An International Journal (AMIJ)
Singaporean Journal of Scientific Research(SJSR)
Vol.14.No.1 2022 Pp. 1-15
available at:www.sjsronline.com
ISSN: 1205-2422
Paper Received :08-07-2022
Paper Accepted:24-07-2022
Paper Reviewed by: 1. Dr. P. Surya Prakash 2. Dr.Basu Reddy
Editor : Dr. R. Rajkumar

AN INVESTIGATIVE STUDY ON OCKHI CYCLONE AND ITS IMPACT IN KANYAKUMARI DISTRICT - WITH SPECIAL REFERENCE TO PUBLIC ADMINISTRATION AND DISASTER MANAGEMENT

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ABSTRACT

The origin of Ockhi can be tracked to an area of low pressure that formed in the eastern Andaman Sea on November 21st, 2017. While traversing the southern part of the Bay of Bengal, favourable conditions established it to consolidate into a cyclonic storm on 29th December of 2017 and devastated parts of Srilanka and Kanyakumari district of Tamilnadu. On its track, Ockhi caused severe damage to structures, property and also claimed the lives of at least 218 people in the Kanyakumari district. This article accentuates the Ockhi cyclone and its impact on the district of Kanyakumari. The disaster is a natural phenomenon; it has to create a wide range of geophysical as well as hydro-meteorological hazards. Its destruction level affected millions across the coastal area of Tamil Nadu leaving a trail of heavy loss of lives, property and livelihoods. In many coastal areas of the district, disaster losses tend to outweigh development gains. The economic and social costs on account of losses caused by cyclones continue to mount year after year as hazards occur with unfailing regularity, encompassing every segment of national life. The article has elucidated disaster management activities during the Ockhi. The vulnerability of the fishing community, as indicated by the reduction in the catch, the loss in fishing infrastructure, and the lives of 449 fishermen, clearly demands the need to increase the adaptive capacity of fishers by more robust early warning systems and by making satellite vessel tracking systems mandatory for fishing crafts.

Keywords: Ockhi Cyclone, Kanyakumari District, Fisherman, Fishing Activities, Public Administration, Preparedness.

1. Introduction

Under favorable environmental conditions, it concentrated into a depression around the same time on November 29. Moving westwards, it crossed the Sri Lanka coast after some time. Continuing its westward movement, it emerged into the Comorin Sea (south of Kerala and Tamil Nadu and west of Sri Lanka) in the evening (around 5:30pm IST) on the 29th and intensified into a deep depression in the early hours of November 30. It further moved northwestwards and intensified into a cyclonic storm in the forenoon (8:30am IST) of November 30. While moving west-northwest, Ockhi intensified into a severe cyclonic storm over the Lakshadweep area in the early morning (5:30am IST) of December 1 and a very severe cyclonic storm in the afternoon(2:30pm IST) of December 1.

Ockhi started off as a low-pressure area over the southwest Bay of Bengal around 8:30AM IST on November 28, 2017. In the wee hours of November 30, 2017, when the Ockhi cyclone hit the tip of South India, there was no information or warning to fishers about the cyclone. Hundreds of fishermen were already deep in the sea and were caught in the intense storm, over three-meter-high waves and high-speed winds. Some managed to return ashore, but, many perished. Officially, the death toll from Ockhi in Tamil Nadu is 204 people - 27 dead bodies recovered and 177 "missing" fishers, meaning their bodies have not been found, but they've been declared dead so their families can receive monetary compensation. In Kerala, the official death toll is 143-52 dead and 91 "missing." This is the first time, we have lost so many fishermen in the state to a cyclone. A similar list prepared by local fishers in the Vallavilai area of Kanyakumari district has the names of 229 dead or missing fishers. In the Thoothor and Poothurai areas of Kanyakumari, 11 and 12 fishers are "missing" respectively.

Fig 1. Track of Ockhi Cyclone by WikiProject Tropical cyclones/Tracks

According to government officials, about 33,000 people from Kerala and another 2,800 from Tamil Nadu were affected by the cyclone as of November 30, 2017. The Centre Government reported that **39 people had died and 167 were missing**, after the cyclone hit parts of Kerala and Tamil Nadu. Cyclone Ockhi was an unusual cyclone, it emerged quickly and travelled rapidly towards the Kerala coast

2. Aims and Objectives

1. To district disaster management main aims to cyclone related awareness create among the communities and the general public.

2. To highlight the disaster preparedness, and effective emergency response for saving of lives during the cyclone of Ockhi in the District of Kanyakumari.

3. To emphasize and implement risk reduction activities to provide relief and humanitarian assistance.

4. To make possible faster recovery through comprehensive reconstruction and rehabilitation methods.

5. To conduct training programmes and capacity building for effective prevention, mitigation and response for the cyclonic situation.

3. Deep Depression

The deep depression over the Comorin area moved west-northwestwards with a speed of 38 kmph and intensified into a cyclonic storm and lay over the Comorin area and neighbourhood about 340 km west-northwest of Galley (Sri Lanka), 60 km south of Kanyakumari and 120 km southwest of Thiruvananthapuram. The system is very likely to move west-northwestwards towards the Lakshadweep Islands and intensify further into a severe cyclonic storm.

Under its influence, rainfall will occur at most places over the State with heavy to very heavy rainfall likely at isolated places over south Tamil Nadu. According to the IMD, heavy to very heavy rainfall is very likely over south Tamil Nadu during the next 36 hours. Tirunelveli, Kanyakumari, and Virudhunagar District Collectors declared a holiday for schools and colleges on Thursday.

The Tamil Nadu government said on Thursday that nearly 2,000 fishermen who had ventured into deep sea before Cyclone Ockhi crossed the coast of Kanyakumari were rescued and safely accommodated in coastal districts of various states.

Principal Secretary (Information Technology) TK Ramachandran said that 1,969 fishermen on 284 boats ventured into the sea just a day before Cyclone Ockhi crossed the coast 7 days ago. The fishermen hailing from Kanyakumari district are currently safe and are being accommodated in the coastal districts of Maharashtra, Gujarat, Lakshadweep, Karnataka and Kerala, [source: https://www.firstpost.com/india/cyclone-ockhi-tamil-nadu-govt-says-1969-fishermen-from-kanyakumari-district-rescued-at-sea-4248133.html].

4. Rain Claims in Kanyakumari

Cyclone _Ockhi‘ has claimed four lives as gusty winds, coupled with heavy downpour, uprooted 550 trees and 950 electric poles.

The gale uprooted trees and electric poles at Vadaserry, Nagerkoil, Thuckalay, Marthandam, Colachel, Kanyakumari, Kaliyakkavilai, Aralvaimozhi, Eethamozhi and other areas.

A report by the India Meteorological Department (IMD) notes Ockhi's unusual features: "There was rapid intensification of Ockhi during its genesis stage, as it intensified into a CS [Cyclonic Storm] at 08:30 IST on the 30th, after its genesis as a depression at 08:30 IST on the 29th (within 24 hrs)". The report goes on to mention that the cyclone "intensified from a deep depression into a cyclonic storm over the Comorin area within six hours." This intensification normally takes two days.

Apart from rapid intensification, the path of the Ockhi cyclone was an unusual one, too. It isn't common for cyclones to strike the west coast of India. Most cyclones are formed in the warmer waters of the Bay of Bengal and hit the eastern coast of the country. Ockhi is the fourth cyclonic storm to have developed over the Comorin Sea between 1891 and 2017.

5. Forecasting and Communication Delays

On November 28, 2017, at noon, the IMD issued the first information regarding the formation of a depression in the next 48-72 hours in its Tropical Weather Outlook. The next day, at noon, it issued a bulletin indicating the west-northwest movement of the system and its possible emergence into the Comorin area by November 30. However, the system emerged into the Comorin area during the night of November 29 and further intensified into a deep depression in the early hours of November 30 and into a cyclonic storm in the forenoon of the same day.

- As per an IMD report, "the cyclone watch/alert could not be issued due to unusually rapid intensification over the Comorin Sea". The cyclone specific advisory was issued only on November 30 at noon for south Tamil Nadu, south Kerala and Lakshadweep. Meanwhile, the first warning for fishers to not venture into the sea along and off south Tamil Nadu, south Kerala and Lakshadweep Islands was issued at 11:50am on November 29. But by then, it was already too late.
- The Department of Fisheries received the information and alert on the deep depression formed off the coast of Kanniyakumari District on the forenoon of **29.11.2017 from the State Disaster Management Authority, Chennai.**
  - On receipt of the information all the **coastal Joint/ Deputy/ Assistant Director of Fisheries were immediately alerted** to convey the information to all the fishermen and to advise them not to venture into sea for fishing.
  - The same warning was **immediately conveyed to all fishing villages through Parish priests, FCS presidents, Village heads, social media groups and public address systems**.
  - All the coastal districts esp, Kanniyakumari, Ramanathapuram, Thoothukudi and Tirunelveli District **fishermen were strictly advised not to venture into sea for fishing from 29.11.2017**.

6. I survived, but am scarred for life.

While a number of fishers never returned home and died in the sea, some managed to brave the Ockhi cyclone and get back home. But they are unable to lead a normal life. Ockhi claimed 203 lives in TN, taking into account those who died and those still missing, and presumed dead.

7. India and fisheries sector

India has close to 2,60,000 registered fishing vessels.[7] These include deep-sea fishing vessels (61), motorised mechanical vessels (62,130), motorised non-mechanical vessels (1,40,272) and non-motorised/traditional boats (55,748). These boats operate from 1,265 marine fish landing centres along the 7,516.6 kilometre (km) Indian coastline.[8] Overall, it is estimated that around 54,00,000 fishers are employed full time with the fisheries industry.[9] The Gross Value Added (GVA) of the fisheries sector—one of India's blue economy sectors— in the national economy in 2018–19 was Rs 2,12,915 crore, accounting for 1.24 per cent of the total national GVA.[4] From 2014–15 to 2018–19, the average growth rate of the fisheries sector has been 10.88 per cent.[5] In financial year 2019–20, India exported 12,89,651 metric tonnes of seafood worth US$ 6.68 billion (Rs 46,663 crore), and the government's target is to reach Rs 1 lakh crore worth of exports by 2025.[10] As per the Food and Agricultural Organization (FAO) report of 2020 on the state of world fisheries and aquaculture, India accounts for 6 per cent of global capture fisheries and is ranked fourth after China (15 per cent), Indonesia and Peru (both 7 per cent).[7] India is also the fourth largest exporter of fish since 2017, after China, Norway, and Vietnam.[8]

The Mumbai attacks in 2008 led to the revamp of the coastal security construct in India, and this led to the subsequent integration of the fisheries sector into the security construct. While the need to develop MCS structures had been envisioned in the early 2000s, after the Mumbai attack, several initiatives were taken to address specific gaps in the fisheries sector. Notwithstanding the significant progress in several aspects, two issues that particularly merit attention are: first, the implementation of a comprehensive monitoring/tracking system at sea, as has already been recommended by several committees; and second, the development of an integrated shore component for MCS. Robust MCS is a sine qua non for sustainable fisheries, maritime and coastal security, economic progress, as well as the security, safety, and well-being of the fishers themselves. Consequently, developing an integrated fisheries MCS system in India needs to be given due consideration and priority. This would be useful also to tracking the vessels location to send rescue teams.

8. Study Area

The study area was located in the southernmost tip of the Indian subcontinent and lies between the latitude and longitude of 8.1^{o} N to 8.5^{o} N and 77.1^{o} E to 77.6^{o} E respectively. Kanyakumari is a coastal town in the state of Tamil Nadu and roughly covers an area of 25.89 km^2. It has an elevation above 30m from the mean sea level (MSL). The major drainage system in this area is the Tamiraparani River, which originates from the Pothigai Hills at an elevation of 1,725 m above MSL on the south-western slopes of the Western Ghats. Sub-tropical conditions are the climate patterns that are experienced by the study area, with an annual optimum temperature of between 23^{o} and 27^{o} C The south-west monsoon during June to September and the north-east monsoon during October to December are the monsoons that prevail over the area.

It is having a coastal length of 72 km., four revenue taluks Vilavancode, kalkulam, Thovala and Agatheeswaram, 44 fishing villages and with 143388 fishermen population.

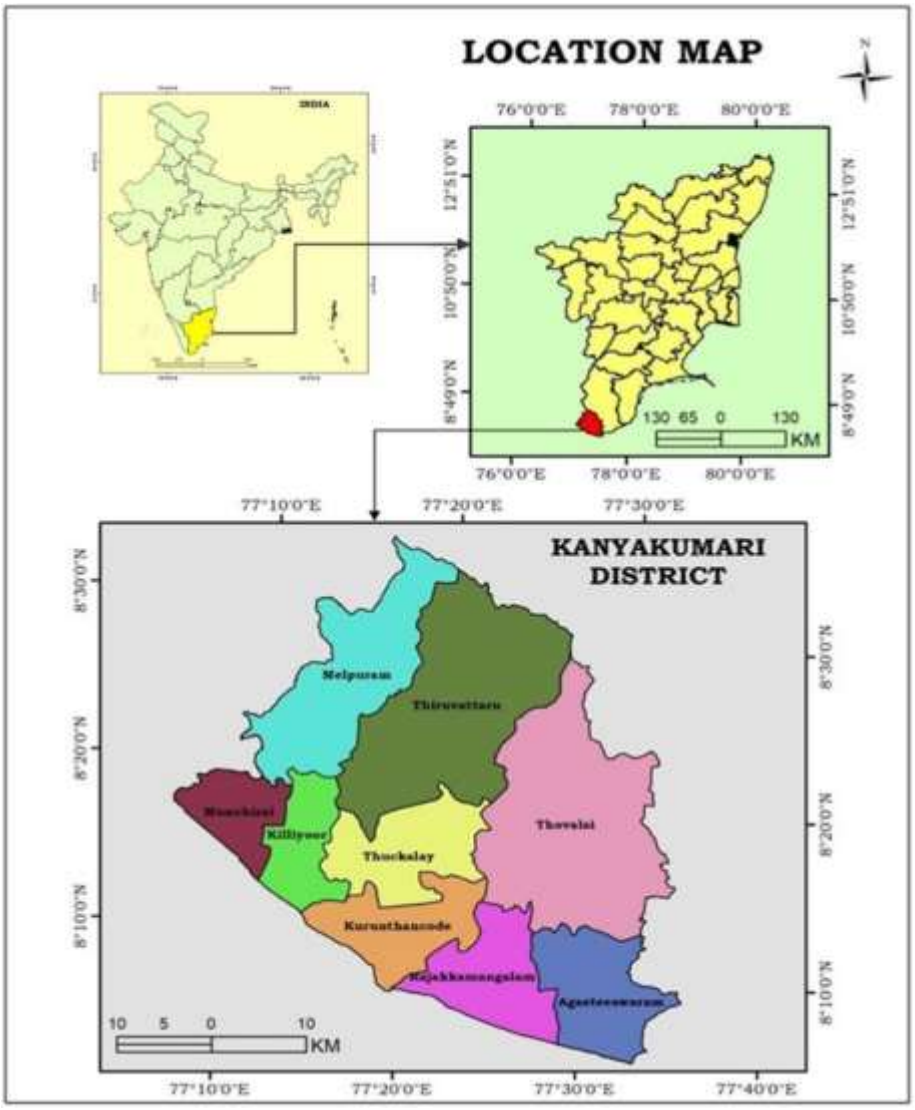

Fig 2: Map of Kanyakumari District(Study Area) of Tamilnadu, India

The surface and sub-surface water bodies are being filled by monsoonal precipitation, which is the main source of water and it ranges from 80 mm to 241 mm where the north-east monsoon (October and December) period contributes maximum rainfall to the study area. The study area is shown in Figure 2.

The majority of fishers in Tamil Nadu go for one to three days of fishing voyages. But, fishers in Kanyakumari district have a variety of practices of undertaking daily fishing, single day fishing using mechanized boats, multiday fishing , Colahel trawlers and Thuthoor long liners and gill netters which goes 15-45 days of long fishing voyages extending up to 200 nautical miles from our coast [1 nautical mile = 1.85 kilometers]. They go till and beyond Lakshadweep

for fishing. These mechanized boats are operated in the high seas of EEZ of India off shores of neighboring states such as kerala, katnataka, Maharstra,Gujarath,Goa,Maldieves

The existing communication systems with fishers, such as mobile phones and VHF [very high frequency] sets, do not function beyond 12 nautical miles and 50 nautical miles, respectively. Hence, communicating with fishers in the deep sea is a challenge.

9. Lapses Found in the Practices of Fishermen

As per Tamil Nadu marine Fishing Regulation Rules 1983, amended in 2017 and in 2020, mechanized commercia fishing boats having length not less than 10 meters but not exceeding 20 meters need to be registered with concern authorities of the state before venturing into sea. It was reported in Kanniya kumari district out of 1220 mechanized boats 415 boats are unregistered since they were constructed beyond the length of 20 meters and which need to be registered under Indian Marine shipping act. The fishermen of Kanyakumari District could not follow these standards and regulations prescribed while constructing the large size deep sea fishing vessels .Therefore they could neither register the vessel nor insure their vessels which is posing great challenge to be resolved. Knowing all these risks they are venturing into deep sea fishing.

Onset of cyclone happened on 28.11.17. Multi day deep sea fishing vessels have ventured into sea well in advance of this onset of ockhi cyclone . The fisheries department wireless sets communication range is 30 NM 9 Nautical,Miles),Fishermen wireless communication sets range is 60 NM. Whereas the fishermen who were caught in the cyclone attempted requests from beyond 500NM.other fishing vessels which reached shores of other states have reported they could intercept the SOS calls from such boats but were not able to reach them due to cyclone.

Fisheries department could not properly monitor these multi day unregistered fishing vessels involved in deep sea fishing in the high seas. Many of such vessels berthed in the state of Kerala and operated from fishing harbour of Kerala state. The list of vessels ventured into sea for fishing, date of their leaving ,fishing harbour place from where they started (Kerala or Tamilnadu) place of their proposed fishing area , names of the crew went in such vessels were not found with the fisheries department. This was a very great lapse . The fishermen of the district have reported that they have the habit of informing to the fishermen association about their leaving entering back after fishing Since most of the deep sea vessels are berthed before after venturing for deep sea multi day fishing

10. Challenges to the Government Administration in the Post Cyclone

Immediately after the cyclone created its impacts in the Kanyakumari District and Kerala State, family members of the fishermen who went through thee multiday fishing vessels prior to the onset of Ockhi cyclone went into fear state and started pestering the government to find out the fishing boats, fishermen and take steps to rescue them . The priests and fishermen associations immediately wanted to know the whereabouts of around 2900 fishermen and status of 1200 fishing boats went for fishing well in of the onset of monsoon and there was advanced notification and warning from the Government about the severity of the cyclone. As they were

able to prevent the boats which were berthed in the fishing harbours and were ready for day or multiday fishing .

As there was ignorance on the part of fishermen to build the fishing vessels as per standards which includes fitting of tracking and communication systems , Distress alert transmitters prescribed for the safety and security of the vessels and the crew travelling in it, the location of the stranded fishing vessels could not be tracked from the shore and recue teams were left with no prominent clue about the location for search and rescue operations. Only few calls received by the fisheries department were sent to MRCC on 29.11.17.

Maritime Rescue Coordination centre located in Mumbai, or its sub centres at Chennai or Cochin did not received any SOS(Save our Soals) from any such stranded or struggling fishing vessels as they were not fitted with any Distress Alert Transmitters which could send signals to the MRCC from which their locations could be identified and assisted through nearby sailing shipping vessels o

As the weather forecast cautioned that the severe cyclone was turning into very severe cyclone and may cause endangerment to the rescue teams rescue operations could not be fully launched in the rough sea immediately on 30.11.17 and on 1.12.17.

Fishermen on seeing the signs of cyclone was chasing them from behind started to reach the nearest fishing harbours of Lakhadeep Kerala,Karnataka, Maharastra, Gujarath and Goa States.The reports started coming to the families and to the administration from 3.12.17 onwards. Most of the fishing vessels which reached the nearest shores of other states could not get berths hich were already fully occupied by the respective states fishing boats and managed to berth their vessels out side such harbors and reached the shore for safety leaving their fishing vessels.

Bodies washed away by the sea reached various shores of Kerala and Tamilnadu and were brought to nearby Government hospital and kept in the mortuaries, Many of the bodies could not be identified, hence DNA sample were collected from the relatives and tested at Hyderabad.

Government had taken an in depth process of village level enumeration of the missing Fishermen, filing of FIRs in the relevant police authorities about the missing fishermen went for fishing before cyclone and presumed dead, detailed enquires and verification by the police, revenue and fisheries department in finalizing the missing fishermen and presumed death before notification of presumed deaths so as to issue death certificates. In normal cases the death certificate could be issued only after 7 years from the date filing of FIRs about the missing of a person. This had enabled the legal heirs of the such missing fishermen to get their financial and all other assistances including securing a government job.

None of the vessels lost in the cyclone had any insurance for their deep sea fishing vessels build at a cost above 50 lakhs or for the innocent fishermen crew engaged for fishing and lost their precious life during the cyclone. This has to be taken care Government should devolve a possible viable mechanism to insure such vessels and to share the part of the insurance fund from fisheries welfare allocations.

11. Emergency Rescue Operations

The State Government authorities, Honble Central Defense Minister, State Minister for Shipping, Tamil Nadu State Ministers, The Indian Navy, Airforce and Army seniors have gathered at Kanyakumari, coordinated and imitated all their possible search and rescue operations amidst the disturbances of cyclone. Control rooms opened by the national and state disaster management agencies.

A joint control centre (JOC) was established in the Cochin Port comprising members from the Tamil Nadu and Kerala Fisheries department, Naval ,Air force teams and representatives of fishermen association who had the knowledge to about the possible fishing locations of the missing fishing vessels and fishing crew to make the rescue operations effective . MRCC (MUMBAI, INDIA) (Maritime rescue coordination centre) internationally connected with similar rescue centres.(It is assisted through Inmarsat system consisting special satellites for global communications and networking connectivity in assisting the safety of millions seafarers and Airline passengers.) ,Indian Coast Guard force, Indian Navy force and Indian Air force have done their search and rescue operations since 2nd of December 2017. Indian Navy force had deployed its 9 ships(INS ADITYA, INS JAMUNA, INS SAGRDHWANI, INS KALPENI, INS SUJATHA, INS KOSWARI,INS KABRA,INS SHARDHA,INS SHARDUL AND Indian Coast guard force had also deployed its 8 ships Samrat, Abhinav,shoor and other 5 ICG ships.Indian airforce had deployed its PB aircraft, RPA aircrafts , Droniers and Helicopters in the search operations to locate the stranded fishing vessels in the mid of the sea or in the nearby islands , Volunteer fishermen were included in the Indian navy vessels and in the aircrafts to assist the search teams to share the information and to decide the possible locations of their regular fishing areas volumteered Local fishermen were also involved to use their deep sea fishing vessels and such vessels were provided with free fuel by the fisheries department in the search and rescue operations 268 tamilnadu fishermen were rescued in the rescue operations. 2656 fishermen were returned safely.

Lessons Learned.

One of the biggest lessons we learned was that we can‘t localize these issues. We need a national policy framework that integrates safety on land and at sea. We also can‘t have the Fisheries Department just looking after fisheries, and disaster management just looking after natural disasters. We need better communication, better coordination and better coherence across provinces and across different departments,‖

Fishermen and investors in the fisheries sector should be given adequate capacity building to understand the risks involved in the deep sea fishing vessels at times of such cyclones. The need for fitting the basic safety, tracking and communication systems to be imparted to them. The legal hurdles in permitting the satellite phones, satellite receivers to such deep sea fishing vessels need to be carefully studied and appropriate decisions and strategies to be developed to address the gaps.

An increase in cyclones and extreme weather will make fishing more dangerous in the future, disrupt fish habitats and redistribute fish populations.

―We can‘t stop disasters from happening, especially with climate change, but we can make sure that there‘s more resilience in the community to deal with these types of disasters so fewer people are affected and fewer vessels and people are lost at sea,

Annual checks of all the fishing vessels to be carried out before renewal of fishing licenses to ensure to make sure their safety equipment works properly – life jackets, radios, first aid kits, and protective gear (from rubber products manufacturers) –would help a lot, as would requiring fishers to take a sea safety training every year or two in order to get a fishing license,‖ The details of the crew who are venturing in such fishingvesselse should be made available with the fisheries department

Another big vacuum in the NDMA‘s current response mechanism is that there is no proper documentation as to how deep-sea relief ought to be carried out, ―Currently, we are dependent on the Indian Navy and Coast Guard for this, but the Ockhi experience has taught us that the NDMA needs to develop clear protocols on these too for speedy response.‖

Tamil Nadu Chief Minister K Palaniswami had announced a solatium of Rs 20 lakh to the kin of fishermen who died in Cyclone Ockhi.

He also announced Rs five lakh solatium to those fishermen who were affected by the cyclone and were unable to pursue their profession.

The chief minister ordered Rs 50,000 in assistance to the injured fishermen who are undergoing treatment in hospitals.

Financial aid of Rs 5,000 to the families of missing fishermen and Rs 2,500 to fisherfolk of Kanyakumari district as they were unable to go fishing in view of the cyclone.

The chief minister announced a hike in allowances for fishermen who were now sheltered in other states due to the cyclone.

Teams headed by the senior Indian Administrative Officers with officers of Fisheries department have been deputed to Kerala, Karnataka,Gujrath, Maharshtra and lakshdeep to coordinate with respective state officials to enumerate the fishermen returned safely so as to inform their anxious families and state so as to narrow down the missing fishermen and fishing vessels . and also the possible whereabouts of the fishing vessels friom their counterparts and such locations have were also included for repeated search operations, A total of 1000 litres of fuel was provided for those in Gujarat, Maharashtra and Lakshadweep and 750 litres for fishermen stranded in Karnataka and Kerala. Cash doles were disbursed to such returned and rescued fishermen to meet out their immediate expenses in the other states

Special education assistance for the children of fishermen who died in the cyclone. Such children will also be given priority for their skill development through educational institutions.

12. Cyclone Ockhi–Impact on Fishermen and Damage caused

Forecasting-It suggested that the Indian Meteorological Department (IMD) should develop forecasting models for rapid intensification of cyclones. One of the reasons for rapid intensification was the heat content at the ocean surface. It suggested that IMD should acquire inputs on sea surface temperature from satellites and integrate them into prediction models.

Tracking Systems: The Indian Space Research Organisation has developed a satellite-based vessel tracking system to track fishing vessels and send messages. It recommended that a trial of the system should be completed at the earliest and that the system should be expanded to every boat that ventures out for deep sea fishing.

Missing Fishermen: The several fishermen had gone missing as a result of the cyclone. It noted that while IMD had issued an advisory, the advisory did not warn of an impending cyclone.

The experience from the past cyclones, however, formed benchmarks for the government agencies to build better coordination, chalk out plans and implement a portion of the long- term flood mitigation projects. The Tamil Nadu government had deputed senior IAS officers and Ministers to coordinate preparatory measures like shifting of people from low-level and vulnerable areas to safer places, mobilising equipment and taking post-landfall measures along with the Collectors. The India Meteorological Department‘s frequent alerts and precise forecasting of the landfall helped local bodies and residents prepare for the cyclone.

13. Emergency Response

Disaster management teams were prepared to face nature‘s fury on the scale of Cyclone Ockhi and National Disaster Response Force (NDRF) teams were positioned hours before the cyclone hit the coast. They stepped in to clear the roads of fallen trees, electric poles, and cables.

Revenue and panchayat workers were present in the villages on the night of landfall and made better arrangements than what were in place during Cyclone Ockhi.

The Action Taken Report of the Committee deals with the action taken by the Ministry of Home Affairs on the recommendations contained in the Two Hundred Eleventh Report of the Committee on „The Cyclone Ockhi-Its Impact on Fishermen and Damage Caused by it‟. The Two Hundred Eleventh Report was presented to Rajya Sabha /laid on the Table of Lok Sabha, on the 4th of April, 2018.

14. Inconsistent compensation and relief measures

The state government of Tamil Nadu has put together various welfare schemes to support the lives and livelihoods of marine fishers. A fisheries policy note (2017/2018) mentions that the fishermen‘s welfare board of Tamil Nadu usually provides a total sum of 100,000 rupees (about $1,500) to the families of missing or deceased fishermen during the fishing season (Government of Tamil Nadu 2018). However, in practice, the compensation amounts vary according to the types of events and sociopolitical conditions. For example, the Tamil Nadu state government

provided 2 million rupees ($30,500) to the families of the fishermen who went missing or died during the 2017 Ockhi cyclone.

15. Disaster Preparedness

I have discussed the first three phases of disaster preparedness—mitigation, preparedness, and response—with the community leaders of the hamlet. They noted that the district administration visited their village and provided basic pre-disaster management training to young fishermen for a few months. But this training has had no visible impact on the state of disaster preparedness. Leaders were unaware of the proper escape routes and emergency shelters. The life jackets and the emergency equipment given by the state administration and donor agencies were no longer in usable condition.

15. Improving the future of disaster relief

My field visits revealed that fishers‘ awareness about the need for disaster preparedness has been low irrespective of their educational backgrounds. Insufficient income, unstable finances, and a lack of proper disaster education exacerbate the vulnerabilities of fishers to extreme climate conditions. Fishers in stable financial condition are more prepared and more capable of responding to the effects of climate events. But the apathy of the state administration, and fishers‘ unawareness of the panchayat-level contingency plans for natural disasters, have impeded cohesive localized disaster management efforts.

16.Results and Discussion

Globally, Cyclone was an unusual phenomenon, which was evident in its prediction of rapid intensification remains and area of concern. The prediction of the rapid intensification of cyclones is an imperative method to bolster our existing capacity for advance cyclone warning. The Indian Meteorological Department must acquire inputs on sea surface temperatures from thermal satellites and integrate them into the cyclone forecasting models to predict cyclones like Ockhi and another upcoming cyclone with more accuracy. The results and discussion show that the increasing population and their needs lead to global warming. Global warming has caused unchanged monsoon problems. All these activities favour five or six cyclones that occur in the Bay of Bengal region every year. Due to poor construction methods, few urban land areas have been destroyed by the wind speed of the Ockhi cyclone. At the same time, the government of Tamil Nadu increased water storage due to the flood situation, allowing irrigation and conversion of forest lands into agriculture. They also increased barren land.

The Committee also feels the advisory issued by the IMD might not have been given wide publicity in the mass media and on radio stations. This might be the reason for the concern raised regarding the absence of any prior warning or alert. The people should have been alerted through media channels and radio stations promptly before Cyclone Ockhi hit the coast. The Committee recommends that in the future, the Ministry should issue an advisory when there are weather disturbances, as a measure of abundant precaution, to the state governments. All the media units and radio stations in such states may be sensitized and instructed to give wide publicity, in a prioritized manner, to all the advisories, regarding any imminent disaster, issued

by the IMD and the Area Cyclone Warning Centres/Cyclone Warning Centres. 1.2.8 The Committee also recommends that coastal communities, like fishermen, who are at grave risk due to disasters, be regularly sensitized about the fact that certain natural disasters cannot be predicted well in advance and that they must, in their interest, strictly adhere to any advisories/warnings in the future.

The government of Tamil Nadu has slowly implemented relief and reconstruction methods. They should not give early warnings to the fish and common people. In the aftermath of a cyclone, the government cannot take reconstruction work for debt relief, interest free loans, subsidies for purchasing new boats, to their affected areas and training in alternate means of livelihood for at least one member of their families. In future, the Central and State governments should provide all necessary support and assistance to victims.

These deep-sea fishing vessels go beyond 150 NM, and they operate for 10-15 days per voyage, During the Ockhi Cyclone, the fishermen who ventured out for deep-sea fishing before the onset of the cyclone could not be contacted and warned to return to shore immediately. It has resulted in the loss of lives of fishermen, major injuries to those who have been rescued, apart from damage and loss of fishing crafts and other fishing implements. Moreover, many fishermen could not be contacted and have to be considered as untraceable. In order to avoid such situations in the future, these deep-sea fishing boats of Tamil Nadu will be brought under the seamless communication networking system in order to enhance the safety and security of the deep sea-going fishermen of Tamil Nadu, by equipping the vessels with high frequency (HF) sets that provide a long-range service in both the ship to shore and the shore to ship directions, especially for usage by the deep-sea fishing marine fishermen mainly during distress situations. to provide a proper and efficient communication system for the deep-sea vessels of Kanyakumari District. It is proposed to provide 1500HF communication equipment besides establishing HF control rooms in two locations in Tamil Nadu.

17.Conclusion

Cyclones are natural phenomena that affect everybody, but the main victims are the fishing people. They are particularly vulnerable because they are poorly understood, marginalized and often invisible. The majority of the cyclonic events occurred in the Bay of Bengal region, the main reason for climate change and its consequences. It also led to cyclones and floods. Disaster management is a multi-disciplinary area, covering a wide range of disciplines that encompasses the aspects of preparedness, mitigation, rescue, relief, and rehabilitation. The Indian Meteorological Department and disaster management were to coordinate the rapid intensification of the cyclone and its landfall. During the Ockhi cyclonic events, rapid intensification did not develop. IMD to issue a cyclone watch or alert and, therefore, both are affected by the state government and the people. National Disaster Management authority has to develop a protocol as to how carryout search and rescue operations when the deep sea fishing vessels caught in the mid of the cyclones or when the cyclone itself happening in the mid of the sea, in coordination with the maritime Rescue Coordination Authorities, Coast Guard, Indian Navy, Airforce and concerned civil authorities which was not readily available either prior to or post ockhi cyclone rescue or relief operations. Strict regulations have to be enforced, monitored, controlled, and surveillance to be done by the

fisheries and public administration authorities in restricting the Illegal, unreported and Unregulated fishing activities by the unregistered deep sea fishing vessels which created great concern and enormous efforts for the Defense and Government Administrative authorities in carrying out the search and rescue operations , beside leaving hardship to the families of the missing fishermen, and liabilities of the families to set right the loans related to the plunged fishing vessels in the unknown locations of the deep sea along with the precious lives of crew.

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