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Evaluation of Compliance of Marine Fisheries of Kerala with Article 8 of FAO CCRF

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Abstract

It is necessary to evaluate the compliance of local fisheries with relevant provisions of the FAO Code of Conduct for Responsible Fisheries (CCRF) which is an indication of how far the code has been implemented. The present study focused on applications of the Code at the grassroot level by local fisheries management authorities in marine fisheries of Kerala with reference to guidelines for fishing operations (Article 8 of FAO CCRF). A questionnaire-based approach was used to demonstrate the compliance with the same. Study on marine fisheries of Kerala showed compliance on many areas of Article 8 like documentation of catch and effort, registration and licensing of fishing vessels, safety of fishers and insurance coverage. However, mesh size regulations as per section 4 of Kerala Marine Fisheries Regulation Act (KMFRA), 1980 were not followed. Other areas where improvement is required include Monitoring, Control and Surveillance (MCS), fishing gear selectivity and energy optimization. An overall 54% score was obtained for compliance of marine fisheries of Kerala with Article 8 of the code.

Keywords: CCRF, marine fisheries of Kerala, compliance, sea safety, MCS

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Introduction

Code of Conduct for Responsible Fisheries (FAO, 1995) is a tool which focuses mainly on achieving sustainability through responsible fishing practices. The code mainly aims at conservation, management and development of all living aquatic resources. It aims to promote compatibility between the activities and economic interests of all those involved in fisheries, through enlightened fishermen and ecological principles of conservation, ensuring that resources and development opportunities they represent are transferred to future generations of fishermen (Lizarraga, 1991). The code was fundamentally a global response to the progressively failing state of many fisheries the world over (Hanchard, 2004). CCRF is one of the first Codes of Conduct to be formulated for an industry harvesting a natural resource (Smith, 1999).

It is necessary to evaluate the compliance of local fisheries with relevant provisions of the code to indicate the level of implementation of the code. Article 8 of the CCRF deals with fishing operations and it has provisions with regard to the duties of flag states and port states, as well as provisions on the harbours, protection of the environment and the abandonment of structures and reefs. Flag states are encouraged to ensure compliance with appropriate safety requirements as well as to promote access to insurance coverage for fishing vessels. Port states are to provide safe harbours and landing places. The overall objective of Article 8 is to promote a framework that would encourage sustainable development while making a significant contribution to the safety of fishing operations.

Annual marine fish landings of India during the year 2012 were estimated to be 3.94 million t (CMFRI, 2013). Kerala is one of the major marine fish production states along the south west coast and one of the most literate states in India. The state occupies premier position in Indian fisheries by contributing about 20% of the total marine fish landings of India. The total marine fish landings of Kerala were estimated to be 0.84 million t during 2012. The contributions of mechanised, motorised

and non-mechanised sectors were 68.3, 30.3 and 1.4% respectively (CMFRI, 2013). Focus of the present study was on application of the code at grassroot level by fisheries management authorities in Kerala. The findings of the study would throw light on the compliance level of selected parameters of Article 8 (Fishing Operations) of FAO CCRF that will help in suggesting measures to ensure sustainability and responsible fishing achievable through changes in marine fishing policies in the state of Kerala.

Materials and Methods

Caddy's checklist (Caddy, 1996, 2000, 2007) was selected to evaluate Article 8 (Fishing Operations) of FAO CCRF in the state of Kerala. Article 8 for the purpose of evaluating its compliance with local marine fisheries of Kerala, was divided into six major sub-sections. The sub-sections contain questions pertaining to duties of the state, fishing activities, fishing gear selectivity, energy optimization, harbours and landing places for fishing vessels and fish aggregating devices which were developed into a questionnaire.

Three main coastal districts were selected for the study, namely Kollam (Southern), Ernakulam (Central) and Kozhikode (Northern). The study was carried out from September 2012 to May, 2013. The details of fishing vessels surveyed (same as number of fishers) are given in Table 1. Department of Fisheries, Kerala and other agencies associated with fisheries sector of Kerala such as Kerala State Co-operative Federation for Fisheries Development Ltd. (Matsyafed) and Marine Enforcement were visited for the purpose of study. Role of agencies which play a supporting role in the development and management of marine fisheries of Kerala were assessed through their publications.

Scoring system developed by Caddy (1996) was followed which awarded a score of 1 where compliance is complete, 0.5 in case of partial or incomplete compliance and zero where the fishery is not compliant or compliance is uncertain. Scores of each subsection are summed up and divided by total possible score to arrive at the percentage compliance (Caddy, 2007). Kite diagram was plotted which indicated the percentage compliance of each subsection under Article 8.

Results and Discussion

The present study was able to breakdown the statements of Article 8 of CCRF by the features that have potential to improve the condition of marine fisheries sector of Kerala. The fishing operations conducted in the state have evolved through various stages of innovation and experimentation. Marine fisheries of Kerala provide livelihood to 610,165 people (CMFRI, 2010) and to other allied workers. The scorings are presented in Table 2 corresponding to each clause of Article 8.

Kerala ranked first in the formulation of rules and regulations to govern the marine fisheries sector. Article 246 of Indian constitution places fisheries in territorial waters under State list. Kerala Marine Fisheries Regulation Act (KMFRA), 1980 (GOK, 1980) was formed as per the recommendations of Majumdar Committee (Government of India, 1976). In 2007, the Government implemented the Kerala Monsoon Fishery (Pelagic) Protection Act (GOK, 2007) in order to protect the livelihood of traditional fishers. Government of Kerala and National Informatics Centre developed an application named "ReALCraft" in 2008 to register and monitor all the fishing vessels, operating along the territorial waters of Kerala, which has since been extended to all the maritime states of the country.

Monitoring, Control and Surveillance (MCS) in Kerala is based on enforcement of marine fisheries regulations, monitoring and data collection in respect of landings, fishing operations, fishing catch

Table 1. Details of the fishing vessels surveyed

Region	Mechanized (nos)	Motorized (nos)	Non- Motorized (nos)	Total (nos)
Kozhikode	50	87	13	150
Ernakulam	70	23	7	100
Kollam	47	27	15	89
Total	**167**	**137**	**35**	**339**

and effort and other fishing activities and management programmes. Marine Enforcement enforces the KMFRA along the coast line of Kerala. The Monitoring, Control and Surveillance of Deep Sea Fishing vessels are undertaken by Coast Guard in accordance with the directives of the Inter-Ministerial Empowered Committee constituted to regulate the operation of Deep Sea Fishing vessels. The Marine Fishing Policy (2004) incorporated the posting of observers on commercial fishing vessels and enforce-

Table 2. Scorings for the compliance of marine fisheries of Kerala with Article 8 of FAO CCRF

Article	Question	Score
8.1	Duties of State	
8.1.1	Are the fishing operations carried out in a responsible manner in the state of Kerala?	1
8.1.2	Are records related to all authorizations to fish maintained in the state of Kerala?	1
8.1.3	Are statistical data related to fishing operations maintained?	0
8.1.4	Does the state of Kerala have an established system of MCS?.	0.5
8.1.5	Are the required safety standards for boat and crew ensured?	1
8.1.6	Are the fishing operations integrated into the maritime search and rescue systems?	1
8.1.7	Are the education and training programmes to enhance the skills of fishermen conducted?	0.5
8.1.8	Are the records containing information on the service & qualifications including certificates of competency of fishers maintained?	0
8.1.10	Are training programmes to create awareness on important provisions of the code conducted?	0.5
8.2.8	Is the insurance cover to protect the crew made mandatory?	1
8.4	Fishing Activities	
8.4.1	Is fishing in Kerala conducted with due regard to safety of human life?	1
8.4.2	Are destructive fishing methods such as dynamiting prohibited?	1
8.4.3	Is documentation of catch & bycatch data after every fishing operation ensured?	0
8.4.4	Is the adoption of appropriate technology for retention of catch being promoted?	0
8.4.5	Are technologies, materials and operational methods being promoted and applied to reduce discards?	0
8.4.6	Are technologies being promoted to minimize loss of fishing gear and prevent ghost fishing?	0
8.4.8	Is research being promoted on environmental and social impacts of fishing gear?	1
8.5	Fishing gear selectivity	
8.5.1	Are fishing gear, methods & practices selective?.	0.5
8.5.2	Is selectivity of fishing gear taken into account while framing laws and regulations?	1
8.6	Energy Optimization	
8.6.1	Are appropriate standards and guidelines for efficient use of energy in harvesting and post-harvesting followed?	0
8.9	Harbours and landing places for fishing vessels	
8.9.1	a. Are there adequate servicing facilities for vessels, vendors & buyers in fishing harbours (FH)/ landing center (LC)?	0.5
	b. Are there provisions for adequate freshwater supplies and sanitation arrangements made in FH/ LC?	0.5
	c. Are there provisions for waste disposal in FH/ LC	0.5
	d. Are arrangements made to reduce the effects of siltation and erosion in FH/ LC?	1
8.9.2	Is the institutional framework for selection and improvement of sites for harbours established?	0.5
8.11	Artificial reefs and fish aggregating devices	
8.11.1	Are there policies for increasing fish stocks through the use of FAD's?	0

ment of MCS systems. Thankappan (2001) pointed out that MCS in the state was structurally well organized and in tune with the Code.

Kerala State Fishermen Welfare Fund Board (KFWFB) distributed safety kit called 'Suraksha kit' to all the registered motorised boats in the year 2011-12. Life saving appliances like life jacket and lifebuoy are mandatory for registration of a fishing vessel in the mechanized sector. All mechanized fishing vessels surveyed carried lifebuoy and only 80% of them carried life jacket. GPS and Echo sounder assist the mechanized fishing vessel in locating fishing grounds and VHF in communication. All mechanized fishing vessels that were surveyed used GPS, Echo sounder and VHF. Motorised hook and liners made use of GPS facility for detecting the fishing area. The extent of use of navigational and life saving equipments among the surveyed fishing vessels is given in Table 3.

Sea rescue operations are co-ordinated by the Director of Fisheries through Marine Enforcement. These operations are facilitated by the co-ordination of various departments concerned with safety and distress relief at sea, especially during adverse weather conditions. Department of Fisheries, Department of Ports, Department of Revenue, Department of Police, Department of Fire force, Indian Navy, Coast Guard and Meteorological Centre are mainly involved in the implementation of search and rescue operations. During monsoon, Fisheries Control Rooms are setup to monitor any incidents of mishap and immediate rescue action provided. Indian Coast Guard ships are deployed regularly 24x7 for effective surveillance of the area to prevent any illegal activities for coastal security, anti-poaching and anti-smuggling.

It was found during the study that the level of education among fishers was low, majority having completed only primary education. The survey revealed that 64% of fishers were educated up to primary level and only 1% had education above secondary level. Training of fishers in Kerala is done by Central Marine Fisheries Research Institute (CMFRI), Central Institute of Fisheries Technology (CIFT) and Marine Products Export Development Authority (MPEDA) on various aspects of fish quality and sustainable capture of the resources. Training is restricted to limited number of fishers mainly due to lack of manpower and funds. Indian Coast Guard regularly conducted community interaction programmes to educate and create awareness amongst fishermen fraternity on maritime safety and security related aspects and issues.

Records with regard to the service and qualifications of the fishers are not maintained. Though the state government issued notification in 1990 under Section 4 of KMFRA, 1980 for bottom trawl that *serang* and driver should possess competency certificate issued by the Mercantile department, majority of the fishers do not carry competency certificates that was attributed to lack of awareness.

The state government in consultation with Kerala State Fishermen's Welfare Fund Board (Matsyaboard) has formulated a few insurance schemes for fishers of the state. All registered active fishermen can avail Group Insurance Scheme in case of accidental death/ heart attack while fishing. An amount of Rs 1 lakh is given to the immediate relative of deceased. The premium is met by the Government of Kerala. There are private insurance agencies which provide insurance to mechanized fishing vessels. Insurance Regulatory Development Authority (IRDA) monitors the private insurance companies in India. The main players in marine fisheries insurance in India include Oriental Insurance Company and United India Insurance Company. NGOs such as South Indian Federation of Fishermen Societies (SIFFS) and Trivandrum District Fishermen Federation (TDFF) are also active in providing insurance to the

Table 3. Availability of navigational and life saving equipment among surveyed fishers

Equipment	Kozhikode (%)	Ernakulam (%)	Kollam (%)	Overall (%)
GPS	36	70	53	50
Echosounder	32	70	42	46
VHF	33	70	53	49
Lifebuoy	33	70	53	49
Lifejacket	31	70	34	40

Table 4. Percentage of fishers satisfied with the harbour facilities

Facilities	Kozhikode (%)	Ernakulam (%)	Kollam (%)	Overall (%)
Freshwater supplies	67	100	64	76
Waste disposal system	3	5	24	9
Cleanliness	2	100	33	39
Sanitation	2	100	34	39
Availability of vendors and buyers	93	100	100	97

fishers in Kerala. Selectivity of fishing gear was considered while framing rules and regulations. On survey of fishing gears, it was found that trawlers used nets with cod-end mesh size as small as 16 mm which poses threat to juvenile fishes. As per the KMFRA, 1980, the bottom trawl nets should use cod end mesh size not less than 35 mm. Technologies like bycatch reduction devices (BRD) are not in use for reducing discards. Ring seines of mesh sizes 18-20 mm are also found in practice. Gill nets operated by vessels in the motorized sector varied in mesh size depending on the target species. Difficulties faced by the Fisheries Department in regulating the use of Chinese engines of higher horsepower owing to resistance from boat owners association, has been reported in the media (Anon, 2012a). Motorised sector gets subsidised fuel from the Government and it is perceived that control on subsidies only may dissuade new entrants to the sector.

Opinion of fishers on the harbour facilities is provided in Table 4. The fishers were satisfied with the improvements in harbour structures made year after year. The number of vessels entering was in excess of the capacity of the harbour. The conditions of fishing harbours in Kerala were found to be mostly unhygienic and their safety standards were not regularly checked (Anon, 2012b).

Kerala is a state largely known for its pelagic resources and the dependency of fishers on them. The present study noted that Fish Aggregating Device (FAD) was mainly used in Trivandrum coast and in inland areas. Therefore it became less important to frame laws when such practice was rarely in use.

An overall compliance of 54% is obtained for evaluation of marine fisheries of Kerala with Article 8. Caddy (2007) opined that an overall scoring of 60+ should be regarded as very satisfactory. This suggests the need for further improvement in extension activities. Kite diagram given shows percentage compliance of each subsection of Article 8 (Fig. 1). A detailed evaluation of Article 7 (Fisheries Management) of the Code by Pitcher et al. (2006, 2009a, b) for the 53 countries landing 96% of the global marine catch revealed dismally poor compliance. In this evaluation, India had 'fail grade' of 40% overall compliance score (Varkey et al., 2006).

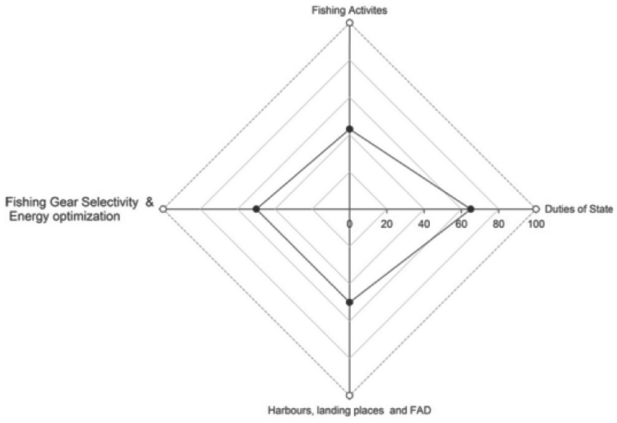

Fig. 1. Kite diagram showing percentage compliance of marine fisheries of Kerala with Article 8 of FAO CCRF

The study on marine fisheries of Kerala showed compliance on some of the provisions of Article 8 like documentation of catch and effort, registration and licensing of fishing vessels, safety of fishers and insurance coverage. MCS needed to be improved in areas such as control of fishing fleet, inspection of vessels after landing, monitoring of destructive fishing practices, etc. However, mesh size regulations as per section 4 of KMFRA, 1980 were not at all followed. Other areas where improvement is required include fishing gear selectivity and energy optimization.

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