update the various productions methods and develop standards for transportation and storage.	As per FAO standards	CIFT, NAPC and DOF of all maritime states
11.1.8	States should encourage those involved in fish processing, distribution and marketing to: a) Reduce post-harvest losses and waste; b) Improve the use of by-catch to the extent that this is consistent with responsible fisheries management practices; c) use the resources, especially water and energy, in particular wood, in an environmentally sound manner	CIFT research focusses on these areas and the outputs have to be provided to NAPC for setting the standards.	FAO standards	NAPC, CIFT

Sl.No	Article / Subsection	How	Standard	Who
11.1.9	States should encourage the use of fish for human, consumption and promote consumption of fish whenever appropriate.	NFDB can advertise indicating the nutritive value of fish on the lines of NDDB or Egg Promotion Committee.	The nutritive value of fish and its role in reducing the risk of certain ailments like heart attack and cancer.	NFDB
11.1.10	States should cooperate in order to facilitate the production of value-added products by developing countries.	Encouraging domestic industries to set up units producing value-added products and providing tax incentives and relaxation in import of technical know-how.	Identify the species for VAP production. Guidelines for import of capital goods and technical know-how to set up VAP plants in India.	NAPC, DADF, NFDB
11.1.11	States should ensure that international and domestic trade in fish and fishery products accords with sound conservation and management practices through improving the identification of the origin of fish and fishery products traded.	Guidelines for fishery products traceability to be developed.	Traceability standards of FAO.	NAPC, DADF
11.1.12	States should ensure that environmental effects of post-harvest activities are considered in the development of related laws, regulations and policies without creating any market distortions.	Research on environmental effects of post-harvest activities are to be strengthened and standards have to be developed.	International standards.	CIFT, NAPC, CIFT DADF
11.2	**Responsible international trade**			
11.2.1	The provisions of this Code should be interpreted and applied in accordance with the principles, rights and obligations established in the World Trade Organization (WTO) Agreement.	All guidance given in this Code are WTO compliant.	WTO agreement.	NMFMC, NAPC, DOF of all maritime states

Sl.No	Article / Subsection	How	Standard	Who
11.2.2	International trade in fish and fishery products should not compromise the sustainable development of fisheries and responsible utilization of living aquatic resources.	Trade promotion agencies like MPEDA should ensure compliance to sustainability through eco-labelling, certification and traceability.	Guidelines for eco-labelling, certification, traceability.	MPEDA, Core Marine Fisheries Research Institutions .
11.2.3	States should ensure that measures affecting international trade in fish and fishery products are transparent, based, when applicable, on scientific evidence, and/are in accordance with internationally agreed rules.	Trade based on principles of harmonization of standards and guidelines. Appropriate documentation of quality and traceability standards to be established by concerned agencies	International quality standards and guidelines.	MPEDA EIC DADF
11.2.4	Fish trade measures adopted by States to protect human or animal life or health, the interests of consumers or the environment, should not be discriminatory and should be in accordance with internationally agreed trade rules, in particular the principles, rights and obligations established in the Agreement on the Application of Sanitary and Phytosanitary Measures and the Agreement on Technical Barriers to Trade of the WTO.	The NAPC should ensure that science based information is available to the FSSAI and DADF for setting standards for fishery products traded in the region which is compliant with SPS and TBT of WTO respectively. On a regional scale the standards should be harmonized with that of SAARC countries.	SPS standards and TBT of WTO.	NAPC FSSAI DADF
11.2.5	States should further liberalize trade in fish and fishery products and eliminate barriers and distortions to trade such as duties, quotas and non-tariff barriers in accordance with the principles, rights and obligations of the WTO Agreement.	As India is a signatory to the WTO, these requirements are already in place. The NAPC should ensure that the regulations with respect to fish trade are WTO compliant.	EXIM policy of the GOI, SPS standards and TBT of WTO.	NAPC

Sl.No	Article / Subsection	How	Standard	Who
11.2.6	States should not directly or indirectly create unnecessary or hidden barriers to trade which limit the consumer's freedom of choice of supplier or that restrict market access.	As India is a signatory to the WTO, these requirements are already in place. The NAPC should ensure that the regulations with respect to fish trade are WTO compliant.	EXIM policy of the GOI TBT of WTO	NAPC
11.2.7	States should not condition access to markets or access to resources. This principle does not preclude the possibility of fishing agreements between States, which include provisions referring to access to resources, trade and access to markets, transfer of technology, scientific research, training and other relevant elements.	As India is a signatory to the WTO, these requirements are already in place. The NAPC should ensure that the regulations with respect to fish trade are WTO compliant.	EXIM policy of the GOI TBT of WTO	NAPC
11.2.8	States should not link access to markets or the purchase of specific technology or sale of other products.	The NAPC should ensure that the technology transfer and access to markets are not linked.	EXIM policy of the GOI TBT of WTO	NAPC
11.2.9	States should cooperate in complying with relevant international agreements regulating trade in endangered species.	The NAPC should ensure that the regulations with respect to fish trade are in agreement with CITES guidelines on trade in endangered species. The NMFMC should provide species status updates to CITES through MoEF&CC for appropriate listing.	CITES List	NAPC NMFMC MoEF&CC

Sl.No	Article / Subsection	How	Standard	Who
11.2.10	States should develop international agreements for trade in live Specimens where there is a risk of environmental damage in importing or exporting States.	NMFMC should strengthen guidelines for trade in live specimens between States considering the risk of environmental damage. The SPS measures are to be strictly adhered and protocols for controlled introductions have to be framed.	SPS measures EIA	NMFMC DADF
11.2.11	States should cooperate to promote adherence to, and effective Implementation of relevant international standards for trade in fish and fishery products and living aquatic resource conservation.	The NMFMC and NAPC should ensure that necessary support is provided to concerned departments for enhanced cooperation.	International standards	NMFMC NAPC
11.2.12	States should not undermine conservation measures for living aquatic resources in order to gain trade or investment benefits.	The NMFMC and NAPC should ensure that the existing rules of conservation are not violated to gain benefits in trade.		NMFMC NAPC
11.2.13	States should cooperate to develop internationally acceptable rules or Standards for trade in fish and fishery products in accordance with the principles, rights, and obligations established in the WTO Agreement.	As India is a signatory to the WTO, these requirements are already in place. The NAPC should ensure that the regulations with respect to fish trade are WTO compliant.	EXIM policy of the GOI TBT of WTO	NAPC

Sl.No	Article / Subsection	How	Standard	Who
11.2.14	States should cooperate with each other and actively participate in relevant regional and multilateral forums, such as the WTO in order to ensure equitable, non-discriminatory trade in fish and fishery products as well as wide adherence to Multilaterally agreed fishery conservation measures.	The NMFMC and NAPC should ensure that technical experts participate in the multilateral forums and also ensure fair trade and conservation measures.	Multilateral agreements.	NMFMC NAPC, DADF MoC
11.2.15	States, aid agencies, multilateral development banks and other relevant international organizations should ensure that their policies and practices related to the promotion of international fish trade and export production do not result in environmental degradation or adversely impact the nutritional rights and needs of people for whom fish is critical to their health and well-being and for whom other comparable sources of food are not readily available or affordable.	NMFMC should give necessary advisories to the concerned departments for ensuring that fish trade and exports do not affect the environmental integrity and the nutritional security of the people of India.		NMFMC DADF MoC
11.3	**Laws and regulations relating to fish trade**			
11.3.1	Laws, regulations and administrative procedures applicable to international trade in fish and fishery products should be transparent, as simple as possible, comprehensible and, when appropriate, based on scientific evidence.	NAPC should provide necessary scientific information for the formulation of laws, rules and procedures and ensure that the instruments are transparent, simple and comprehensible.	International best practices	NAPC, MoC MoL

Sl.No	Article / Subsection	How	Standard	Who
11.3.2	States, in accordance with their national laws, should facilitate appropriate consultation with and participation of industry as well as environmental and consumer groups in the development and implementation of laws and regulations related to trade in fish and fishery products	NAPC will ensure the participatory and consultative process in development of laws and rules.	International best practices.	NAPC, DADF MoC MoL
11.3.3	States should simplify their laws, regulations and administrative procedures applicable to trade in fish and fishery products without jeopardizing their effectiveness.	NAPC will assist in simplifying the existing laws and procedures without sacrificing the objectives of the instruments.		NAPC, DADF MoC MoL
11.3.4	When a State introduces changes to its legal requirements affecting trade in fish and fishery products with other States, sufficient information and time should be given to allow the States and producers affected to introduce, as appropriate, the Changes needed in their processes and procedures. In this connection, consultation with affected States on the time frame for implementation of the changes would be desirable. Due consideration should be given to requests from developing countries for temporary derogations from obligations.	NAPC should assess the ground realities and advise the concerned ministries to seek appropriate time frame for implementation of the regulatory instruments in the State.		NAPC, DADF MoC
11.3.5	States should periodically review laws and regulations applicable to International trade in fish and fishery products in order to determine whether the conditions which gave rise to their introduction continue to exist.	NAPC should review the international regulatory instruments in the light of changing situation in the country and recommend necessary amendments in the rules.		NAPC

Sl.No	Article / Subsection	How	Standard	Who
11.3.6	States should harmonize as far as possible the standards applicable to international trade in fish and fishery products in accordance with relevant internationally recognized provisions	The quality standards for fish and fishery products have already been harmonized by FSSAI with inputs from CIFT. NAPC should initiate steps to harmonize other trade related standards.	CODEX Standards WTO provisions FSSAI	NAPC
11.3.7	States should collect, disseminate and exchange timely, accurate and pertinent statistical information on international trade in fish and fishery products through relevant national institutions and international organizations	MPEDA is collecting and disseminating information on marine product exports. MPEDA should facilitate exchange of trade related information among the national and international organizations, besides making it available to all relevant stakeholders.	GLOBEFISH INFOFISH of FAO	MPEDA
11.3.8	States should promptly notify interested States, WTO and other appropriate international organizations on the development of and changes to laws, regulations and administrative procedures applicable to international trade in fish and fishery products.	This aspect is being currently addressed by MoC.		MoC

Chapter-14

Article 12: Fisheries Research

ARTICLE 12. FISHERIES RESEARCH

Article / Subsection	How	Standard	Who
12.1 States should recognize that responsible fisheries require the availability of a sound scientific basis to assist fisheries managers and other interested parties in making decisions. Therefore, States should ensure that appropriate research is conducted into all aspects of fisheries including biology, ecology, technology, environmental science, economics, social science, aquaculture and nutritional science. States should ensure the availability of research facilities and provide appropriate training, staffing and institution building to conduct the research, taking into account the special needs of developing countries.	The country has a well-established system for fisheries research encompassing biology, ecology, technology, environmental science, economics, social sciences, aquaculture and nutrition science under the aegis of ICAR, MoA&FW, and Fisheries Colleges/Universities. The Institutes in marine fisheries research are CMFRI, CIFT, CIFE, CIBA, FSI, CICEF, NIFPHATT and CIFNET. Besides, supporting research is provided by institute under MoES, MoEF&CC, MoC and CSIR.		ICAR, MoA&FW MoES MoEF&CC MoC CSIR Universities
12.2 States should establish an appropriate institutional framework to determine the applied research which is required and its proper use.	Keeping in view the above institutional system, the NMFMC, which is the apex council for fisheries management in the country, should provide framework to the core institutions on applied fisheries research. Besides, the three-tier fisheries management council to be formed in all the maritime states, would also bring out researchable issues at the local and regional levels.		NMFMC FMCs

Article / Subsection	How	Standard	Who
12.3 States should ensure that data generated by research are analyzed, that the results of such analyses are published, respecting confidentiality where appropriate, and distributed in a timely and readily understood fashion, in order that the best scientific evidence is made available as a contribution to fisheries conservation, management and development. In the absence of adequate .scientific information, appropriate research should be initiated as soon as possible.	The Core Marine and Ancillary Fisheries Research Institutions should ensure that all their research results are peer reviewed and published in the shortest possible time. The research publications should also be published in a manner which is easily accessible to interested parties.	Global standards for science communications	Core Marine and Ancillary Fisheries Research Institutions, CICEF NIFPHATT
12.4 States should collect reliable and accurate data which are required to assess the status of fisheries and ecosystems, including data on by catch, discards and waste. Where appropriate, this data should be provided, at an appropriate time and level of aggregation, to relevant States and sub-regional, regional and global fisheries organizations.	The existing system of marine fisheries data collection should be made more robust to address the whole ecosystem including data on by catch, discards and waste.	Global standards	CMFRI DADF DOF of all maritime states FSI
12.5 States should be able to monitor and assess the state of the stocks under their jurisdiction, including the impacts of ecosystem changes resulting from fishing pressure, pollution or habitat alteration. They should also establish the research capacity necessary to assess the effects of' climate or environment change on fish stocks and aquatic ecosystems.	The annual status of major marine fish stocks has to be brought out by the Core Marine Fisheries Research Institutions. The status of major ecosystems and habitats should also be reported. The research institutions should undertake projects to address effects of climate or environment change.		CMFRI FSI CIFT
12.6 States should support and strengthen national research capabilities to meet acknowledged scientific standards.	The concerned Ministries should ensure enhanced financial and manpower support for marine fisheries research institutions to conduct world-class scientific research.		MoA&FW MoES MoEF&CC MoST

Article / Subsection	How	Standard	Who
12.7 States, as appropriate in cooperation with relevant international organisations, should encourage research to ensure optimum utilization of fishery resources and stimulate the research required to support national policies related to fish as food.	The Government should formulate policies fostering international cooperation in the field of marine fisheries research.		DADF ICAR/DARE
12.8 States should conduct research into, and monitor, human food supplies from aquatic sources and the environment from which they are taken and ensure that there is no adverse health impact on consumers. The results of such research should be made publicly available.	The levels of harmful substances in harvested marine resources should be periodically monitored and the information made public.	WHO standards on heavy metal and pesticide levels in aquatic organisms.	CIFT CMFRI MPEDA NAPC EIA
12.9 States should ensure that the economic, social, marketing and institutional aspects of fisheries are adequately researched and that comparable data are generated for ongoing monitoring, analysis and policy formulation.	The Core Marine Fisheries Research Institutions should strengthen research on economic, social, marketing and institutional aspects of fisheries to enable development of appropriate policies.	Global standards on economic and social research.	Core Marine Fisheries Research Institutions
12.10 States should carry out studies on the selectivity of fishing gear, the environmental impact of fishing gear on target species and on the behavior of target and non-target species in relation to such fishing gear as an aid for management decisions and with a view to minimizing non-utilized catches as well as safeguarding the biodiversity of ecosystems and the aquatic habitat.	Research on gear selectivity and environmental impact of fishing gears should be enhanced so as to aid in management decision and policy, particularly for complete utilization of harvested resources and conserving biodiversity.	Global standards on gear studies.	Core Marine Fisheries Research Institutions
12.11 States should ensure that before the commercial introduction of new types of gear, a scientific evaluation of their impact on the fisheries and ecosystems where they will be used should be undertaken. The effects of such gear introductions should be monitored.	Any new gear before introduction should be tested and evaluated in the field for efficiency and environmental impacts and a NMFMC subcommittee should approve before commercial introduction of such new gears.	Global standards for gear testing.	CIFT CMFRI NMFMC

Article / Subsection	How	Standard	Who
12.12 States should investigate and document traditional fisheries knowledge and technologies, in particular those applied to small-scale fisheries, in order to assess their application to sustainable fisheries conservation, management and development.	A regional repository on ITKs in marine fisheries should be maintained by Core Marine Fisheries Research Institutions and their application for conservation and management of marine fisheries should be assessed.		Core Marine Fisheries Research Institutions
12.13 States should promote the use of research results as a basis for the setting of management objectives, reference points and performance criteria, as well as for ensuring adequate linkage, between applied research and fisheries management.	The framework developed by NMFMC should take into account the use of research results as a basis for setting management objectives.		NMFMC
12.14 States conducting scientific research activities in waters under the jurisdiction of another State should ensure that their vessels comply with the laws and regulations of that State and international law.	Necessary directives should be issued by the Government detailing the protocol for undertaking vessel based programmes in the jurisdiction of other States.	International and national laws	MoEA DADF MoS
12.15 States should promote the adoption of uniform guidelines governing fisheries research conducted on the high sea.	The concerned ministry should formulate guidelines for undertaking research in high seas.	UNCLOS	MoES
12.16 States should, where appropriate, support the establishment of mechanisms, including, *inter alia*, the adoption of uniform guidelines, to facilitate research at the sub-regional or regional level and should encourage the sharing of the results of such research with other regions.	The concerned ministry should develop guidelines and establish mechanism for sharing of information at regional and sub-regional level.		MoA&FW DADF

Article / Subsection	How	Standard	Who
12.17 States, either directly or with the support of relevant international organizations, should develop collaborative technical and research programmes to improve understanding of the biology, environment and status of transboundary aquatic stocks.	The Core Marine Fisheries Research Institutions should embark on collaborative research on transboundary stocks either directly or with support of international organizations.	CMS and UNFSA guidelines	Core Marine Fisheries Research Institutions
12.18 States and relevant international organizations should promote and enhance the research capacities of developing countries, inter alia, in the areas of data collection and analysis, information, science and technology, human resource development and provision of research facilities, in order for them to participate effectively in the conservation, management and sustainable use of living aquatic resources.	The concerned ministries should promote international collaboration for enhancing the capacity in fisheries research.	UNCLOS,UNFSA, IOTC	DADF DARE
12.19 Competent international organizations should, where appropriate, render technical and financial support to States upon request and when engaged in research investigations aimed at evaluating stocks which have been previously not fished or very lightly fished.	The concerned ministries should liberalize the procedures for receiving technical and financial supports from international organizations for investigations on developing new fisheries.		MoF DADF DARE
12.20 Relevant technical and financial international organizations should, upon request, support States in their research efforts, devoting special attention to developing countries, in particular the least developed among them and small island developing countries.	The concerned ministries should liberalise the procedures for receiving technical and financial support from international organizations in relevant areas.		MoF DADF DARE

Annex 1

National Marine Fisheries Management Council (NMFMC)

During the last decade, there has been a shift in the governance of fisheries to a broader approach that recognizes fishermen participation, local stewardship, and shared decision-making in the management of fisheries. Through this process, fishers are empowered to become active members of the fisheries management team, balancing rights and responsibilities, and working in partnership, rather than antagonistically, with government. This approach is called co-management or participatory management[20].

It is becoming increasingly clear that governments, with their finite resources, cannot solve all fishery problems. Local communities will need to take more responsibility for solving local problems. In order to do this, however, communities must be empowered and resources provided to make decisions locally and to take actions that meet local opportunities and problems. The assistance and support of government will still be needed to achieve these results, although the role and responsibilities of government will also need to change. The concept of co-management has gained acceptance among governments, development agencies and development practitioners as an alternative fisheries management strategy to the top-down, centralized government management approach.

However, the actual process of co-management has often been problematic as the definition of co-management is quite broad and means different things to different people. However, co-management may not be an appropriate alternative management strategy for every community or area. Centralized management may be more appropriate to certain community or area. The development of co-management is neither automatic nor simple, nor is its sustainability guaranteed. Co-management does show promise for addressing many of the requirements for sustainability, equity and efficiency in fisheries and coastal resources management and there are several examples of success stories in many parts of the developing world.

Definition of co-management

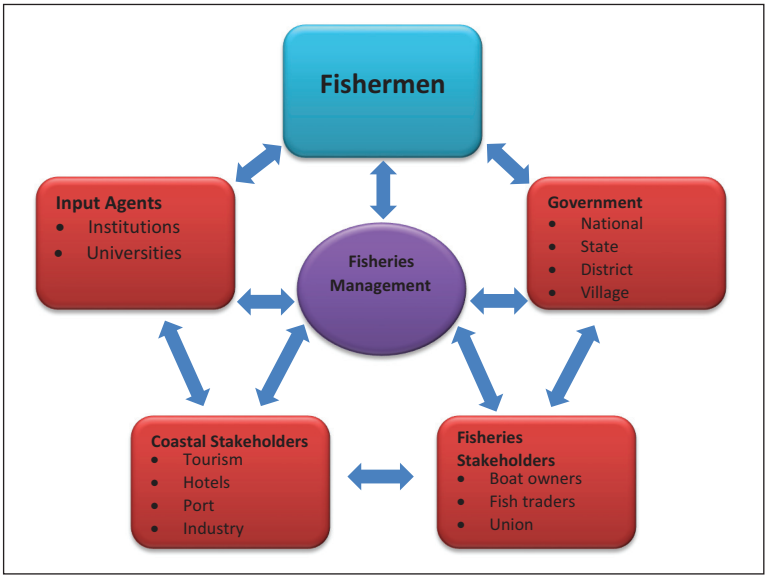
Participatory management or co-management can be defined as a partnership arrangement in which the community of local resource users (fishermen), government, other stakeholders (boat owners, fish traders, boat builders, business people, etc.)

[20]Pomeroy, R.S. and Rivera-Guieb, R. 2006. Fishery co-management: a practical handbook. International Development Research Centre, Ottawa, Canada. 223 pp.

and external input agents (non-governmental organizations (NGOs), academic and research institutions) share the responsibility and authority for the management of the fishery.

Through consultations and negotiations, the partners develop a formal agreement on their respective roles, responsibilities and rights in management, referred to as 'negotiated power'. Co-management is also called participatory, joint, stakeholder, multi-party or collaborative management.

Partnership in Co-management (From Mohamed et al. 2014[21])



According to Pomeroy and Rivera-Guieb[20] co-management covers various partnership arrangements and degrees of power sharing and integration of local (informal, traditional, and customary) and centralized government management systems. Fisheries co-management can be classified into five broad types according to the roles government and fishers play:

- **Instructive:** There is only minimal exchange of information between government and fishers. This type of co-management regime is only different from centralized management in the sense that the mechanisms exist for dialogue with users, but the process itself tends to be government informing fishers on the decisions they plan to make.

[21] Mohamed, K.S., P. Puthra, T.V. Sathianandan, M.V. Baiju, K.A. Sairabanu, K.M. Lethy, P. Sahadevan, Chandrasekharan Nair, M. Lailabeevi and P.S. Sivaprasad. 2014. Report of the committee to evaluate fish wealth and impact of trawl ban along Kerala coast. Department of Fisheries, Government of Kerala, 85 pp.

- **Consultative:** Mechanisms exist for government to consult with fishers but all decisions are taken by government.
- **Cooperative:** This type of co-management is where government and fishers cooperate together as equal partners in decision-making.
- **Advisory:** Fishers advise government of decisions to be taken and government endorses these decisions.
- **Informative:** Government has delegated authority to make decisions to fisher groups who are responsible for informing government of these decisions.

Since India is new to such types of co-management, it is recommended that India embrace the consultative mode of co-management immediately and then in later years move on to the cooperative mode of co-management as communities and governments take time to adjust and understand these new governance systems (see box above). Under the consultative mode of co-management 3-tier fisheries councils should be formed immediately at the maritime state level. An example for each maritime state is shown below as an infographic.

At the lowest level should be the Village Fisheries Council (VFC) and next should be the District Fisheries Council (DFC) and finally the State Fisheries Council (SFC). The TORs of the councils should be very clearly set. The councils should have representation from panchayats/ district/state, Department of Fisheries, CMFRI, CIFT, NGO's working in the

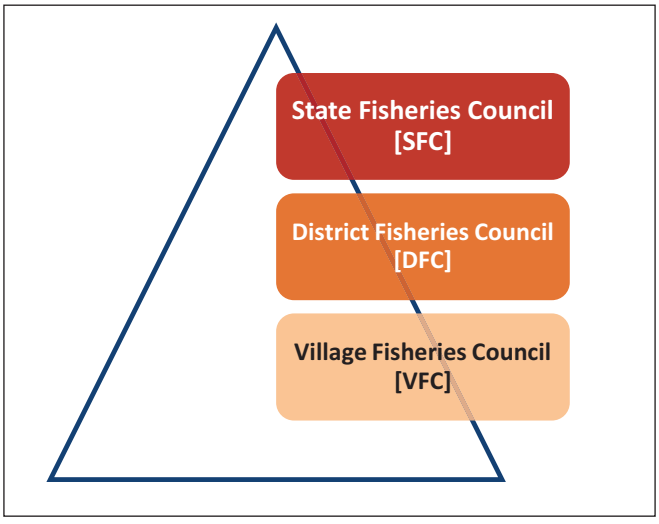


Fig. 4. Infographic of the hierarchical 3-tiered fishery management councils proposed for every maritime state (from Mohamed et al., 2014[21]).

area and fishermen associations and societies. They should meet once in a quarter. The Council should have powers to debate and recommend rules as necessary for effective management of fisheries to the rule making authority. The scientific inputs for management of fisheries should be taken from concerned national/ regional research institutes and universities.

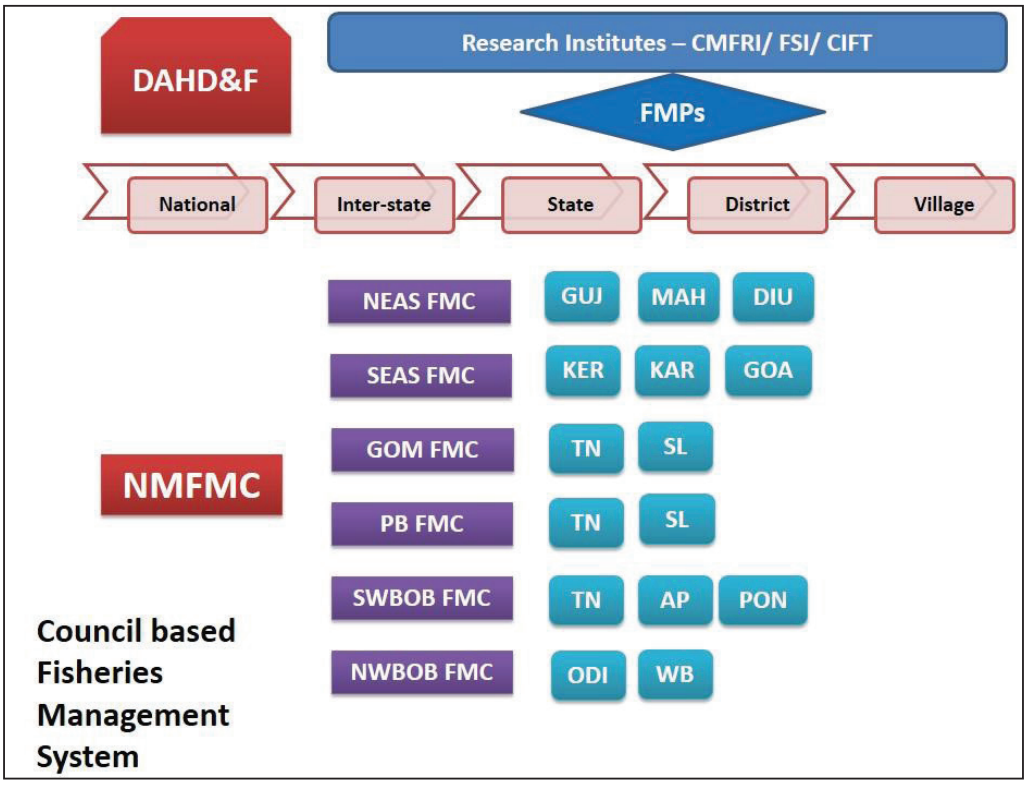


Fig. 5. Infographic of the proposed council based fisheries management system proposed for India. Abbreviations are provided in text

At the national level there would be an apex National Marine Fisheries Management Council (NMFMC) under the DADF. Under this apex body there would be 6 interstate or regional FMCs (RFC) representing the 4 main sea areas of the country (see Fig.5, infographic), besides some of the special ecosystems such as the Gulf of Mannar (GOM) and the Palk Bay (PB). The GOM and PB FMCs could have provision for inclusion of Sri Lanka (SL) also for regional dispute redressal and management of shared stocks. The main sea areas are the Northeast Arabian Sea (NEAS), Southeast Arabian Sea (SEAS), Northwest Bay of Bengal (NWBOB) and the Southwest Bay of Bengal (SWBOB). The composition and the terms of reference of the councils would be very clearly set out and an example composition for each of the council is shown in section 7.1.1. The main objective would be to manage and regulate the fisheries using

the scientific outputs in the form of fishery management plans (FMPs) brought out by the fisheries research institutes.

The current practice of fisheries advisories being given by research institutes/ universities has not worked well, primarily because the respective governments have been mostly unable to act immediately by making new regulations or amending laws. As a first trial the council based management system has worked remarkably well for the management of the Ashtamudi Lake Short-neck clam fisheries which incidentally is the first ecolabelled (MSC certified) fisheries in the country[22]. (see box).

Ashtamudi Clam Fisheries Governance Council (AFGC)

The AFGC came into being in 2013 through an executive order of the District Collector of Kollam, Kerala based on the advisory in the clam FMP prepared by CMFRI[23]. A TOR was adopted by the 20 member council which includes, fishermen union leaders, clam fishermen, clam agents, clam exporters, scientists of CMFRI, NGOs, representatives of marine enforcement and MPEDA. The District Collector is the Chairman and the Deputy Director of Fisheries is the Member Secretary and the AFGC meets four times in a year. The decisions taken are binding to all concerned. The short-neck clam fishery has been a successfully managed fisheries for past several years, and hence the award of MSC certification.

A rough guide on the manner in which a responsive and efficient council management system can work is shown in the flowchart shown below (Fig. 6).

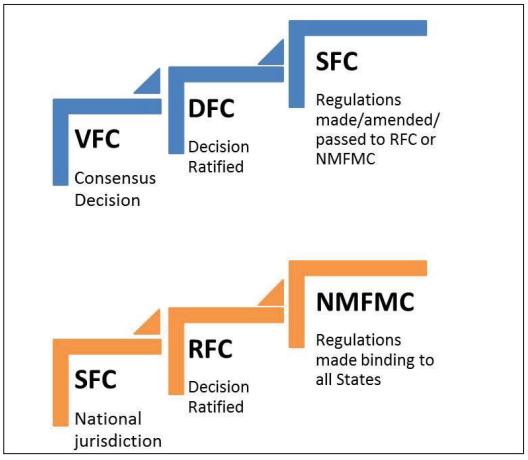


Fig. 6. Decision making hierarchy in the proposed council based fisheries management system

[22] Mohamed, K S and Malayilethu, Vinod .2015. Ashtamudi Clam Fishery - An example of Sustainable Management and Biodiversity Conservation. In: Biocultural Heritage and Sustainability. Kerala State Biodiversity Board, Thiruvananthapuram, pp. 69-76.

[23] Mohamed, K S, Venketasan V, Kripa V, Prema D, Joseph M, Alloycious P S, Jerni B, Valsala K K, Sajikumar K K, Ragesh N, Bose J and Mohan A (2013) Fishery Management Plan for Ashtamudi Lake Clam Resources. CMFRI Special Publication 114:1-48.

Annex 2

National Aquatic Products Council (NAPC)

The safety of food being consumed is paramount importance as far as the consumer is concerned. Fish is good source of cheap, high quality protein and is affordable to even the weaker sections of the society. The health of the consumer is directly related to the quality of food consumed by them. It is obvious that the quality of the fish and other aquatic lives is related directly to the ecosystem and it is important to check the hazardous chemicals and pathogens in fish contributing to ill-health to consumers and thereby the overall well-being of the society. Hazards associated with the ecosystem particularly, those caused by organochlorine compounds, antibiotic residues, heavy metal residues, pathogenic microorganisms etc., could be expected in the fish and could cause dangerous outcomes in human beings, if appropriate measures to contain them are not taken up.

The activities concerned with production, processing, distribution and retail are all controlled by food laws but have not been effectively implemented in developing countries including India due to various reasons. It is pertinent to address these in the interest of the population in the countries. It has been detailed in the FAO's code of practices and it is up to the individual countries to take care of their population with appropriate regulatory or remedial measures. It is well known that the aqutic food production system in India is not regulated at all and demands strict regulation for supply of safe and uncontaminated fish to the consumers. India has vast potential in both marine and aquaculture production and appropriate regulatory measure would add to the existing supply of quality fish to the society.

In India the quality of food, particularly the quality of fish meant for human consumption is, as of now, regulated by Export Inspection Council and Food Safety Standards Authority of India for export and domestic consumption respectively. The control at lower level is through Export Inspection Agency on commodity basis and by Food Safety Commiserate at state level. To make the whole system effective and have an up and down regulation in accordance with the FAO's Code, a model system is suggested for effective implementation which incorporates a collective involvement of national bodies, regulatory bodies and the core research institutes. An apex body, namely the **National Aquatic Products Council (NAPC)**, being proposed here will operate through regional bodies, state bodies and district bodies which will have representatives from the state and district and national bodies. The interlinking of

regional and national bodies will facilitate utilizing the expertise at national level for effective implementation and regulation on the quality of fish and fishery products for the benefit of the consumers.

Constitution of the NAPC

The proposed National Aquatic Products Council system will have a four tiered functional structure as shown below in Fig.7.

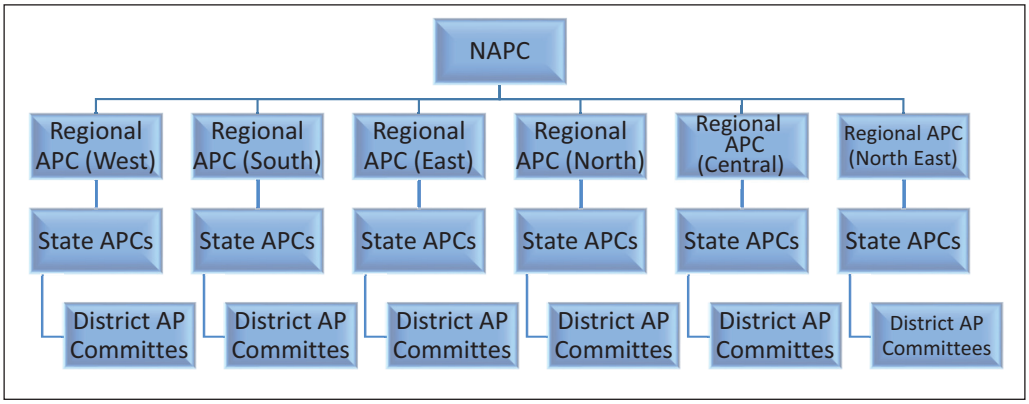


Fig. 7. Structure of the proposed NAPC

The Regional AP Councils will have states from the respective regions as members. The details are given in Fig. 8 below.

Fig. 8. Constitution of regional AP Councils

The NAPC will have the following constitution.

1. Secretary, DADF, MoA&FW, Chairman
2. Joint Secretary, DADF, MoA&FW
3. Representatives from CIFT, Quality Control (1 member)
4. Representatives from CIFT, Microbiology (2 members)
5. Representative from CMFRI
6. Representative from FSSAI
7. Representative from EIC
8. Representative from NFDB
9. Representatives of the Regional AP Council (2 members)
10. Representatives of State DOF (4 members)
11. President FISHCOPFED or his representative
12. Secretary, SEAI
13. Commissioner of Fisheries (Member Secretary)

Annex 3

Aquaculture Authority of India (AAI)

The Coastal Aquaculture Authority (CAA) was established under the Coastal Aquaculture Authority Act, 2005 and notified vide Gazette Notification dated 22nd December, 2005. The main objective of the Authority is to regulate aquaculture activities in coastal areas in order to ensure sustainable development without causing damage to the coastal environment. The Authority is empowered to make regulations for the construction and operation of aquaculture farms in coastal areas, inspection of farms to ascertain their environmental impact, registration of aquaculture farms, fixing standards for inputs and effluents, removal or demolition of coastal aquaculture farms, which cause pollution etc.

The CAA today is greafly focused towards shrimp with regard to the composition of its members, standards and activities. The organization needs to widen its scope to include aquaculture of finfish (marine and freshwater), bivalves, seaweeds and other cultivable aquatic organisms. Standards for Best Aquaculture Practice (BAP) for all aquatic organisms need to be developed and implimented using the statutory powers vested with the Authority. For achieving this, the composition of the members of the CAA has to be enlarged to include expertise in culture of other aquatic organisms and culture systems. The CAA could also be appropriately renamed as **Aquaculture Authority of India** (AAI) to refer to the widened scope of the body.

Celebrating

20 Years of the FAO Code of Conduct for Responsible Fisheries