

A STUDY ON MEDIA USE, INFORMATION SEEKING BEHAVIOUR AND CYCLONE PREPAREDNESS WITH REFERENCE TO COASTAL AREA OF CHENNAI AND THIRUVALLUR DISTRICTS OF TAMILNADU

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Abstract

This study presents an overview of the Vardah cyclone and its impact assessment along the coastal districts of northern Tamil Nadu. The cyclone formed over south-east Bay of Bengal and crossed north of Tamil Nadu near Chennai on December 12, 2016, with a wind speed of about 100 to 110 kmph gusting to 120 kmph. The severe cyclonic storm Vardah caused significant damages along the coast of Chennai, Kanchipuram, and Thiruvalluvar districts. It brought severe damages to buildings and uprooted almost 75% trees. This study revealed various damages to buildings and properties during the cyclone through a field study, which is supported by published secondary data. Further, the article explores the causes of damages and remedial measures to avoid those in future cyclones. The instances of cyclones are becoming more frequent as well as intense in the recent times which raises a pressing need for disaster preparedness. Information plays a crucial role in the context of disasters and the same is disseminated through media. People seek information from media to become aware as well as adopt precautionary measures to safeguard themselves and their property from cyclones to the extent possible. A question arises as to how frequently people use media in the context of disaster, the pattern of information seeking, what are the factors that determine the information seeking behaviour and whether they pave way for the adoption of disaster preparedness. The thesis proposes the disaster preparedness model that conceptualizes structural relationships among media use, information seeking behaviour and disaster preparedness. The proposed structural relationships are empirically investigated in the context of tropical cyclones in the coastal districts of the state of Tamil Nadu, India.

Keywords: media use, information seeking behavior, cyclone preparedness, chennai and thiruvallur districts

INTRODUCTION

Cyclone Vardah, which was formed in the Southeast Bay of Bengal on Thursday, 08 December, was close to the Andaman and Nicobar Islands and wreaked havoc over the region. The system intensified into a severe cyclone and thereafter into a very severe cyclonic storm. (ECHO, 11 Dec 2016) Northern Tamil Nadu and Southern Andhra Pradesh battered by a Super Cyclonic Storm on 12 December, 2016 that made landfall at Chennai. The estimated maximum wind speed reached 110-130 kmph in the core area which produced a huge storm surge that led to sea-level elevation of more than 3 m and took away valuable lives of nearly 10 people. Downed trees and some structural damage were reported. More than 8,000 were evacuated to relief centers.

The India Meteorological Department (IMD) warned of a storm surge about 1 meter (3.2 feet) above normal tide levels in low-lying areas of Chennai, Thiruvallur, Kanchipuram and Nellore districts. Underground personal weather stations measured 6 to 10 inches of rainfall as of Monday afternoon in the Chennai metro area. Heavy rainfall was likely to spread westward into southern India as Vardah slowly weakened. Emphasis is laid on the real-time handling of this event, impacts made by the cyclone and the services rendered in relation to disaster management by the State and Central Agencies.

On 12 December, its centre was located approx. 134 km east of Chennai (Tamil Nadu state) and it had max. Sustained wind speed of 139 kmph (equivalent to a Category 1 on the Saffir-Simpson scale). An Orange Warning for heavy to very heavy rain is in effect for the states of Tamil Nadu and Andhra Pradesh. (ECHO, 12 Dec 2016) On 13th December, the depression over north interior Tamil Nadu weakened into a well-marked low pressure area. (Govt. of India, 13 Dec 2016) The Government of India stated that 16 people had died in rain related incidents linked to the cyclone, and more than 15,000 people in low lying areas were evacuated to 104 relief camps and provided food, water and medical services. (Govt of India, 14 Dec 2016).

DAMAGE

The South East Indian Peninsula has more than a dozen major cyclones, but the Vardah Cyclone effects on 12th December 2016 along the Northern Tamil Nadu and Southern Andhra Pradesh is one of the worst with a wind speed exceeding 120 km per hour with uprooting large number of trees, electric poles, devastating houses, human settlement, power shut down and created gratuitous devastation.



Figure 1: Vardah Cyclone crossing the Tamilnadu boundary on 12th dec 2016.

RAINFALL

Heavy rainfall occurred at many places with very heavy falls at few places and isolated extremely heavy rainfall over Chennai, Kancheepuram, Tiruvallur, and Villupuram districts of Tamil Nadu. Heavy to very heavy rainfall occurred at a few places over Vellore, Krishnagiri, Tiruvannamalai districts of Tamil Nadu, Nellore district of coastal Andhra Pradesh and Chittoor, Anantapuram & Cuddapah districts of Rayalaseema on 12th December 2016. During genesis stage cyclone Vardah

caused heavy to very heavy rainfall at a few places over Hut Bay, Maya Bandar, IAF Car Nicobar on 7th December and rainfall at many places with isolated extremely heavy rainfall occurred over Long Island, Port Blair of Andaman & Nicobar Islands on 8th December.

WIND

At the time of landfall, the high wind speed recorder of IMD at Chennai recorded peak winds of 96 kmph, Dynes Pressure Tube Anemograph of IMD, Chennai reported peak winds of 114 kmph. Thus the associated surface wind speed at the time of landfall of the cyclone has been estimated as 100-110 kmph gusting to 120 kmph.

STORM SURGE

The astronomical tide at that time was 0.47 m and hence the total tidal wave was 1.47 m IMD predicted Storm surge of about 1m height above astronomical tide at the time of landfall over low lying areas of Chennai and Tiruvallur districts of Tamil Nadu.

LITERATURE REVIEW

Plummer et al.,(2017) realizing the underlined importance of disaster preparedness, India joined the list of countries that have adopted the Sendai Framework for Disaster Risk Reduction 2015-2030. The National Disaster Management Plan (NDMP) devised by the Government of India serves a guidelines policy in effectively managing disasters in the country that aims to make the country disaster resilient. The priorities of NDMP are in line with the Sendai Framework for Disaster Risk Reduction. India earned praises from the United Nations for being a forerunner in implementing global plan that aims to reduce disaster loss across the world.

Hemalatha et al.,(2019) discuss the aspect of the need for adopting disaster preparedness was the case of floods in the year 2015 in Chennai and adjoining districts. The floods were a result of heavy rainfall generated by the northeast monsoon season. The deluge threw the capital city Chennai totally out of gear, inundated as many as 23.5 lakh houses and took lives of 500 people in various rain related incidents.

AIM AND OBJECTIVES OF THE STUDY

Despite having cyclone warnings and experiences of cyclones every year, why the people have not the steps to protect from such calamities and why the government is not showing adequate measures to teach and make awareness among the fisherman community of coastal villages. This was indented to the researcher to take up this study.

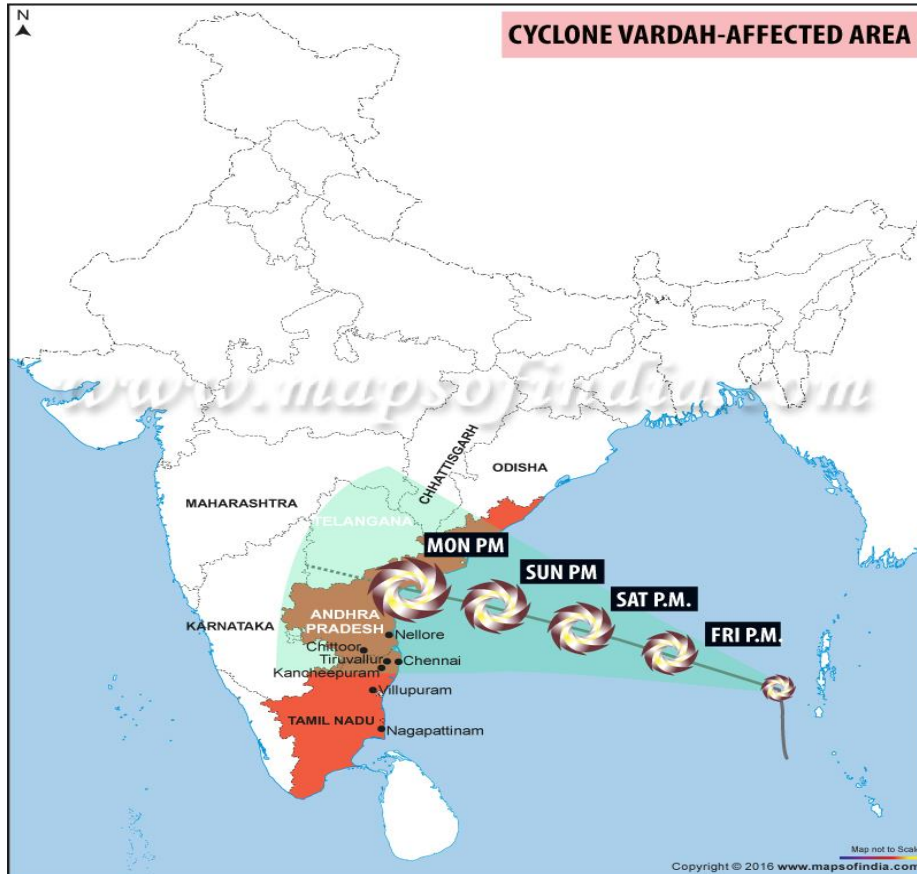
The aim and objectives of the study are:

1. To demarcate the cyclone affected area and vulnerable area.
2. To assess the Agriculture damages in the study area
3. To assess the Fisherman life affected in the study area

STUDY AREA

The Chennai district area covers 178.2 km² on the east coast of India. It is surrounded by the Bay of Bengal and inland districts of Tiruvallur and Kanchipuram. It lies between 12°59' N and 13°9' N latitude and 80°12' E and 80°19' E longitude at an average height of 6m above the mean sea level on a sandy shelf breaker swept beach. Two rivers, namely Cooum (flowing in the northern part) and

Adyar (flowing in the southern part), and a canal (the Buckingham) flow through the city. The Marina beach is the world's second longest beach with a stretch of about 13 km, formed due to the interception of long-shore sediment transport by southern breakwater of Chennai harbour. The location map of the study area is given in Figure 2.



Courtesy: www.mapsofindia.com

Figure 2: Path of Vardah cyclone on 12th Dec 2016



<p>Cyclone Vardah creates havoc in Chennai, thousands displaced from their homes</p>	<p>Cyclone Vardah leaves behind a trail of destruction in Chennai, destroys Toll Gate</p>
	
<p>Cyclone Vardah leaves behind a trail of destruction in Thiruvallur District</p>	<p>Cyclone Vardah leaves behind a trail of destruction in Chennai Airport</p>
	
<p>Cyclone Vardah leaves behind a trail of destruction in Chennai</p>	<p>Cyclone Vardah leaves behind a trail of destruction in Chennai</p>

Figure .3. Vardah Cyclone affected images

METHODOLOGY

Gathering data to answer the proposed research questions is guided by adopting a specific research method (North Central University Library 2020).

Data Collection and Sampling

The current research used interview schedule to gather the required data from 184 respondents using random sampling technique. The data for the current study was collected over a period of 7 months beginning from January 2021 to July 2021.

Tools Used For Data Analysis

The data collected by the enumerators from the respondents using the interview schedule developed were coded to create a database. They were tabulated and analyzed in the software Statistical Package for Social Sciences (SPSS) developed by IBM.

ANALYSIS AND INTERPRETATION

In this chapter a comprehensive analysis of the data collected has been done in line with the objectives proposed for the study. The hypotheses proposed for the research were tested based on the findings of the study followed by drawing conclusions. The statistical methods adapted for analysis of the data are descriptive statistics and inferential statistics.

Demographic and Vulnerability Profile of the Respondents

From the above figure (see Figure 4), 62% of the respondents are males and the rest 38% are females. Male respondents are found to be larger in number when compared to the female respondents.

Table 1: Sex Ratio of respondents from Chennai and Thiruvallur District

Sex	Respondents(n=184)	Percentage
Male	114	62%
Female	70	38%
Total	184	100%

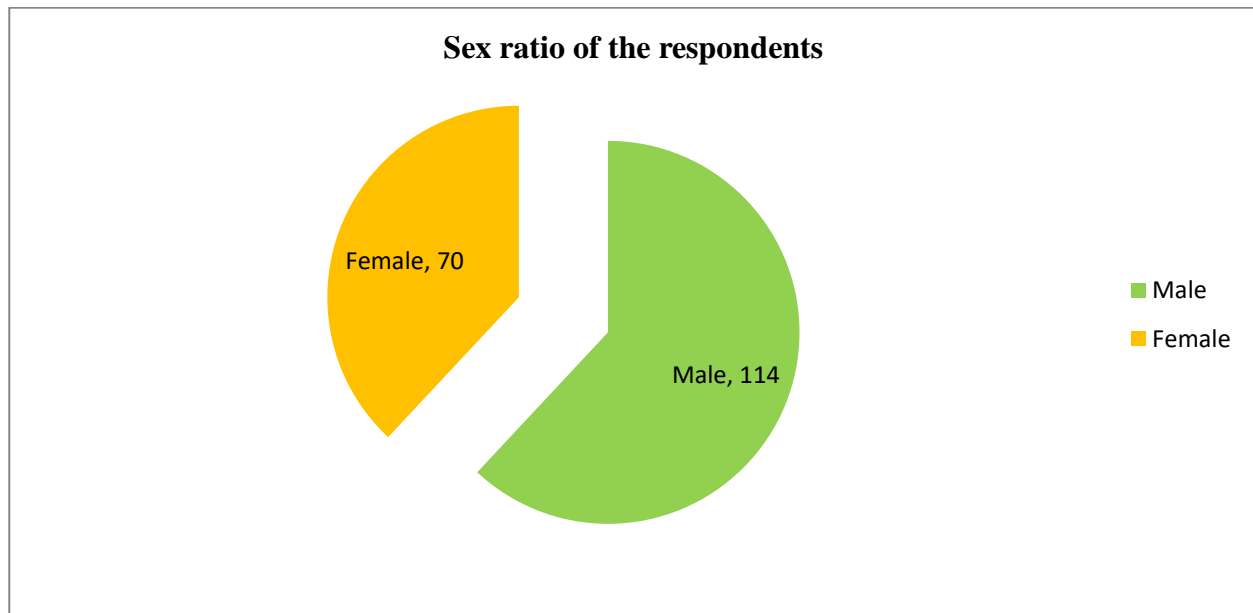


Figure 4: Sex Ratio of respondents from Chennai and Thiruvallur District

Hypothesis I: There are significant differences in the respondents' demographic and vulnerability profile with respect to the factors of disaster preparedness model.

Null Hypothesis: There is no significant difference between male and female respondents with respect to the factors of the disaster preparedness model.

From the below figure (see Figure 4), 15(8.15%) of the respondents are aged between 13 and 20 years, 54(29.35%) are aged between 21 and 30, 65(35.33%) are aged between 31 and 40, 20(10.87%) are aged between 41 and 50, 21(11.41%) are aged between 51 and 60 and 9(4.89%) of the respondents are aged over 60 years.

Table 2: Age wise responses of the respondent

Age	Respondents(n=184)	Percentage
13-20 Years	15	8.15
21-30 Years	54	29.35
31-40 Years	65	35.33
41-50 Years	20	10.87
51-60 Years	21	11.41
Above 60 Years	09	4.89
Total	184	100.00

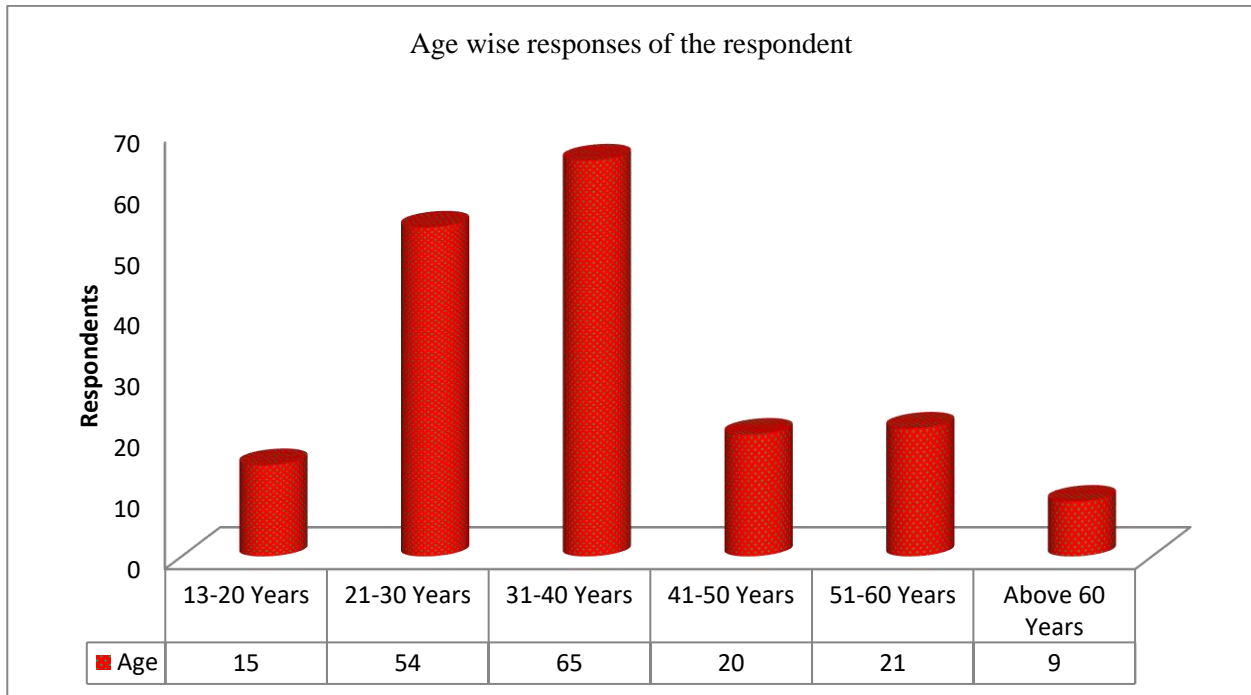


Figure 5: Age wise responses of the respondent

Level of Education of the Respondents

From the above figure (see Figure 6 and Table 3), 16(8.70%) of the respondents have no experience of schooling, 30(16.85%) have attained primary level of education, 21(11.41%) have attained middle school education, 45(24.46%) have attained high school education, 41(22.28%) have attained higher secondary education, 11(5.98%) possess have attained technical education by pursuing diploma courses, 14(7.61%) were graduates and the rest 6(3.26%) being post graduates. Majority of the respondents are found to have attained high school as their educational qualification followed by higher secondary education.

Table 3: Level of Education of the Respondents

Level of Education	Respondents(n=184)	Percentage
No. Experience of Schooling	16	8.70
Primary	30	16.85
Middle School	21	11.41
High School	45	24.46
Higher Secondary	41	22.28

Technical	11	5.98
Graduate(UG)	14	7.61
Post Graduate(PG)	6	3.26
Total	184	100.00

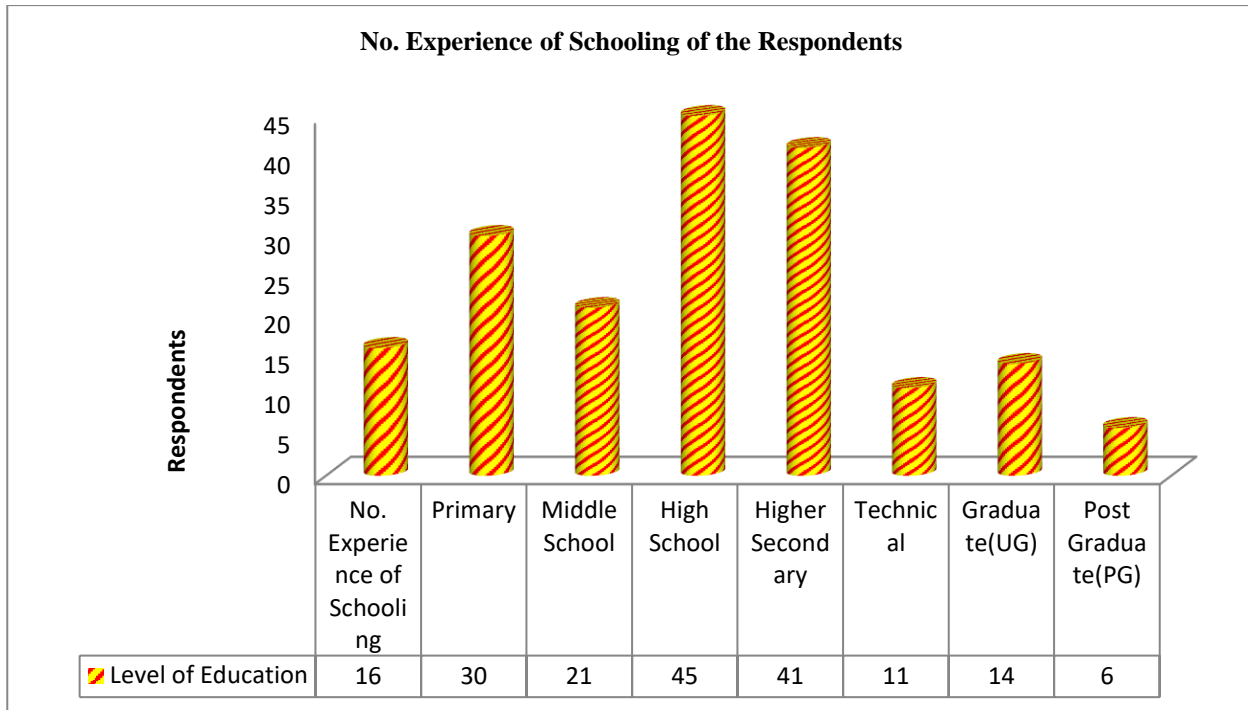


Figure 6: No. Experience of Schooling of the Respondents of the Respondents

Occupation of the Respondents

From the above figure (see Figure 7 and Table 4), 81(44.02%) of the respondents are fishermen, 62(33.70%) are self-employed, 15(8.15%) are employed, 19(10.33%) are home-makers, 3(1.63%) are students and the rest 4(2.17%) fall under others category. Majority of the respondents are found to be fishermen followed by the self-employed occupational category. Self-employed respondents are engaged with selling fish, fish products and other sea food.

Table 4: Occupation of the Respondents

Occupation of the Respondents	Respondents(n=184)	Percentage
Fisherman	81	44.02
Self-Employed	62	33.70
Employed	15	8.15
Home maker	19	10.33
Student	3	1.63
Others	4	2.17
Total	184	100.00

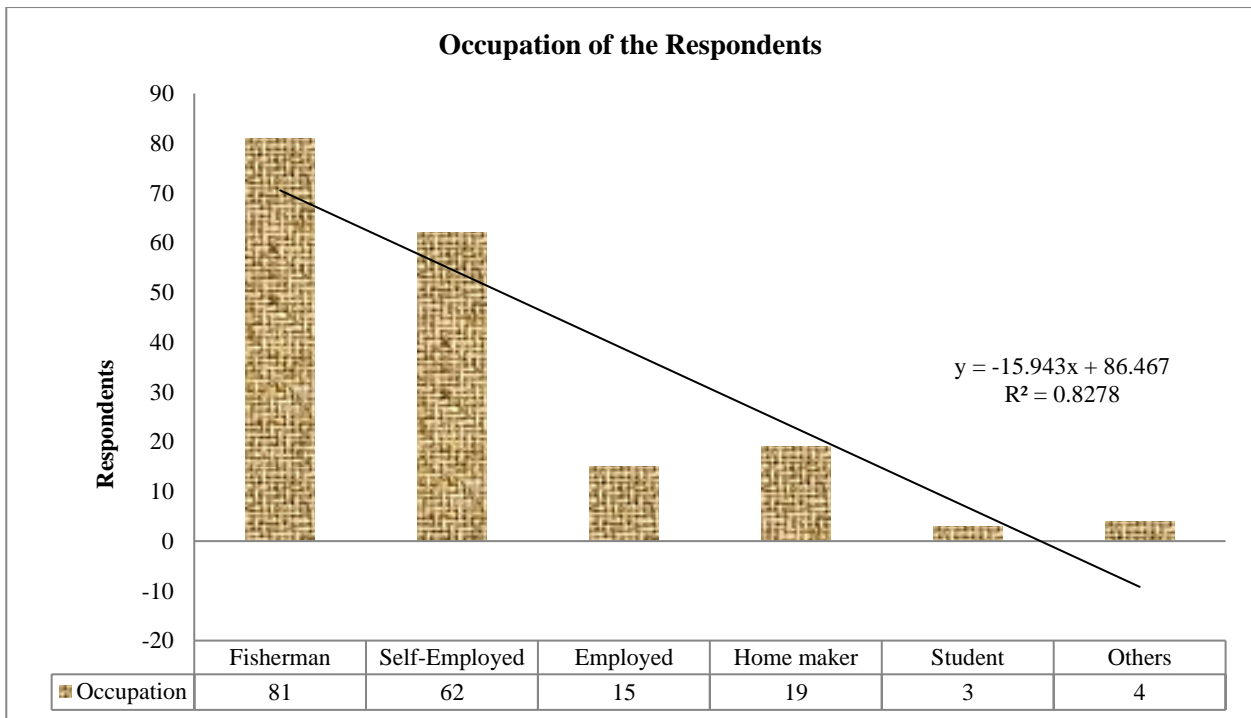


Figure 7: Occupation of the Respondents

Marital Status of the Respondents

From the above figure (see Figure 7 and Table 4), 28(15.22%) of the respondents' marital status is found to be single and 156(84.78%) of the respondents' marital status is found to be married.

Table 5: Marital status of the Respondents

Marital Status	Respondents(n=184)	Percentage
Single	28	15.22
Married	156	84.78
Total	184	100.00

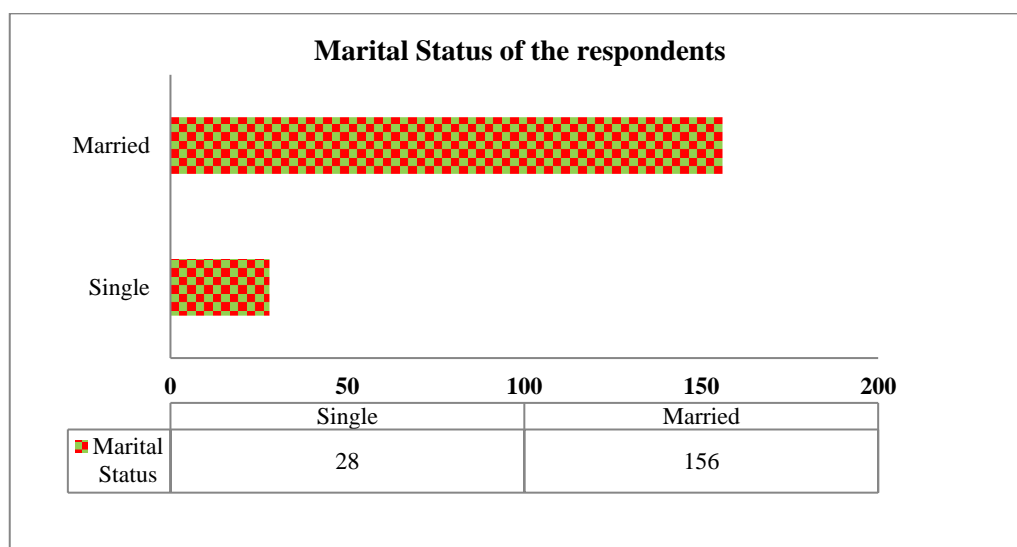


Figure 8: Marital status of the Respondents

Majority of the respondents are found to be married.

Family type, Family Size, Annual Income and Type of Residence of the Respondents

From the above figure (see Figure 9 and Table 6), 94(51.09%) of the respondents are found to be belonging to the nuclear family type while the rest 90(48.91%) are found to be belonging to the joint family type. Both family types viz. nuclear and joint are found to be almost equal in number. Nuclear families majorly comprise of parents and children, while joint families are extended in nature comprising of grandparents alongside other familial relations. In the case of joint families, the age of the members shall be widely varying.

Table 6: Family type, Family Size, Annual Income and Type of Residence of the Respondents

	Variables	Respondents(n=184)	Percentage
Family Type	Nuclear	94	51.09
	Joint	90	48.91
Family Size	Upto 2 Members	31	16.85
	3-4 Members	44	23.91
	5-6 Members	99	53.80
	More than 6 members	17	9.24
Annual Income	Below 90,000	24	13.04
	90,000 to 2,00,000	51	27.72
	2,00,001 to 5,00,000	84	45.65
	Above 5,00,000	18	9.78
Type of Residence	Hut	6	3.26
	Thatched Roof	15	8.15
	Semi-Pucca	62	33.70
	Pucca	101	54.89
Home Ownership Status	Owner	164	89.13
	Tenant	20	10.87
Duration of Living in the Cyclone Hit Area	Less than 3 years	15	8.15
	3 to 6 years	24	13.04
	7 to 10 years	44	23.91
	More than 10 years	101	54.89

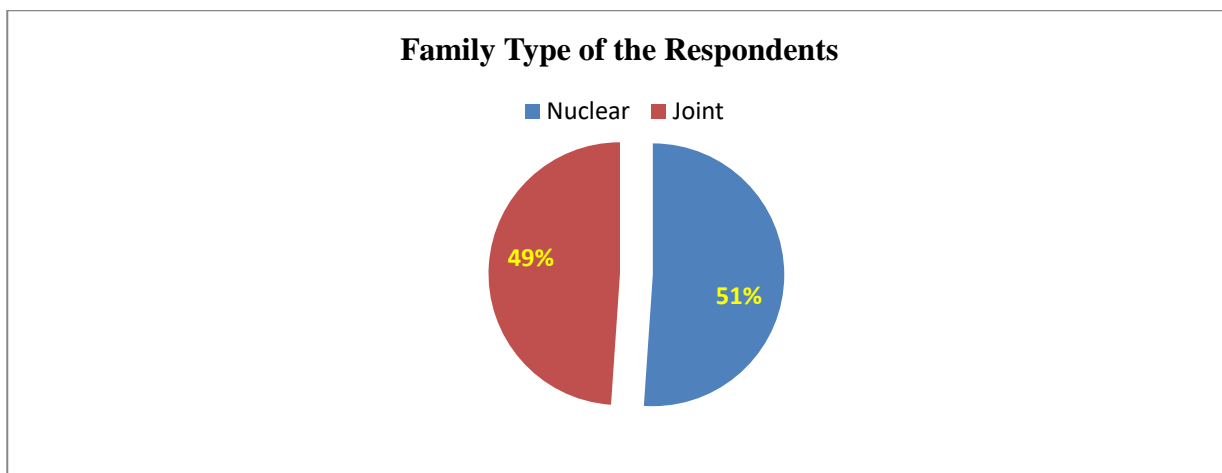


Figure 9: Family type of the respondents

From the above Table, 31(16.85%) of the respondents are found to have a family size of up to 2 members, 44(23.91%) are found to have a family size of 3 to 4 members, 99(53.80%) are found to have a family size of 5 to 6 members and the rest 17(9.24%) are found to have a family size of above 6 members. The family size of the respondents is found to be varied in nature. Majority of the respondents are found to have a family size of 5 to 6 members.

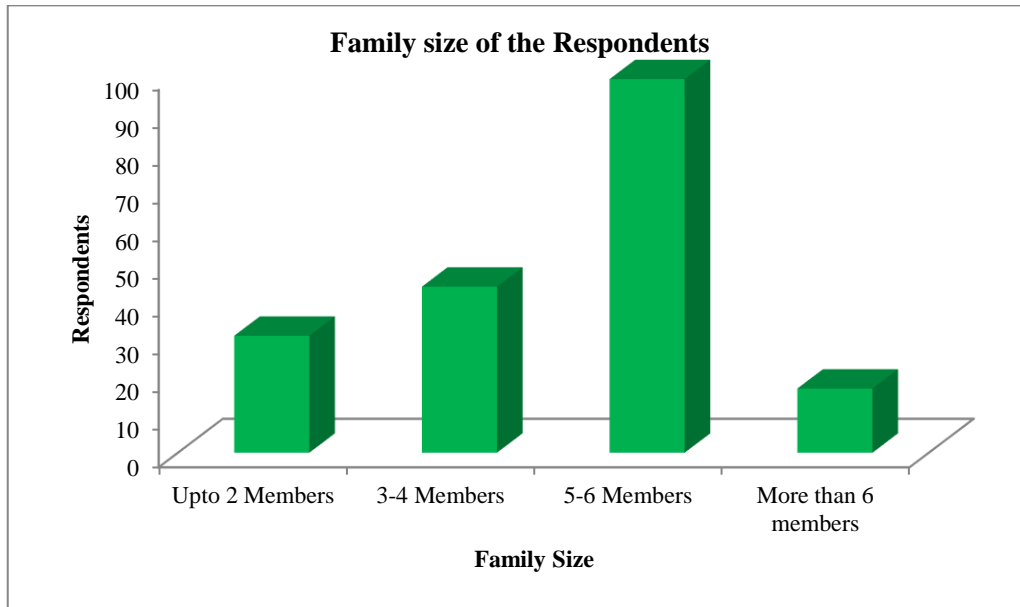


Figure 10: Family size of the Respondents

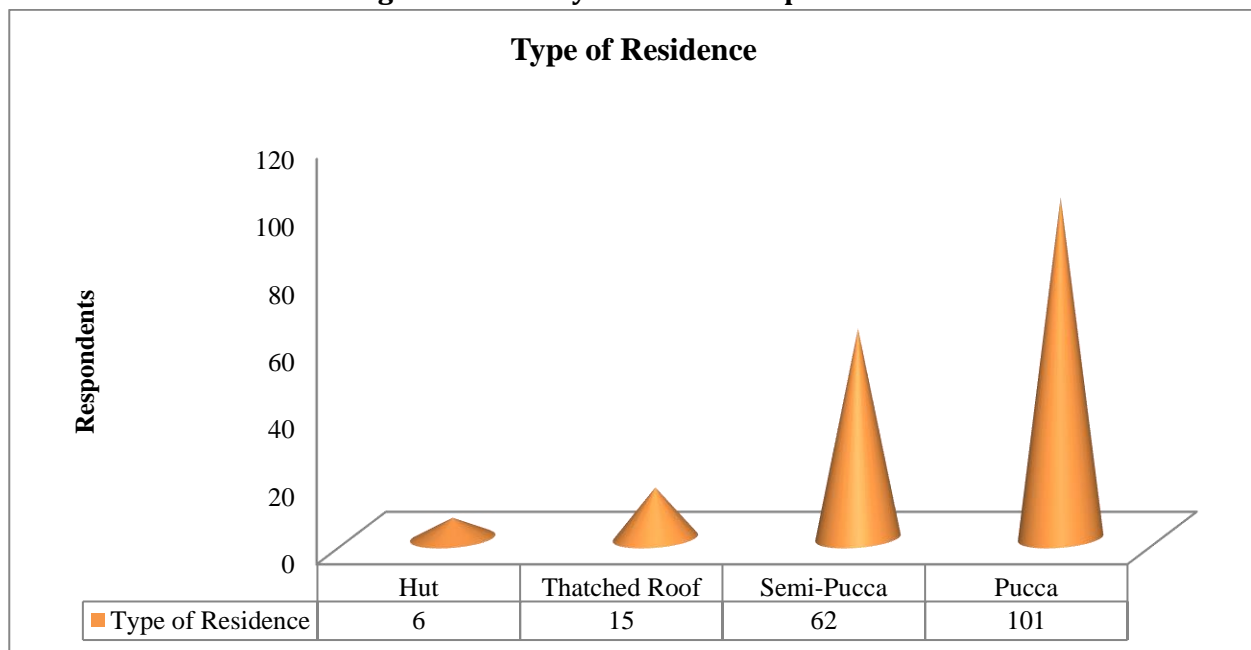


Figure 11: Type of Residence of the Respondents

From the above figure (see Figure 5.11), 92.6% of the respondents own a house and the rest 7.4% of the respondents are tenants. Majority of the respondents are found to be owners.

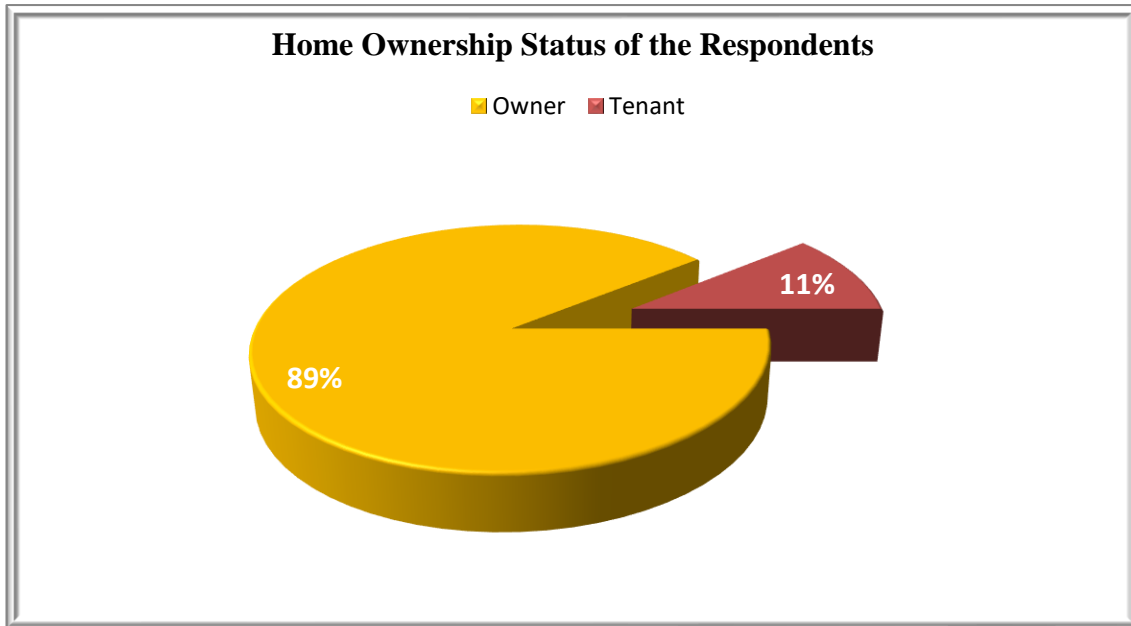


Figure 12: Home Ownership Status of the Respondents

From the above Table, 24(13.04%) of the respondents' annual household income is below 90,000 INR, 51(27.72%) of the respondents' annual household income is between 90,001 and 2,00,000 INR, 84(45.65%) of the respondents' annual household income is between 2,00,001 and 5,00,000 INR and the rest 18(9.78%) of the respondents' annual household income is 5,00,000 INR.

Majority of the respondents' annual household income is between 2,00,001 and 5,00,000 INR. People who earn below INR 90,000 are referred as deprived, those earning between 90,000 and 2,00,000 are referred as aspirers, those earning between 2,00,000 and 5,00,000 are referred as seekers, those earning between 5,00,000 and 10,00,000 are referred as strivers and those earning above 10,00,000 fall under the category called globals (McKinsey Global Institute 2007).

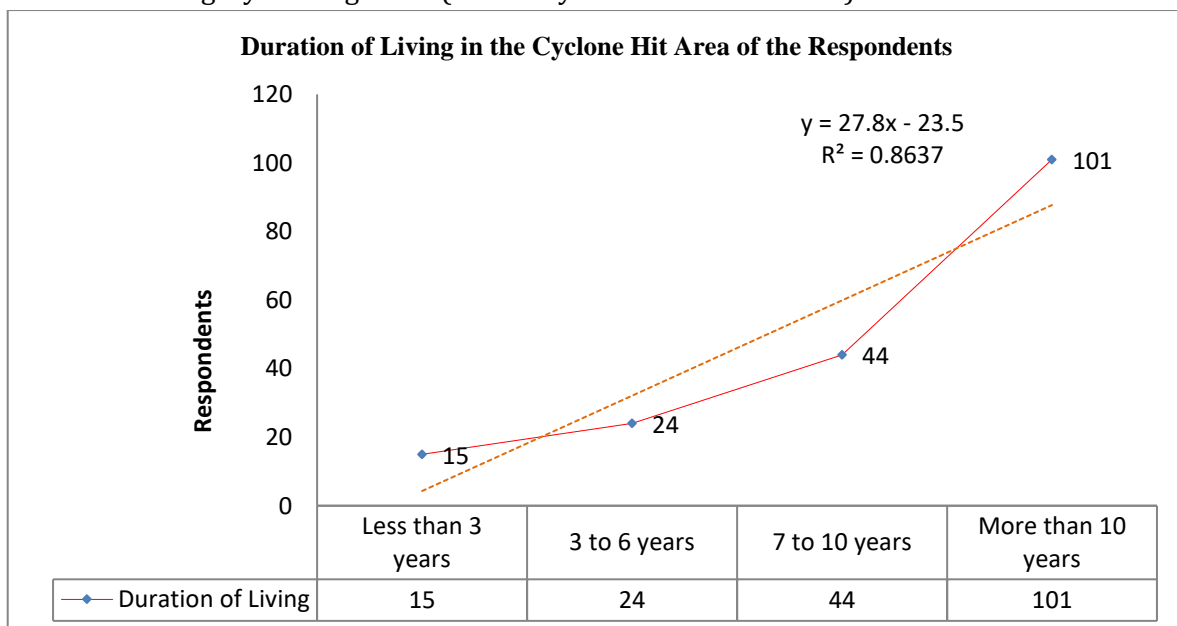


Figure 13: Duration of Living in the Cyclone Hit Area of the Respondents

From the above figure (see Figure 13), 1.2% of the respondents are residing in the cyclone hit area for less than 3 years, 5.4% are residing in the cyclone hit area for 3 to 6 years, 13.1% are residing in the cyclone hit area for 7 to 10 years and the rest 80.4% are residing in the cyclone hit area for more than 10 years. Majority of the respondents are found to residing in the cyclone hit area for more than 10 years.

Cyclone Experience of the Respondents

Table 7: Cyclone Experience of the Respondents

Cyclone Experience	Respondents (n=184)		Percentage	
	Yes	No	Yes	No
Have you taken shelter because of a cyclone impact?	145	39	78.80	21.20
Has your house or property impacted by cyclones?	35	149	19.02	80.98
Has your family member or a friend's house or property impacted by cyclones?	23	161	12.5	87.5
Have you experience disruption of day-to-day life activities disrupted due to cyclones?	8	176	4.35	95.65

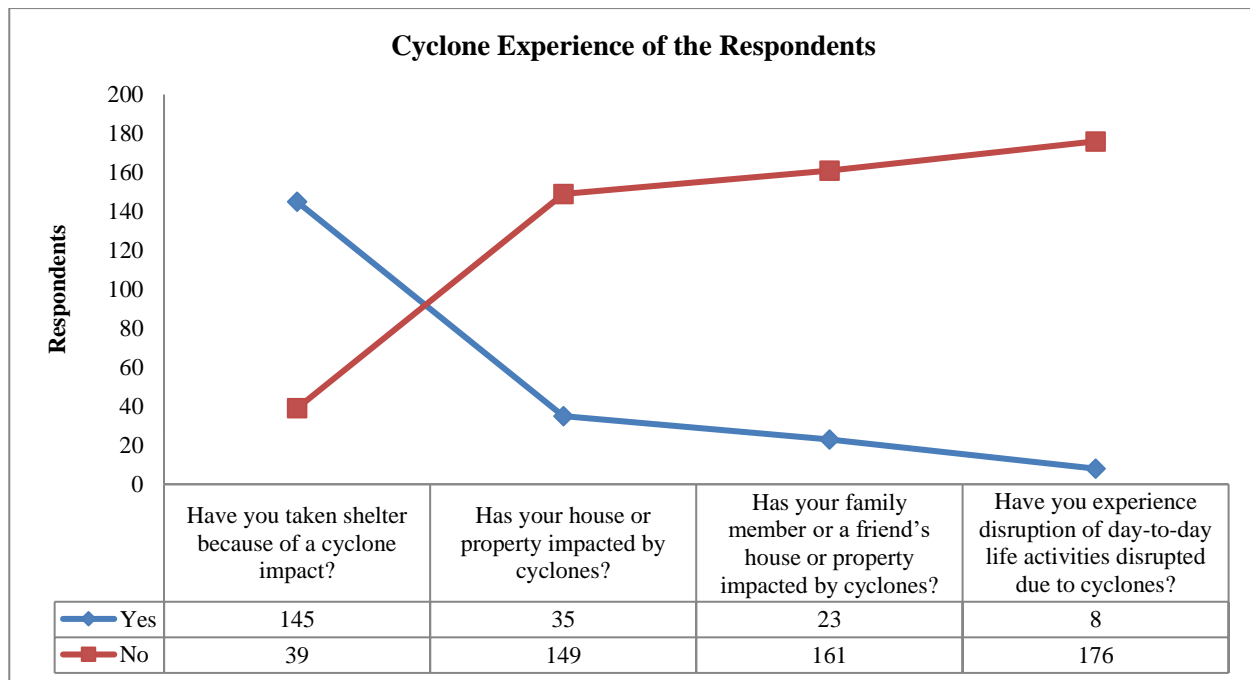


Figure 14: Cyclone Experience of the Respondents

From the above figure (Figure 14), 32.77% of the respondents have taken shelter due to a cyclone impact, 78.36% of the respondents have experienced impact to their house or property due to cyclones. For 85.61% of the respondents the properties of their friends and other family members have been impacted by cyclones and a whopping 99.58% of the respondents have experience day to day to disruption of day to day activities due to cyclones.

Inferential analysis such as t-test, Analysis of Variance (ANOVA) followed by Duncan Multiple Range Test (DMRT), Correlation Analysis, Multiple Regression Analysis, Mediation Analysis and Structural Equation Model (SEM) are used to verify the hypotheses formulated for the study.

DISCUSSIONS

The respondents are associated majorly with fishing and self-employment which is associated with the merchandise of fish and sea food. These respondents possess occupational vulnerability towards cyclones. The level of income of the respondents is not very sound. The finding that income disparity significantly contributes to disaster vulnerability is congruent with previous researches. The respondents live close by the sea, their residences are not very robust and contribute to their vulnerability to cyclones. There are many differences existing in the demographic and vulnerability profile of the respondents. Particularly, the gender difference existing in the factor of information seeking behaviour has been in line with the previous research. Where they have demonstrated that men and women seek information differently. The study hypothesized that a higher level of risk perception is positively associated with the engagement of a wider range of information source repertoires. The same has been validated in the current study.

CONCLUSION

The present study has been carried out in order to identify the effect of the 'Vardah' cyclone especially agriculture damages, settlement damages, transport damages, communication damages and biological damages due to cyclone affected places of the study area. Political governance is the process of decision making to formulate policies including national disaster reduction policy and planning. Administrative governance is the system of policy implementation and requires the existence of well-functioning organizations at the central and local levels. In the case of disaster risk reduction, it requires functioning enforcement of building codes, land-use planning, environmental risk and human vulnerability monitoring and safety standards.

RECOMMENDATIONS

- 1) The government should take the steps to erect the walls for preventing from the flood prone area and sea level rise.
- 2) The government should provide the aid to people to build up and other basic needs to into normal life to the severely affected areas of the study area.
- 3) The plan should be based on an integrated approach covering all relevant aspects of water management, infrastructural facilities, physical planning, land use, agriculture, transport and urban development, nature conservation at all levels (national, regional and local).
- 4) In the development of a management plan, decision makers at all levels (local, regional, national and international) as well as stakeholders and civil society should be involved.

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