Research Article

Study Report On Michaung Cyclone - 2023

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ARTICLE INFO	ABSTRACT
	To purpose of this study was an assessment framework was developed to learn the impact and response of the Cyclone Michaung in Tamil Nadu. Two worst affected districts were also visited during the period. An interview schedule was prepared in advance for different stakeholders namely government officials, civil society and local communities. In-depth interviews were held with government officials at the state and district level like Additional Chief Secretary/ State Relief Commissioner, Officials of line Departments like Electricity, Animal Husbandry, Agriculture, PWD, etc. A number of focused group discussions were held with civil society organizations and affected communities. In addition, a team of NDMA for direct observation in the field visited two of the districts affected.

1. INTRODUCTION

Tamil Nadu is historically one of the most vulnerable States to tropical cyclone. The total geographical area of Tamil Nadu is 13 Million hectares and it has a coastline of 1,076 km which is about 15% of the coastline of India. The State is multi-hazard prone, the major natural hazards being Cyclonic storms, Urban and Rural floods, and periodic Droughts. Some of the tropical cyclones that hit Tamil Nadu are Michaung (2023), Gaja (2018), Ockhi (2017), Vardha (2016), Nilam (2012), Thane (2011), Jal (2010) and Nisha (2008).

IMD's FORECAST
The cyclonic circulation had6 completely moved away from the Indian land mass and currently located over southeast Arabian Sea, there is no significant rainfall forecast or warning over Tamil Nadu.
However, the IMD has said that light to moderate intensity (upto 64mm in 24 hours) rainfall will occur in some places in southern Tamil Nadu till Thursday, after which there will be reduction in the overall rainfall activity. The storm peaked with sustained winds of 60 knots (110 km/h; 70 mph) causing heavy rainfall in north-eastern Tamil Nadu including Chennai and south-eastern Andhra Pradesh before making landfall near Bapatla in Andhra Pradesh on December 5.

STATEMENT OF THE PROBLEM
The key reason for Thoothukudi and Tirunelveli's living conditions is that they don't experience annual flooding like the Chennai district and its surrounding areas do. The purpose of this topic is to provide a comprehensive understanding of how the government's services have reached the local population and to offer suggestions on how the government might address the challenges it experienced in 2023.

OBJECTIVES

- To critically analyze the role of disaster managers in the management of Cyclone Michaung with special reference to early warning, preparedness, impact, response, and community preparedness.
- To assess the impact of Cyclone Michaung on the infrastructure, services, and communities.
- To study the measures undertaken by the Central Government, State Governments and District Administrations to reduce the mortality and impact of cyclones in the State of Tamil Nadu.
- To document the best practices undertaken during the management of Cyclone Michaung.
- Suggest evidence-based recommendations for better management of Cyclones in the future

LIMITATIONS
• The result of the day is based upon the views expressed by the 158 respondents
• The statistical tools used to analyse the data have their own limitations
• All the limitations of primary data are applicable to this study
• Getting accurate response due to their inherent problem is difficult

2. LITERATURE REVIEW

LUCKNOW: Government has decided to build 100 permanent flood shelters in 18 flood-prone districts of Uttar Pradesh at the cost of Rs 622 crores. The permanent flood shelters, to be built in three phases, will have the capacity to accommodate up to 30,000 people. The decision has been taken following a survey conducted by the government, which revealed that 18 districts of the state were the most affected by floods and waterlogging every year.

CHENNAI: The Union government has approved the first urban flood mitigation project of Rs 561.29 crore for 'Integrated Urban Flood Management activities for Chennai Basin project' under the National Disaster Management Fund, which also includes central assistance of Rs 500 crore, defence minister Rajnath Singh said on Thursday.
The Government of India will also extend a system for reconstruction of damaged assets and flood control works through plan scheme. We will ensure that adequate quantities of foodgrains and other essential commodities are available in the State. And that agricultural seeds of the desired varities required for replacement purposes are also available. Once the immediate relief work has taken place we will pay more adequate attention through medium and long term problems of flood relief, of flood control, control of erosion and related problems.

3. RESEARCH METHODOLOGY

Research is an organized and systematic way of finding answers to questions to questions. Research methodology is the specific procedures or techniques used to identify, select, process and analyze information about a topic in a research methodology section allows the reader to critically evaluate a study overall validity and reliability

CYCLONE MICHAUNG NEAR PEAK INTENSITY ON 4 DECEMBER	
Meteorological history	
Formed	1 December 2023
Dissipated	6 December 2023
Severe cyclonic storm	
3-minute sustained (IMD)	
Highest winds	100 km/h (65 mph)
Lowest pressure	986 hPa (mbar); 29.12 inHg
Tropical storm	
1-minute sustained (SSHWS/JTWC)	
Highest winds	110 km/h (70 mph)
Lowest pressure	988 hPa (mbar); 29.18 inHg
Overall effects	
Fatalities	17
Areas affected	India (particularly in Tamil Nadu and Andhra Pradesh) Bangladesh

To build upon the learning of Cyclone "Michaung" and to document the lessons learnt and best practices, the present study was undertaken with the following objectives:

RESEARCH DESIGN
Research design is an arrangement of conditions or collection, the research design adopted here is descriptive in nature.

SOURCE OF DATA
The study was carried out using both primary and secondary data.

Primary Data:
The required primary data have been collected through structured questionnaire from the respondents of the study arca

Secondary Data:
The secondary data have been collected through various printed and published sources namely books, joumals, magazines, other research reports and company websites

STATISTICAL TOOLS USED
After the completion of data, the collected data is tabulated and analyzed and the relationships between different variable have been estimated with the help of percentage method and chỉ square method

Sampling technique:
The sampling technique used for the study is convenient sampling

Meteorological data
The minimum cloud top temperature was recorded at –90 °C (–130 °F). Coastal surface observations from various locations on the coast indicated a maximum wind speed of 60 knots (110 km/h; 69 mph) and a minimum sea level pressure of 988 hectopascals (29.2 in Hg).

4. DATA ANALYSIS AND INTERPRETATTION

The aim of research was to understand the part of the research includes the information acquired from primary and secondary data for the analysis. Analysis had been completed in two parts; in first part there was a demographic representation of respondent; in second part percentage satisfaction with all variables of employees' satisfaction and compensation was analyzed;

DESCRIPTION OF THE RESPONDENTS
Describing respondent characteristics was very important for this research because it provides the deeper understanding of the study. The distribution of the respondent across several personal data is presented separately. The personal information includes included age, education, gender and income . The sample characteristics are discussed in the order they appeared in the questionnaire.
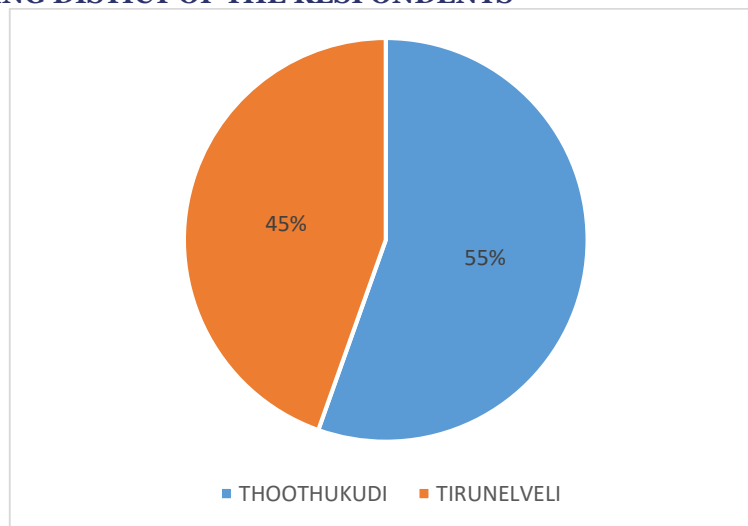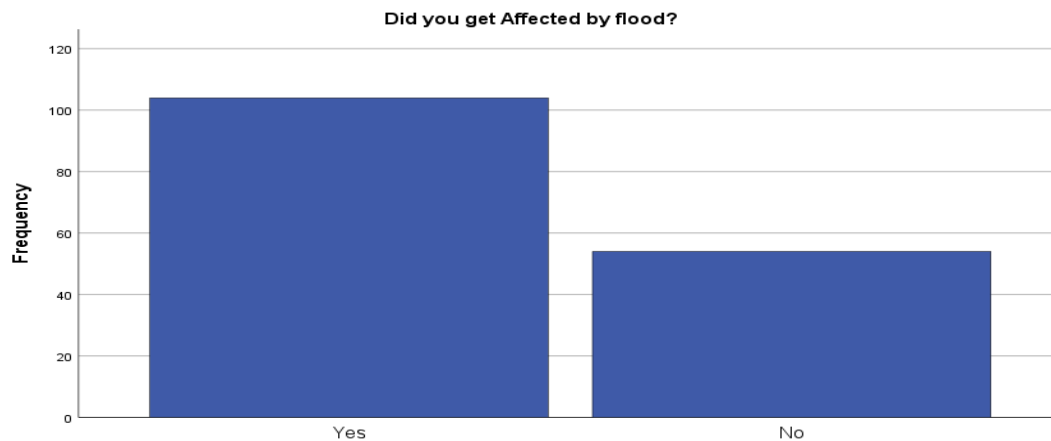
CHART 4.1 SHOWING DISTICT OF THE RESPONDENTS

45%   55%

■ THOOTHUKUDI   ■ TIRUNELVELI

INTEPRETATION
Table 4.1shows out of all respondents 52.8% are from Thoothukudi and 46.5% are from Tirunelveli.

INFERENCE
Majority (52.8%) of respondents are from Thoothukudi.

CHART 4.2 SHOWING PEOPLE AFFECTED BY FLOOD

Did you get Affected by flood?

INTERPRETATION

The table shows that 65.4% of the respondents says yes for getting affected by the flood while 34%of respondents says no.

INFERENCE

Majority (65.4%) of respondents are affected by the flood

CHART 4.3 SHOWING MEANS OF COMMUNICATION REGARDING FLOOD.

CHART 4.3 SHOWING MEANS OF COMMUNICATION REAGARDING FLOOD.

■ TELEVISION ■ RADIO ■ SOCIAL MEDIA ■ OTHERS ■ LOCAL COMMUNITY
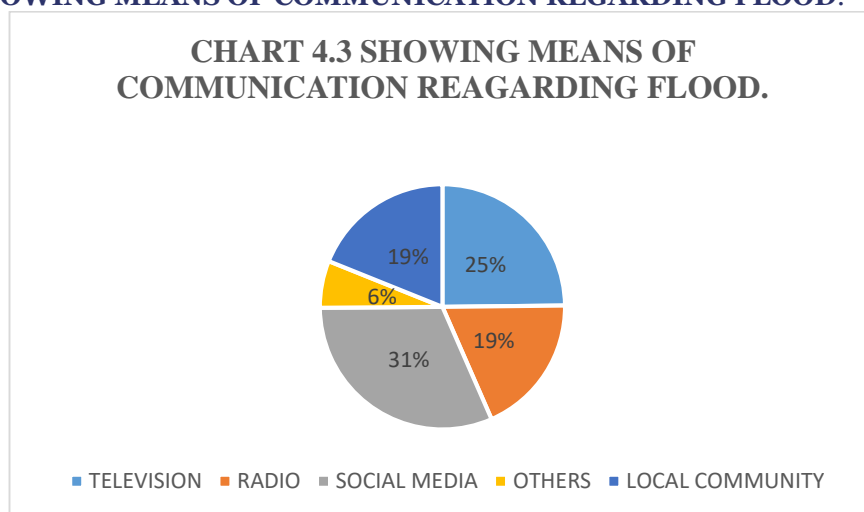
CHART 4.4 SHOWING WHETHER RESPONDENTS STRUGGLE FOR PURCHASING GROCERIES OR NOT

Did you struggle for purchasing groceries?
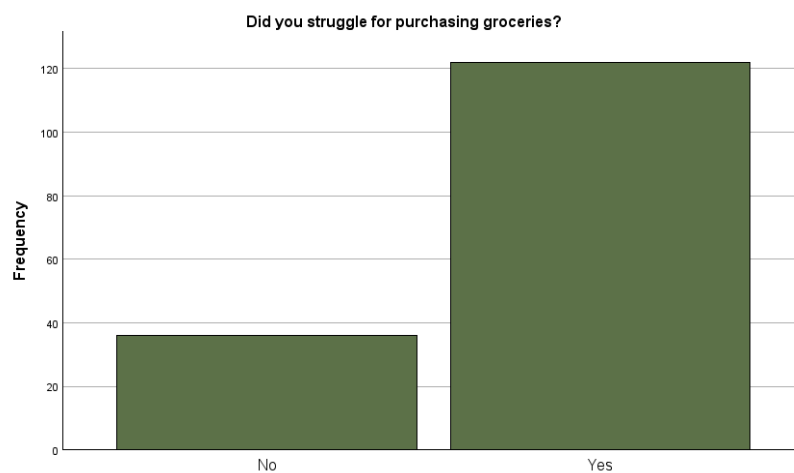
INTERPRETATION
Table 4.4 shows out of the all respondents, 22.6% answered No and 76.6% Yes.

INFERENCE
Majority of the respondents (76.6%) struggled for purchasing groceries.

CHART 4.5 SHOWING THE AWARNESS OF RESPONDENTS REAGRDING AMENITIES PROVIDED BY GOVERNMENT.

whether you were aware of amenities provided by government?
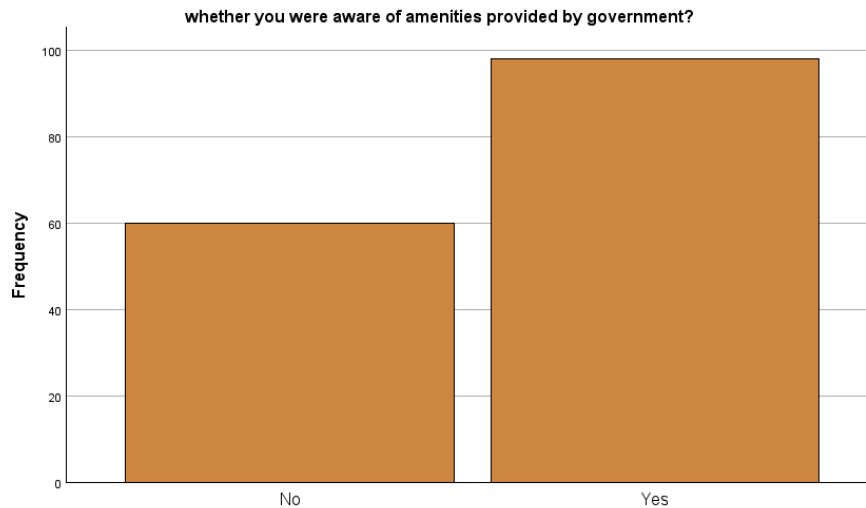
INTERPRETATION
The table 4.5 shows that 37.7% respondents are not aware of the amenities provided by the government and 61.6% of the respondents are aware of the amenities provided by the government.

INFERENCE
Majority (61.6%) of the repondents are aware of the amenities provided by the government.

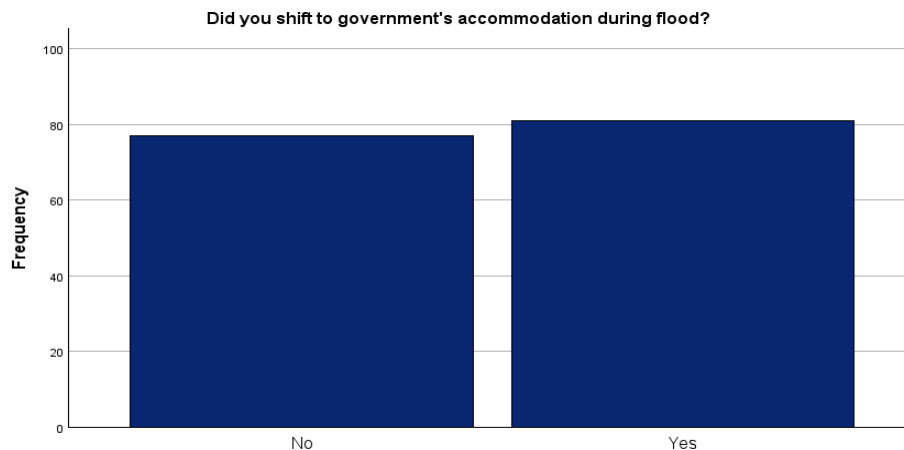**CHART 4.6 SHOWING GOVERNMENTS ACCOMMODATION DURING FLOOD?**

Did you shift to government's accommodation during flood?

INTERPRETATION
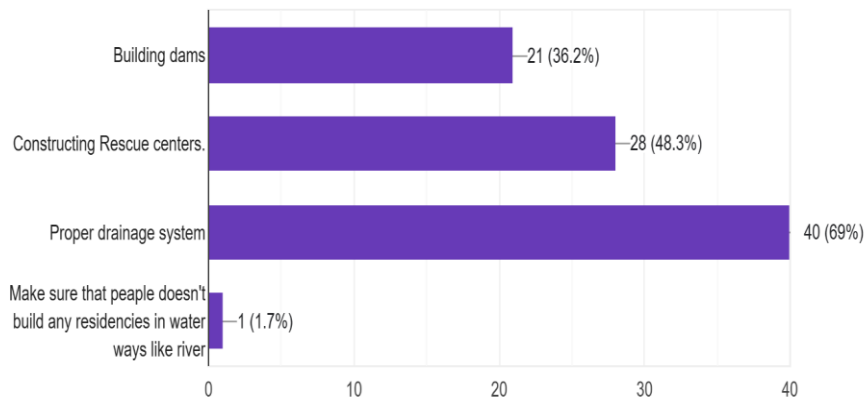TABLE 4.6 SHOWS OUT OF ALL RESPONDENTS 48.1% ANSWERED NO AND 50.6% YES.

INFERENCE
Majority of respondents (50.6%) has shifted to governments accommodation during flood.

4.7 WHAT ARE ALL THE MEASUREMENTS MUST BE TAKEN BY GOVERNMENT OF INDIA CHART SHOWING 4.7

23.What are all the measurments must be taken by government in future?

58 responses

INTERPRETATION
Table 4.7 Showing 69% of the respondents suggested for proper drainage system, 48.3% for constructing rescue centres, 36.2% for building dams.

INFERENCE
Majority of 69% respondents suggested for proper drainage system.

CROSSTABS:
Case Processing Summary

| | Cases | | | | | |
| | Valid | | Missing | | Total | |
	N	Percent	N	Percent	N	Percent
Gender * district	158	99.4%	1	0.6%	159	100.0%

Gender * district Crosstabulation

Gender			Thoothukudi	Tirunelveli	
Gender	Female	Count	46	30	76
		Expected Count	40.4	35.6	76.0
	Male	Count	38	44	82
		Expected Count	43.6	38.4	82.0
Total		Count	84	74	158
		Expected Count	84.0	74.0	158.0

Chi-Square Tests

	Value	Df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.187a	1	.074		
Continuity Correctionb	2.643	1	.104		
Likelihood Ratio	3.200	1	.074		
Fisher's Exact Test				.081	.052
Linear-by-Linear Association	3.167	1	.075		
N of Valid Cases	158				

a)   0 cells (0.0%) have expected count less than 5. The minimum expected count is 35.59.
b)   Computed only for a 2x2 table

Symmetric Measures

		Value	Asymptotic Standard Error[a]	Approximate T[b]	Approximate Significance
Nominal by Nominal	Phi	.286			<.001
	Cramer's V	.286			<.001
Interval by Interval	Pearson's R	.286	.076	3.733	<.001[c]
Ordinal by Ordinal	Spearman Correlation	.286	.076	3.733	<.001[c]
N of Valid Cases		158			

a) Not assuming the null hypothesis.
b) Using the asymptotic standard error assuming the null hypothesis.
c) Based on normal approximation.

Symmetric Measures

		Value	Approximate Significance
Nominal by Nominal	Phi	.142	.074
	Cramer's V	.142	.074
N of Valid Cases		158	

INTERPRETATION

Null hypothesis(Ho) Accepted- There is significant relationship between the gender and district of the respondents.

To find the relationship between the district of the respondents and gender of the respondents, the chi-square is applied. The above analysis discloses chi-square test. The asymptotic significance (0.075) is higher than the significant level (0.05) with 1 as degree of freedom. Hence, the null hypothesis is accepted. So, there is significant relationship between district and gender of respondents

	Cases Valid N	Percent	Missing N	Percent	Total N	Percent
District*Affected people	158	98.8%	2	1.3%	160	100.0%

			No of people Affected Yes	No	Total
District	Thoothukudi	Count	66	18	84
		Expected Count	55.3	28.7	84.0
	Tirunelveli	Count	38	36	74
		Expected Count	48.7	25.3	74.0
Total		Count	104	54	158
		Expected Count	104.0	54.0	158.0

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	12.957[a]	1	<.001		
Continuity Correction[b]	11.776	1	<.001		
Likelihood Ratio	13.115	1	<.001		
Fisher's Exact Test				<.001	<.001
Linear-by-Linear Association	12.875	1	<.001		
N of Valid Cases	158				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 25.29.
b. Computed only for a 2x2 table

INTERPRETATION

Null hypothesis (Ho) Accepted- There is significant relationship between the gender and district of the respondents.
To find the relationship between the district of the respondents and gender of the respondents, the chi-square is applied. The above analysis discloses chi-square test. The asymptotic significance (0.075) is higher than the significant level (0.05) with 1 as degree of freedom. Hence, the null hypothesis is accepted. So, there is significant relationship between district and gender of respondents.

5. FINDINGS & SUGGESTIONS

1. 50% of the respondents were between the age of 21-30
2. 48.3% of the respondents were female
3. 75.9% of the respondents were unmarried
4. 41% of the respondents belong to Tirunelveli
5. 25.9% of the respondent's salary was above30000
6. 69% of the respondents got affected by the flood
7. 17.2% of the respondents got the flood warning before 5-10 hours
8. 74.1% of the respondents got the flood information and updates through television
9. 82.8% of the respondents reside in an individual house
10. 51.7% of the respondent's maximum level of water around their house was below 5 feet
11. 75.9% of the respondents struggled for purchasing groceries
12. 72.4% of the respondents were not able to use public transport
13. 79.3% of the respondents were not having electricity connection during flood
14. 60.3% of the respondents were aware of the amenities provided by the government
15. 54.9% of the respondents did not get all the amenities provided by the government
16. 50% of the respondents shifted to the government accommodation
17. 53.4% of the respondents faced health issues
18. 53.4% of the respondents took damage alleviation before flood
19. 60.4% of the respondents evacuated to a safer place
20. 41.4% of the respondents are unlikely of the flood event in the next five years
21. 72.4% of the respondents wanted to improve the health facilities by the government
22. 36.2% of the respondents wanted to build dams as a precaution by the government to face the future
23. 7.1% of the respondents needed improvement

SUGGESTIONS

1. Based on feedback from the community, it is preferable to construct dams close to the Thamirabarani River's river beds.
2. Buildings can be built at an elevation that will prevent flooding from easily affecting them.
3. To ensure they are aware in advance, the districts might install flood monitors or water sensors in strategic locations.
4. The authorities may also build shelters for the people
5. To deal with any uncertainty, the administration should also have prepared plans and ideas.
6. Given that ditch blockages are the main cause of the issue, the government should also concentrate on the drainage system.
7. The government can create smartphone apps that link children, the police, fire department, and ambulance in case of an emergency.

6. CONCLUSION

Based on the Findings we can see that the schemes were introduced by the government that were not received properly at that time. The Government of Tamil Nadu took various measures towards disaster preparedness and response keeping in minds all the coastal disasters floods, cyclones and tsunamis. Every disaster response, if analysed, helps us to learn lessons to respond better in future. From the study we conclude that better drainage system, installation of water sensors and building evacuation places will help us to overcome these sudden calamities in future.

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