Brief Communication

Abandoned and Derelict FRP Fishing Vessels (ADFV) in North Kerala – An urgent need for a National Policy

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Over the past five decades, the marine fisheries sector has evolved much in capacity, vessel transitions, areas covered, time spent at sea and catch. The advent of Fibre Reinforced Plastic (FRP) for boat construction has been an urging force in fisheries, particularly in the marine fisheries sector. This technological shift, marked by the motorization period of marine fisheries, has significantly revolutionized the fisheries industry especially the small-scale fisheries, contributing much of its success to the widespread adoption of FRP fishing vessels. Initiated in the 1970s, Indian government-supported schemes aimed at enhancing marine fisheries, led to the extensive introduction of motorised boats in Indian waters. By 1980-90's, these boats were urged to use Fibre Reinforced Polymer to a larger extent, laying a crucial transitional-historical step-up in the fisheries industry. Presently, India has a total of 1,66,333 fishing crafts in the marine fisheries sector, of which, 42,985 (25.8%) are mechanized, 97,659 (58.7%) are motorized, and 25,689 (15.4%) are non-motorized (ReALCRaft 2024). Notably, many of the motorized and non-motorized fishing vessels, supporting the small-scale fisheries primarily rely on FRP boats, highlighting their pivotal role in the sector. The popularity of FRP boats can be attributed to several advantages over traditional

FRP fishing vessels in a fish landing centre

Derelict fishing vessels

materials like wood, steel etc. These advantages include being lightweight, easy to handle, more fuel-efficiency, long durability, resistant to corrosion and weathering, easy mouldability in any sizes and shapes, low maintenance, and less prone to rotting etc. Moreover, the cost-effectiveness of FRP construction further strongly solidifies its position as the supreme material of choice in the fishing vessel industry. The widespread adoption of FRP boats has not only revolutionized the fishing industry in India but has also played a pivotal role in supporting sustainable and efficient practices in marine fisheries.

It is estimated that the lifespan of FRP fishing boats is influenced by various factors such as material quality, manufacturing processes, fishing activities, and maintenance. Generally, it is observed that the FRP boats last for 15 to 20 years in Indian waters may be due to the proper maintenance on a regular basis. In India, the peak of motorization in the 1980-1990 through BoBP programs and post Tsunami rehabilitation programs, addition to the government programs for conversion/new boats and subsidies; which all led to an upsurge in FRP fishing boats. As the time passed, these boats, now reaching the end of their operational lifespan, present a challenge in terms of disposal.

The global concerns over the disposal of FRP boats are alarmingly increasing, with an increasing trend of discarding them on beaches, estuarine stretches as well as within the water bodies as well as non-scientific disposal activities like burning are observed locally. These activities lead to the release of significant quantities of potentially toxic metals, leading to potential risk to the environment as well as public health. This also aids in discarding of derelict or abandoning of fishing gears and other marine debris on beaches and in coastal waters. These, improper discarding of non-seaworthy vessels has several impacts, including risks of causing environmental harm due to the prolonged release of toxic chemicals from FRP coating into the sediment and water indicating need for national policies to address abandoned, lost, or discarded fishing gears and vessels. In India, National Action Plan On Marine Plastic Litter From Sea-based Sources (https://digital.gpmarinelitter.org/action-plan/11010) (2024), UN led Global Partnership for preventing and reducing marine plastic litter from sea-based sources viz; Glo Litter partnership (https://glolitter.imo.org/) is being implemented. Ways to implement regulations addressing coastal pollution caused by abandoned FRP fishing crafts, are urgently needed as abandoned fishing boats are very common sight in harbours, beaches, coastal-intertidal areas in Kerala. These boats are often discarded as they may be in damaged/ non-repairable condition, expiration of license period, seized for violation of laws, disputes among the shareholders etc. Besides, FRP boats are mostly owned by small-scale fishers who may not have the resources, finance or knowledge to dispose of their boats properly. Discarded FRP boats range in sizes from 3-22 m overall length (OAL) in North Kerala, and other fishing boats like trawlers are also seen abandoned or unused for long time in the landing centres in water and land. Surveys conducted by ICAR-CMFRI along the coastal areas have documented a notable rise in the prevalence of abandoned and derelict FRP fishing vessels and fishing gears, reaching to 12-23 FRP boats/km^2, often affecting navigation, berthing and occupying operational space. Though there are no direct SOPs regarding the vessel disposal, the responsibility of fishing vessels during operation and post-life lies with the vessel owner, similar to vehicles on land. This results in deliberate dumping of boats in coastal environments. Kerala has a fishing vessel license based on life span of period of 12 years for FRP fishing vessels with wheel house (request based extension upto 15 years from 2022), and 18 years for those FRP vessels without wheelhouse (request based extension up to 21 years from 2022); license and registration is not renewed after this period currently in Kerala, and fishing vessels whose licences have expired are not entitled to operate. As there is strict enforcement of this rule in land and sea, with frequent on-board inspections, most of these fishing vessels contribute to the increased anonymous dumping in the coastal waters. Lack of infrastructure and inadequate regulations, especially concerning the small-scale fishers lacking financial aid for proper disposal magnify the problem. Recycling FRP boats is challenging due to the difficulty in breaking down the composite materials. Programs like *Swachhta Abhiyaan, Suchitwa Sagaram- Sundara Teeram, Swachh Sagar-Surakshit Sagar*, Clean Coast Safe Sea, coastal clean-up campaigns, etc. are, model program to

Abandoned and derelict FRP fishing vessels in coastal regions of North Kerala

address marine debris and pollution issues which needs to implemented widely and improvised. Stakeholder meetings conducted by Calicut Regional Station of ICAR-CMFRI and District Fisheries Management Council sessions in Northern Kerala have consistently highlighted similar concerns among the participants on the open discards of FRP fishing vessels. Recommendations to address the concerns due to ADFV in the marine fisheries sector, based on observations from North Kerala are listed below.

Table 1. Mitigational suggestions/recommendations for proper management of FRP boats discarding in public spaces

No.	Critical Steps	Interventions	Suggestion for implementation agencies/Institutions/ Departments
1	General. New dedicated rule in addressing marine pollution	Addressing major concerns by source prevention, debris filtration implementation etc. Options for polluters responsibility and pays.	National policy implementation at local scales, Local Governments
2	Guidance and policy development on disposal of fishing crafts and gears	National working group. Proper guidance for FRP usage, prompt disposal and recycling. Methodologies as well as other crafts and gears. User responsibility programs and strict implementation of the formulated policies specifically addressing the disposal of non- operational FRP fishing vessels.	FSI, ICAR-CMFRI, ICAR-CIFT, NCCR, Department of Fisheries
3	Establish recycling Infrastructure	Dedicated dumping yards of fishing vessels. Develop recycling facilities for processing FRP materials. Proper guidance and support to the fisher for the development of efficient FRP recycling.	Department of Fisheries
4	Traceability	Replacement registration should ensure on the older boats which are disposed properly in designated areas. Real craft to include the image depository of fishing boats. Develop collecting yards.	Department of Fisheries
5	Enhancement in monitoring and enforcement	Monitor and enforce proper disposal practices for FRP fishing vessels. Initiate strict implementation of penalties for improper disposal and irresponsible practices.	Department of Fisheries and citizen reporting mechanisms
6	Promote sustainable fishing and post harvest practices	Encourage for the use of eco-friendly materials in new vessel constructions. More awareness among the fishers about the ecological impact of FRP pollution so as to support and promote sustainable good fishing practices and disposal.	Department of Fisheries and organisations in relevant fields, stakeholder organisations, like boat owners, etc
7	Research	More research to innovate and recommend alternatives to FRP and sustainable disposal mechanism for FRP .	ICAR-CIFT, CIPET, other research organisations
8	Polluter Pay principle	Initial collection of tax for new boat registration including charges of disposal and and fine for violation of marine pollution prevention laws.	Department of Fisheries
9	Mass awareness programs	Provide incentives or subsidies for fishermen to collect marine debris as well as to promote the recycling of old vessels, thus promoting recycling in the economy. Conduct awareness campaigns and educational programs on the environmental consequences of FRP pollution. Distribute extension pamphlets among the fisher communities on proper disposal methods and to show the importance of responsible waste management. Organise frequent clean-up drives and swachhata activities in coastal ecosytems, in beaches, with public participation, mainly targeting abandoned FRP vessels as well as other marine debris.	Department of fisheries, all fisheries/ ocean related government and non government organization
	Local community engagement	The local communities should be involved in mitigating open discards, clean-up efforts of their particular area, thus creating a responsibility for the environment. More community-driven initiatives to be established for the proper disposal of FRP materials.	Department of Fisheries and other organisation involved in pollution and marine pollution management
	Financial support	Provide financial support or subsidies for transitioning to eco-friendly materials and recycling initiatives. Funding schemes to have responsible disposal practices among fishers.	Department of Fisheries
	International collaboration	Engage in collaborative efforts with international organizations/ countries to exchange best practices and knowledge and expertise sharing in managing, mitigation of pollution. Actively participate in global meets aimed at addressing marine pollution, and or undertake bilateral programmes and global programmes like GloLitter, IMO, etc. for sustainable solutions on a broader scale.	Department of fisheries, Central Institute of Petrochemicals Engineering & Technology (CIPET), ICAR-Central Institute of Fisheries Technology (CIFT), ICAR-CMFRI and Fishery Survey of India (FSI)

Ensuring the proper disposal and recycling of FRP boats through comprehensive laws, inspections, and initiatives to minimize open discards; prioritizing research and initiatives for FRP recycling, establishing dumping-breaking yards, and initiating buyback or credit programs to fishers are some measures that may be considered.