

Technological Novelties for a Sustainable Deep Sea Fishery in Sri Lanka

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Abstract

Extensive poaching of deep sea fishers into neighboring Exclusive Economic Zones (EEZ) and even beyond was disclaimed by European Union (EU) and banned fish and fisheries products from Sri Lanka. As a result of the series of discussions held between EU delegates and Government of Sri Lanka (GOSL) officers with the mediation of fish exporters' association, 1500 licenses were granted for high seas operation with adjustments. This study evaluates the strategies and adjustments adopted to unveil the EU ban by GOSL deeming on technological innovations and their consequences. The study was mainly based on secondary data from Ministry of Fisheries and Vessel Monitoring Center. Further, key informant discussions were held with responsible resource personnel in the sector. In depth interviews with skippers and key informant discussions were held to glean primary data. Findings indicate two folds of changes: technology and awareness. Technological innovations were introduced for the licensed boats thus transponders, e-log books, and active radio communication around the clock was implemented. All the measures were taken for traceability, which was the prime focus of the EU. Trained skippers were accredited with a certificate in order to allow high seas fishing operations. Consequently, poaching brought down successfully to one percent within two years. However, practical obstacles are yet to be solved from fishers' perspectives. Ear marking the deep sea fisheries, Sri Lanka is privileged with the novel technology compared to the other countries in the region. Thus, policy focus is needed to be steering toward high seas fishing operations that would ensure multiple benefits to all the stakeholders attaining fisheries policy targets with advanced technology and knowhow.

Key words: EU ban, High sea fishing, Poaching, Technological innovations

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Introduction

Fisheries crisis, over exploitation, exhausted small-scale fisheries are the popularly mooted slogans/jargons in fisheries dependant countries like Sri Lanka. Increasing population, demanding food security and ecosystem sustainability evokes tendency toward off shore fisheries, which have the most potential resources to fulfill the animal protein intake (Pomeroy et al. 2016). Concerns on resources, livelihoods, and sustainability have formulated policies to expand fishing efforts in deep sea fisheries. Recent policy reforms imposed by Government of Sri Lanka (GOSL) supported and encouraged deep sea fishing with a huge expansion in fishing efforts; number of fishing fleets, duration, and distance of searching for fish (MFARD 2016). Deep sea fishing targets high value fish varieties such as tuna and tuna like fish species: skipjack tuna, yellow fin tuna; marlin, sail fish, sword fish, and sharks, which are mostly medium and large pelagic fish species. Hence, gill nets and long lines are commonly employed (Hewamanage, 2010). Although, the government targets to increase deep sea fish production up to 434000 mt in year 2018 by employing larger fishing vessels (MFARD 2016), the depleting fisheries resources and unattainable demands prompted fishers to enlarge their harvest ignoring national and international laws. Due to the importance in

terms of quantity, fish species, and global demand the industry is driven by the export market.

Despite, the marine endowment extends up to 517000 km² demarcating the Exclusive Economic Zone (EEZ), fishing is being continued even beyond encroaching others' EEZ. Poaching

Table 1: Arrested multiday boats by other countries

Country	2006	2007	2008	2009	2011	2012	2013	2014
India	22	24	121	128	34	24	63	40
Myanmar	1			1				3
Maldives	1	4	1	1		1		
Bangladesh			1	3				4
Diagonia			2	5	1	1	3	11
South Africa					1		2	
Indonesia					1			
TOTAL					37	26	68	58

(Source: MFARD, 2016)

complaints on Sri Lankan deep sea fishers are presented in table 01.

Poaching into Indian waters has been a usual practice since 2006 or even before (MFARD 2016). However, the increased incidents of poaching into Diago Grasia in British Indian Ocean Territory (BIOT) had become critical, which ended up with an EU ban in 2015; Sri Lanka was not permitted to export fish and fisheries products to EU. The socio-economic impact was tremendous over each node of the fish supply chain hence immediate remedial measures were called upon. In fact, this paper unravels the strategies undertaken by the GoSL and their consequences specially focusing the technological novelties in the industry.

Materials and Methods

The study delineates its factual from existing literature, secondary data of Ministry of Fisheries, which are not possible to gather through an ordinary survey or quantitative research, and policy documents. Thus, secondary data sources were utilized heavily for descriptive analysis and policies. Existing secondary data on poaching, deep sea fish production, fishing efforts, and detentions were gathered from Ministry of Fisheries. Besides, key informant discussions with fisheries officers in deep sea fisheries and VMC were carried out for a sound understanding on recent technological innovations. In-depth interviews with deep sea skippers (n=10) were conducted to glean primary data for explorative information. A thorough policy analysis was employed to evaluate the change due to technological interventions and its implications on poaching, production, and sustenance in the deep sea fisheries. Basically, descriptive techniques were used to present the quantitative data and interpretations were adopted for qualitative information.

Results and Discussions

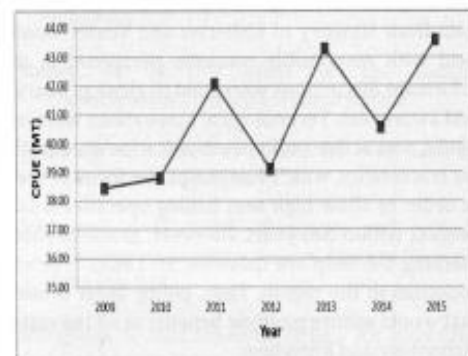
This section presents findings over following sub headings: EU ban, technological innovations, and policy reforms.

EU ban

Although, the number of boats increases continuously from recent past at a rate of 284 per annum, the annual fish catch increment is marginal even with negatives where 2016 catch was lesser than 2015 catch by 1040 mt. In contrast, catch per unit effort (CPUE) drastically fluctuates but with an increasing trend: which is a positive motive (figure 01). However, the outcome does not worth for the investment thus fishers tend to trespass the IMBL while searching for more. As per the table 01, poaching

into others' EEZ was a usual practice in deep sea fisheries for decades. Sri Lankan fishers were arrested mainly in India but occasionally in Myanmar, Maldives, Bangladesh, South Africa, and Indonesia. Poaching in Diago Grasia increased where 11 vessels were arrested in year 2014 ended up as an EU ban affirming that Sri Lanka as a nation who practices illegal

Figure 1: Catch per Unit effort in deep sea fisheries



Source: Author (based on MFARD data)

Unreported and Unregulated (IUU) fishing. This disclaimer hit fish exportation because most lucrative markets closed their gates dropping the entire fisheries industry in Sri Lanka into an abysmal.

With the increasing pressure of large scale fish exporters, the GoSL collaboratively intervened into the process to uplift the EU ban by implementing sustainable technological measures. The next section elaborates the novel technologies adapted in 2016 for the upheaval of the fisheries sector.

Technological adaptations

Technological revolution in Sri Lankan deep sea fisheries (with respect to EU ban) occurred due to transponders installation that thwarts fishers being engaged in IUU fishing. Transponders play a key role in Vessel Monitoring System (VMS) by communicating information on; the route of the vessel, where it is; what it is doing; speed level; whether engage in IUU fishing and so on. An alarming system is always alive to inform border crossings. In addition, radio communication system is operating 24 hours with active communications between officers at VMCs and skippers. Twenty-one harbors digitalized with satellite technology that assure traceability of the fish catch, warnings on IUU fishing, protection at the sea, and weather reports. e-log

books by means of tablets are distributed per vessel that make the traceability process convenient and transparent. Accordingly, a significant improvement depicted in IUU fishing where only 4 vessels were arrested during 2016 - 2017 period at the Indian territory. Moreover, information on lucrative fishing grounds is provided with the collaboration of National Aquatic Research and development Agency (NARA) for cost effective fishing operations.

Policy reforms

Policy changes with respect to deep sea/high seas fishing are numerous. The significant importance is the establishment of VMC attached to Ministry of Fisheries for the surveillance and monitoring of vessels fishing in Sri Lankan waters (national and foreign vessels). VMCs were mostly demanded by EU thus established per each harbor in Sri Lanka (21 units). Skipper and crew are needed to be skillful with the technology, weather changes, IUU fishing, laws in the sea, and protection. Thus awareness and empowerment is facilitated through training sessions. The appreciation certificate authorized the skipper as a qualified person for high sea fishing. Vertical and horizontal institutional linkages have been established with NARA, Navy, Ocean University, and Ministry of fisheries for reliable and real-time scientific information on vessel dynamics in terms of size of the vessel, gear types, vessel-gear combination, fishing grounds, and other catch-effort parameters. However, strategies are needed to minimize post-harvest losses while concerning the quality to attract international buyers from Europe, USA, and Japan.

Conclusion

This paper organized to inform the novel

technological changes implemented in the deep sea fisheries in response to the extensive poaching and EU ban in recent past. The lessons highlighted in the essay evoke the importance of technology and knowhow for a sustainable deep-sea fishery abide by with maritime law, international relations, and legitimacy. Empowerment with transponders cum other sophisticated gadgets and awareness on laws of the Seas, fishing grounds, and cost-effective techniques have been reducing poaching incidents hence recommended for further applications not only in Sri Lanka but also other countries that suffer due to boundary crossers. This signals a green light to the government to expand the effort in the deep sea/high seas fishing to attain the policy targets without destructing the most productive near shore fisheries. However, at least 94 fishing fleets have a potential to launch their operations in high seas. Thus, immediate reactions claimed from responsible authorities that may strengthen the national economy as well.

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