

# REMOTE SENSING ON LOCAL MULTIDAY FISHING FLEET TO MITIGATE MARITIME CRIMES

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## Abstract

As per the annual report of Ministry of Fisheries and Aquatic Resources Development (MFARD) in 2015 a total local fishing fleet is nearly 63000 in year 2015. Out of that 4447 are Multiday fishing trawlers which are go beyond the national waters for industry.

With the dawn of the peace, restrictions that have been imposed on fishing were relaxed with aiming to increase the catch. With the statistics of the Ministry of Fisheries and Aquatic Resources Development, Significant developments in the industry were seen in subsequent years. Similarly, numbers of fishing boats that are arrested while engaging various types of maritime crimes out at sea were also increased over the period of time. Rapid growth of maritime crimes was a security concern of the government and taken many steps to control the trend but long lasting solution is inevitable.

Involvements for Drug Trafficking, Human Trafficking and Environmental Crimes such as Illegal Unreported and Unregulated (IUU) are some of the Maritime Crimes that Sri Lankan fishermen are involved or in other hand multiday fishing trawlers are used for. Even though governmental bodies are there to administer and to regulate multiday fishing fleet, absence of proper procedure to monitor them out at sea caused many security concerns.

In an era where the man kind is capable enough to send vehicles far end to the universe to search external life, absence of a system to monitor own fishing fleet for the purpose of security and to ensure their safety is something to consider seriously. Most of developed countries are using various types of monitoring systems to monitor their fishing fleets out at sea. VMS (vessel monitoring system) is one of the recognized systems developed exclusively for fishing vessels monitoring. The government of Sri Lanka has taken the action to install VMS to local multiday fishing trawlers. To regulate a large fishing fleet it is necessary to have advance methods of monitoring rather depend on conventional methods. To manage with high density of fishing movements VMS will be the best application for the Sri Lankan context.

Even though Sri Lankan government is stepping in to the new technologies lack of coordination among governmental bodies were significant and restructuring of the procedures of fishery administration must be done along with the new system. Remote sensing on local fishing fleet and information sharing is utmost important and my paper is to understand how it can be done effectively and to highlight the advantages that can be derived to strengthen maritime security through an effective monitoring and information sharing.

## Introduction

Sri Lanka, being an island and being islanders the relationship between sea and the people of the country is strong and history of the country was shaped up with many maritime related incidents. Population of the country is around 21 million and coastal population represents the largest portion of the total population. Main income source

of many coastal dwellers is directly or indirectly connected with the fishery industry. As per the annual report of the ministry of fisheries and aquatic resources development in 2015 total local fishing fleet is nearly 63000 in year 2015. Sri Lankan Fishing fleet consist various types of fishing crafts ranging from canoe to a multiday fishing trawler. Basically type of the craft and the nature of the engagement in the industry are the main determinant to classify them in to various categorizes.

Fisheries sector plays an important role in the Sri Lankan economy. Apart from providing employment by direct opportunities in fishing, the sector also provides indirect employment opportunities to a large number involved in fisheries related activities both upstream and downstream. Fish is the number one source of animal protein supplier to the nation. Fishery industry has undergone considerable modernization since the independence and has witnessed a spectacular growth in production particularly over the past three decades. Introduction and application of new technologies, establishment of Exclusive Economic Zone (EEZ), and expansion of markets due to globalization and infrastructure developments have brought drastic changes in the fisheries sector and these have resulted in improved access to resources, significant expansion of effort, production, marketing and trade.

During the conflict period, numbers of restrictions were in place to monitor activities of the local fishing fleet, basically due to the maritime threat posed by LTTE sea tigers. Industry was affected much with the security measures taken by the government and most of the fishermen disengaged from the industry due to the difficulties to sustain in the industry. However with the dawn of peace in year 2009, restrictions are imposed on the industry were relaxed and fishermen were commenced to venture out to sea comparatively on much larger scale than prior 2009.

### **Nature of the Local Fishing Industry**

As per the reports of MFARD a fisheries sector in Sri Lanka account for 1.8 percent of GDP at the current market prices and 1.3 percent at constant (2002) prices in 2014. Total fish production in 2014 amounted to 535,050 metric tons and its value addition was Rs. 176,239 million (US\$ 1,350 Mn.). Growth rate of fisheries sector in 2014 was recorded as 4.5 percent at constant prices and it was 12.7 percent at current market prices against 2013. Fisheries sector has generated Rs. 34,797 million (US\$ 266.5 Mn.) of export earnings in the year 2014 and it was accounted for 2.4 percent of total export earnings.

Analyzing the fish production forecast expected to be achieved in 2016 and 2017 and 2018, table 1 indicates that Sri Lanka is expecting higher degree of income from fishery industry.

**Table .1 Fish production forecast (Mt)**

Indicator	2016	2017	2018
Coastal	310,000	328,600	348,000
Off-shore/ High sea	256,000	332,000	434,000
<b>Total</b>	<b>566,000</b>	<b>660,600</b>	<b>782,000</b>

### **Source: Statistics Unit of MFARD**

In order to achieve this growth, about 32,025 of motorized boats and 21,963 of non-motorized boats have been operated in marine fishing. Out of motorized boats around 4,447 boats have been operated in offshore fishing. The development that has taken place in the fishery sector in the recent past is likely to continue to gain the full potential of the fisheries resources that lie in the Exclusive Economic Zone (EEZ) and High Seas.

### **Local fishermen and Maritime Security challenges**

Coastline around country is approx 1700kms, territorial sea area is 21,000kms<sup>2</sup>, a 517,000kms<sup>2</sup> of EEZ and expected Extended EEZ of nearly 1,400,000 is an enormous challenge for a country like Sri Lanka in monitoring the activities on the shore, out in the EEZ and the EEEZ. The challenge is primarily due to the vastness of the ocean space that Sri Lanka has to look after. No navy or Coastguard is capable enough of monitoring this mammoth ocean mass hundred percent. Inability to protect maritime domain can be effectively exploit by the various actors to gain advantage for numerous illegal activities (Joseph, 2015).

However at the latter part of the conflicts government of Sri Lanka (GOSL) has taken numerous steps to monitor local fishermen's activities primarily due to the maritime threat posed by the LTTE sea tigers. Out of all

such mechanism in place, the establishment of fishing marshalling points (FMP) to keep record of fishing boats movements was a major deterrent factor to prevent the LTTS's exploitation of local fishermen/ their crafts to launch attack and also to ensure that fishermen were not involved in such activities. The navy manned over 170 such points in identified locations around the country during the conflict period and procedure was suspended at the dawn of peace due to the public pressure for such rigid procedures. (Joseph, 2015) Taking the advantage of the situation, local fishermen were commenced fishing in large scales. Parallel to the expansion various types of illegal activities were taking place with the involvement of local fishermen were surfaced gradually after 2009. Area such as human smuggling, drug trafficking, over exploitation of marine resources, and Illegal Unregulated and Unreported fishing (IUU) are some of the main illegal activities the local fishermen have been found to be directly or indirectly engaged at present.

### **Non conventional maritime security threats**

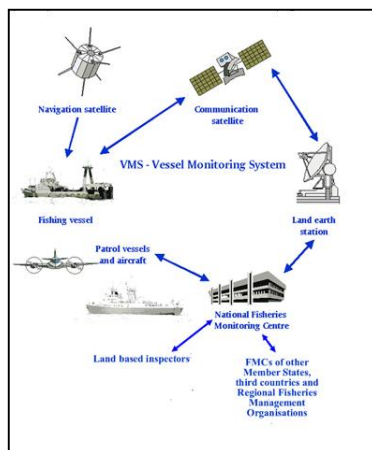
Most of the maritime crimes that are reported during recent past are having the capacity to consider as transnational criminality and poor response and inability to control those by government of Sri Lanka caused serious consequences on the diplomatic relationships of the country. In 1995, the United Nations identified eighteen categories of transnational - and mostly organized - criminality. Transnational crime was then defined as 'offences whose inception, prevention and/or direct or indirect effects involved more than one country.' (UN Doc. A.CONF. 169/15/Add.1 (1995). The crimes listed included, among others, money laundering, terrorist activities, theft of art and cultural objects, theft of intellectual property, illicit arms trafficking, aircraft hijacking, sea piracy, insurance fraud, computer crime, environmental crime, trafficking in persons, trade in human body parts, illicit drug trafficking, fraudulent bankruptcy, infiltration of legal business, corruption and bribery of public or party officials and Illegal Unregulated and Unreported fishing (IUU). Most of the maritime crimes that have been committed by local fishermen were under the category of such and the international pressure posed on us due to the illegal migration and IUU fishing is good examples. (Kariyakarawana, 2013).

However to ensure the national security, action has been taken to monitor the territorial waters through radar surveillance by fixed radars and mobile platforms. Further during the peak of the war Sri Lanka Navy installed an antenna array of High Frequency Surface Wave Radar (HFSWR) at Nilaweli to monitor the merchant shipping movements in northern waters of Sri Lanka to monitor the LTTE logistic movements. Sri Lanka navy still uses the system to monitor the shipping movements in Eastern coast. HFSWR is a type of radar system with the ability to detect targets at very long ranges, typically hundreds to thousands of kilometers, beyond the radar horizon, which is the distance limit for ordinary radar. Object movement will be traced on the present position indicator PPI and trace of the movement will be remained in the PPI to understand the movement and direction of the movement. Information that can be derived through this system is very limited and suitability of that cannot be recommended to monitor the movements of local fishing fleet.

Sri Lankan multiday fishing trawlers are operating in high seas extending their ranges of operations in thousands miles from the coast of Sri Lanka. Hence monitoring and tracking their movements by ships or air craft's is impossible due to many constraints. Only viable option is to have a larger area coverage through a satellite but cost factor involved with such system is beyond the limits of a third world country. Remote sensing through a monitoring system on the vast sea area is one of the affordable method and various types of monitoring methods are there in the world for different purposes. Vessel Monitoring System (VMS) is one monitoring method among other systems which is dedicatedly tailor made for monitor the fishing vessels. VMS will be a ideal solution for the Sri Lankan requirement.

### **Vessel Monitoring Systems (VMS)**

The vessel monitoring system (VMS) is a satellite-based monitoring system which at regular intervals provides data to the fisheries authorities on the location, course and speed of vessels. A fishing vessel monitoring system is a cost-effective tool for the successful monitoring, control and surveillance (MCS) of fisheries activities. VMS provides a fishery management agency with accurate and timely information about the location and activity of regulated fishing vessels. (Russell.J .2014)



VMS is a system that has an integrated Global Positioning System (GPS). The system calculates the unit's position and sends a data report to shore side users. The standard data report includes the VMS unit's unique identifier, date, time and position in latitude and longitude. In a satellite-based system, data reports sent from the vessel are transferred to a satellite and then on to a terrestrial, or "earth", station. The earth station validates and stores the data, and makes them available to the monitoring agencies.

Government of Sri Lanka has taken very significant decision to introduce VMS to the local multiday fishing trawlers. Department of Fisheries and Aquatic Resources states that it has made obligatory to install Vessel Monitoring System (VMS) equipment in all multiday fishing vessels for obtaining High Seas Fishing Operation license. Department of Fisheries and Aquatic Resources stress that High seas fishing operation licence will not be issued to any vessel which does not install the Vessel Monitoring System (VMS) equipment and these boats are also not allowed to engage in fishing operations in international waters.

According to the available statistics, about 4,280 multiday fishing boats are engaged in the fisheries sector in Sri Lanka and more than 1,503 boats have obtained licence to engage in fishing operations in High Seas. The Department stated that VMS equipment will be installed with the assistance of the government, free of charge.

### Other Uses for VMS

- i. Managing sensitive areas such as marine sanctuaries
- ii. Monitoring activity & arrivals in port to plan for sampling
- iii. Supporting catch share programs
- iv. Tracking, monitoring, and predicting fishing effort, activity, and location
- v. Managing observer programs
- vi. Verifying/validating data from other sources
- vii. Identifying fishing vessels
- viii. Supporting Homeland and National Security initiatives.

### Sri Lankan context

It is pretty sure that government of Sri Lanka had spent millions of rupees to get down the system and to launch the system in such hurry. Subsequently it is interesting to understand the real cause of rapid action of the government to install transceivers free of charge on multiday fishing trawlers. However it is not the purpose of the paper but it is necessary to understand the prime objective of the government action and to understand the other benefits that can derive from the system for optimal usage of the system.

Potential that can use for national security initiatives is one of the biggest advantages incorporated with VMS and effective utilization of the system to filter smugglers among the innocent fishermen will be an added advantage of the system and will be a answer for the many maritime security issues. Further effective monitoring on maritime domain to ensure the security is one of the demanding factors and was delayed due to many constrains. Initiatives that have been taken by the Ministry of Fisheries and aquatic Resources Development to install VMS are indirectly benefitted to find a solution for long time awaited security issues.

Local multiday fishing fleet is a great concern of the many security agencies of the country as fishery community is the only segment go out and come in to the country without any security wetting and potential that they have is clearly evident with recent incidents. Undoubtedly, developed nations are using VMS for security purposes other than the prime purpose of monitoring IUU fishing. But in Sri Lankan context VMS is exclusively using for the monitoring of IUU fishing and neglecting the other benefits of the system. With the resent international diplomatic pressure on the government for IUU fishing the government of Sri Lanka was compelled to spend millions of rupees to install VMS on local fishing trawlers to protect Sri Lankan fish market in the Europe. Monitor local fishing fleet to mitigate maritime crimes is national requirement and underutilization of the system neglecting its potential to use to improve maritime security is something to discuss. With slight configurations with relevant government agencies system can effectively utilize to derive information relevant to the security requirements in addition to the monitoring of IUU fishing.

The other important benefit that can receive from the VMS is sharing of real time information with relevant authorities for rapid and effective action. Real time information sharing is one of the very important integral parts of the remote sensing. Absence such a system during the conflict period paved the way of grave disasters. Reasonable numbers of naval ships and craft were lost in the war while at engaging the physical checks of fishing boats due to absence of a system to confirmation of the identity of boat out at sea. With VMS information are at finger tips and current data can be derived through the system based up on the data feed on the system. Presently two monitoring stations are manning by Navy and the Ministry of Fisheries and Aquatic Resources Development independently at respective head offices. Other than Navy system has to be integrated with Customs, Police, department of narcotic and judiciary for effective utilization of the system.

Even though prevailing situation demands information in great depth, system is configured to obtain very basic information such as Location, Speed, and Track of the moment, Owner of the boat and his Contact Numbers etc. However system can be configure to obtain much more advance information which is really important to track and monitor the parties involved in maritime crimes. Number of boat crew, registration expiry date, ownership records, date of departure, and date of arrival last port of call and the crew list of the boat at the time of departure are some of the information needed for the purpose of security.

Alone with VMS it cannot be improved maritime security unless action to be taken to restructure the existing procedures of administration of local fishing fleet. Fisheries control is not just about checking the activities of fishers at sea, which is expensive and cannot alone ensure that the rules are respected. Checks are carried out at every point in the chain from the launching point to a retailer to ensure the legitimacy of procedure followed. Administrative functions such as renewal of registration, licensing, ownership transfers and boat insurance are to be regulated proper to strict compliance and punish those who are violated. Further action has to be taken to impose condition for mandatory to be a member of fishery society to get the approval to engage in the industry and empower fishery societies and it officials up to certain level to regulate the system from lower level.

Legal frame work of the country in relation to the maritime crimes has to be change to accept the data derive through the system to accept as valid evidence in the courts to take legal action against those who are violated the rules and regulations. Severe punishments have to be introduced to the system to eliminate illegal activities and crimes.

Sub office of VMS should be manned at every fishery harbour by the navy and MFARD to upkeep the records of each and every multiday movements to upkeep the logs to validate the information of VMS when required. Fishery societies are to be strengthened and empowered to regulate the functions of lower level administration and by doing that, it can be self disciplined the fishermen for respect to the law of the country. Image of fishery inspectors are tarnished by them just because of the malpractices that they are engaged and presently fishery inspectors are considered as just nominal figures by the fishermen. Procedures have to be introduced to recognize them by empowering them for certain law enforcement and they must be paid a reasonable salary to keep them away from wrong doings.

Being neglected the fundamental of national security at the early stage of LTTE terrorism nation had suffered for 30 years and all we know the bitter taste of war and none of us wanted to have such situation ever again in our motherland. It is not a secret how extensively that LTTE used fishermen and fishing boats for their logistic and how they were successes to carryout offensive action against to the government forces. Monitoring on local fishing fleet is a must in the aspect of security. Implementation of VMS is a giant step taken to strengthen the national security in addition to its prime objective. However there are lot to do to ensure the maritime security but I believe effective utilization of VMS will be an answer for many questions.

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