

# A Technical Review of Disaster –Cyclone Ockhi in Tamilnadu

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## Abstract

The first week, December 2017 was a difficult time for all in Tamilnadu, Kerala particularly Kanyakumari and its coastal village because of the devastation of the tropical Cyclone Ockhi. This raised serious questions and doubts in our minds whether the disaster management after the tsunami in 2004 was actually of any use to save lives and prevents the property losses. There are too many problems faced by the fishermen society which have to be analysed. This paper discusses the havoc footprints of Cyclone Ockhi that leftover the fishermen society. Through the various sources of the observations root cause for the losses are discussed and suggestions were recommended to avoid further losses in future.

## I. INTRODUCTION

One of the longest coastlines of India is Tamilnadu which covers about 669 miles (Approximately) through thirteen coastal line districts of four coastal zones viz., Palk Bay, West Coast, Coromandel Coast and Gulf of Mannar. The state hild roughly about 15989.26 square miles of continental shelf area in which the offshore area is of 2778.8 square miles, Inshore area 6200 square miles and deep sea is of 7010.5 square miles. Globally, fishery products are largest trading commodity similarly in India also one of the most significant sector of the economic development of the state is contributed by the Fisheries division by more than 11 lakh fishers directly and indirectly.

Tamilnadu fishery statistics shows that it holds position five among other states of its country in fish production of 0.67 million tonnes in the year 2014-2015 became a a preeminent trader of sea food. In the year 2014-2015 tamilnadu export on marine related products is about 93,477 metric tonne and attained foreign exchange of Rs.5, 3081.7million, which added 0.7% of overall Gross State Domestic Product of Tamilnadu. Tamil Nadu is endowed with

3.83 lakh Hectares. Through District Fish Farmers Development Agency around five thousand hectors of ponds are for used for fresh water aquaculture and now it is the upcoming industry with diversification.

viz., exploring deep-sea resources, and eco-friendly aquaculture practices for the culture of finfish and shellfish, ornamental fish culture, eco-tourism, fish processing parks, etc. Also, the Government have introduced many fishermen welfare/ development schemes with a long-term vision to ensure safety and social security of fishers in the State.

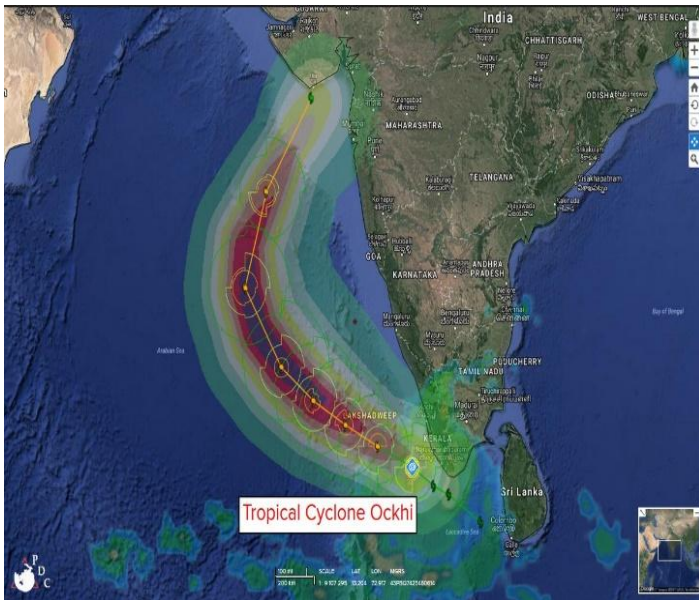
## II. METROLOGICAL BACKGROUND - CYCLONE OCKHI.

At Colombo, Sri Lanka, a low-pressure zone was created around 425 km towards south and southeast On 28th November 2017 and then the disruption was identified within the zone of hot sea surface temperatures and average to heavy vertical wind shear. Later the storm organized into a depression on 29th November 2017.

Further the storm consolidated into a low level circulation centre on November 29 2017 so the Joint

Typhoon Warning Centre announced a Tropical Cyclone development warning on the system, shortly before categorizing as Tropical Cyclone 03B.

Again this storm upgraded to a Deep Depression, and afterwards to Cyclonic Storm Ockhi. As showed in figure 1, the storm tracked along south-western as well as in the western coastline of Sri Lanka, approached the west and northwest, around the southern threshold of a subtropical ridge placed over India.



**Fig 1: Cyclone Ockhi track**

Early on 1st December this cyclone escalated into a Very serious Cyclonic Storm and undergone extra tropical transitions off the Gujarat coast on December 4 2017. Through the sea surface temperature of 31°C it travelled towards Arabian sea and cyclone eye was visible on satellite image when it further intensified into category 3 cyclone on 02nd December 2017. Later the storm instantaneously increased unfavourable conditions, including high wind shear. On 6th December 2017 dry cold air through subcontinent instantaneously weakened the effect of cyclone and later marked as low pressure zone(10)(11)(2)

**Table1: Cyclone Background**

Date	Time (IST)	Stage of Cyclone	Location
28.11.2017	0830	Low Pressure Area	Southwest Bay off Sri Lanka
29.11.2017	0830	Depression	Southwest Bay off Sri Lanka
30.11.2017	0230	Deep Depression	Comorin Area
	0830	Cyclone Storm	Comorin Area
01.12.2017	0530	Serve cyclonic Storm	Lakshadweep
	1430	Very Serve cyclonic storm	Lakshadweep
04.12.2017	1730	Severe Cyclonic Storm	East-central Arabian Sea
05.12.2017	0830	Cyclonic Storm	East-central Arabian Sea
	1730	Deep Depression	East-central Arabian Sea
	2030	Depression	East-central Arabian Sea
06.12.2017	0230	Well Marked Low	North-east Arabian Sea
	0530	Low Pressure Area	South Coastal Gujarat

### III. STATISTICS OF TAMILNADU FISHING COMMUNITY

The following table 2 shows the Glance of Tamilnadu total fishing zones, the population of the fishing community, the number of properly registered fishing crafts as on 2016 and the total value of export through the fishing community. In the quantity of marine catch, the Kanyakumari district of Tamilnadu alone contributes 22% of the total quantity of export.

**Table 2: Fisheries Department of Tamilnadu 2015-2016**

1. Coastal Length	1076 Kms. (India - 8118 Km)
2. Continental Shelf	41412 sq.kms.
3.No. of Coastal Districts	13
4.Marine Fishing Villages	608
<b>5. Infrastructure facilities</b>	
Marine Fishing Harbours	11
Marine Fish Landing Centres	36
Marine Fish Landing points	254
<b>6.Fisher-folk Population (projected) 2017</b>	
a)Women	481555
b)Men	503923
<b>Total</b>	<b>985478</b>
<b>7. Registered Fishing Craft(in Nos)</b>	
a) Mechanised Boats	5952
b) Non-Motorized	5263
c) Motorised	29774
<b>Total</b>	<b>41089</b>
<b>8 Marine Products Export</b>	
a) Quantity ( in tonnes )	88,257
b) Value (Rs. in Crore)	4341.78

After Tsunami in the year 2004, in these southern coastal zones, there was a decline in quantity of marine export. Thereafter from the year 2008 the quantity of marine Catch and value of catch stabilized towards positive trend. Fig 2 shows the yearly statistics of the quantity of fishing.

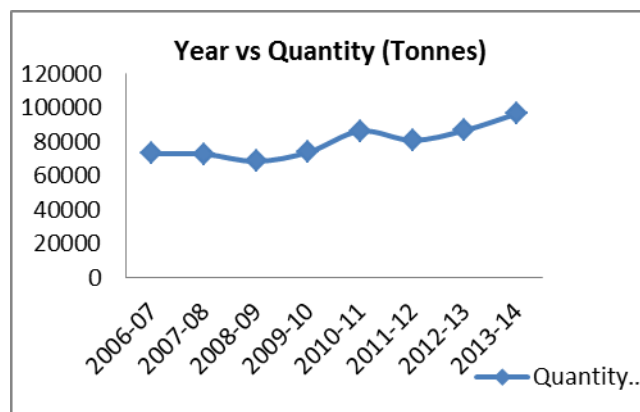


Fig 2: Yearly Quantity

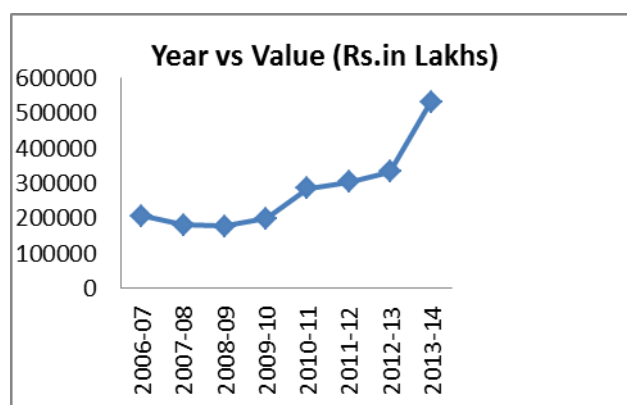


Fig 3: Yearly Income in Lakhs

### Effect of OCKHI in Tamilnadu coastal zone:

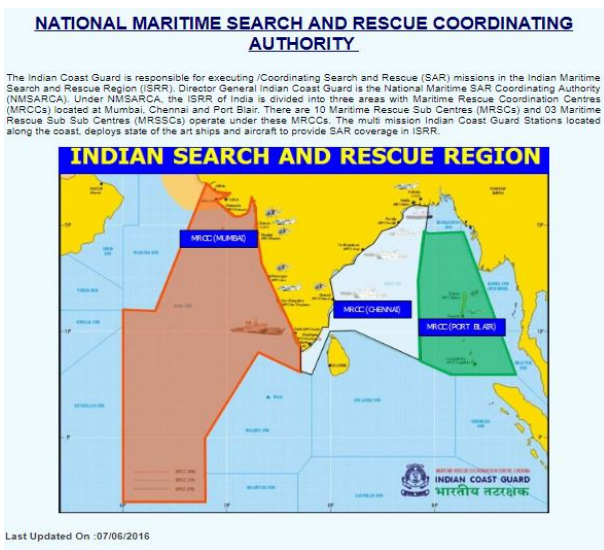
Initially, as a safety precaution around two hundred and twenty families in coastline are shifted to safe zone. Nearly approximately 100 shelters and schools were used as rehabilitation centres. As Cyclone Ockhi threats, NDRF teams were deployed in vulnerable places. Fishermen were warned not to put out to sea and those out for fishing were called back. As on December 15, in the Lok Sabha, the minister said 400 fishermen were missing from Tamil Nadu in the cyclone that struck the coastal districts of Tamil Nadu. The Report says Kerala 174 fatalities 261 missings and \$2.29 billion property damage {14}{3}{1}. Reports say only in Kanyakumari district of Tamilnadu about 0.5% of Agricultural & urban land has been destroyed and the water logs and barren land increased, Where in the same region about 4501 houses were damaged during cyclone (16). There is a mismatch in various details provided by the sources and media. The following table 4 gives detailed information about the number of

fishermen died, lost and rescued. Cyclone Ockhi Rescue and Relief Detailed Report (By Tamil Nadu Government Commission of Fisheries) (7)

**Table 4: Life loss and rescued fishermen after cyclone**

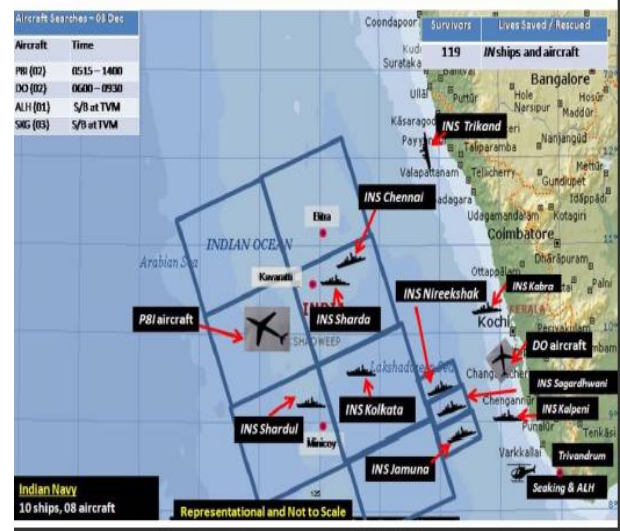
S.No	Content	Total
1	Injured and recovered fishermen form hospital	96
2	Fishermen died in cyclone Ockhi	24
3	As on 2.12.2017 fishermen missing	404
4	Rescued fishermen as on 02.02.2017	3794
5	Fishermen still not recovered / reported	251
6	First Information Report filed for the missing Fishermen	53
7	Registered fishermen as missing by their families	425

Figure 4 shows the search & rescue regions after cyclone Ockhi. The SAR was carried out by the Indian coastal guard which deployed about eight aircrafts and INS ships the Sothern coastal zone of Kerala and Tamilnadu.



**Fig4:SAR Zones**

**INDIAN NAVY SAR EFFORT- 03 DEC/ 0800 H**



**Fig 5 : SAR region by Indian coastal guard**

**Observations & Root cause**

The Major reason behind this huge property loss and life loss in every natural disaster faced by Tamilnadu fishermen are Lack of Communication between the deep sea fishermen and the people on the shore.

Also, Poor boat building & Violation of the boat building and registration norms provided by the government. The Government restricted fishermen to a limited fishing zone of 30nautical miles, Although due to the scarcity of inshore resources and economic urge, fishermen risk their lives, violating the international waterlines rules and regulation and sails beyond the limited zone in search of fish and spend more days out at sea to i.e. 1000nautical miles (approx) near to Oman waters. When a fisherman sails towards the international waterways creates a serious issue in communicating about the upcoming threats and rescuing fishermen during a disaster.

After property loss when a boat is registered properly then only it is eligible for the life insurance, Material insurance and subsidy provided by the government. The awareness about the boat strength boat stability among the fishermen is low when comparing to other countries fishermen which lead to overloading causes a fatal risk during this kind of disaster. Deep sea fishermen demand

Communication devices such as EPIRB, SART, and Water resistant walkie-talkie similar to other countries like Oman, Singapore and other Gulf countries.

### Recommendations & Suggestions

Only authorized ship designers should do design of boat and other crafts, this may reduce the structure failure if boat during a incident. Similar to commercial ships, an dedicated R& D division shall be initiated for boat building especially to withstand the rough whether condition and also for safe working condition. Modern fishing, fish finder equipment, communication and safety equipment must be made available to fishers with subsidies and tax breaks. Marketing of catch brought by deep-sea fishermen may be permitted in identified harbors in the west and east coast is also. Training on handling of fire safety equipment, processing, quality control of catch should be provided by an authorized agency of Government of India.

### CONCLUSION

After the devastating tropical cyclone, the financial capital index and physical capital index were declined due to huge damage of equipments and infra structure (15). Financial capital index value decrease due to Ockhi cyclone, there was high damage to assets and property owned by fishermen it requires high amount for rehabilitation cost. The physical capital index shows decreasing value after cyclone due to Ockhi cyclone the infrastructure facilities highly destroyed. Post cyclonic statics shows there is a decline in quantity and marine export. Also, For special catch techniques and catch type the fishermen are to be involved in all level of constructing boat building.

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