CHAPTER FOUR
DATA ANALYSIS AND INTERPRETATION

Data analysis and interpretation:

Introduction

Quantitative Data Analysis

Qualitative Data Analysis

Introduction:

Social Vulnerability and Resilience to climate change being a relatively new area of research, the researcher used qualitative and well as quantitative method of data collection. Data analysis is a very important part of any research.

The present chapter is divided into two major parts. The Part 1 is the quantitative aspect of the present research for which an interview schedule is used and data is collected from one adult member of the household from the two communities. Part II consist of analysis of data gathered by using qualitative tools like focus group discussions, transect walk and key informant interviews from the key informants like formal and informal leaders, NGO representative, functionaries etc . These parts are further divided into various sections:

Part I

The first part contains ten sections. The **Section I** contain questions related to the demographic details of the respondents like sex, caste, marital status, age, education, occupation, role position of the respondents with respect to household head, residential status, type of house, facilities available at the household level, type of family and family size.

It also contains information related to family pattern in terms of gender wise distribution of the family members, marital status of the family members, occupation of the family members and migration status of family member.

The same section also has questions related to the household in terms of ability to save money, types of saving, perception of household related to economic status of the family as compared to other families in the community, perception regarding adequacy of income, debts /loans, the reason for taking debt/loans, the source of taking loan, ability to repay loan and migration status of the household members depicting economic status of the family.

The section further presents data on the health status of the members, accessibility to health services, problems faced in taking care of the special needs members etc.

The **Section II** contains data on exposure of the household to hazards related to climate and their impacts. This is explored in terms of climate hazards, intensity and the damage. Climate related hazards like cyclones, storm surge, coastal erosion, salinity etc and are also explored along with intensity.

Section III talks about the affiliation of the households with groups and subgroups. It probes into the kind of activities that are carried out by the various groups in the community that the household is affiliated with. These act as bonding and bridging social capitals.

Section IV interrogates into the kinds of amenities that the household has in normal times and times of emergency.

Section V talks about the resource dependency of the households on coastal and marine resource for household consumption and for generating income in terms of related goods and services. It explores how people use coral reefs, mangroves and other resources in form of goods and services.

Section VI explores the sources of livelihood at the household level for consumption and for business. It also talks about the role of the members who are involved in livelihood activities. It also encapsulates whether the household has any supplementary and alternative livelihoods at the household level. It also inquires into the possible threats and opportunities, knowledge and capacity for the same.

Section VII explores the impacts of any climate related hazards witnessed by the household, the frequency of these hazards, sensitivity, negative impact on the household in terms of damages and difficulty in coping up with hazards. The sum total of all these adds to the over all vulnerability.

Section VIII probes into from where the households gain information related to climate hazards and how is it used by the household. If they do not utilize why do they not utilize it. It also probes into whether they have access to any other information they seek and what are the barriers to accessing this information. The section further probes the quality and effectiveness of formal and informal networks supporting climate hazard reduction and adaptations and how do they benefit the households.

Section IX deals with perception of the households regarding the ability of the community to organize by learning, planning and making necessary changes to cope with climate change related impacts.

Section X deals with the attitude of the household towards governance and leadership

Part II

The Part II contains three sections of the qualitative data analyzed by the researcher.

Section I contains the information captured by way of transect walk.

Section II captures the focus groups discussions carried out in the selected communities. These groups are of elderly men, young men, elderly women, young women, occupational groups and community leaders. The FGDs explores the basic history of the village/community, community resources in term of infrastructure and services related to housing, water, sanitation, health, basic infrastructure, education and skills, amenities, occupations, income groups and legal services. It takes into consideration vulnerable groups in terms of elderly, widows, single headed households, orphans, children, differently able people or any special need group as identified by the community. It also captures community vulnerabilities in terms of identified hazards, history of disasters, damage, loss of lives, causes, warning and forecasting systems, traditional knowledge, depletion of resources, changes in

coastal area, major changes in living after change and disaster preparedness. The concluding part contains information about community resilience in terms of, risk knowledge, disaster recovery, diversity : in terms of livelihood and resource dependency(coastal and marine), supplementary and alternative livelihoods; knowledge and learning from changes, adaptability : in terms of vision and leadership, demographic changes(migration); and Self Organization : in term of linkages and networks.

Section III captures the key informant interviews. It contains information about the history of village in term of community and its ecology, the infrastructure facilities available in the village in terms of Housing, Health, Education, Water, Electricity, Drainage, Communication and legal services. It further probes into the kind of family and family networks, the major occupations of the community, whether there are any sudden or gradual change observed in the occupation of the community members, the economic status of the community, the indebtness status of the households in general, the major reasons for the same and status of migration observed in the community. It also probes into the health status of community people, specific health problems observed amongst the people and the health services available. It captures the presence of any persons with special needs in the community. It probes the climate related hazards identified by the community and the loss/damage due to such events. It inquires into the social networks and their role in carrying out activities. In furthers probes into the livelihoods and possible alternative and supplementary livelihoods, resource dependency in term of good and services on coastal and marine resources. The section than deals with the hazards and their impact, sources of information related to climate hazards, networks supporting climate hazard reduction and adaptation and quality and effectiveness of such networks. The section continues with perception of the households regarding the ability of the community to organize for planning, learning and making necessary changes to cope with climate related impacts and also its attitude towards governance and leadership.

SECTION I

DEMOGRAPHIC PROFILE

Table No: 1: Table depicting sex wise distribution of respondents

Sex		Area		Total
		Umarsadi	Madhvad	
Male	Frequency	62	56	118
	% within Sex	52.5%	47.5%	100.0%
	% within Area	62.0%	80.0%	69.4%
Female	Frequency	38	14	52
	% within Sex	73.1%	26.9%	100.0%
	% within Area	38.0%	20.0%	30.6%
Total	Frequency	100	70	170
	% within Sex	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

The above table reflects that over all, 58.8% of the respondents are male. The figure is high 80% in case of Madhvad while in Umarsadi its 62.0%. It reflects that there are more male respondents than female connoting a male dominant community.

Table No: 2: Table depicting caste wise distribution of respondents

Caste		Area		Total
		Umarsadi	Madhvad	
Hindu Machi	Frequency	99	2	101
	% within Caste	98.0%	2.0%	100.0%
	% within Area	99.0%	2.9%	59.4%
Hindu Kharva	Frequency	0	68	68
	% within Caste	.0%	100.0%	100.0%
	% within Area	.0%	97.1%	40.0%
Hindu Patel	Frequency	1	0	1
	% within Caste	100.0%	.0%	100.0%
	% within Area	1.0%	.0%	.6%
Total	Frequency	100	70	170
	% within Caste	58.8%	41.2%	100.0%
	% within Area	100 0%	100.0%	100 0%

It is inferred from the table that while Umarsadi is dominated by the Hindu Machi caste amounting to 99%, it is the Kharvas who dominate Madhvad with 97.1%. It is also inferred that all 170 respondents are Hindus. All the respondents belong to general category.

Table No: 3: Table showing marital status of the respondents

Marital Status		Area		Total
		Umarsadi	Madhvad	
Married	Frequency	90	66	156
	% within Marital Status	57.7%	42.3%	100.0%
	% within Area	90.0%	94.3%	91.8%
Unmarried	Frequency	5	4	9
	% within Marital Status	55.6%	44.4%	100.0%
	% within Area	5.0%	5 7%	5.3%
Widow	Frequency	5	0	5
	% within Marital Status	100.0%	.0%	100.0%
	% within Area	5.0%	.0%	2.9%
Total	Frequency	100	70	170
	% within Marital Status	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As depicted from the table, 90% of the respondents from Umarsadi are married while 94.3% of the respondents from Madhvad are married. 5% of the respondents from Umarsadi are widows.

Table No: 4: Table showing age wise distribution of the respondents:

Age		Area		Total
		Umarsadi	Madhvad	
25-40 Yrs.	Count	47	40	87
	% within Area	47.0%	57.1%	51.2%
41-55 Yrs.	Count	44	24	68
	% within Area	44.0%	34.3%	40.0%
>=56 Yrs.	Count	9	6	15
	% within Area	9.0%	8.6%	8.8%
Total	Count	100	70	170
	% within Area	100.0%	100.0%	100.0%

57.0% of the respondents from Madhvad fall in the age group of 25 to 40 years as compared to 47.0% from Umarsadi. In the age group of 41-55 years, there are 44.0% of the respondents from Umarsadi and 34.3% from Madhvad. Very few percentage of respondents are above the age of 55.

Table No: 5: Table showing education wise distribution of the respondents

Education		Area		Total
		Umarsadi	Madhvad	
Primary	Frequency	18	19	37
	% within Educational level of the respondent	48.6%	51.4%	100.0%
	% within Area	18.0%	27.1%	21.8%
Secondary	Frequency	35	31	66
	% within Educational level of the respondent	53.0%	47.0%	100.0%
	% within Area	35.0%	44.3%	38.8%
Higher secondary	Frequency	8	7	15
	% within Educational level of the respondent	53.3%	46.7%	100.0%
	% within Area	8.0%	10.0%	8.8%
ITI/PTC	Frequency	4	8	12
	% within Educational level of the respondent	33.3%	66.7%	100.0%
	% within Area	4.0%	11.4%	7.1%
Graduate	Frequency	31	3	34
	% within Educational level of the respondent	91.2%	8.8%	100.0%
	% within Area	31.0%	4.3%	20.0%
Post Graduate	Frequency	4	2	6
	% within Educational level of the respondent	66.7%	33.3%	100.0%
	% within Area	4.0%	2.9%	3.5%
Total	Frequency	100	70	170
	% within Educational level of the respondent	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

The educational level of the respondents is note worthy. In case of Madhvad, 4.3% of the respondents are graduates and 2.9% of the respondents are post graduates while in case of Umarsadi, this is 31% and 4%. None of the respondents are illiterate.

Table No: 6: Table showing Occupation wise distribution of respondents

Occupation		Area		
		Umarsadi	Madhvad	Total
Machimar/Fishing	Count	21	44	65
	% within Area	21.0%	62.9%	38.2%
Household	Count	13	6	19
	% within Area	13.0%	8.6%	11.2%
Business	Count	15	2	17
	% within Area	15.0%	2.9%	10.0%
Seamen	Count	14	0	14
	% within Area	14.0%	.0%	8.2%
Service	Count	30	0	30
	% within Area	30.0%	.0%	17 6%
Labour	Count	0	14	14
	% within Area	.0%	20.0%	8.2%
Unemployed	Count	3	0	3
	% within Area	3.0%	.0%	1.8%
Other	Count	2	0	2
	% within Area	2.0%	.0%	1.2%
NR	Count	2	4	6
	% within Area	2.0%	5.7%	3.5%
Total	Count	100	70	170
	% within Area	100.0%	100.0%	100.0%

Regarding the occupation of the respondents, it can be depicted from the above table that 62.9% of the respondents in case of Madhvad are Fishermen as compared to 21.0% in Umarsadi. 30.0% of respondents in case of Umarsadi are dependent on service sector as compared to Nil in case of Madhvad. 15.0% of the respondents are engaged in business in Umarsadi while only 2.9% of the respondents from Madhvad are engaged in business.

Table No: 7 : Table showing roles position of the respondents with respect to household head

Role Position of the Respondent with respect to household head		Area		Total
		Umarsadi	Madhvad	
Self	Frequency	79	55	134
	% within Role Position of the Respondent with respect to household head	59.0%	41 0%	100.0%
	% within Area	79.0%	78.6%	78.8%
Daughter in law	Frequency	6	11	17
	% within Role Position of the Respondent with respect to household head	35.3%	64.7%	100 0%
	% within Area	6.0%	15 7%	10.0%
Son	Frequency	6	0	6
	% within Role Position of the Respondent with respect to household head	100.0%	.0%	100.0%
	% within Area	6.0%	.0%	3.5%
Wife	Frequency	9	4	13
	% within Role Position of the Respondent with respect to household head	69.2%	30.8%	100.0%
	% within Area	9.0%	5.7%	7.6%
Total	Frequency	100	70	170
	% within Role Position of the Respondent with respect to household head	58.8%	41.2%	100 0%
	% within Area	100.0%	100.0%	100.0%

In both the communities the respondents are house hold heads which account for more than 75% of the total respondents with 79% in case of Umarsadi and 78.6% in case of Madhvad.

Table No: 8: Table showing residential status of the household in the community

Resident of the community since		Area		Total
		Umarsadi	Madhvad	
From beginning	Frequency	96	70	166
	% within Resident of the community since :	57.8%	42.2%	100.0%
	% within Area	96.0%	100.0%	97.6%
NR	Frequency	4	0	4
	% within Resident of the community since .	100.0%	.0%	100.0%
	% within Area	4.0%	.0%	2.4%
Total	Frequency	100	70	170
	% within Resident of the community since ·	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As depicted from the table, all the respondents in Madhvad are residents of the community since the beginning of their lives as compared to 96% in case of Umarsadi. Thus this indicated continuity of domicile in the community.

Table No: 9: Table showing type of house of the respondent

Type of house		Area		Total
		Umarsadi	Madhvad	
Pucca	Frequency	65	24	89
	% within Type of house	73.0%	27.0%	100.0%
	% within Area	65.0%	34.3%	52.4%
Semi pucca	Frequency	26	13	39
	% within Type of house	66.7%	33.3%	100.0%
	% within Area	26.0%	18.6%	22.9%
Kutcha	Frequency	7	27	34
	% within Type of house	20.6%	79.4%	100.0%
	% within Area	7.0%	38.6%	20.0%
Thatched	Frequency	0	1	1
	% within Type of house	.0%	100.0%	100.0%
	% within Area	.0%	1.4%	.6%
Other	Frequency	2	5	7
	% within Type of house	28.6%	71.4%	100.0%
	% within Area	2.0%	7.1%	4.1%
Total	Frequency	100	70	170
	% within Type of house	58.8%	41.2%	100.0%
	% within Area	100 0%	100.0%	100.0%

As depicted from the above table, while 65% of the houses in Umarsadi are Pucca houses, the percentage is 34.3% in case of Madhvad. In contrast to this, 38.6% of the houses in Madhvad are Kutcha as compared to 7% in Umarsadi. Percentage of semi pucca houses are more in Umarsadi than in Madhvad.

Table No: 10: Table showing the facilities available at the household level of the respondents

Facilities at the Household level		Area		Total
		Umarsadi	Madhvad	
Courtyard	Frequency	85	3	88
	% within $Q4	96.6%	3.4%	
	% within Area	85.0%	4.3%	
latrines	Frequency	66	15	81
	% within $Q4	81.5%	18.5%	
	% within Area	66.0%	21.4%	
Bathrooms	Frequency	86	35	121
	% within $Q4	71.1%	28.9%	
	% within Area	86.0%	50.0%	
Ventilation	Frequency	65	11	76
	% within $Q4	85.5%	14.5%	
	% within Area	65.0%	15.7%	
Separate Kitchen	Frequency	83	18	101
	% within $Q4	82.2%	17.8%	
	% within Area	83.0%	25.7%	
Store Room	Frequency	1	1	2
	% within $Q4	50.0%	50.0%	
	% within Area	1.0%	1.4%	
No facilities	Frequency	14	24	38
	% within $Q4	36.8%	63.2%	
	% within Area	14.0%	34.3%	
Total	Frequency	100	70	170

As regards the facilities available in the houses, 66.0% of the houses in Umarsadi have latrines which are only 21.4% in case of Madhvad. In case of bathrooms, 86% of the houses in Umarsadi as compared to 50% in case of Madhvad have them. 65% of the houses in Umarsadi as compared to 15.7% in case of Madhvad have ventilation, in case of separate kitchen this is 83% in case of Umarsadi as compared to 25.7% in case of Madhvad. 34.3% of the houses in Madhvad have no facilities conveying one room houses. Thus, it is clear that basic facilities and housing is better in Umarsadi than in Madhvad

Table No: 11: Table showing type of family of the respondents

Type of Family		Area		Total
		Umarsadi	Madhvad	
Joint	Frequency	35	24	59
	% within Type of Family	59 3%	40.7%	100.0%
	% within Area	35.0%	34.3%	34.7%
Nuclear	Frequency	65	46	111
	% within Type of Family	58.6%	41.4%	100.0%
	% within Area	65.0%	65.7%	65.3%
Total	Frequency	100	70	170
	% within Type of Family	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As depicted from the above table, prevalence of nuclear families is seen in both the communities with 65% of the families in Umarsadi and 65.7% of the families in Madhvad having nuclear families. Generally fishermen communities have more incidences of joint family as part of their traditional lifestyles.

Table No: 12: Table showing family size of the respondents

Family Size		Area		Total
		Umarsadi	Madhvad	
1-4 Members	Frequency	58	17	75
	% within Family Size	77.3%	22.7%	100.0%
	% within Area	58.0%	24.3%	44.1%
5-7 members	Frequency	41	37	78
	% within Family Size	52.6%	47.4%	100.0%
	% within Area	41.0%	52.9%	45.9%
8-12 Members	Frequency	1	16	17
	% within Family Size	5.9%	94.1%	100.0%
	% within Area	1.0%	22.9%	10.0%
Total	Frequency	100	70	170
	% within Family Size	58.8%	41 2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As regards the size of the families, the table shows that 22.9% of the families in Madhvad are large families with 8-12 members as compared to1% families in Umarsadi. 52% of the families in Madhvad have 5-7 members as compared to 41.0% in Umarsadi. Thus Madhvad has larger families than Umarsadi depicting a traditional pattern.

Table No: 13: Table showing Gender wise distribution of the family members of the respondents

N=170

Gender of family members		Area		Total
		Umarsadi	Madhvad	
Male	Frequency	222	210	432
	% within gender	51.4%	48.6%	
	% within Area	222.0%	300.0%	
Female	Frequency	215	207	422
	% within gender	50.9%	49.1%	
	% within Area	215.0%	295.7%	
Total	Frequency	100	70	170

As seen in the above table there is no significance difference between the gender of family members of both the communities.

Table No: 14: Table showing marital status of the family members of the respondents

N=170

Marital status of family members		Area		Total
		Umarsadi	Madhvad	
Married	Frequency	234	202	436
	% within marital status	53.7%	46.3%	
	% within Area	234.0%	288.6%	
Unmarried	Frequency	202	216	418
	% within marital status	48.3%	51.7%	
	% within Area	202.0%	308.6%	
Any other	Frequency	0	2	2
	% within marital status	.0%	100.0%	
	% within Area	.0%	2.9%	
Total	Frequency	100	70	170

As depicted from the above table, there is not much difference between the marital status of family members in both the communities

Table No: 15: Table showing educational level of the family members of the respondent

N=170

Educational level of family members		Area		Total
		Umarsadi	Madhvad	
KG	Frequency	16	0	16
	% within $Q6e	100.0%	0%	
	% within Area	16.0%	.0%	
Primary	Frequency	117	173	290
	% within $Q6e	40.3%	59.7%	
	% within Area	117.0%	247.1%	
Secondary	Frequency	119	25	144
	% within $Q6e	82.6%	17.4%	
	% within Area	119.0%	35.7%	
Higher secondary	Frequency	74	0	74
	% within $Q6e	100.0%	.0%	
	% within Area	74.0%	.0%	
ITI/PTC	Frequency	13	0	13
	% within $Q6e	100.0%	.0%	
	% within Area	13.0%	0%	
Graduate	Frequency	79	0	79
	% within $Q6e	100.0%	.0%	
	% within Area	79.0%	.0%	
Post Graduate	Frequency	7	4	11
	% within $Q6e	63.6%	36.4%	
	% within Area	7.0%	5.7%	
NA	Frequency	13	12	13
	% within $Q6e			
	% within Area			
Total	Frequency	100	70	170

As depicted from the above table, the family members in Umarsadi are more educated as compared to Madhvad. This is especially so in case of higher education

Table No: 16: Table showing occupation of the family members of the respondents

Occupation		Area		Total
		Umarsadi	Madhvad	
Household	Count	19	47	66
	% within Area	19.0%	67.1%	
Service	Count	61	2	63
	% within Area	61.0%	2.9%	
Unemployed	Count	1	0	1
	% within Area	1.0%	.0%	
Seamen	Count	39	1	40
	% within Area	39.0%	1.4%	
fishermen	Count	15	12	27
	% within Area	15.0%	17.1%	
Business	Count	25	2	27
	% within Area	25.0%	2.9%	
Other	Count	10	5	160
	% within Area	10.0%	5.6%	
NR	Count	6	1	7
	% within Area	6.0%	1.4%	
Total	Count	100	70	170

As depicted from the above table, 67.1% of the household members are engaged in household work while in Umarsadi, it is 19.0% of the household members. 61.0% of the household members in Umarsadi are engaged in service sector while only 2.9% are engaged in this sector in Madhvad. 39.0% of the household members in Umarsadi are engaged as seamen while no such case is seen in Madhvad. 25.0% of the household members are engaged in Business in Umarsadi with only 2.9% in case of Madhvad.

Table No: 17: Table showing migration status of the family members of the respondent

N=170

Migration of family members for livelihood		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	15	145	160
	% within Migration of family members for livelihood	9.4%	90 6%	
	% within Area	15 0%	207.1%	
No	Frequency	119	271	390
	% within Migration of family members for livelihood	30.5%	69.5%	
	% within Area	119.0%	387.1%	
NR	Frequency	10	0	10
	% within Migration of family members for livelihood	100.0%	.0%	
	% within Area	10.0%	.0%	
Total	Frequency	100	70	170

As depicted from the above table, 145 family members migrate seasonally for livelihood in Madhvad while only 15 members migrate for livelihood in case of Umarsadi. The main reason being unavailability of livelihood resources in the near vicinity.

Table No: 18: Table showing ability of the household for monthly savings:

Abilty of the household to save money monthly		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	72	21	93
	% within Is the household able to save money monthly? Abilty of the household to save money monthly	77.4%	22 6%	100.0%
	% within Area	72.0%	30.0%	54.7%
No	Frequency	28	49	77
	% within Ability of the household to save money monthly	36.4%	63.6%	100.0%
	% within Area	28.0%	70.0%	45.3%
Total	Frequency	100	70	170
	% within Ability of the household to save money monthly	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding the ability of the household to have monthly savings, it is found that 70% of the respondents in Madhvad are not able to save as compared to 28% in Umarsadi. Respondent in Umarsadi are saving more monthly in comparison with the respondents from Madhvad.

Table No: 19: Table showing types of saving at the household level

Cross Tabulation				
Type of savings		Area		
		Umarsadi	Madhvad	Total
Cash at household	Frequency	67	1	68
	% within savings	98.5%	1.5%	
	% within Area	93.1%	4.8%	
Saving accounts in bank	Frequency	4	15	19
	% within savings	21.1%	78.9%	
	% within Area	5.6%	71 4%	
Gold and Silver	Frequency	1	2	3
	% within savings	33.3%	66 7%	
	% within Area	1.4%	9.5%	
Business	Frequency	1	8	9
	% within savings	11.1%	88.9%	
	% within Area	1.4%	38.1%	
Any other	Frequency	0	2	2
	% within savings	.0%	100.0%	
	% within Area	.0%	9.5%	
Total	Frequency	72	21	93

As depicted from the table, 93.1% of the households save money in form of cash at home in Umarsadi as compared to 71.4% opting for saving accounts in bank in case of Madhvad. Unlike other fishing communities, they do not invest much in gold and silver.

Table No: 20: Table showing perception of the respondent regarding economic status of the household as compared to other families in the community

Economic status of the household compared to other families in the community		Area		
		Umarsadi	Madhvad	Total
Below Average	Frequency	9	6	15
	% within comparison	60.0%	40.0%	100.0%
	% within Area	9.0%	8.6%	8.8%
Average	Frequency	34	24	58
	% within Comparison	58.6%	41.4%	100.0%
	% within Area	34.0%	34.3%	34.1%
Above average	Frequency	50	3	53
	% within comparison	94.3%	5.7%	100.0%
	% within Area	50.0%	4.3%	31.2%
NR	Frequency	7	37	44
	% within Comparison	15.9%	84.1%	100.0%
	% within Area	7.0%	52.9%	25.9%
Total	Frequency	100	70	170
	% within comparison	58.8%	41 2%	100.0%
	% within Area	100.0%	100.0%	100.0%

50% of the respondents in Umarsadi rate the economic status of their households as compared to other families of the community to be above average as compared to 34.3% respondents in Madhvad stating that the economic status of their household is average as compared to economic status of others families in the community. 52.9% of the respondents in Madhvad did not respond

Table No: 21: Table showing perception of the respondent regarding adequacy of income of the household

Adequacy of income		Area		Total
		Umarsadi	Madhvad	
Usually not enough to cover important household expenses	Frequency	8	28	36
	% within Usually not enough to cover important household expenses	22.2%	77.8%	
	% within Area	8.0%	40.0%	
Just enough to cover important household expenses	Frequency	15	31	46
	% within Just enough to cover important household expenses	15.6%	84.4%	
	% within Area	15.0%	44.3%	
Usually have some left after important household expenses	Frequency	75	10	85
	% within Usually have some left after important household expenses	88.2%	11 8%	
	% within Area	75.0%	14.3%	
NR	Frequency	7	1	8
	% within NR	87.5%	12.5%	
	% within Area	7.0%	1.4%	
Total	Frequency	100	70	170

As seen from the above table, 40.0% of the respondents in Madhvad feel that usually the income of the household is not enough to cover important household expenses and 44.3% of the respondents in the same community state that their income is just enough to cover important household expenses. 75.0% of the respondents in Umarsadi state that their income is adequate and usually they have some left after important household expenses. Thus respondents in Umarsadi have adequate income.

Table No: 22: Table showing whether the household of the respondent takes debt/loans

Household takes any debt/loan		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	40	46	86
	% within household takes any debt	46.5%	53.5%	100.0%
	% within Area	40.0%	65.7%	50.6%
No	Frequency	60	24	84
	% within household takes any debt	71.4%	28.6%	100.0%
	% within Area	60.0%	34.3%	49.4%
Total	Frequency	100	70	170
	% within household takes any debt	58.8%	41 2%	100.0%
	% within Area	100.0%	100.0%	100.0%

65.7% of the respondents in case of Madhvad take debts as compared to 40%of the respondents in Umarsadi. This also indicates that Madhvad is more dependent on loans than Umarsadi.

Table No: 23: Table showing the reasons for taking debt by the household of the respondent

N=86

Reasons for taking debt for the household		Area		Total
		Umarsadi	Madhvad	
For Household expenses	Frequency	9	44	53
	% within reason	17.0%	83.0%	
	% within Area	22.5%	95.7%	
For Marriage	Frequency	32	38	70
	% within reason	45.7%	54.3%	
	% within Area	80.0%	82.6%	
Religious purpose	Frequency	2	39	41
	% within reason	4.9%	95.1%	
	% within Area	5.0%	84.8%	
For basic necessities	Frequency	3	40	43
	% within reason	7.0%	93.0%	
	% within Area	7.5%	87.0%	
Building house or renovation	Frequency	27	4	31
	% within reason	87.1%	12.9%	
	% within Area	67.5%	8.7%	
Others	Frequency	4	20	24
	% within reason	16.7%	83.3%	
	% within Area	10.0%	43.5%	
Total	Frequency	40	46	86

Stating the main reasons for taking debt of the 40 and 46 respondents who take debts in Umarsadi and Madhvad respectively, 95.7% of the respondents in Madhvad stated that they take debts to meet the household expenses while 80.0% of the households in Umarsadi take debts for marriage as compared to 82.6% of the respondents. 87% of the respondents in Madhvad also take debt for basic necessities. 67.5% of the households in Umarsadi take debt for building house or renovation. 84.8% of the households in Madhvad take the debt for religious purpose also.

Table No: 24: Table showing the source of debt/loan by the household of the respondents

Source of debt/loans		Area		Total
		Umarsadi	Madhvad	
Bank	Frequency	29	5	34
	% within Source of debt/loans	85.3%	14.7%	
	% within Area	72.5%	10.9%	
Money lender from the village	Frequency	0	4	4
	% within Source of debt/loans	.0%	100.0%	
	% within Area	.0%	8.7%	
From relatives	Frequency	40	23	63
	% within Source of debt/loans	63.5%	36.5%	
	% within Area	100.0%	50.0%	
Community organizations	Frequency	0	18	18
	% within Source of debt/loans	.0%	100.0%	
	% within Area	.0%	39.1%	
Others	Frequency	0	6	6
	% within Source of debt/loans	.0%	100.0%	
	% within Area	.0%	13.0%	
Total	Frequency	40	46	86

Regarding the source of debts/loans, 72.5% of the people in Umarsadi take loans from the bank as compared to 50% in case of Madhvad who resort to taking loan from relatives. Surprisingly 63.5% of the respondents from Umarsadi admitted that they take loan from relatives as compared to 36.5% in Madhvad. Madhvad also has mechanism of taking loans from community organizations in form of their samaj.

Table No: 25: Table showing whether the household of the respondent is able to repay debt

Ability of the household to repay debt /loan		Area		
		Umarsadi	Madhvad	Total
Yes	Frequency	10	41	51
	% within Ability of the household to repay debt /loan	19.6%	80.4%	100.0%
	% within Area	25.0%	89.1%	59.3%
No	Frequency	29	5	34
	% within Is the household able to repay debt? Ability of the household to repay debt /loan	85.3%	14 7%	100.0%
	% within Area	72.5%	10.9%	39.5%
NR	Frequency	1	0	1
	% within Ability of the household to repay debt /loan	100.0%	.0%	100.0%
	% within Area	2.5%	.0%	1 2%
Total	Frequency	40	46	86
	% Ability of the household to repay debt /loan	46.5%	53.5%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding the repayment of loans, 89.1% of the households in Madhvad are able to repay the loans while 72.5% of the households in Umarsadi are not able to repay the debts they take.

Migration status of the family members of the respondents

There is no in migration at the household level in both communities.

Table No: 26: Table showing out Migration Status of the household members of the respondents

N=170

Migration of family members livelihood		Area		
		Umarsadi	Madhvad	Total
Yes	Frequency	15	145	160
	% within out migration	9.4%	90.6%	
	% within Area	15.0%	207.1%	
No	Frequency	119	271	390
	% within out migration	30.5%	69.5%	
	% within Area	119.0%	387.1%	
NR	Frequency	10	0	10
	% within out migration	100.0%	.0%	
	% within Area	10.0%	.0%	
Total	Frequency	100	70	170

As seen from the above table out of the total 160 family members who migrate, 145 family members in case of Madhvad migrate on seasonal basis for livelihood purpose as compared to 15 members in case of Umarsadi.

SECTION II

EXPOSURE TO CLIMATE HAZARDS BY THE HOUSEHOLDS

Table No: 27 : Table showing exposure of the household of the respondent to storm surge climate hazard

Climate Hazard_Storm surge		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	97	1	98
	% within Climate Hazards_Storm surge	99.0%	1 0%	100.0%
	% within Area	97.0%	1.4%	57.6%
No	Frequency	3	69	72
	% within Climate Hazards_Storm surge	4.2%	95.8%	100.0%
	% within Area	3.0%	98.6%	42.4%
Total	Frequency	100	70	170
	% within Climate Hazards_Storm surge	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As shown in the above table, 97% of the households in Umarsadi have been exposed to climate related hazard of storm surge as compared to 1.4% at Madhvad. 98.6% of the respondents have no exposure to storm surge in Mahdvad.

Table No: 28 : Table showing intensity experienced by the household of the respondent to storm surge climate hazard

Intensity of Storm Surge		Area		Total
		Umarsadi	Madhvad	
High	Frequency	58	0	58
	% within Intensity of Storm Surge	100.0%	.0%	100.0%
	% within Area	58.0%	.0%	34.1%
Medium	Frequency	20	1	21
	% within Intensity of Storm Surge	95.2%	4.8%	100.0%
	% within Area	20.0%	1.4%	12.4%
Low	Frequency	19	0	19
	% within Intensity of Storm Surge	100.0%	.0%	100.0%
	% within Area	19.0%	.0%	11.2%
NA	Frequency	3	69	72
	% within Intensity of Storm Surge	4.2%	95.8%	100.0%
	% within Area	3.0%	98 6%	42.4%
Total	Frequency	100	70	170
	% within Intensity of Storm Surge	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

58% of the households in Umarsadi have rated the intensity of storm surge to be high while in Madhvad, they have rated it as Medium.

Table No: 29: Table showing exposure of the household of the respondent to coastal erosion climate hazard

Climate Hazard_Coastal erosion		Area		
		Umarsadi	Madhvad	Total
Yes	Frequency	96	18	114
	% within Climate Hazards_Coastal erosion	84.2%	15.8%	100.0%
	% within Area	96.0%	25.7%	67.1%
No	Frequency	4	52	56
	% within Climate Hazards_Coastal erosion	7.1%	92.9%	100.0%
	% within Area	4.0%	74.3%	32 9%
Total	Frequency	100	70	170
	% within Climate Hazards_Coastal erosion	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

96.0% of the respondents in Umarsadi state that their households have been exposed to Coastal erosion as a climate related hazard as against 25.7% of the households in Madhvad. This connotes that Umarsadi is more vulnerable as compared to Madhvad in term of coastal erosion.

Table No: 30 : Table showing intensity experienced by the household of the respondent to coastal erosion climate hazard

Intensity experienced by the household to Coastal Erosion climate hazard		Area		
		Umarsadi	Madhvad	Total
High	Frequency	54	3	57
	% within Intensity of Coastal Erosion	94.7%	5.3%	100.0%
	% within Area	54.0%	4 3%	33.5%
Medium	Frequency	32	15	47
	% within Intensity of Coastal Erosion	68 1%	31.9%	100.0%
	% within Area	32 0%	21.4%	27.6%
Low	Frequency	10	0	10
	% within Intensity of Coastal Erosion	100.0%	.0%	100.0%
	% within Area	10.0%	.0%	5.9%
NA	Frequency	4	52	56
	% within Intensity of Coastal Erosion	7.1%	92.9%	100.0%
	% within Area	4.0%	74.3%	32.9%
Total	Frequency	100	70	170
	% within Intensity of Coastal Erosion	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

54% of the respondents in Umarsadi have stated that the intensity of coastal erosion as a climate hazard as experienced by the household to be high as compared to 21.4% of the respondents stating it to be medium in Madhvad

Table No: 31 : Table showing exposure of the household of the respondent to Cyclone climate hazard

Climate Hazard_Cyclone		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	87	70	157
	% within Climate Hazards_Cyclone	55.4%	44.6%	100.0%
	% within Area	87.0%	100.0%	92.4%
No	Frequency	13	0	13
	% within Climate Hazards_Cyclone	100.0%	.0%	100.0%
	% within Area	13.0%	.0%	7.6%
Total	Frequency	100	70	170
	% within Climate Hazards_Cyclone	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

All respondents in Madhvad stated that their households have been exposed to cyclone climate hazard as compared to 87% of the respondents in Umarsadi area.

Table No: 32 : Table showing intensity experienced by the household of the respondent to cyclone climate hazard

Intensity of Cyclone		Area		Total
		Umarsadi	Madhvad	
High	Frequency	19	2	21
	% within Intensity of Cyclone	90.5%	9.5%	100.0%
	% within Area	19.0%	2.9%	12.4%
Medium	Frequency	7	68	75
	% within Intensity of Cyclone	9.3%	90.7%	100.0%
	% within Area	7.0%	97.1%	44.1%
Low	Frequency	61	0	61
	% within Intensity ofCyclone	100.0%	.0%	100.0%
	% within Area	61.0%	.0%	35.9%
NA	Frequency	13	0	13
	% within Intensity of Cyclone	100.0%	.0%	100.0%
	% within Area	13.0%	.0%	7.6%
Total	Frequency	100	70	170
	% within Intensity of Cyclone	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As seen from the above table, 61% of the respondents have rated cyclones to be of low intensity in Umarsadi while 97.1% of the respondents in Madhvad stated it to be of medium intensity.

Table No: 33 : Table showing exposure of the household of the respondent to Flood climate hazard

Climate Hazard_Flood		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	1	53	54
	% within Climate Hazard_Flood	1.9%	98.1%	100.0%
	% within Area	1.0%	75.7%	31.8%
No	Frequency	99	17	116
	% within Climate Hazard_Flood	85.3%	14.7%	100.0%
	% within Area	99.0%	24.3%	68.2%
Total	Frequency	100	70	170
	% within Climate Hazard_Flood	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

75.7% of the respondents from Madhvad stated that their households have been exposed to flood related climate hazard as compared to 99% of the respondents from Umarsadi stating that their households have not been exposed to flood related climate hazard.

Table No: 34 : Table showing intensity experienced by the household of the respondent of Flood climate hazard

Intensity of Flood		Area		Total
		Umarsadi	Madhvad	
High	Frequency	0	32	32
	% within Intensity of Flood	.0%	100.0%	100.0%
	% within Area	.0%	45.7%	18.8%
Medium	Frequency	0	21	21
	% within Intensity of Flood	.0%	100.0%	100.0%
	% within Area	.0%	30.0%	12.4%
Low	Frequency	1	0	1
	% within Intensity of Flood	100.0%	.0%	100.0%
	% within Area	1.0%	.0%	.6%
NA	Frequency	99	17	116
	% within Intensity of Flood	85.3%	14.7%	100.0%
	% within Area	99.0%	24.3%	68.2%
Total	Frequency	100	70	170
	% within Intensity of Flood	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

The above table reflects that 45.7% of the respondents in Madhvad have rated the intensity of the flood as experienced by the household to be of High and 30% of them rate it as medium. This almost makes 75.7% of the respondents in the area. In case of Umarsadi, 99% of the respondents have stated it to be non applicable and the one who experienced it stated that intensity was low.

Table No: 35 : Table showing exposure of the household of the respondent to Salinity climate hazard

Climate Hazard_Salinity		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	16	70	86
	% within Climate Hazard_Salinity	18.6%	81.4%	100.0%
	% within Area	16.0%	100.0%	50.6%
No	Frequency	84	0	84
	% within Climate Hazard_Salinity	100.0%	.0%	100 0%
	% within Area	84.0%	.0%	49.4%
Total	Frequency	100	70	170
	% within Climate Hazard_Salinity	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

With regards to exposure of the households to salinity climate hazard, all the households in Madhvad have stated that they have been exposed to this hazard as compared to 16% of the households in case of Umarsadi.

Table No: 36 : Table showing intensity experienced by the household of the respondent to Salinity climate hazard

Intensity of Salinity		Area		Total
		Umarsadi	Madhvad	
High	Frequency	3	46	49
	% within Intensity of Salinity	6.1%	93.9%	100.0%
	% within Area	3.0%	65.7%	28.8%
Medium	Frequency	5	24	29
	% within Intensity of Salinity	17.2%	82.8%	100.0%
	% within Area	5.0%	34.3%	17.1%
Low	Frequency	8	0	8
	% within Intensity of Salinity	100.0%	.0%	100.0%
	% within Area	8.0%	.0%	4.7%
NA	Frequency	84	0	84
	% within Intensity of Salinity	100.0%	.0%	100.0%
	% within Area	84.0%	.0%	49.4%
Total	Frequency	100	70	170
	% within Intensity of Salinity	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding the intensity of the salinity, 65.7% of the households state in Madhvad state that it's high as compared to 3.0% in Umarsadi. None of the respondents in Madhvad state it to be low as compared to 8% in Umarsadi stating that it is low.

Table No: 37 : Table showing exposure of the household of the respondent to depletion of mangrove cover as climate hazard

Climate Hazard -depletion of mangroves		Area		
		Umarsadi	Madhvad	Total
Yes	Frequency	0	11	11
	% within Climate Hazard_ depletion of mangroves	.0%	100.0%	100.0%
	% within Area	.0%	15.7%	6.5%
No	Frequency	100	59	159
	% within Climate Hazard_ depletion of mangroves	62.9%	37.1%	100.0%
	% within Area	100.0%	84.3%	93.5%
Total	Frequency	100	70	170
	% within Climate Hazard_ depletion of mangroves	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As observed from the above table, 15.7% of the households in Madhvad state that there has been depletion of mangrove covers in the area. No such exposure has been felt in case of Umarsadi.

Table No: 38 : Table showing intensity experienced by the household of the respondent to depletion of mangrove cover as climate hazard

Intensity of mangrove depletion		Area		
		Umarsadi	Madhvad	Total
High	Frequency	0	7	7
	% within Intensity of mangrove depletion	.0%	100.0%	100.0%
	% within Area	.0%	10.0%	4.1%
Medium	Frequency	0	4	4
	% within Intensity of mangrove depletion	.0%	100.0%	100.0%
	% within Area	.0%	5.7%	2.4%
NA	Frequency	100	59	159
	% within Intensity of mangrove depletion	62.9%	37.1%	100.0%
	% within Area	100.0%	84.3%	93.5%
Total	Frequency	100	70	170
	% within Intensity of mangrove depletion	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

10% of the respondents state that the intensity of depletion of mangroves is high while 5.7% say its low in Madhvad area. No such incidence is reported from Umarsadi area.

SECTION III

SOCIAL CAPITAL IN FORM OF FORMAL AND INFORMAL NETWORKS

Social Capital

Social capital in form of formal and informal capital is present in both the communities. These are especially in form of the fishermen community network known as Samaj by the local community. Another one is the presence of Swadhyay Parivar in both the communities since past two generations. People are connected to their Samaj right from their births as membership is based on birth. Once a baby is born, he/she is considered as member of the community. All the adults of the community become members of the samaj and hence their affiliation is since adulthood for working. In Madhvad, it is known as Kharva Samaj which in turn is affiliated with its network at the regional and national level. It acts as a strong support system and helps in governance of the community. They have their own social rules and regulations which are binding to the members. Regarding its activities, these networks apart from monitoring and implementing social rules and regulations, are also active during emergencies like death in a family, loss of income/livelihood, natural disasters, theft etc. These networks are the back bone of the community and thus they act as a strong support to the communities. There are regular meeting of the samaj and an annual meeting at the regional level for discussing and planning.

Religious group in form of Swadhyay parivar is present in both the communities. The members are engaged in different activities like krushi mandir, matsyagandha (tartu mandir), bhav feri, relief work during emergencies etc. They also conduct youth kendras and women kendras for the development of the community on regular basis. More than 75% of the households in both the communities are members of swadhyay parivar. In Madhvad, there is another group which is follower of Ram Dev Pir baba but apart from religious activities in form of prayers and religious functions, it is not involved in any other activities. In Umarsadi, there are followers of a cult from Dakor which is affiliated to the laxminarayan temple. They also run mandals especially mahila mandals which carry out activities like bhajans, prayers etc. These mandals also help their members in times of need.

There are three self help groups in Madhvad formed by the DRDA (District Rural Development Agency) they are recently formed groups and are in their infancy stage. They are presently involved in saving – credit activities. Each group has around 20 members who are all women. Similar kinds of self help groups are also there in Umarsadi and they are around 6-8 years old. They are also involved in saving credit activities and lending of loans. There are around 8-10 such groups which are functional.

Occupational groups in form of boat association are found to be there in both the communities. The main function of this association is to look after the various benefits the fishermen get under the various programmes of the fisheries department. These groups are also actively engaged during the cyclones in both the communities. In Umarsadi, there is a Seamen's association which caters to the need of seamen in the community. There are around 600+ members. The group basically helps the seamen in getting education, work permits, provide accommodation and lodging facilities at Mumbai etc. One important activity of this group is to offer monetary help to the needy people.

SECTION IV

AMENITIES IN TIMES OF NORMALCY AND EMERGENCY

Table No: 39 : Table showing source of drinking water at the household level

	Amenities _Drinking water	Area		Total
		Umarsadi	Madhvad	
Borewell	Frequency	54	1	55
	% within Amenities _Drinking water	98.2%	1.8%	
	% within Area	54.0%	1.4%	
Handpump	Frequency	39	3	42
	% within Amenities _Drinking water	92.9%	7.1%	
	% within Area	39.0%	4.3%	
Tap water	Frequency	6	41	47
	% within Amenities _Drinking water	12.8%	87.2%	
	% within Area	6.0%	58.6%	
Well	Frequency	2	14	16
	% within Amenities _Drinking water	12.5%	87.5%	
	% within Area	2.0%	20.0%	
Tanker	Frequency	0	11	11
	% within Amenities _Drinking water	.0%	100.0%	
	% within Area	.0%	15.7%	
NR	Frequency	2	8	10
	% within Amenities _Drinking water	20.0%	80.0%	
	% within Area	2.0%	11.4%	
Total	Frequency	100	70	170

As depicted from the above table under stress free conditions, 54.0% and 39.0% of the households have Borewell and Handpump as major source of drinking water in Umarsadi as compared to 58.6% , 20.0% and 15.7% households have Tap water, Well and Tanker as major source of drinking water in Madhvad. People in Umarsadi have better drinking facilities

Table No: 40 : Table showing source of Electricity at the household level

Amenities _Electricity		Area		Total
		Umarsadi	Madhvad	
GEB	Frequency	96	44	140
	% within Amenities _Electricity	68.6%	31.4%	100.0%
	% within Area	96.0%	62.9%	82.4%
NA	Frequency	4	26	30
	% within Amenities _Electricity	13.3%	86.7%	100.0%
	% within Area	4.0%	37.1%	17.6%
Total	Frequency	100	70	170
	% within Amenities _Electricity	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding source of power (electricity) under stress free conditions, 96.0% of the households in Umarsadi and 62.9 % of the households in Madhvad depend on government power supply. It is to be noted that 37.1% of the households in Madhvad have no electricity as compared to 4%in case of Umarsadi.

Table No: 41 : Table showing Health Care Services utilized at the household level

Amenities- Health Care services		Area		Total
		Umarsadi	Madhvad	
Private	Frequency	94	65	159
	% within $q16a4	59.1%	40.9%	
	% within Area	94.0%	92.9%	
Government	Frequency	5	22	27
	% within $q16a4	18.5%	81.5%	
	% within Area	5.0%	31.4%	
NR	Frequency	5	5	10
	% within $q16a4	50.0%	50.0%	
	% within Area	5.0%	7.1%	
Total	Frequency	100	70	170

Under stress free conditions (Normal conditions), 94% of the respondents go to private health care service providers in Umarsadi for their health care needs and 92.9% of the respondent households also go to private health care service providers in Madhvad. In contrast to this, 31.4% of the households opt for government health care service providers in Madhvad while only 5.0% of the households from Umarsadi avail government facilities.

Table No: 42 : Table showing source of communication utilized at the household level

N=170

Amenities_ Communication		Area		Total
		Umarsadi	Madhvad	
Phone	Frequency	35	13	48
	% within Amenities_ Communication	72.9%	27.1%	
	% within Area	35.0%	18.6%	
Mobile	Frequency	58	17	75
	% within Amenities_ Communication	77.3%	22.7%	
	% within Area	58.0%	24.3%	
T.V	Frequency	31	45	76
	% within Amenities_ Communication	40.8%	59.2%	
	% within Area	31.0%	64.3%	
Radio	Frequency	6	40	46
	% within Amenities_ Communication	13.0%	87.0%	
	% within Area	6.0%	57.1%	
Boat Radio	Frequency	0	3	3
	% within Amenities_ Communication	.0%	100.0%	
	% within Area	.0%	4 3%	
NR	Frequency	34	22	56
	% within Amenities_ Communication	60.7%	39.3%	
	% within Area	34.0%	31 4%	
Total	Frequency	100	70	170

Regarding the sources of communication under stress free conditions, households in Umarsadi use Phone and Mobile with 35.0% and 58.o% of households as compared to 18.6% and 24.3% in Madhvad households. 64.3% use TV and 57.1% use Radio in Madhvad as compared to 31.0% and 6.0% in Umarsadi. It is worth noting that 34.0% and 31.4% of the respondent households in Umarsadi and Madhvad have not responded to the question.

Table No: 43 : Table showing source of transportation utilized at the household level

Amenities_ Transportation		Area		Total
		Umarsadi	Madhvad	
Rickshaw	Frequency	44	45	89
	% within Amenities_ Transportation	49.4%	50.6%	
	% within Area	44.0%	64.3%	
Bus	Frequency	35	2	37
	% within Amenities_ Transportation	94.6%	5.4%	
	% within Area	35.0%	2.9%	
Two Wheeler	Frequency	46	0	46
	% within Amenities_ Transportation	100.0%	0%	
	% within Area	46.0%	.0%	
Car	Frequency	9	0	9
	% within Amenities_ Transportation	100.0%	.0%	
	% within Area	9.0%	.0%	
Train	Frequency	2	0	2
	% within Amenities_ Transportation	100.0%	.0%	
	% within Area	2.0%	.0%	
Others	Frequency	9	24	33
	% within Amenities_ Transportation	27.3%	72.7%	
	% within Area	9.0%	34.3%	
Total	Frequency	100	70	170

As seen from the above table, 62.0% and 34.3% of the households in Madhvad use Rickshaw and other mode of transportation in stress free conditions as compared to 46.0% and 44% of the households in Umarsadi using two wheeler and rickshaw. Households at Umarsadi use all amenities and more number of households has two wheelers and cars.

Table No: 44 : Table showing occupational resources utilized at the household level

Amenities- Occupational Resources		Area		Total
		Umarsadi	Madhvad	
Boat	Frequency	3	12	15
	% within Amenities- Occupational Resources	20.0%	80.0%	100.0%
	% within Area	3.0%	17.1%	8.8%
NA	Frequency	97	58	155
	% within Amenities- Occupational Resources	62.6%	37.4%	100.0%
	% within Area	97.0%	82.9%	91.2%
Total	Frequency	100	70	170
	% within Amenities- Occupational Resources	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As seen from the above table, it can be inferred that 17.1% and 3% of the respondents in Madhvad and Umarsadi have stated that under stress free conditions, they use their boats as occupation resources.

Table No: 45 : Table showing source of drinking water in times of stress at the household level

Drinking water in times of stress		Area		Total
		Umarsadi	Madhvad	
Tanker	Frequency	23	54	77
	% within tanker	29.9%	70 1%	
	% within Area	23.0%	77.1%	
Government tap	Frequency	69	4	73
	% within government	94.5%	5 5%	
	% within Area	69.0%	5.7%	
Boring	Frequency	4	0	4
	% within boring	100.0%	.0%	
	% within Area	4.0%	.0%	
Hand pump	Frequency	1	0	1
	% within hand pump	100.0%	.0%	
	% within Area	1.0%	.0%	
Panchayat Tap	Frequency	3	5	8
	% within Panchayat tap	37.5%	62.5%	
	% within Area	3.0%	7.1%	

Other	Frequency	0	4	4
	% within others	.0%	100.0%	
	% within Area	.0%	5.7%	
NA	Frequency	4	7	11
	% within NA	36.4%	63.6%	
	% within Area	4.0%	10.0%	
Total	Frequency	100	70	170

As depicted from the above table, it can be noted that in case of emergency situations, 77.1% of the households in Madhvad and 69.0% households in Umarsadi resort to tankers selling water and Government sources for drinking water facility.

Table No: 46 : Table showing source of electricity in times of stress at the household level

N=170

Amenities in the time of stress -Electricity		Area		Total
		Umarsadi	Madhvad	
Lamp	Frequency	64	42	106
	% within lamp	60.4%	39.6%	
	% within Area	64.0%	60.0%	
Candle	Frequency	55	39	94
	% within candle	58.5%	41.5%	
	% within Area	55.0%	55.7%	
Government	Frequency	30	51	81
	% within government	37.0%	63.0%	
	% within Area	30.0%	72.9%	
Inverter	Frequency	5	0	5
	% within inverter	100.0%	.0%	
	% within Area	5.0%	.0%	
Emergency Light	Frequency	5	1	6
	% within emergency light	83.3%	16.7%	
	% within Area	5.0%	1.4%	
NA	Frequency	3	7	10
	% within NA	30.0%	70.0%	
	% within Area	3.0%	10.0%	
Total	Frequency	100	70	170

As depicted from the above table, in emergency situation, for electricity or power, 72.9%, 55.7% and 60% of the households in Madhvad depend on government sources, candle and lamps as compared to 30%, 55% and 64% in case of Umarsadi. It is worth noting that households in Umarsadi also have facilities like emergency light and inverters.

Table No: 47 : Table showing shelter utilized in times of stress at the household level

N=170

Amenities in the time of stress_Shelter		Area		Total
		Umarsadi	Madhvad	
School	Frequency	62	29	91
	% within school	68.1%	31.9%	
	% within Area	62.0%	41.4%	
Society	Frequency	32	1	33
	% within society	97.0%	3.0%	
	% within Area	32.0%	1.4%	
Thatch	Frequency	1	0	1
	% within thatch	100.0%	.0%	
	% within Area	1.0%	.0%	
Relatives	Frequency	2	21	23
	% within Relatives	8.7%	91.3%	
	% within Area	2.0%	30.0%	
House	Frequency	0	21	21
	% within house	.0%	100.0%	
	% within Area	.0%	30.0%	
Temple	Frequency	0	12	12
	% within Temple	.0%	100.0%	
	% within Area	.0%	17.2%	
NR	Frequency	7	0	17
	% within NR	100.0%	.0%	
	% within Area	7.0%	.0%	
Total	Frequency	100	70	170

In case of emergencies, households in Madhvad, 30% go to relatives or stay in own houses, 41.4% take shelter in School and 17.0 % take shelter in the temple. In Umarsadi, 62.0% go to schools and 32% take shelter in society.

Table No: 48 : Table showing source of Health Care Services in times of stress at the household level

N=170

Amenities in the time of stress_ Health Service Providers		Area		Total
		Umarsadi	Madhvad	
Government	Frequency	84	30	114
	% within Amenities in the time of stress_ Health Service Providers	73.7%	26.3%	
	% within Area	84.0%	42.9%	
Private	Frequency	62	50	112
	% within Amenities in the time of stress_ Health Service Providers	55.4%	44.6%	
	% within Area	62.0%	71.4%	
108	Frequency	2	31	33
	% within Amenities in the time of stress_ Health Service Providers	6.1%	93.9%	
	% within Area	2.0%	44.3%	
Village Doctor	Frequency	8	0	8
	% within Amenities in the time of stress_ Health Service Providers	100.0%	.0%	
	% within Area	8.0%	.0%	
NA	Frequency	5	10	15
	% within Amenities in the time of stress_ Health Service Providers	33.3%	66.7%	
	% within Area	5.0%	14.3%	
Total	Frequency	100	70	170

As seen from the above table, in emergency situations, households in Umarsadi resort to Government as well as private health care providers with 84.0% opting for government health care providers and 62.0% opting for private health care providers. 71.4%, 44. 3% and 42.9% households in Madhvad opt for Private, 108 emergency services and government health care providers respectively.

Table No: 49 : Table showing source of Communication in times of stress at the household level

N=170

Amenities in the time of stress_ Communication		Area		Total
		Umarsadi	Madhvad	
Phone	Frequency	31	10	41
	% within Amenities in the time of stress_ Communication	75.6%	24.4%	
	% within Area	31.0%	14.3%	
Mobile	Frequency	61	12	73
	% within Amenities in the time of stress_ Communication	83.6%	16.4%	
	% within Area	61.0%	17.1%	
TV	Frequency	63	39	102
	% within Amenities in the time of stress_ Communication	61.8%	38.2%	
	% within Area	63.0%	55.7%	
Public Address System	Frequency	28	28	56
	% within Amenities in the time of stress_ Communication	50.0%	50.0%	
	% within Area	28.0%	40.0%	
Radio	Frequency	0	34	34
	% within Amenities in the time of stress_ Communication	.0%	100.0%	
	% within Area	.0%	48.6%	
NR	Frequency	33	26	59
	% within Amenities in the time of stress_ Communication	55.9%	44.1%	
	% within Area	33.0%	37.1%	
Total	Frequency	100	70	170

Regarding communication facilities in time of stress, an interesting thing to note is that 33% of households in Umarsadi and 37% of the households in Madhvad have not responded to the question. The major source of communication in Madhvad with 40% of the households responding is Public Address System as compared to 28.0% in Umarsadi. In Umarsadi, major source still remains Phone, Mobile and TV while for Madhvad, its Radio and TV.

Table No: 50 : Table showing use of Transportation in times of stress at the household level

N=170

Amenities in the time of stress_ Transportation		Area		Total
		Umarsadi	Madhvad	
Government	Frequency	64	1	65
	% within Amenities in the time of stress_ Transportation	98.5%	1.5%	
	% within Area	64.0%	1.4%	
Private	Frequency	74	47	121
	% within Amenities in the time of stress_ Transportation	61.2%	38.8%	
	% within Area	74.0%	67.1%	
Car	Frequency	2	0	2
	% within Amenities in the time of stress_ Transportation	100.0%	.0%	
	% within Area	2.0%	.0%	
Other	Frequency	6	0	6
	% within Amenities in the time of stress_ Transportation	100.0%	.0%	
	% within Area	6.0%	.0%	
NR	Frequency	13	22	35
	% within Amenities in the time of stress_ Transportation	37.1%	62.9%	
	% within Area	13.0%	31.4%	
Total	Frequency	100	70	170

As depicted from the above table, 64.0% and 74.0% of the households in Umarsadi use Government and Private transportation in times of emergency while in Madhvad, 67.1% use the private vehicles. It is to be noted that 31.4% of the households in Madhvad have not responded to the question. Madhvad households have less access to government vehicles.

Table No: 51 : Table showing source of Occupational resources in times of stress at the household level

Amenities in the time of stress_ Occupational resources		Area		Total
		Umarsadi	Madhvad	
Boat	Frequency	0	1	1
	% within Amenities in the time of stress_Occupational tool	.0%	100.0%	100.0%
	% within Area	.0%	1 4%	.6%
NA	Frequency	100	69	169
	% within Amenities in the time of stress_Occupational tool	59.2%	40.8%	100.0%
	% within Area	100.0%	98.6%	99.4%
Total	Frequency	100	70	170
	% within Amenities in the time of stress_Occupational tool	58.8%	41 2%	100.0%
	% within Area	100.0%	100 0%	100.0%

As observed from the above table, 1.4% of the total household respondents use boat as occupation resources in times of emergency in Madhvad. Thus most of the households do not go to sea during cyclones and floods.

SECTION V
COASTAL AND MARINE RESOURCE DEPENDENCY

Table No: 52 : Table showing utilization of Coral Reefs as coastal and marine resources for fishing for household consumption

Utilizing Coral reef for fishing as goods and services		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	0	48	48
	% within Utilizing Coral reef for fishing as goods and services	.0%	100.0%	100.0%
	% within Area	.0%	68.6%	28.2%
No	Frequency	100	22	3
	% within Utilizing Coral reef for fishing as goods and services	98%	66.7%	100.0%
	% within Area	84.2%	18 8%	1.8%
Total	Frequency	100	70	170
	% within Utilizing Coral reef for fishing as goods and services	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As depicted from the above table, 68.6% of the respondents households in Madhvad utilizes coral reef as coastal and marine resources for fishing in form of goods and services for household consumption. No one from Umarsadi utilizes this.

Table No: 53 : Table showing utilization of Coral Reefs as coastal and marine resources for fishing for Selling

Utilizing Coral reef for fishing as goods and services for selling		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	0	48	48
	% within Your household is utilizing which of the following coastal and Goods & services_Fish	.0%	100.0%	100.0%
	% within Area	.0%	68.6%	28.2%
No	Frequency	100	22	122
	% within Your household is utilizing which of the following coastal and Goods & services_Fish	82.0%	18.0%	100.0%
	% within Area	100.0%	31.4%	71.8%
Total	Frequency	100	70	170
	% within Your household is utilizing which of the following coastal and Goods & services_Fish	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As depicted in the above table, 68.6% of the respondent households in Madhvad do utilize fishing from coral reef to sell and earn livelihood. It is to be noted that no such activity is found to be in practice in Umarsadi area.

Table No: 54 : Table showing utilization of mangroves as coastal and marine resources in form of wood for household

Goods & Services_Wood for HH use		Area		
		Umarsadi	Madhvad	Total
Yes	Frequency	0	36	36
	% within Goods & Services_Wood for HH use	.0%	100.0%	100.0%
	% within Area	.0%	51.4%	21.2%
No	Frequency	100	34	134
	% within Goods & Services_Wood for HH use	74.6%	25 4%	100 0%
	% within Area	100.0%	48.6%	78.8%
Total	Frequency	100	70	170
	% within Goods & Services_Wood for HH use	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

51.4% of the households in Madhvad do utilize mangroves wood in the households. It is important to note that no such practice is seen in Umarsadi.

Table No: 55 : Table showing utilization of mangroves as coastal and marine resources in form of wood for cooking for household

Goods & Services_Wood for cooking		Area		
		Umarsadi	Madhvad	Total
Yes	Frequency	0	38	38
	% within Goods & Services_Wood for cooking	.0%	100.0%	100.0%
	% within Area	.0%	54.3%	22.4%
No	Frequency	100	32	132
	% within Goods & Services_Wood for cooking	75.8%	24.2%	100 0%
	% within Area	100.0%	45.7%	77.6%
Total	Frequency	100	70	170
	% within Goods & Services_Wood for cooking	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

54.3% of the households in Madhvad use mangrove wood for cooking purpose. No such activity is reported in case of Umarsadi.

Table No: 56 : Table showing utilization of mangroves as coastal and marine resources in form of wood for making coal for household

Goods & Services_ Coal for cooking		Area		
		Umarsadi	Madhvad	Total
Yes	Frequency	0	11	11
	% within Goods & Services_Coal for cooking	.0%	100.0%	100.0%
	% within Area	.0%	15 7%	6.5%
No	Frequency	100	59	159
	% within Goods & Services_Coal for cooking	62 9%	37.1%	100.0%
	% within Area	100.0%	84.3%	93.5%
Total	Frequency	100	70	170
	% within Goods & Services_Coal for cooking	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As seen from the above table, it is observed that 15.7% of the respondent households utilize mangroves for making coal which is used for cooking in the households. It is to be noted that no such activity is noted in Umarsadi.

Table No: 57 : Table showing utilization of mangroves as coastal and marine resources for fishing for selling

Goods & Services_ Fishing		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	0	50	50
	% within Goods & Services_Fishing	.0%	100.0%	100.0%
	% within Area	.0%	71.4%	29.4%
No	Frequency	100	20	120
	% within Goods & Services_Fishing	83.3%	16.7%	100.0%
	% within Area	100.0%	28.6%	70.6%
Total	Frequency	100	70	170
	% within Goods & Services_Fishing	58.8%	41.2%	100.0%
	% within Area	100.0%	100 0%	100.0%

The above table depicts that 71.4% of the respondent households utilize coastal and marine resource of mangroves for fishing which they sell. No such activity is found to be there in case of Umarsadi,

SECTION VI:
SOURCES OF LIVELIHOOD

Table No: 58 : Table showing fishing as a main source of livelihood for household use

Livelihood source_HH consumption_Fishing		Area		
		Umarsadi	Madhvad	Total
Yes	Frequency	23	57	80
	% within Livelihood source_HH consumption_Fishing	28.8%	71 3%	100.0%
	% within Area	23.0%	81 4%	47.1%
No	Frequency	77	13	90
	% within Livelihood source_HH consumption_Fishing	85.6%	14.4%	100.0%
	% within Area	77.0%	18.6%	52.9%
Total	Frequency	100	70	170
	% within Livelihood source_HH consumption_Fishing	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As shown in the table, 71.3% of the respondent households in Madhvad and 23.0% in Umarsadi state that the main source of livelihood for their household use is in form of fishing. It is to be noted that 77% of the households in Umarsadi do not depend on fishing for household use.

Table No: 59 : Table showing Other marine life as a main source of livelihood for household use

Livelihood source_HH consumption_Other marine life		Area		
		Umarsadi	Madhvad	Total
Yes	Frequency	0	31	31
	% within Livelihood source_HH consumption_Other marine life	.0%	100.0%	100.0%
	% within Area	.0%	44.3%	18.2%
No	Frequency	100	39	139
	% within Livelihood source_HH consumption_Other marine life	71.9%	28.1%	100.0%
	% within Area	100.0%	55 7%	81.8%
Total	Frequency	100	70	170
	% within Livelihood source_HH consumption_Other marine life	58.8%	41.2%	100.0%
	% within Area	100.0%	100 0%	100.0%

As depicted from the above table, 44.3% of the households in Madhvad depend on other marine life in form of crabs, lobsters and shells for household purpose as main source of livelihood. It is to be noted that no such activity is reported in case of Umarsadi.

Table No: 60 : Table showing income from Job as a main source of livelihood for household

Livelihood source_HH consumption_Income from service/job		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	54	1	55
	% within Livelihood source_HH consumption_Income from service/job	98.2%	1.8%	100.0%
	% within Area	54.0%	1 4%	32.4%
No	Frequency	46	69	115
	% within Livelihood source_HH consumption_Income from service/job	40.0%	60.0%	100 0%
	% within Area	46.0%	98 6%	67.6%
Total	Frequency	100	70	170
	% within Livelihood source_HH consumption_Income from service/job	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As depicted from the above table, 54% of the respondent households in Umarsadi and only 1.4% of the households in Madhvad are engaged in service/job as the major source of income for household consumption. Rest of the respondents from Madhvad are not dependent on job.

Table No: 61 : Table showing business as a main source of livelihood for household use

Livelihood source_HH consumption_Business		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	10	40	50
	% within Livelihood source_HH consumption_Business	20.0%	80.0%	100.0%
	% within Area	10.0%	57.1%	29.4%
No	Frequency	90	30	120
	% within Livelihood source_HH consumption_Business	75.0%	25.0%	100.0%
	% within Area	90.0%	42 9%	70.6%
Total	Frequency	100	70	170
	% within Livelihood source_HH consumption_Business	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As seen from the above table, 10% of the households in Umarsadi and 57.1% of the households in Madhvad are engaged in business as a main source of livelihood for their subsistence

Table No: 62 : Table showing Pension as a main source of livelihood for household use

Livelihood source_HH consumption_Pension		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	2	1	3
	% within Livelihood source_HH consumption_Pension	66.7%	33.3%	100.0%
	% within Area	2.0%	1.4%	1.8%
No	Frequency	98	69	167
	% within Livelihood source_HH consumption_Pension	58.7%	41 3%	100.0%
	% within Area	98.0%	98.6%	98.2%
Total	Frequency	100	70	170
	% within Livelihood source_HH consumption_Pension	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As depicted in the above table, 2.0% of the households in Umarsadi and 1.4 % of the households in Madhvad have pension as their main source of livelihood for household consumption.

Table No: 63 : Table showing other sources as a main source of livelihood for household use

Livelihood source_HH consumption_Other ...		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	31	1	32
	% within Livelihood source_HH consumption_Other ...	96.9%	3.1%	100.0%
	% within Area	31.0%	1.4%	18.8%
No	Frequency	69	69	138
	% within Livelihood source_HH consumption_Other ...	50.0%	50.0%	100.0%
	% within Area	69.0%	98.6%	81.2%
Total	Frequency	100	70	170
	% within Livelihood source_HH consumption_Other ...	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding other sources as main source of livelihood for household use, 31.0%of the households from Umarsadi and 1.4% of the households from Madhvad have opted for this suggestive of engagement in other occupations like driving auto, bus etc.

Table No: 64 : Table showing fishing as a main source of livelihood for business use

For business purpose_Fishing		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	19	1	20
	% within For business purpose_Fishing	95.0%	5.0%	100.0%
	% within Area	19.0%	1.4%	11.8%
No	Frequency	81	69	150
	% within For business purpose_Fishing	54.0%	46.0%	100 0%
	% within Area	81.0%	98.6%	88.2%
Total	Frequency	100	70	170
	% within For business purpose_Fishing	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

Only 19.0% of the households in Umarsadi and 1.4% of the households in Madhvad are engaged in fishing as a main source of livelihood for business use only.

Table No: 65 : Table showing other marine life as a main source of livelihood for business use

For business purpose_Other marine life		Area		Total
		Umarsadi	Madhvad	
No	Frequency	100	70	170
	% within For business purpose_Other marine life	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%
Total	Frequency	100	70	170
	% within For business purpose_Other marine life	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

None of the households in the two communities depend on other marine life as main source of livelihood for business use.

Table No: 66 : Table showing animal husbandry as a main source of livelihood for business use

For business purpose_Animal husbandry		Area		Total
		Umarsadi	Madhvad	
No	Frequency	100	70	170
	% within For business purpose_Animal husbandry	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%
Total	Frequency	100	70	170
	% within For business purpose_Animal husbandry	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

It is to be noted that no respondent household is involved in animal husbandry as main source of livelihood for business use.

Table No: 67 : Table showing Handicraft as a main source of livelihood for business use

For business purose_Handicraft		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	1	0	1
	% within For business purose_Handicraft	100.0%	.0%	100.0%
	% within Area	1.0%	.0%	.6%
No	Frequency	99	70	169
	% within For business purose_Handicraft	58.6%	41.4%	100.0%
	% within Area	99.0%	100.0%	99.4%
Total	Frequency	100	70	170
	% within For business purose_Handicraft	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

Only 1.0% of the household in Umarsadi is involved in Handicrafts as the main source of livelihood for business use. No such activity is reported in Madhvad area.

Table No: 68 : Table showing Income from service as a main source of livelihood for business use

For business purpose_Income from service/job		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	42	0	42
	% within For business purpose_Income from service/job	100.0%	.0%	100.0%
	% within Area	42.0%	.0%	24.7%
No	Frequency	58	70	128
	% within For business purpose_Income from service/job	45.3%	54.7%	100.0%
	% within Area	58.0%	100.0%	75.3%
Total	Frequency	100	70	170
	% within For business purpose_Income from service/job	58.8%	41.2%	100.0%
	% within Area	100.0%	100 0%	100.0%

As seen from the above table, 42% of the respondent households in Umarsadi are involved in major source of livelihood for business purpose in form of income from service. No such activity is seen in Madhvad area.

Table No: 69 : Table showing money from relatives as a main source of livelihood for business use

For business purpose_Money from relatives		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	1	0	1
	% within For business purpose_Money from relatives	100.0%	.0%	100.0%
	% within Area	1.0%	.0%	.6%
No	Frequency	99	70	169
	% within For business purpose_Money from relatives	58.6%	41.4%	100.0%
	% within Area	99.0%	100.0%	99.4%
Total	Frequency	100	70	170
	% within For business purpose_Money from relatives	58.8%	41 2%	100.0%
	% within Area	100 0%	100.0%	100.0%

1.0% of the respondent household is involved in using money from relatives as main source of livelihood for business use.

Table No: 70 : Table showing others as a main source of livelihood for business use

For business purpose_other		Area		Total
		Umarsadi	Madhvad	
Yes	Frequency	29	0	29
	% within For business purpose_other	100.0%	.0%	100.0%
	% within Area	29.0%	.0%	17.1%
No	Frequency	71	70	141
	% within For business purpose_other	50.4%	49.6%	100.0%
	% within Area	71.0%	100.0%	82.9%
Total	Frequency	100	70	170
	% within For business purpose_other	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

29.0% of the respondent households in Umarsadi depend on other sources as main source of livelihood in form of Seamen for business use. It is to be noted that no such activity is reported from Madhvad.

Table No: 71 : Table showing number and role of family members engaged in livelihood - Fishing

Family members involved in _Fishing		Area		Total
		Umarsadi	Madhvad	
Self/ head of the family	Frequency	17	27	44
	% within Family members involved in _Fishing	38.6%	61.4%	100.0%
	% within Area	17.0%	38.6%	25.9%
Wife	Frequency	2	15	17
	% within Family members involved in _Fishing	11.8%	88.2%	100.0%
	% within Area	2.0%	21.4%	10.0%
Son	Frequency	1	7	8
	% within Family members involved in _Fishing	12.5%	87.5%	100.0%
	% within Area	1.0%	10.0%	4.7%
Daughter in law	Frequency	0	5	5
	% within Family members involved in _Fishing	.0%	100.0%	100.0%
	% within Area	.0%	7.1%	2.9%
Grand Daughter	Frequency	0	1	1
	% within Family members involved in _Fishing	.0%	100.0%	100.0%
	% within Area	.0%	1.4%	.6%

Mother	Frequency	**1**	**0**	**1**
	% within Family members involved in _Fishing	100.0%	.0%	100.0%
	% within Area	1.0%	.0%	.6%
Husband	Frequency	**0**	**6**	**6**
	% within Family members involved in _Fishing	.0%	100.0%	100.0%
	% within Area	.0%	8.6%	3.5%
Father In law	Frequency	**1**	**0**	**1**
	% within Family members involved in _Fishing	100.0%	.0%	100.0%
	% within Area	1.0%	.0%	.6%
NA	Frequency	**78**	**9**	**87**
	% within Family members involved in _Fishing	89.7%	10.3%	100.0%
	% within Area	78.0%	12.9%	51.2%
Total	Frequency	**100**	**70**	**170**
	% within Family members involved in _Fishing	58.8%	41.2%	100.0%
	% within Area	100.0%	100 0%	100.0%

As depicted from the above table, 38.6% of the respondent households in Madhvad as compared to 17.0% in Umarsadi state that it is the household head who is engaged in fishing for livelihood. 21.4% and 2.0% of the households in Madhvad and Umarsadi respectively have engagement of wives in the same livelihood. Only 12.9% of the households in Madhvad and 78.0% of the households in Umarsadi are not engaged in fishing for livelihood. It is to be noted that in case of Madhvad, second generation in form of daughter in law, sons, daughters etc are also involved in fishing unlike Umarsadi.

Table No: 72 : Table showing number and role of family members engaged in livelihood – Other marine life

Role of family members engaged in livelihood in form of other marine life		Area		
		Umarsadi	Madhvad	Total
Wife	Frequency	3	11	14
	Role of family members engaged in livelihood in form of other marine life	21.4%	78.6%	
	% within Area	3.0%	15.7%	
Son	Frequency	0	20	20
	Role of family members engaged in livelihood in form of other marine life	.0%	100.0%	
	% within Area	0%	28.6%	
Daughter in law	Frequency	0	1	1
	Role of family members engaged in livelihood in form of other marine life	.0%	100 0%	
	% within Area	.0%	1.4%	
Daughter	Frequency	0	1	1
	Role of family members engaged in livelihood in form of other marine life	0%	100.0%	
	% within Area	.0%	1.4%	
Husband	Frequency	2	0	2
	Role of family members engaged in livelihood in form of other marine life	100.0%	.0%	
	% within Area	2.0%	0%	
Sister in law (nanand)	Frequency	0	1	1
	Role of family members engaged in livelihood in form of other marine life	.0%	100.0%	
	% within Area	.0%	1.4%	
Brother in law (diyar)	Frequency	0	1	1
	Role of family members engaged in livelihood in form of other marine life	.0%	100.0%	
	% within Area	.0%	1.4%	
NA	Frequency	95	44	139
	Role of family members engaged in livelihood in form of other marine life	68.3%	31.7%	
	% within Area	95.0%	62.9%	
Total	Frequency	100	70	170

As pertaining to role of family members engaged in livelihood from other marine lives like crabs, prawns and shells, 15.7% of the households in Madhvad have the wives engaged in this while 28.6% are in form of sons. Thus absence of engagement of the household heads is noted in this case in both the communities.

Table No: 73 : Table showing number and role of family members engaged in livelihood – Handicraft

Role of Family members engaged in livelihood in form of handicrafts		Area		
		Umarsadi	Madhvad	Total
Wife	Frequency	1	0	1
	% within Role of Family members engaged in livelihood in form of handicrafts	100.0%	0%	100.0%
	% within Area	1.0%	.0%	.6%
NA	Frequency	99	70	169
	% within Role of Family members engaged in livelihood in form of handicrafts	58.6%	41.4%	100.0%
	% within Area	99.0%	100.0%	99.4%
Total	Frequency	100	70	170
	% within Role of Family members engaged in livelihood in form of handicrafts	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As seen from the above table, only one person in form of wife of a respondent household is engaged in livelihood in form of handicraft in Umarsadi. No such activity is reported in Madhvad.

Table No: 74 : Table showing number and role of family members engaged in livelihood – Service sector

Role of Family members engaged in livelihood in form of service/job		Area		
		Umarsadi	Madhvad	Total
Self/ head of the family	Frequency	30	1	31
	% within Role of Family members engaged in livelihood in form of service/job	96.8%	3.2%	
	% within Area	30.0%	1.4%	
Wife	Frequency	14	0	14
	% within Role of Family members engaged in livelihood in form of service/job	100.0%	.0%	
	% within Area	14.0%	.0%	
Son	Frequency	14	2	16
	% within Role of Family members engaged in livelihood in form of service/job	87.5%	12 5%	
	% within Area	14.0%	2.9%	
Daughter In law	Frequency	1	0	1
	% within Role of Family members engaged in livelihood in form of service/job	100.0%	.0%	
	% within Area	1.0%	.0%	

Daughter	Frequency	**2**	**0**	**2**
	% within Role of Family members engaged in livelihood in form of service/job	100.0%	.0%	
	% within Area	2.0%	.0%	
Father	Frequency	**1**	**0**	**1**
	% within Role of Family members engaged in livelihood in form of service/job	100.0%	0%	
	% within Area	1.0%	.0%	
Mother	Frequency	**1**	**0**	**1**
	% within Role of Family members engaged in livelihood in form of service/job	100.0%	0%	
	% within Area	1.0%	.0%	
Husband	Frequency	**5**	**0**	**5**
	% within Role of Family members engaged in livelihood in form of service/job	100.0%	.0%	
	% within Area	5.0%	.0%	
Sister	Frequency	**1**	**0**	**1**
	% within Role of Family members engaged in livelihood in form of service/job	100.0%	.0%	
	% within Area	1.0%	.0%	
Brother	Frequency	**1**	**0**	**1**
	% within Role of Family members engaged in livelihood in form of service/job	100.0%	.0%	
	% within Area	1.0%	.0%	
NA	Frequency	**49**	**69**	**118**
	% within Role of Family members engaged in livelihood in form of service/job	41.5%	58.5%	
	% within Area	49.0%	98.6%	
Total	Frequency	**100**	**70**	**170**

As regards the engagement in service sector, it is noted that this is negligible in case of Madhvad with only three members engaged in this activity as against in Umarsadi where 30.0% are in form of household heads, 14.0 % in form of wives and sons. It is to be noted that daughters, daughter in laws, sisters etc are also engaged in this sector in Umarsadi.

Table No: 75 : Table showing number and role of family members engaged in livelihood – Business

Role of Family members engaged in livelihood in form of business		Area		
		Umarsadi	Madhvad	Total
Self/ head of the family	Frequency	6	1	7
	% within Role of Family members engaged in livelihood in form of business	85.7%	14.3%	100.0%
	% within Area	6.0%	1.4%	4.1%
Son	Frequency	2	0	2
	% within Role of Family members engaged in livelihood in form of business	100.0%	.0%	100.0%
	% within Area	2.0%	.0%	1.2%
Mother	Frequency	1	0	1
	% within Role of Family members engaged in livelihood in form of business	100.0%	.0%	100.0%
	% within Area	1.0%	.0%	.6%
Husband	Frequency	1	0	1
	% within Role of Family members engaged in livelihood in form of business	100.0%	.0%	100.0%
	% within Area	1.0%	0%	.6%
NA	Frequency	90	69	159
	% within Role of Family members engaged in livelihood in form of business	56.6%	43.4%	100.0%
	% within Area	90.0%	98.6%	93.5%
Total	Frequency	100	70	170
	% within Role of Family members engaged in livelihood in form of business	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100 0%

As seen from the above table, members engaged in livelihood in form of business like shop, auto rickshaw etc in Umarsadi are found to be head of the family amounting to 6.0% and sons (2.0%) followed by mothers and husbands amounting to 1.0% each. In contrast, in Madhvad, this percentage is 1.4% in form of head of the family.

Table No: 76 : Table showing number and role of family members engaged in livelihood – others

Role of Family members engaged in livelihood in form of other occupations		Area		
		Umarsadi	Madhvad	Total
Self/ head of the family	Frequency	0	6	6
	% within Role of Family members engaged in livelihood in form of other occupations	.0%	100.0%	100.0%
	% within Area	.0%	8.6%	3.5%
Son	Frequency	1	1	2
	% within Role of Family members engaged in livelihood in form of other occupations	50.0%	50.0%	100.0%
	% within Area	1.0%	1.4%	1.2%
NA	Frequency	99	63	162
	% within Role of Family members engaged in livelihood in form of other occupations	61.1%	38.9%	100.0%
	% within Area	99.0%	90.0%	95.3%
Total	Frequency	100	70	170
	% within Role of Family members engaged in livelihood in form of other occupations	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As seen from the above table, 8.6% of the household heads and 1.4% of the sons are engaged in livelihood in form of other occupations in Madhvad as compared to 1.0% sons engaged in Umarsadi.

Table No: 77 : Table showing number and role of family members engaged in livelihood – Seaman

Role of Family members engaged in livelihood in form of seaman		Area		
		Umarsadi	Madhvad	Total
Self/ head of the family	Frequency	17	0	17
	% within Role of Family members engaged in livelihood in form of seaman	100.0%	.0%	
	% within Area	17.0%	.0%	
Son	Frequency	11	0	11
	% within Role of Family members engaged in livelihood in form of seaman	100.0%	.0%	
	% within Area	11.0%	.0%	
Father	Frequency	1	0	1
	% within Role of Family members engaged in livelihood in form of seaman	100.0%	.0%	
	% within Area	1.0%	.0%	
Husband	Frequency	8	0	8
	% within Role of Family members engaged in livelihood in form of seaman	100.0%	.0%	
	% within Area	8.0%	.0%	
Father in law	Frequency	1	0	1
	% within Role of Family members engaged in livelihood in form of seaman	100.0%	.0%	
	% within Area	1.0%	.0%	
NA	Frequency	67	68	135
	% within Role of Family members engaged in livelihood in form of seaman	49.6%	50.4%	
	% within Area	67.0%	97.1%	
Total	Frequency	100	70	170

As seen from the above table, 17.0% of the household heads, 11.0% of the sons, 8.0% of the husbands, and 1.0% of father and father in law each in Umarsadi are engaged in livelihood in form of seaman while no such occupational engagement is found to be there in Madhvad.

SECTION VII
VULNERABILITY TO HAZARDS AT THE HOUSEHOLD LEVEL

Table No : 78 : Table showing frequency of cyclones witnessed by the households

Frequency of cyclones as witnessed by households		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	74	7	81
	% within Frequency of cyclones as witnessed by households	91.4%	8.6%	100.0%
	% within Area	77.1%	10.1%	49.1%
Medium	Frequency	18	40	58
	% within Frequency of cyclones as witnessed by households	31.0%	69.0%	100.0%
	% within Area	18.8%	58.0%	35.2%
High	Frequency	4	22	26
	% within Frequency of cyclones as witnessed by households	15.4%	84 6%	100.0%
	% within Area	4.2%	31 9%	15.8%
Total	Frequency	96	69	165
	% within Frequency of cyclones as witnessed by households	58.2%	41.8%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding the frequency of cyclones witnessed by the households, 31.9% of the households in Madhvad as compared to 4.2% in Umarsadi state this to be high. 58.0% of them in Madhvad report this to be medium while 77.1% of them in Umarsadi state that the frequency is low. 5 respondents have not responded.

Table No : 79 : Table showing sensitivity of the households towards impact of cyclones witnessed by the households

Sensitivity of households towards impact of cyclones as witnessed by the households		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	72	27	99
	% within Sensitivity of households towards impact of cyclones as witnessed by the households	72.7%	27.3%	100.0%
	% within Area	75.0%	39.1%	60.0%
Medium	Frequency	20	38	58
	% within Sensitivity of households towards impact of cyclones as witnessed by the households	34.5%	65.5%	100.0%
	% within Area	20.8%	55.1%	35.2%
High	Frequency	4	4	8
	% within Sensitivity of households towards impact of cyclones as witnessed by the households	50.0%	50.0%	100.0%
	% within Area	4.2%	5.8%	4.8%

Total	Frequency	**96**	**69**	**165**
	% within Sensitivity of households towards impact of cyclones as witnessed by the households	58.2%	41 8%	100.0%
	% within Area	100.0%	100 0%	100.0%

As depicted from the table, sensitivity of the households towards cyclones, 75.0% of the households in Umarsadi rate it as low and 20.8% rate it as medium as against 39.1% of them in Madhvad rating it as low and 55.1% of them rating it as medium. 5 respondents did not respond.

Table No : 80 : Table showing negative impact of cyclones witnessed by the households

Negative Impact of cyclones as witnessed by households		Area		
		Umarsadi	**Madhvad**	**Total**
Low	Frequency	**64**	**26**	**90**
	% within Negative impact of cyclones as witnessed by households	71.1%	28.9%	100.0%
	% within Area	66.7%	37.7%	54.5%
Medium	Frequency	**28**	**37**	**65**
	% within Negative impact of cyclones as witnessed by households	43.1%	56.9%	100.0%
	% within Area	29.2%	53.6%	39.4%
High	Frequency	**4**	**6**	**10**
	% within Negative impact of cyclones as witnessed by households	40.0%	60.0%	100.0%
	% within Area	4.2%	8.7%	6.1%
Total	Frequency	**96**	**69**	**165**
	% within Negative impact of cyclones as witnessed by households	58.2%	41.8%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding the negative impact of cyclones (in term of damage) as witnessed by the households, 66.7% of the households in Umarsadi as compared to 37.7% in Madhvad rate it as low. 53.6%of the households in Madhvad as compared to 29.2% in Umarsadi rate it as medium. 5 respondents did not respond.

Table No: 81: Table showing difficulty in coping with impact of cyclones witnessed by the households

Difficulty of coping with Impact of cyclones witnessed by the households		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	69	27	96
	% within Difficulty of coping with Impact of cyclones witnessed by the households	71.9%	28.1%	100.0%
	% within Area	71.9%	39.1%	58.2%
Medium	Frequency	26	14	40
	% within Difficulty of coping with Impact of cyclones witnessed by the households	65.0%	35.0%	100.0%
	% within Area	27.1%	20.3%	24.2%
High	Frequency	1	28	29
	% within Difficulty of coping with Impact of cyclones witnessed by the households	3.4%	96.6%	100.0%
	% within Area	1.0%	40.6%	17.6%
Total	Frequency	96	69	165
	% within Difficulty of coping with Impact of cyclones witnessed by the households	58.2%	41.8%	100.0%
	% within Area	100.0%	100.0%	100.0%

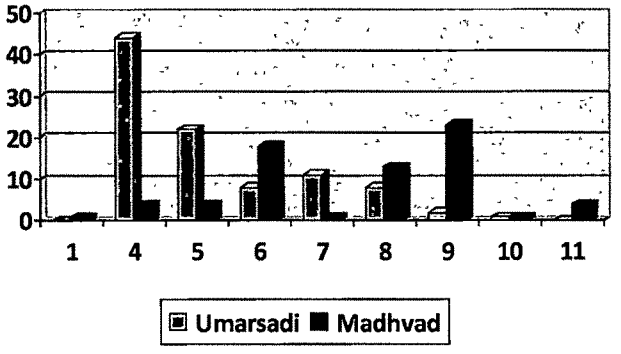
As seen in the above table, 71.9% of the households in Umarsadi as compared to 39.1% in Madhvad rate difficulty in coping with impact of cyclones witnessed by the households to be low while 27.1% and 20.3% rate it to be medium in Umarsadi and Madhvad. It is to be noted that 40.6% of the households in Madhvad have rated it to be high. Thus households in Madhvad find it more difficult to cope up with impacts of cyclone. This is so due to the intensity of the cyclones in the area.

Table No: 82: Table showing total vulnerability rating for cyclones witnessed by the households

Total Vulnerability Rating		Area		Total
		Umarsadi	Madhvad	
1	Frequency	0	1	1
	% within Total Vulnerability Rating_Cyclone	.0%	100.0%	100.0%
	% within Area	.0%	1.4%	.6%
4	Frequency	44	4	48
	% within Total Vulnerability Rating_Cyclone	91.7%	8.3%	100.0%
	% within Area	45.8%	5.8%	29.1%

5	Frequency	22	4	26
	% within Total Vulnerability Rating_Cyclone	84 6%	15 4%	100.0%
	% within Area	22.9%	5.8%	15.8%
6	Frequency	8	18	26
	% within Total Vulnerability Rating_Cyclone	30 8%	69.2%	100 0%
	% within Area	8.3%	26 1%	15.8%
7	Frequency	11	1	12
	% within Total Vulnerability Rating_Cyclone	91.7%	8.3%	100.0%
	% within Area	11 5%	1.4%	7 3%
8	Frequency	8	13	21
	% within Total Vulnerability Rating_Cyclone	38.1%	61 9%	100.0%
	% within Area	8.3%	18.8%	12.7%
9	Frequency	2	23	25
	% within Total Vulnerability Rating_Cyclone	8.0%	92.0%	100.0%
	% within Area	2.1%	33 3%	15.2%
10	Frequency	1	1	2
	% within Total Vulnerability Rating_Cyclone	50 0%	50.0%	100 0%
	% within Area	1.0%	1 4%	1.2%
11	Frequency	0	4	4
	% within Total Vulnerability Rating_Cyclone	.0%	100.0%	100.0%
	% within Area	0%	5.8%	2.4%
Total	Frequency	96	69	165
	% within Total Vulnerability Rating_Cyclone	58.2%	41.8%	100.0%
	% within Area	100.0%	100.0%	100 0%

Total Vulnerability Rating_Cyclone



As seen from the above table and graph, while the total vulnerability to cyclones is low in Umarsadi, it is high in case of Madhvad. The sum total of frequency, sensitivity, negative impact and difficulty in coping gives an idea about the total vulnerability rating. Thus Madhvad is more vulnerable than Umarsadi based on the total vulnerability rating

Table No: 83 : Table showing frequency of coastal erosion witnessed by the households

Frequency of Coastal erosion witnessed by the households		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	19	10	29
	% within Frequency of Coastal erosion witnessed by the households	65.5%	34.5%	100.0%
	% within Area	19.8%	27.8%	22.0%
Medium	Frequency	23	8	31
	% within Frequency of Coastal erosion witnessed by the households	74.2%	25.8%	100.0%
	% within Area	24.0%	22.2%	23.5%
High	Frequency	54	18	72
	% within Frequency of Coastal erosion witnessed by the households	75 0%	25 0%	100.0%
	% within Area	56.3%	50.0%	54.5%
Total	Frequency	96	36	132
	% within Frequency of Coastal erosion witnessed by the households	72.7%	27.3%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding the frequency of coastal erosion, 56.3% of the households in Umarsadi and 50.0%of the households in Madhvad have rated this to be high. Coastal erosion is a major hazard identified by both the communities. 28 respondents did not respond as it is not applicable to them

Table No: 84: Table showing sensitivity of the households to coastal erosion

Sensitivity of the household to coastal erosion		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	23	18	41
	% within Sensitivity of the household to coastal erosion	56.1%	43.9%	100.0%
	% within Area	24.0%	50.0%	31.1%
Medium	Frequency	15	8	23
	% within Sensitivity of the household to coastal erosion	65 2%	34.8%	100.0%
	% within Area	15.6%	22.2%	17.4%
High	Frequency	58	10	68
	% within Sensitivity of the household to coastal erosion	85.3%	14 7%	100.0%
	% within Area	60.4%	27.8%	51.5%
Total	Frequency	96	36	132
	% within Sensitivity of the household to coastal erosion	72.7%	27.3%	100.0%
	% within Area	100.0%	100.0%	100.0%

60.4% of the households in Umarsadi and 27.8% of the households in Madhvad state that the sensitivity of their households to coastal erosion is high. It is to be noted that 50.0% of the households in Madhvad rate this to be low. 28 respondents did not reply as it is not applicable to them

Table No: 85: Table showing Negative impact of coastal erosion on the households

Negative Impact of coastal erosion on households		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	20	6	26
	% within Negative Impact of coastal erosion on households	76.9%	23.1%	100.0%
	% within Area	20.8%	16.7%	19.7%
Medium	Frequency	23	29	52
	% within Negative Impact of coastal erosion on households	44.2%	55.8%	100.0%
	% within Area	24.0%	80.6%	39.4%
High	Frequency	53	1	54
	% within Negative Impact of coastal erosion on households	98.1%	1.9%	100 0%
	% within Area	55.2%	2.8%	40.9%
Total	Frequency	96	36	132
	% within Negative Impact of coastal erosion on households	72.7%	27.3%	100.0%
	% within Area	100.0%	100.0%	100.0%

80.6% of the households in Madhvad rate the negative impact of coastal erosion on their households as medium while 55.2% of the households rate it to be high in Umarsadi. 28 respondents did not reply as it is not applicable to them

Table No : 86 : Table showing difficulty in coping with impact of coastal erosion by the households

Difficulty in coping with impact of coastal erosion by the households		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	21	7	28
	% within Difficulty in coping with impact of coastal erosion by the households	75.0%	25.0%	100.0%
	% within Area	21.9%	19.4%	21.2%
Medium	Frequency	19	28	47
	% within Difficulty in coping with impact of coastal erosion by the households	40.4%	59.6%	100.0%
	% within Area	19.8%	77.8%	35.6%

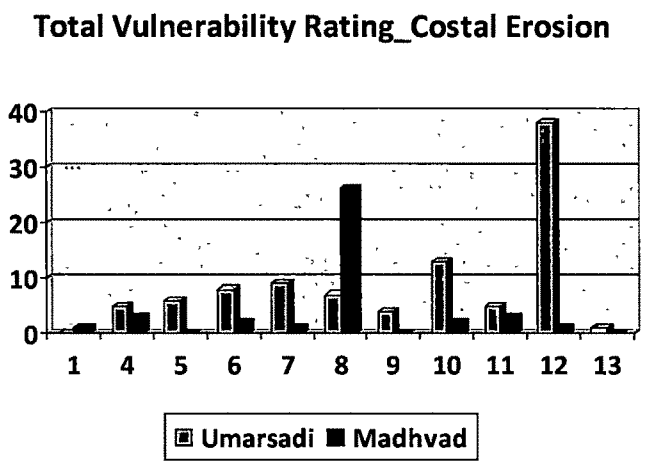
High	Frequency	56	1	57
	% within Difficulty in coping with impact of coastal erosion by the households	98.2%	1.8%	100.0%
	% within Area	58.3%	2.8%	43.2%
Total	Frequency	96	36	132
	% within Difficulty in coping with impact of coastal erosion by the households	72.7%	27.3%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding difficulty in coping with impact of coastal erosion by the households, 77.8% of the respondent households in Madhvad rate this to be medium while 58.3% of the households in Umarsadi rate this to be high. 28 respondents did not respond as it is not applicable to them.

Table No: 87 : Table showing total vulnerability rating of the households to coastal erosion

Total Vulnerability Rating_Coastal erosion		Area		Total
		Umarsadi	Madhvad	
1	Frequency	0	1	1
	% within Total Vulnerability Rating_Coastal erosion	.0%	100.0%	100.0%
	% within Area	.0%	2.8%	.8%
4	Frequency	5	3	8
	% within Total Vulnerability Rating_Coastal erosion	62.5%	37.5%	100.0%
	% within Area	5.2%	8.3%	6.1%
5	Frequency	6	0	6
	% within Total Vulnerability Rating_Coastal erosion	100.0%	.0%	100.0%
	% within Area	6.3%	.0%	4.5%
6	Frequency	8	2	10
	% within Total Vulnerability Rating_Coastal erosion	80.0%	20.0%	100.0%
	% within Area	8.3%	5.6%	7.6%
7	Frequency	9	1	10
	% within Total Vulnerability Rating_Coastal erosion	90.0%	10.0%	100.0%
	% within Area	9.4%	2.8%	7.6%
8	Frequency	7	26	33
	% within Total Vulnerability Rating_Coastal erosion	21.2%	78.8%	100.0%
	% within Area	7.3%	72.2%	25.0%
9	Frequency	4	0	4
	% within Total Vulnerability Rating_Coastal erosion	100.0%	.0%	100.0%
	% within Area	4.2%	.0%	3.0%
10	Frequency	13	2	15
	% within Total Vulnerability Rating_Coastal erosion	86.7%	13.3%	100.0%
	% within Area	13.5%	5.6%	11.4%
11	Frequency	5	0	5
	% within Total Vulnerability Rating_Coastal erosion	100.0%	.0%	100.0%
	% within Area	5.2%	.0%	3.8%

12	Frequency	38	1	39
	% within Total Vulnerability Rating_Coastal erosion	97 4%	2 6%	100.0%
	% within Area	39.6%	2.8%	29.5%
13	Frequency	1	0	1
	% within Total Vulnerability Rating_Coastal erosion	100.0%	.0%	100.0%
	% within Area	1.0%	.0%	8%
Total	Frequency	96	36	132
	% within Total Vulnerability Rating_Coastal erosion	72.7%	27.3%	100.0%
	% within Area	100.0%	100.0%	100 0%



As depicted in the above table and graph, total vulnerability rating for coastal erosion is found to be high in case of Umarsadi than in Madhvad. The sum total of frequency, sensitivity, negative impact and difficulty in coping with the impact of coastal erosion provides the total vulnerability rating. Thus though both the communities are vulnerable, the vulnerability is high in case of Umarsadi. 28 respondents did not reply as it is not applicable to them.

Table No: 88 : Table showing frequency of increase in sea level as witnessed by the households

Frequency rating of increase in sea level by the households		Area		
		Umarsadi	Madhvad	Total
Low	Frequency	30	22	52
	% within Frequency rating of increase in sea level by the households	57.7%	42.3%	100.0%
	% within Area	31.6%	31.4%	31.5%
Medium	Frequency	41	42	83
	% within Frequency rating of increase in sea level by the households	49.4%	50.6%	100.0%
	% within Area	43.2%	60.0%	50.3%
High	Frequency	24	6	30
	% within Frequency rating of increase in sea level by the households	80.0%	20.0%	100.0%
	% within Area	25.3%	8.6%	18.2%
Total	Frequency	95	70	165
	% within Frequency rating of increase in sea level by the households	57.6%	42.4%	100.0%
	% within Area	100.0%	100.0%	100.0%

As seen in the above table, 60.0% of the households in Madhvad have rated frequency of increase in sea level to be medium as compared to 43.2% of the households in Umarsadi. 25.3% of the households in Umarsadi have rated this to be high while 31.6% have rated this to be low. 5 respondents did not reply

Table No: 89 : Table showing sensitivity towards increase in sea level by the households

Sensitivity to increase in sea level by the households		Area		
		Umarsadi	Madhvad	Total
Low	Frequency	32	20	52
	% within Sensitivity to increase in sea level by the households	61.5%	38.5%	100.0%
	% within Area	33.7%	28.6%	31.5%
Medium	Frequency	36	18	54
	% within Sensitivity to increase in sea level by the households	66.7%	33.3%	100.0%
	% within Area	37.9%	25.7%	32.7%
High	Frequency	27	32	59
	% within Sensitivity to increase in sea level by the households	45.8%	54.2%	100.0%
	% within Area	28.4%	45.7%	35.8%
Total	Frequency	95	70	165
	% within Sensitivity to increase in sea level by the households	57.6%	42.4%	100.0%
	% within Area	100.0%	100.0%	100.0%

As depicted from the table, 45.7% of the households in Madhvad have rated sensitivity to increase in sea level to be high as 37.9% of the households in Umarsadi rating it to be medium. 5 respondents did not reply

Table No : 90 : Table showing negative impact of increase in sea level on the households

Negative Impact of increase in sea level on the households		Area		
		Umarsadi	Madhvad	Total
Low	Frequency	35	57	92
	% within Negative impact of increase in sea level on the households	38.0%	62.0%	100.0%
	% within Area	36.8%	81.4%	55.8%
Medium	Frequency	34	7	41
	% within Negative impact of increase in sea level on the households	82.9%	17.1%	100.0%
	% within Area	35.8%	10.0%	24.8%
High	Frequency	26	6	32
	% within Negative impact of increase in sea level on the households	81.3%	18.8%	100.0%
	% within Area	27.4%	8.6%	19.4%
Total	Frequency	95	70	165
	% within Negative impact of increase in sea level on the households	57.6%	42.4%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding the negative impact of increase in sea level on the households, 81.4% of the households in Madhvad have rated it to be low as compared to 36.8% in Umarsadi. 35.8% and 10.0% of the households have rated this to be medium in Umarsadi and Madhvad respectively. 5 respondents did not respond.

Table No : 91 : Table showing difficulty in coping with impact of increase in sea level by the households

Difficulty in coping with impact of increase in sea level by the households		Area		
		Umarsadi	Madhvad	Total
Low	Frequency	38	35	73
	% within Difficulty in coping with impact of increase in sea level by the households	52.1%	47.9%	100.0%
	% within Area	40.0%	50.0%	44.2%
Medium	Frequency	32	5	37
	% within Difficulty in coping with impact of increase in sea level by the households	86.5%	13.5%	100.0%
	% within Area	33.7%	7.1%	22.4%

High	Frequency	25	30	55
	% within Difficulty in coping with impact of increase in sea level by the households	45.5%	54.5%	100.0%
	% within Area	26.3%	42.9%	33.3%
Total	Frequency	95	70	165
	% within Difficulty in coping with impact of increase in sea level by the households	57.6%	42.4%	100.0%
	% within Area	100.0%	100.0%	100.0%

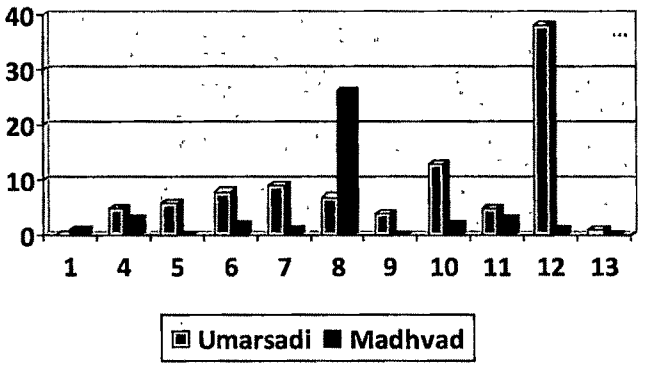
As regards the difficulty in coping with impact of increase in sea level by the households, 42.9% of the households in Madhvad have rated it to be high compared to 40.0% of the households in Umarsadi rating it to be low. It is to be noted that 33.7% of the households in Umarsadi have rated this to be as medium. 5 respondents did not respond.

Table No: 92: Table showing total vulnerability rating of increase in sea level by the households

Total Vulnerability Rating		Area		Total
		Umarsadi	Madhvad	
1	Frequency	0	1	1
	% within Total Vulnerability Rating_Increase in sea water level	.0%	100.0%	100.0%
	% within Area	.0%	1.4%	.6%
4	Frequency	4	20	24
	% within Total Vulnerability Rating_Increase in sea water level	16.7%	83.3%	100.0%
	% within Area	4.2%	28.6%	14.5%
5	Frequency	14	3	17
	% within Total Vulnerability Rating_Increase in sea water level	82.4%	17.6%	100.0%
	% within Area	14.7%	4.3%	10.3%
6	Frequency	18	10	28
	% within Total Vulnerability Rating_Increase in sea water level	64.3%	35.7%	100.0%
	% within Area	18.9%	14.3%	17.0%
7	Frequency	21	3	24
	% within Total Vulnerability Rating_Increase in sea water level	87.5%	12.5%	100.0%
	% within Area	22.1%	4.3%	14.5%
8	Frequency	7	5	12
	% within Total Vulnerability Rating_Increase in sea water level	58.3%	41.7%	100.0%
	% within Area	7.4%	7.1%	7.3%
9	Frequency	3	20	23
	% within Total Vulnerability Rating_Increase in sea water level	13.0%	87.0%	100.0%
	% within Area	3.2%	28.6%	13.9%
10	Frequency	12	2	14
	% within Total Vulnerability Rating_Increase in sea water level	85.7%	14.3%	100.0%
	% within Area	12.6%	2.9%	8.5%

11	Frequency	2	0	2
	% within Total Vulnerability Rating_Increase in sea water level	100.0%	0%	100.0%
	% within Area	2 1%	.0%	1.2%
12	Frequency	14	6	20
	% within Total Vulnerability Rating_Increase in sea water level	70 0%	30 0%	100 0%
	% within Area	14 7%	8.6%	12.1%
Total	Frequency	95	70	165
	% within Total Vulnerability Rating_Increase in sea water level	57.6%	42 4%	100.0%
	% within Area	100.0%	100.0%	100.0%

Total Vulnerability Rating_Sea Level Rise



As seen in the above table and graph, total vulnerability rating regarding Sea Level Rise is more in case of Umarsadi than in case of Madhvad. The sum total of the frequency, sensitivity, negative impact and difficulty in coping up provides the total vulnerability rating of a hazard. Thus, Umarsadi is more vulnerable to Sea Level Rise than Madhvad.

Table No: 93: Table showing frequency of salty water in farms as witnessed by the households

Frequency of salty water in farms witnessed by the households		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	20	28	48
	% within Frequency of salty water in farms by the households	41.7%	58 3%	100.0%
	% within Area	69.0%	50.0%	56 5%
Medium	Frequency	6	16	22
	% within Frequency of salty water in farms by the households	27 3%	72.7%	100.0%
	% within Area	20.7%	28.6%	25.9%

High	Frequency	3	12	15
	% within Frequency of salty water in farms by the households	20.0%	80.0%	100.0%
	% within Area	10.3%	21 4%	17.6%
Total	Frequency	29	56	85
	% within Frequency of salty water in farms by the households	34.1%	65.9%	100.0%
	% within Area	100.0%	100.0%	100.0%

As seen from the above table, 69.0% and 50.0% of the households have rated the frequency of salty water in the farms to be low in Umarsadi and Madhvad. This is to be noted that the respondents belong to fishermen community. While 20.7% and 28.6% households in Umarsadi and Madhvad rate it as medium respectively. 21.4% of the households in Madhvad rate this to be high suggestive of salinity ingress. Only 85 respondents have responded.

Table No : 94 : Table showing sensitivity to salty water in farms by the households

Sensitivity to salty water in farms witnessed by the households		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	22	28	50
	% within Sensitivity to salty water in farms by the households	44.0%	56 0%	100.0%
	% within Area	75.9%	50.0%	58.8%
Medium	Frequency	2	16	18
	% within Sensitivity to salty water in farms by the households	11.1%	88.9%	100.0%
	% within Area	6.9%	28.6%	21.2%
High	Frequency	5	12	17
	% within Sensitivity to salty water in farms by the households	29.4%	70.6%	100.0%
	% within Area	17.2%	21.4%	20.0%
Total	Frequency	29	56	85
	% within Sensitivity to salty water in farms by the households	34 1%	65.9%	100.0%
	% within Area	100.0%	100.0%	100.0%

As observed in the above table, 75.9% and 50.0% of the households in Umarsadi and Madhvad respectively state that the sensitivity to salty water in the farms is low. It is to be noted that 21.4% of the households in Madhvad have rated it to be high and 28.6% stating it to be medium. Only 85 respondents have responded.

Table No : 95 : Table showing negative impact of salty water in farms on the households

Negative impact of salty water in farms on the households		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	22	16	38
	% within Negative impact of salty water in farms on the households	57.9%	42.1%	100.0%
	% within Area	75.9%	28.6%	44.7%
Medium	Frequency	5	10	15
	% within Negative impact of salty water in farms on the households	33.3%	66.7%	100.0%
	% within Area	17.2%	17.9%	17.6%
High	Frequency	2	30	32
	% within Negative impact of salty water in farms on the households	6.3%	93.8%	100.0%
	% within Area	6.9%	53.6%	37.6%
Total	Frequency	29	56	85
	% within Negative impact of salty water in farms on the households	34.1%	65.9%	100.0%
	% within Area	100.0%	100.0%	100.0%

As seen from the above table, the negative impact of salty water in farms has been rated as low by 75.9% of the households in Umarsadi as against 53.6% of the households in Madhvad rating it to be high. Only 85 respondents have responded and hence values are computed for them only.

Table No: 96 : Table showing difficulty in coping due to salty water in farms by the households

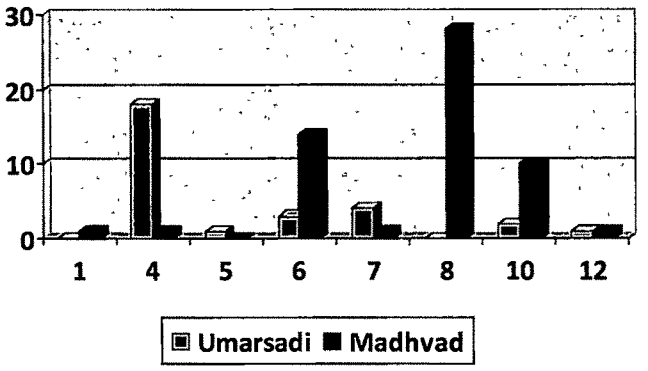
Difficulty in coping due to salty water in farms by the households		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	21	18	39
	% within Difficulty in coping due to salty water in farms by the households	53.8%	46.2%	100.0%
	% within Area	72.4%	32.1%	45.9%
Medium	Frequency	5	9	14
	% within Difficulty in coping due to salty water in farms by the households	35.7%	64.3%	100.0%
	% within Area	17.2%	16.1%	16.5%
High	Frequency	3	29	32
	% within Difficulty in coping due to salty water in farms by the households	9.4%	90.6%	100.0%
	% within Area	10.3%	51.8%	37.6%
Total	Frequency	29	56	85
	% within Difficulty in coping due to salty water in farms by the households	34.1%	65.9%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding difficulty in coping by the households due to salty water in farms, it is rated low by 72.4% and 32.1% of the households in Umarsadi and Madhvad respectively. 51.8% of the households have rated this to be high in Madhvad. Only 85 respondents have responded to the question.

Table No: 97: Table showing total vulnerability rating of salty water in farms as witnessed by the households

Total Vulnerability Rating_Salty water in farms		Area		
		Umarsadi	Madhvad	Total
1	Frequency	0	1	1
	% within Total Vulnerability Rating_Salty water in farms	.0%	100.0%	100.0%
	% within Area	.0%	1.8%	1.2%
4	Frequency	18	1	19
	% within Total Vulnerability Rating_Salty water in farms	94.7%	5.3%	100.0%
	% within Area	62.1%	1 8%	22.4%
5	Frequency	1	0	1
	% within Total Vulnerability Rating_Salty water in farms	100.0%	.0%	100.0%
	% within Area	3.4%	.0%	1.2%
6	Frequency	3	14	17
	% within Total Vulnerability Rating_Salty water in farms	17.6%	82.4%	100.0%
	% within Area	10.3%	25.0%	20.0%
7	Frequency	4	1	5
	% within Total Vulnerability Rating_Salty water in farms	80.0%	20.0%	100.0%
	% within Area	13.8%	1.8%	5.9%
8	Frequency	0	28	28
	% within Total Vulnerability Rating_Salty water in farms	.0%	100.0%	100.0%
	% within Area	.0%	50.0%	32.9%
10	Frequency	2	10	12
	% within Total Vulnerability Rating_Salty water in farms	16.7%	83.3%	100.0%
	% within Area	6.9%	17 9%	14.1%
12	Frequency	1	1	2
	% within Total Vulnerability Rating_Salty water in farms	50.0%	50.0%	100.0%
	% within Area	3.4%	1.8%	2.4%
Total	Frequency	29	56	85
	% within Total Vulnerability Rating_Salty water in farms	34.1%	65.9%	100.0%
	% within Area	100.0%	100.0%	100.0%

Total Vulnerability Rating_Salty Water in Farms



The sum total of frequency of hazard, sensitivity to hazard, negative impact of hazard and difficulty in coping up with the impact of hazard provides the total vulnerability rating for that hazard. It shows the total vulnerability in terms of hazards. Thus, according to the responses received from the respondents, Madhvad is more vulnerable than Umarsadi based on the total vulnerability rating for salty water in farms as witnessed by the households.

Table No: 98 : Table showing frequency of salty water in wells as witnessed by the households

Frequency of salty water in wells as witnessed by the households		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	29	15	44
	% within Frequency of salty water in wells by the households	65.9%	34.1%	100.0%
	% within Area	30.2%	21.4%	26.5%
Medium	Frequency	26	11	37
	% within Frequency of salty water in wells by the households I	70.3%	29.7%	100.0%
	% within Area	27.1%	15 7%	22.3%
High	Frequency	41	44	85
	% within Frequency of salty water in wells by the households	48.2%	51.8%	100.0%
	% within Area	42.7%	62.9%	51 2%
Total	Frequency	96	70	166
	% within Frequency of salty water in wells by the households	57.8%	42.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

62.9% of the households in Madhvad and 42.7% of the households in Umarsadi state that frequency of salty water in wells is high. 4 respondents did not reply.

Table No : 99 : Table showing sensitivity to salty water in wells as witnessed by the households

Sensitivity to salty water in wells as witnessed by the households		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	29	0	29
	% within Sensitivity to salty water in wells by the households	100.0%	.0%	100.0%
	% within Area	30.2%	.0%	17.5%
Medium	Frequency	26	13	39
	% within Sensitivity to salty water in wells by the households	66.7%	33.3%	100.0%
	% within Area	27.1%	18.6%	23.5%
High	Frequency	41	57	98
	% within Sensitivity to salty water in wells by the households	41.8%	58.2%	100.0%
	% within Area	42.7%	81.4%	59.0%
Total	Frequency	96	70	166
	% within Sensitivity to salty water in wells by the households	57.8%	42.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As seen from the above table, 81.4% of the households in Madhvad and 42.7% of the households in Umarsadi state that the sensitivity to salty water in wells is high. 4 respondents did not respond.

Table No: 100: Table showing negative impact of salty water in wells as witnessed by the households

Negative impact of salty water in wells on the households		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	29	6	35
	% within Negative impact of salty water in wells on the households	82.9%	17.1%	100.0%
	% within Area	30.2%	8.6%	21.1%
Medium	Frequency	25	25	50
	% within Negative impact of salty water in wells on the households	50.0%	50.0%	100.0%
	% within Area	26.0%	35.7%	30.1%
High	Frequency	42	39	81
	% within Negative impact of salty water in wells on the households	51.9%	48.1%	100.0%
	% within Area	43.8%	55.7%	48.8%
Total	Frequency	96	70	166
	% within Negative impact of salty water in wells on the households	57.8%	42.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding the negative impact of salty water in wells on the households, 55.7% and 43.8% of the respondent households in Madhvad and Umarsadi have rated this to be high. 26.0% and 35.7% in Umarsadi and Madhvad respectively state it to be medium. 4 respondents did not respond.

Table No: 101 : Table showing difficulty in coping with salty water in wells by the households

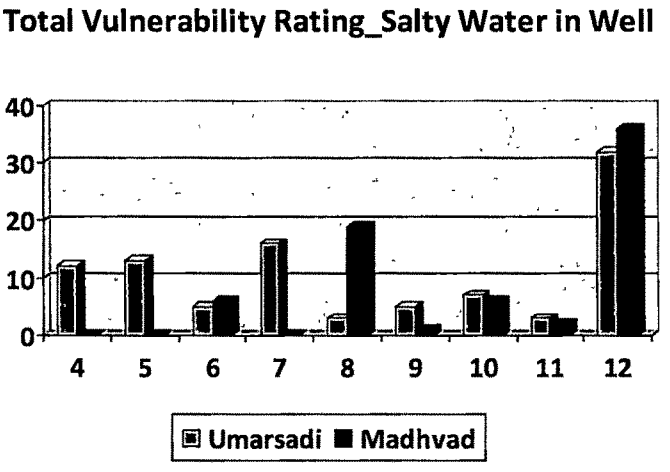
Difficulty of coping with Salty water in well by the household		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	32	7	39
	% within Difficulty of coping with Salty water in well by the household	82.1%	17.9%	100.0%
	% within Area	33 3%	10.0%	23.5%
Medium	Frequency	25	27	52
	% within Difficulty of coping with Salty water in well by the household	48.1%	51.9%	100.0%
	% within Area	26.0%	38.6%	31.3%
High	Frequency	39	36	75
	% within Difficulty of coping with Salty water in well by the household	52.0%	48.0%	100.0%
	% within Area	40.6%	51.4%	45.2%
Total	Frequency	96	70	166
	% within Difficulty of coping with Salty water in well by the household	57.8%	42.2%	100.0%
	% within Area	100 0%	100.0%	100.0%

As depicted in the above table, 51.4% and 40.6% of the households in Madhvad and Umarsadi respectively have rated difficulty in coping with salty water in well by the households to be high and 38.6% and 26.0% have rated it to be medium.

Table No: 102 : Table showing total vulnerability rating of salty water in wells as witnessed by the households

Total Vulnerability Rating_Salty water in well		Area		Total
		Umarsadi	Madhvad	
4	Frequency	12	0	12
	% within Total Vulnerability Rating_Salty water in well	100.0%	.0%	100.0%
	% within Area	12.5%	.0%	7.2%
5	Frequency	13	0	13
	% within Total Vulnerability Rating_Salty water in well	100.0%	.0%	100.0%
	% within Area	13.5%	.0%	7.8%
6	Frequency	5	6	11
	% within Total Vulnerability Rating_Salty water in well	45.5%	54.5%	100.0%
	% within Area	5.2%	8.6%	6.6%
7	Frequency	16	0	16
	% within Total Vulnerability Rating_Salty water in well	100.0%	.0%	100.0%
	% within Area	16.7%	.0%	9.6%

8	Frequency	3	19	22
	% within Total Vulnerability Rating_Salty water in well	13.6%	86 4%	100.0%
	% within Area	3.1%	27.1%	13 3%
9	Frequency	5	1	6
	% within Total Vulnerability Rating_Salty water in well	83.3%	16 7%	100.0%
	% within Area	5.2%	1.4%	3 6%
10	Frequency	7	6	13
	% within Total Vulnerability Rating_Salty water in well	53.8%	46.2%	100 0%
	% within Area	7.3%	8 6%	7.8%
11	Frequency	3	2	5
	% within Total Vulnerability Rating_Salty water in well	60.0%	40 0%	100.0%
	% within Area	3 1%	2.9%	3.0%
12	Frequency	32	36	68
	% within Total Vulnerability Rating_Salty water in well	47.1%	52.9%	100.0%
	% within Area	33.3%	51.4%	41 0%
Total	Frequency	96	70	166
	% within Total Vulnerability Rating_Salty water in well	57 8%	42.2%	100.0%
	% within Area	100.0%	100.0%	100.0%



The total vulnerability rating of any hazard is computed by adding the sum total of frequency, sensitivity, negative impact and difficulty in coping to that hazard. As seen from the above table and graph, Madhvad shows more vulnerability rating than Umarsadi. Thus households in Madhvad are more vulnerable to the wells becoming salty as it affects their water requirement.

Table No : 103 : Table showing frequency of change in weather as reported by the households

Frequency of change in weather as reported by the households		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	78	31	109
	% within Frequency of change in weather by the households	71.6%	28.4%	100.0%
	% within Area	85.7%	44.3%	67.7%
Medium	Frequency	12	33	45
	% within % within Frequency of change in weather by the households	26.7%	73.3%	100.0%
	% within Area	13.2%	47.1%	28.0%
High	Frequency	1	6	7
	% within Frequency of change in weather by the households	14.3%	85.7%	100.0%
	% within Area	1.1%	8.6%	4.3%
Total	Frequency	91	70	161
	% within Frequency of change in weather by the households	56.5%	43.5%	100.0%
	% within Area	100.0%	100.0%	100.0%

As seen from the above table, 47.1% of the households in Madhvad state that the frequency of change in weather is medium while 85.7% of the households in Umarsadi rate it as low. 9 respondents did not respond.

Table No: 104: Table showing sensitivity to change in weather as reported by the households

Sensitivity to change in weather		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	84	14	98
	% within Sensitivity to change in weather	85.7%	14.3%	100.0%
	% within Area	92.3%	20.0%	60.9%
Medium	Frequency	6	39	45
	% within Sensitivity to change in weather	13.3%	86.7%	100.0%
	% within Area	6.6%	55.7%	28.0%
High	Frequency	1	17	18
	% within Sensitivity to change in weather	5.6%	94.4%	100.0%
	% within Area	1.1%	24.3%	11.2%
Total	Frequency	91	70	161
	% within Sensitivity to change in weather	56.5%	43.5%	100.0%
	% within Area	100.0%	100.0%	100.0%

As depicted in the above table, 92.3% of the households in Umarsadi rate sensitivity to change in weather of households to be low while 55.7% of the households in Madhvad rate it to be medium. It is to be noted that 24.3% of the households rate this to be high in case of Madhvad. 9 respondents did not respond.

Table No : 105 : Table showing negative impact of change in weather on the households

Negative Impact of change in weather		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	70	51	121
	% within Negative Impact of change in weather	57.9%	42.1%	100.0%
	% within Area	76.9%	72.9%	75.2%
Medium	Frequency	18	19	37
	% within Negative Impact of change in weather	48.6%	51.4%	100.0%
	% within Area	19.8%	27.1%	23.0%
High	Frequency	3	0	3
	% within Negative Impact of change in weather	100.0%	.0%	100.0%
	% within Area	3.3%	.0%	1.9%
Total	Frequency	91	70	161
	% within Negative Impact of change in weather	56.5%	43.5%	100.0%
	% within Area	100.0%	100.0%	100.0%

As observed from the above table, 76.9% and 72.9% of the households in Umarsadi and Madhvad respectively rate negative impact of change in weather on households to be low. It is to be noted that 27.1% in Madhvad rate this to be medium.

Table No: 106 : Table showing difficulty in coping up with change in weather by the households

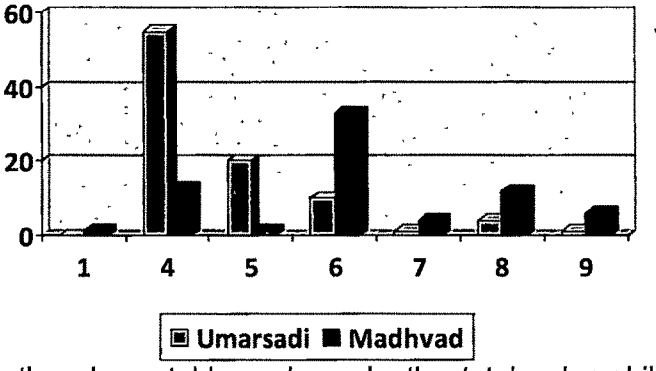
Difficulty in coping with changes in weather by the households		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	76	51	127
	% within Difficulty in coping with changes in weather by the households	59.8%	40.2%	100.0%
	% within Area	83.5%	72.9%	78.9%
Medium	Frequency	12	19	31
	% within Difficulty in coping with changes in weather by the households	38.7%	61.3%	100.0%
	% within Area	13.2%	27.1%	19.3%
High	Frequency	3	0	3
	% within Difficulty in coping with changes in weather by the households	100.0%	.0%	100.0%
	% within Area	3.3%	.0%	1.9%
Total	Frequency	91	70	161
	% within Difficulty in coping with changes in weather by the households	56.5%	43.5%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding difficulty in coping with changes in weather by the households, 83.5% and 72.9% of the households in Umarsadi and Madhvad respectively rate it to be low. 9 respondents did not respond.

Table No : 107 : Table showing total vulnerability rating of impact of change in weather as witnessed by the households

Total Vulnerability Rating_Changes in weather		Area		
		Umarsadi	Madhvad	Total
1	Frequency	0	1	1
	% within Total Vulnerability Rating_Changes in weather	.0%	100.0%	100 0%
	% within Area	0%	1.4%	.6%
4	Frequency	55	13	68
	% within Total Vulnerability Rating_Changes in weather	80 9%	19.1%	100.0%
	% within Area	60.4%	18.6%	42.2%
5	Frequency	20	1	21
	% within Total Vulnerability Rating_Changes in weather	95.2%	4.8%	100.0%
	% within Area	22 0%	1 4%	13 0%
6	Frequency	10	33	43
	% within Total Vulnerability Rating_Changes in weather	23 3%	76.7%	100.0%
	% within Area	11.0%	47.1%	26.7%
7	Frequency	1	4	5
	% within Total Vulnerability Rating_Changes in weather	20.0%	80.0%	100.0%
	% within Area	1 1%	5.7%	3.1%
8	Frequency	4	12	16
	% within Total Vulnerability Rating_Changes in weather	25.0%	75.0%	100.0%
	% within Area	4.4%	17.1%	9.9%
9	Frequency	1	6	7
	% within Total Vulnerability Rating_Changes in weather	14.3%	85.7%	100.0%
	% within Area	1.1%	8.6%	4.3%
Total	Frequency	91	70	161
	% within Total Vulnerability Rating_Changes in weather	56.5%	43.5%	100 0%
	% within Area	100.0%	100.0%	100 0%

Total Vulnerability Rating_Changes in Weather



As seen from the above table and graph, the total vulnerability rating of change in weather as witnessed by households is high in case of Madhvad then Umarsadi. Thus Madhvad is more vulnerable than Umarsadi.

Table No : 108 : Table showing frequency of drought faced by the households

Cross Table			
Frequency of drought faced by the households		Area	
		Madhvad	Total
Low	Frequency	21	21
	% within Frequency of drought faced by the households	100.0%	100.0%
	% within Area	80.8%	80.8%
Medium	Frequency	4	4
	% within Frequency_ Frequency of drought faced by the households	100.0%	100.0%
	% within Area	15.4%	15.4%
High	Frequency	1	1
	% within Frequency of drought faced by the households	100.0%	100.0%
	% within Area	3.8%	3.8%
Total	Frequency	26	26
	% within Frequency of drought faced by the households	100.0%	100.0%
	% within Area	100.0%	100.0%

Out of the 26 households who have said that their households have experienced drought, 80.8% of them have rated this to be low in case of Madhvad. No such incidence has been stated from Umarsadi and hence it is not shown in the table. Only 26 respondents have responded to the question as it is applicable to them.

Table No : 109 : Table showing sensitivity of drought rated by the households

Sensitivity of drought rated by the households		Area	
		Madhvad	Total
Low	Frequency	21	21
	% within Sensitivity of drought rated by the households	100.0%	100.0%
	% within Area	80.8%	80.8%
Medium	Frequency	4	4
	% within Sensitivity of drought rated by the households	100.0%	100 0%
	% within Area	15.4%	15.4%

High	Frequency	1	1
	% within Sensitivity of drought rated by the households	100.0%	100.0%
	% within Area	3.8%	3.8%
Total	Frequency	26	26
	% within Sensitivity_	100.0%	100.0%
	% within Area	100.0%	100.0%

Out of the 26 households who have responded, 80.8% of the households in Madhvad have rated the sensitivity of drought to be low. No such incidence is reported from Umarsadi. Only 26 respondents have reported as they have faced the situation.

Table No: 110 : Table showing negative impact of drought on the households

Negative Impact of drought on the households		Area	Total
		Madhvad	
Low	Frequency	24	24
	% within Negative Impact on HH_	100.0%	100.0%
	% within Area	92.3%	92.3%
Medium	Frequency	2	2
	% within Negative Impact on HH_	100.0%	100.0%
	% within Area	7.7%	7.7%
Total	Frequency	26	26
	% within Negative Impact on HH_	100.0%	100.0%
	% within Area	100.0%	100.0%

As observed from the above table, 92.3% of the households from the 26 that responded to the questioning Madhvad have stated that the negative impact of drought on their households is low. Only 26 respondents have respondent since it was applicable to them.

Table No: 111 : Table showing difficulty in coping up with drought as witnessed by the households

Difficulty in coping with drought		Area	
		Madhvad	Total
Low	Frequency	14	14
	% within Difficulty in coping with drought	100.0%	100.0%
	% within Area	53.8%	53.8%
Medium	Frequency	6	6
	% within Difficulty in coping with drought	100.0%	100.0%
	% within Area	23.1%	23.1%
High	Frequency	6	6
	% within Difficulty in coping with drought	100.0%	100.0%
	% within Area	23.1%	23.1%
Total	Frequency	26	26
	% within Difficulty in coping with drought	100.0%	100.0%
	% within Area	100.0%	100.0%

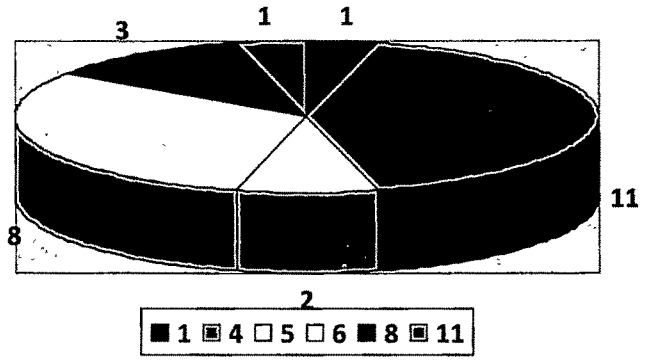
As seen in the above table, 23.1% of the households out of the total 26 who have responded in Madhvad have found difficulty in coping with drought by the households to be medium and high respectively.

Table No: 112: Table showing total vulnerability rating of drought by the households

Total Vulnerability Rating		Area	
		Madhvad	Total
1	Frequency	1	1
	% within Total Vulnerability Rating_ drought	100.0%	100.0%
	% within Area	3.8%	3.8%
4	Frequency	11	11
	% within Total Vulnerability Rating_drought	100.0%	100.0%
	% within Area	42.3%	42.3%
5	Frequency	2	2
	% within Total Vulnerability Rating_ drought	100.0%	100.0%
	% within Area	7.7%	7.7%
6	Frequency	8	8
	% within Total Vulnerability Rating_ drought	100.0%	100.0%
	% within Area	30.8%	30.8%
8	Frequency	3	3
	% within Total Vulnerability Rating_ drought	100.0%	100.0%
	% within Area	11.5%	11.5%
11	Frequency	1	1
	% within Total Vulnerability Rating_ drought	100.0%	100.0%
	% within Area	3.8%	3.8%

Total	Frequency	26	26
	% within Total Vulnerability Rating_ drought	100 0%	100.0%
	% within Area	100.0%	100 0%

Total Vulnerability Rating_Drought



The total vulnerability rating of drought is medium by most of the respondents as represented in the table and graph.

Table No : 113 : Table showing frequency of floods as rated by the households

Frequency of floods		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	**1**	**23**	**24**
	% within Frequency of Flood	4 2%	95.8%	100.0%
	% within Area	100.0%	33 3%	34.3%
Medium	Frequency	**0**	**13**	**13**
	% within Frequency of Flood	.0%	100.0%	100 0%
	% within Area	.0%	18 8%	18.6%
High	Frequency	**0**	**33**	**33**
	% within Frequency of Flood	0%	100 0%	100 0%
	% within Area	.0%	47 8%	47.1%
Total	Frequency	**1**	**69**	**70**
	% within Frequency of Flood	1.4%	98.6%	100.0%
	% within Area	100.0%	100 0%	100 0%

Regarding the frequency of floods, 47.8% of the households have stated it to be high in Madhvad. It is to be noted that in Umarsadi, only 4.2% of the household have stated it to be low. Only 70 respondents for whom it is applicable have responded.

Table No: 114: Table showing sensitivity of floods as rated by the households

Sensitivity to Flood		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	1	23	24
	% within Sensitivity to Flood	4.2%	95.8%	100 0%
	% within Area	100.0%	33.3%	34.3%
Medium	Frequency	0	6	6
	% within Sensitivity to Flood	.0%	100.0%	100.0%
	% within Area	.0%	8.7%	8.6%
High	Frequency	0	40	40
	% within Sensitivity to Flood	.0%	100.0%	100.0%
	% within Area	.0%	58.0%	57.1%
Total	Frequency	1	69	70
	% within Sensitivity to Flood	1.4%	98.6%	100.0%
	% within Area	100.0%	100.0%	100.0%

As depicted from the above table, 58.0% of the households in Madhvad out of the total 69, state that there is high sensitivity to floods of their households. Only 70 respondents for whom it is applicable have responded

Table No : 115 : Table showing negative impact of floods as rated by the households

Negative Impact on flood on households		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	0	23	23
	% within Negative Impact on flood on households	.0%	100.0%	100.0%
	% within Area	.0%	33.3%	32.9%
Medium	Frequency	1	17	18
	% within Negative Impact on flood on households	5.6%	94.4%	100.0%
	% within Area	100.0%	24.6%	25.7%
High	Frequency	0	29	29
	% within Negative Impact on flood on households	.0%	100.0%	100.0%
	% within Area	.0%	42.0%	41.4%
Total	Frequency	1	69	70
	% within Negative Impact on flood on households	1.4%	98.6%	100.0%
	% within Area	100.0%	100.0%	100.0%

As per the above table, 42.0% of the households in Madhvad state that the negative impact on flood on their households is high. In case of Umarsadi only one household has responded to the question and has rated it as medium. Only 70 respondents for whom it is applicable have responded

Table No : 116 : Table showing difficulty in coping with impact of floods as rated by the households

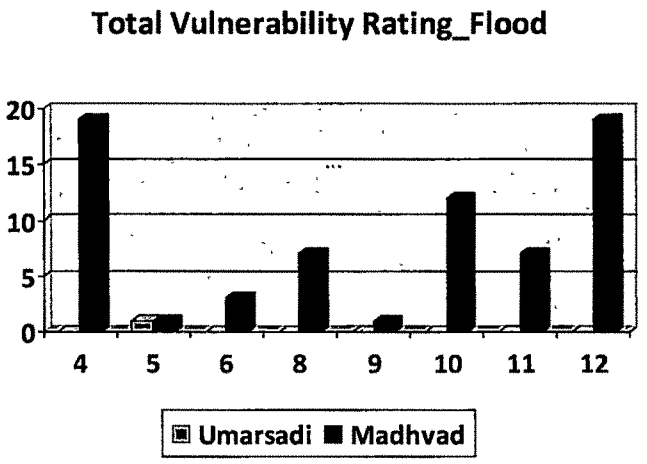
Difficulty in coping with impact of floods		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	1	23	24
	% within Difficulty in coping with impact of floods	4.2%	95.8%	100.0%
	% within Area	100.0%	33.3%	34.3%
Medium	Frequency	0	21	21
	% within Difficulty in coping with impact of floods	0%	100 0%	100.0%
	% within Area	.0%	30.4%	30.0%
High	Frequency	0	25	25
	% within Difficulty in coping with impact of floods	.0%	100.0%	100.0%
	% within Area	.0%	36.2%	35.7%
Total	Frequency	1	69	70
	% within Difficulty in coping with impact of floods	1.4%	98.6%	100.0%
	% within Area	100.0%	100 0%	100.0%

As depicted from the above table, 36.2% of the households state that the difficulty in coping with impact of floods in high in Madhvad while 30.4% state it to be medium. The rest state it to be low.

Table No: 117: Graph showing total vulnerability of floods as rated by the households

Total Vulnerability Rating for Floods		Area		Total
		Umarsadi	Madhvad	
4	Frequency	0	19	19
	% within Total Vulnerability Rating for Floods	.0%	100.0%	100.0%
	% within Area	.0%	27.5%	27.1%
5	Frequency	1	1	2
	% within Total Vulnerability Rating for Floods	50.0%	50 0%	100.0%
	% within Area	100.0%	1.4%	2.9%
6	Frequency	0	3	3
	% within Total Vulnerability Rating for Floods	.0%	100.0%	100.0%
	% within Area	0%	4.3%	4.3%
8	Frequency	0	7	7
	% within Total Vulnerability Rating for Floods	.0%	100.0%	100.0%
	% within Area	.0%	10.1%	10.0%
9	Frequency	0	1	1
	% within Total Vulnerability Rating for Floods	.0%	100.0%	100.0%
	% within Area	.0%	1.4%	1.4%
10	Frequency	0	12	12
	% within Total Vulnerability Rating for Floods	.0%	100.0%	100.0%
	% within Area	.0%	17.4%	17.1%

11	Frequency	0	7	7
	% within Total Vulnerability Rating for Floods	.0%	100.0%	100.0%
	% within Area	0%	10.1%	10 0%
12	Frequency	0	19	19
	% within Total Vulnerability Rating for Floods	.0%	100.0%	100.0%
	% within Area	.0%	27 5%	27.1%
Total	Frequency	1	69	70
	% within Total Vulnerability Rating_Flood Total Vulnerability Rating for Floods	1.4%	98.6%	100.0%
	% within Area	100.0%	100.0%	100.0%



The frequency of hazard, sensitivity, negative impact and difficulty in coping provides the total vulnerability rating of a hazard. As depicted from the table and the graph, it is seen that households in Madhvad have rated the total vulnerability to floods in different way due to the location of their households.

Table No : 118 : Table showing frequency of sea water becoming hot as rated by the households

Frequency of Sea water becoming hot		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	25	0	25
	% within Frequency of Sea water becoming hot	100.0%	0%	100.0%
	% within Area	92.6%	0%	53 2%
Medium	Frequency	2	20	22
	% within Frequency of Sea water becoming hot	9.1%	90.9%	100 0%
	% within Area	7.4%	100 0%	46.8%
Total	Frequency	27	20	47
	% within Frequency of Sea water becoming hot	57 4%	42.6%	100 0%
	% within Area	100.0%	100.0%	100.0%

As observed from the above table, 92.6% of the households of the total 27 households who have responded to this question state that the frequency of sea water becoming hot is high in Umarsadi as compared to 90.9% of the 20 households in Madhvad. Only 47 respondents who have experienced the phenomenon have responded

Table No : 119 : Table showing sensitivity to sea water becoming hot as rated by the households

Sensitivity to Sea water becoming hot		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	26	0	26
	% within Sensitivity to Sea water becoming hot	100.0%	.0%	100.0%
	% within Area	96.3%	.0%	55.3%
Medium	Frequency	1	20	21
	% within Sensitivity to Sea water becoming hot	4.8%	95.2%	100.0%
	% within Area	3.7%	100.0%	44.7%
Total	Frequency	27	20	47
	% within Sensitivity to Sea water becoming hot	57.4%	42.6%	100.0%
	% within Area	100.0%	100.0%	100.0%

As shown in the above table, 96.3% of the households of the total 27 households who have responded to the question in Umarsadi state that the sensitivity of the household is low to sea water becoming hot while 95.2% of the households in Madhvad out of the 20 total households state it to be medium. Only 47 respondents who have experienced the phenomenon have responded

Table No: 120: Table showing negative impact of sea water becoming hot as rated by the households

Negative Impact of Sea water becoming hot		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	20	0	20
	% within Negative Impact of Sea water becoming hot	100.0%	.0%	100.0%
	% within Area	76.9%	.0%	43.5%
Medium	Frequency	5	20	25
	% within Negative Impact of Sea water becoming hot	20.0%	80.0%	100.0%
	% within Area	19.2%	100.0%	54.3%
High	Frequency	1	0	1
	% within Negative Impact of Sea water becoming hot	100.0%	.0%	100.0%
	% within Area	3.8%	.0%	2.2%
Total	Frequency	26	20	46
	% within Negative Impact of Sea water becoming hot	56.5%	43.5%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding the negative impact of the sea water becoming hot, out of the 26 households who have responded in Umarsadi, 76.9% state tat it is low as compared to 100% out of 20 households in Madhvad who have responded stating it to be medium. Only 47 respondents who have experienced the phenomenon have responded

Table No : 121 : Table showing difficulty in coping with impact of sea water becoming hot as rated by the households

Difficulty in coping with Sea water becoming hot		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	27	0	27
	% within Difficulty in coping with Sea water becoming hot	100.0%	.0%	100.0%
	% within Area	100.0%	.0%	57.4%
Medium	Frequency	0	20	20
	% within Difficulty in coping with Sea water becoming hot	.0%	100.0%	100.0%
	% within Area	.0%	100.0%	42.6%
Total	Frequency	27	20	47
	% within Difficulty in coping with Sea water becoming hot	57.4%	42.6%	100.0%
	% within Area	100.0%	100.0%	100.0%

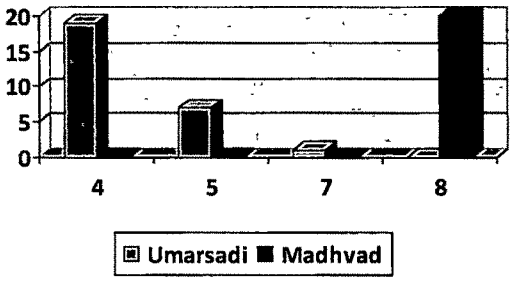
As depicted from the above table, 100% of the households of the total 27 who have responded in Umarsadi state that the difficulty in coping up with impact of sea water becoming hot is low as compared to 100% of the households of the total 20 in Madhvad stating it to be medium. Only 47 respondents who have experienced the phenomenon have responded

Table No: 122: Table showing total vulnerability rating of sea water becoming hot as rated by the households

Total Vulnerability Rating of Sea water becoming hot		Area		Total
		Umarsadi	Madhvad	
4	Frequency	19	0	19
	% within Total Vulnerability Rating of Sea water becoming hot	100.0%	.0%	100.0%
	% within Area	70.4%	.0%	40.4%
5	Frequency	7	0	7
	% within Total Vulnerability Rating of Sea water becoming hot	100.0%	.0%	100.0%
	% within Area	25.9%	.0%	14.9%
7	Frequency	1	0	1
	% within Total Vulnerability Rating of Sea water becoming hot	100.0%	.0%	100.0%
	% within Area	3.7%	.0%	2.1%
8	Frequency	0	20	20
	% within Total Vulnerability Rating of Sea water becoming hot	.0%	100.0%	100.0%
	% within Area	.0%	100.0%	42.6%

Total	Frequency	27	20	47
	% within Total Vulnerability Rating of Sea water becoming hot	57 4%	42.6%	100 0%
	% within Area	100.0%	100.0%	100.0%

Total Vulnerability Rating_Sea Water Becoming Hot



As seen from the above table and graph, the total vulnerability as rated by the households is high in case of Madhvad than Umarsadi. This shows that the households in Madhvad are more vulnerable than those in Umarsadi

Table No: 123: Table showing frequency of depletion of mangroves as rated by the households

Frequency of depletion of mangroves		Area		Total
		Umarsadi	Madhvad	
Low	Frequency	**71**	**4**	**75**
	% within Frequency_Other	94 7%	5 3%	100.0%
	% within Area	82.6%	12 9%	64.1%
Medium	Frequency	**13**	**5**	**18**
	% within Frequency_Other	72 2%	27.8%	100.0%
	% within Area	15 1%	16.1%	15.4%
High	Frequency	**2**	**22**	**24**
	% within Frequency_Other	8.3%	91.7%	100.0%
	% within Area	2.3%	71 0%	20.5%
Total	Frequency	**86**	**31**	**117**
	% within Frequency_Other	73.5%	26 5%	100.0%
	% within Area	100 0%	100 0%	100.0%

As seen from the above table, 82.6% of the household respondents in Umarsadi rate depletion of mangroves to be low while 71.0% of the households in Madhvad rate it to be high. This is due to the fact that mangrove cover in Umarsadi is lost since many years and there are hardly any mangroves left which are far off . In case of Madhvad, the depletion is rated high since it is a recent phenomenon in the memory of the respondents.

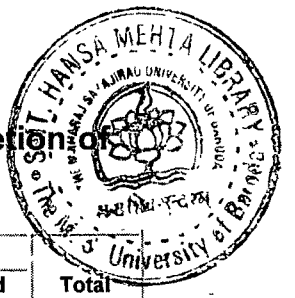


Table No: 124: Table showing negative impact of depletion of mangroves as rated by the households

Negative Impact of depletion of mangroves		Area		
		Umarsadi	Madhvad	Total
Low	Frequency	61	27	88
	% within Negative Impact on HH_Other	69.3%	30.7%	100.0%
	% within Area	70.9%	87.1%	75.2%
Medium	Frequency	24	4	28
	% within Negative Impact on HH_Other	85.7%	14.3%	100.0%
	% within Area	27.9%	12.9%	23.9%
High	Frequency	1	0	1
	% within Negative Impact on HH_Other	100.0%	.0%	100.0%
	% within Area	1.2%	.0%	.9%
Total	Frequency	86	31	117
	% within Negative Impact on HH_Other	73.5%	26.5%	100.0%
	% within Area	100.0%	100.0%	100.0%

As shown in the above table, the negative impact of depletion of the mangroves is shown to be low with 70.9% of respondents from Umarsadi and 87.1% of respondents from Umarsadi rate it to be low.

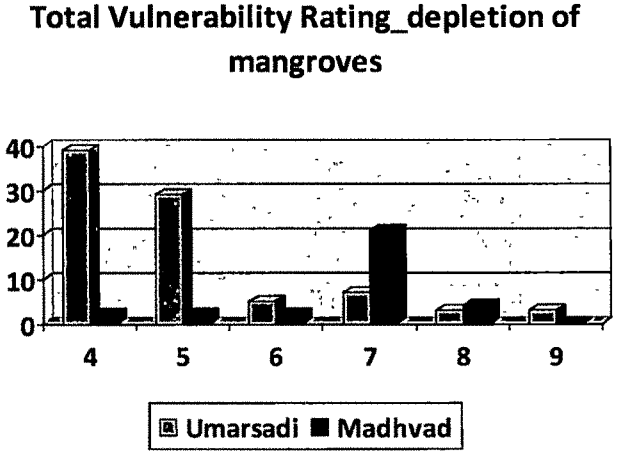
Table No: 125: Table showing difficulty in coping with depletion of mangroves as rated by the households

Difficulty of coping with depletion of mangroves		Area		
		Umarsadi	Madhvad	Total
Low	Frequency	66	27	93
	% within Difficulty of coping with hazard_Other	71.0%	29.0%	100.0%
	% within Area	76.7%	87.1%	79.5%
Medium	Frequency	17	4	21
	% within Difficulty of coping with hazard_Other	81.0%	19.0%	100.0%
	% within Area	19.8%	12.9%	17.9%
High	Frequency	3	0	3
	% within Difficulty of coping with hazard_Other	100.0%	.0%	100.0%
	% within Area	3.5%	.0%	2.6%
Total	Frequency	86	31	117
	% within Difficulty of coping with hazard_Other	73.5%	26 5%	100.0%
	% within Area	100.0%	100.0%	100.0%

76.7% of the respondents in Umarsadi and 87.1% of the respondents in Madhvad rate the difficulty in coping with depletion of mangroves to be low.

Table No : 126 : Table showing total vulnerability of depletion of mangroves as rated by the households

Total Vulnerability Rating		Area		
		Umarsadi	Madhvad	Total
4	Frequency	39	2	41
	% within Total Vulnerability Rating	95.1%	4.9%	100.0%
	% within Area	45.3%	6 5%	35.0%
5	Frequency	29	2	31
	% within Total Vulnerability Rating	93.5%	6.5%	100 0%
	% within Area	33 7%	6.5%	26 5%
6	Frequency	5	2	7
	% within Total Vulnerability Rating	71.4%	28.6%	100.0%
	% within Area	5.8%	6 5%	6 0%
7	Frequency	7	21	28
	% within Total Vulnerability Rating	25.0%	75 0%	100.0%
	% within Area	8.1%	67.7%	23.9%
8	Frequency	3	4	7
	% within Total Vulnerability Rating	42 9%	57.1%	100.0%
	% within Area	3.5%	12.9%	6.0%
9	Frequency	3	0	3
	% within Total Vulnerability Rating	100 0%	0%	100.0%
	% within Area	3.5%	.0%	2.6%
Total	Frequency	86	31	117
	% within Total Vulnerability Rating	73.5%	26 5%	100.0%
	% within Area	100 0%	100.0%	100 0%



As seen from the above table and graphs, the total vulnerability rating of depletion of mangroves is rated high by households in Madhvad than Umarsadi.

SECTION VIII: INFORMATION REGARDING CLIMATE CHANGE AND FUNCTIONING OF FORMAL AND INFORMAL NETWORKS

Information regarding climate change:

In both the communities, information about climate change is gained thorough the local governance i.e. the samaj. Apart from this, the information is gained in form of warnings from the local government through public address system and also through the Sarpanch and Talati. The community leaders play an important role in providing information regarding climate change.

The formal and informal networks in form of samaj, religious organizations and occupational associations enable the community in understanding the impacts of climate change in their own way though it is to be noted that they are not familiar with the word climate change but they know the impacts through their felt experiences.

Apart from this, the three NGOs working in Madhvad – Prakruti Nature Club, Ambuja Cement Foundation and Aga Khan Foundation also act as networks for knowledge on the changes in climate and their impacts.

SECTION IX
ABILITY OF THE COMMUNITY TO ORGANIZE

Table No: 127 : Table showing perception of the household regarding the ability of the community to make community plans to deal with climate related events

Perception of the household regarding the ability of the community to make community plans to deal with climate related events		Area		Total
		Umarsadi	Madhvad	
Strongly agree	Frequency	22	35	57
	% within Perception of the household regarding the ability of the community to make community plans to deal with climate related events	38.6%	61.4%	100.0%
	% within Area	22.0%	50.0%	33.5%
Agree	Frequency	55	16	71
	% within Perception of the household regarding the ability of the community to make community plans to deal with climate related events	77.5%	22.5%	100.0%
	% within Area	55.0%	22.9%	41.8%
Neutral	Frequency	23	10	33
	% within Perception of the household regarding the ability of the community to make community plans to deal with climate related events	69.7%	30.3%	100.0%
	% within Area	23.0%	14.3%	19.4%
Disagree	Frequency	0	8	8
	% within Perception of the household regarding the ability of the community to make community plans to deal with climate related events	.0%	100.0%	100.0%
	% within Area	.0%	11.4%	4.7%
Strongly disagree	Frequency	0	1	1
	% within Perception of the household regarding the ability of the community to make community plans to deal with climate related events	.0%	100.0%	100.0%
	% within Area	.0%	1.4%	.6%
Total	Frequency	100	70	170
	% within Perception of the household regarding the ability of the community to make community plans to deal with climate related events	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding the perception of the household as regards the ability of the community to make community plans to deal with climate related events, 55% of the households in Umarsadi state that they agree with the statement while 50% of the households in Madhvad state that they strongly agree with this statement. 23% of the households in Umarsadi have provided a neutral rating.

Table No: 128 : Table showing perception of the household regarding the ability of the community to coordinate activities to respond quickly to the impacts of natural events

Perception of the household regarding the ability of the community to coordinate activities to respond quickly to the impacts of natural events		Area		
		Umarsadi	Madhvad	Total
Strongly agree	Frequency	67	34	101
	% within Perception of the household regarding the ability of the community to coordinate activities to respond quickly to the impacts of natural events	66.3%	33.7%	100.0%
	% within Area	67.0%	48.6%	59.4%
Agree	Frequency	21	26	47
	% within Perception of the household regarding the ability of the community to coordinate activities to respond quickly to the impacts of natural events	44.7%	55.3%	100.0%
	% within Area	21.0%	37.1%	27.6%
Neutral	Frequency	12	8	20
	% within Perception of the household regarding the ability of the community to coordinate activities to respond quickly to the impacts of natural events	60 0%	40.0%	100.0%
	% within Area	12.0%	11.4%	11.8%
Disagree	Frequency	0	1	1
	% within Perception of the household regarding the ability of the community to coordinate activities to respond quickly to the impacts of natural events	.0%	100.0%	100.0%
	% within Area	0%	1.4%	.6%
Strongly disagree	Frequency	0	1	1
	% within Perception of the household regarding the ability of the community to coordinate activities to respond quickly to the impacts of natural events	.0%	100.0%	100.0%
	% within Area	.0%	1.4%	.6%
Total	Frequency	100	70	170
	% within Perception of the household regarding the ability of the community to coordinate activities to respond quickly to the impacts of natural events	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As depicted in the table, as regards the perception of the household regarding the ability of the community to coordinate activities to respond quickly to the impacts of natural events, 67.0% of the households in Umarsadi and 48.6% of households in Madhvad strongly agree to the statement while 21.0% and 37.1% in Umarsadi and Madhvad respectively agree.

Table No: 129 : Table showing perception of the household regarding the ability of the community to reorganize to respond to new situation

Perception of the household regarding the ability of the community to reorganize to respond to new situation		Area		
		Umarsadi	Madhvad	Total
Strongly agree	Frequency	46	39	85
	% within Perception of the household regarding the ability of the community to reorganize to respond to new situation	54.1%	45.9%	100.0%
	% within Area	46 0%	55.7%	50.0%
Agree	Frequency	25	16	41
	% within Perception of the household regarding the ability of the community to reorganize to respond to new situation	61.0%	39 0%	100.0%
	% within Area	25.0%	22.9%	24.1%
Neutral	Frequency	26	3	29
	% within Perception of the household regarding the ability of the community to reorganize to respond to new situation	89.7%	10.3%	100.0%
	% within Area	26.0%	4.3%	17.1%
Disagree	Frequency	1	2	3
	% within Perception of the household regarding the ability of the community to reorganize to respond to new situation	33.3%	66.7%	100.0%
	% within Area	1.0%	2.9%	1.8%
Strongly disagree	Frequency	2	10	12
	% within Perception of the household regarding the ability of the community to reorganize to respond to new situation	16.7%	83.3%	100.0%
	% within Area	2.0%	14.3%	7.1%
Total	Frequency	100	70	170
	% within Perception of the household regarding the ability of the community to reorganize to respond to new situation	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding the perception of the household as regards the ability of the community to reorganize to respond to new situation, 46.0% and 55.7% of the households in Umarsadi and Madhvad respectively state that they strongly agree to this statement. 26.0% of households in Umarsadi are neutral while 14.3% of the households strongly disagree in Madhvad.

Table No: 130 : Table showing perception of the household regarding the ability of the community institutions to support the members in need to reorganize to cope with new problems

Perception of the household regarding the ability of the community institutions to support the members in need to reorganize to cope with new problems		Area		
		Umarsadi	Madhvad	Total
Strongly agree	Frequency	49	38	87
	% within Perception of the household regarding the ability of the community institutions to support the members in need to reorganize to cope with new problems	56.3%	43.7%	100.0%
	% within Area	49.0%	54.3%	51.2%
Agree	Frequency	35	10	45
	% within Perception of the household regarding the ability of the community institutions to support the members in need to reorganize to cope with new problems	77.8%	22.2%	100.0%
	% within Area	35.0%	14 3%	26.5%
Neutral	Frequency	13	1	14
	% within Perception of the household regarding the ability of the community institutions to support the members in need to reorganize to cope with new problems	92.9%	7.1%	100.0%
	% within Area	13.0%	1.4%	8.2%
Disagree	Frequency	3	15	18
	% within Perception of the household regarding the ability of the community institutions to support the members in need to reorganize to cope with new problems	16.7%	83.3%	100.0%
	% within Area	3.0%	21.4%	10.6%
Strongly disagree	Frequency	0	6	6
	% within Perception of the household regarding the ability of the community institutions to support the members in need to reorganize to cope with new problems	.0%	100.0%	100.0%
	% within Area	.0%	8.6%	3.5%
Total	Frequency	100	70	170
	% within Perception of the household regarding the ability of the community institutions to support the members in need to reorganize to cope with new problems	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding the perception of the household with respect to the ability of the community institutions to support the members in need to reorganize to cope with new problems, 49.0% and 54.3% of the households in Umarsadi and Madhvad state that they strongly agree with the statement. 13.0 % of the households in Umarsadi state they are neutral. 21.4% of the households in Madhvad disagree to this statement.

Table No: 131 : Table showing perception of the household regarding the ability of the community members to work well with each other

Perception of the household regarding the ability of the community members to work well with each other		Area		Total
		Umarsadi	Madhvad	
Strongly agree	Frequency	54	43	97
	% within Perception of the household regarding the ability of the community members to work well with each other	55.7%	44.3%	100.0%
	% within Area	54.0%	61.4%	57.1%
Agree	Frequency	26	7	33
	% within Perception of the household regarding the ability of the community members to work well with each other	78.8%	21.2%	100.0%
	% within Area	26.0%	10.0%	19.4%
Neutral	Frequency	19	13	32
	% within Perception of the household regarding the ability of the community members to work well with each other	59.4%	40 6%	100.0%
	% within Area	19.0%	18.6%	18.8%
Disagree	Frequency	0	6	6
	% within Perception of the household regarding the ability of the community members to work well with each other	.0%	100.0%	100.0%
	% within Area	.0%	8.6%	3.5%
Strongly disagree	Frequency	1	1	2
	% within Perception of the household regarding the ability of the community members to work well with each other	50.0%	50.0%	100.0%
	% within Area	1.0%	1.4%	1.2%
Total	Frequency	100	70	170
	% within Perception of the household regarding the ability of the community members to work well with each other	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding perception of the household with respect to the ability of the community members to work well with each other, 54.0% and 61.4% of the households in Umarsadi and Madhvad state that they strongly agree while 26.0% and 10.0% of the households in Umarsadi and Madhvad state that they agree with the statement. 19.0% and 18.6% of the households in Umarsadi and Madhvad have stated that they are neutral.

Table No: 132 : Table showing perception of the household regarding the ability of the community to access outside support when needed

Perception of the household regarding the ability of the community to access outside support when needed		Area		
		Umarsadi	Madhvad	Total
Strongly agree	Frequency	46	2	48
	% within Perception of the household regarding the ability of the community to access outside support when needed	95.8%	4.2%	100.0%
	% within Area	46.0%	2.9%	28.2%
Agree	Frequency	37	45	82
	% within Perception of the household regarding the ability of the community to access outside support when needed	45.1%	54 9%	100.0%
	% within Area	37.0%	64.3%	48.2%
Neutral	Frequency	15	1	16
	% within Perception of the household regarding the ability of the community to access outside support when needed	93.8%	6.3%	100.0%
	% within Area	15.0%	1.4%	9.4%
Disagree	Frequency	2	2	4
	% within Perception of the household regarding the ability of the community to access outside support when needed	50.0%	50.0%	100.0%
	% within Area	2.0%	2.9%	2.4%
Strongly disagree	Frequency	0	20	20
	% within Perception of the household regarding the ability of the community to access outside support when needed	.0%	100.0%	100.0%
	% within Area	.0%	28.6%	11.8%
Total	Frequency	100	70	170
	% within Perception of the household regarding the ability of the community to access outside support when needed	58.8%	41 2%	100.0%
	% within Area	100.0%	100.0%	100.0%

With regards to perception of the household regarding the ability of the community to access outside support when needed, 28.6% of the households in Madhvad state that they totally disagree to the statement as compared to 64.3% of the households stating that they agree to the statement. 46.0% and 37.0% of the households in Umarsadi strongly agree and agree to the statement respectively. 15.0% of the households in Umarsadi have stated that they are neutral towards the statement.

SECTION X :
ATTITUDE TOWARDS LEADERSHIP AND GOVERNANCE

Table No: 133 : Table showing attitude of the households towards community leaders to successfully lead them through climate related events in the past

Attitude of the households towards community leaders to successfully lead them through climate related events in the past		Area		Total
		Umarsadi	Madhvad	
Strongly agree	Frequency	50	64	114
	% within Attitude of the households towards community leaders to successfully lead them through climate related events in the past	43.9%	56 1%	100.0%
	% within Area	50.0%	91 4%	67.1%
Agree	Frequency	21	5	26
	% within Attitude of the households towards community leaders to successfully lead them through climate related events in the past	80.8%	19.2%	100.0%
	% within Area	21.0%	7.1%	15.3%
Neutral	Frequency	27	1	28
	% within Attitude of the households towards community leaders to successfully lead them through climate related events in the past	96.4%	3.6%	100.0%
	% within Area	27.0%	1.4%	16.5%
Disagree	Frequency	2	0	2
	% within Attitude of the households towards community leaders to successfully lead them through climate related events in the past	100.0%	.0%	100.0%
	% within Area	2.0%	.0%	1.2%
Total	Frequency	100	70	170
	% within Attitude of the households towards community leaders to successfully lead them through climate related events in the past	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

With regards to attitude of the households towards community leaders to successfully lead them through climate related events in the past, 50.0% and 91.4% of the households in Umarsadi and Madhvad respectively strongly agree to this statement while 27.0% of the households in Umarsadi are neutral towards this.

Table No: 134 : Table showing attitude of the households towards community leaders being interested in climate change issues and the impact on the community

Attitude of the households towards community leaders being interested in climate change issues and the impact on the community		Area		
		Umarsadi	Madhvad	Total
Strongly agree	Frequency	39	44	83
	% within Attitude of the households towards community leaders being interested in climate change issues and the impact on the community	47.0%	53.0%	100.0%
	% within Area	39.0%	62.9%	48.8%
Agree	Frequency	44	25	69
	% within Attitude of the households towards community leaders being interested in climate change issues and the impact on the community	63.8%	36.2%	100.0%
	% within Area	44.0%	35.7%	40.6%
Neutral	Frequency	16	1	17
	% within Attitude of the households towards community leaders being interested in climate change issues and the impact on the community	94.1%	5.9%	100.0%
	% within Area	16.0%	1.4%	10.0%
Disagree	Frequency	1	0	1
	% within Attitude of the households towards community leaders being interested in climate change issues and the impact on the community	100.0%	.0%	100.0%
	% within Area	1.0%	.0%	.6%
Total	Frequency	100	70	170
	% within Attitude of the households towards community leaders being interested in climate change issues and the impact on the community	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

With regards attitude of the households towards community leaders being interested in climate change issues and the impact on the community, 44.0% and 39.0% of the households in Umarsadi agree and strongly agree to the statement. 62.7% of the households in Madhvad strongly agree to the statement. 16.0% of the households in Umarsadi are neutral towards the statement.

Table No: 135 : Table showing attitude of the households towards community leaders who have knowledge and skills to effectively take charge of climate change adaptation

Attitude of the households towards community leaders who have knowledge and skills to effectively take charge of climate change adaptation		Area		
		Umarsadi	Madhvad	Total
Strongly agree	Frequency	35	44	79
	% within Attitude of the households towards community leaders who have knowledge and skills to effectively take charge of climate change adaptation	44.3%	55.7%	100.0%
	% within Area	35.0%	62.9%	46.5%
Agree	Frequency	29	23	52
	% within Attitude of the households towards community leaders who have knowledge and skills to effectively take charge of climate change adaptation	55.8%	44.2%	100.0%
	% within Area	29.0%	32.9%	30.6%
Neutral	Frequency	28	1	29
	% within Attitude of the households towards community leaders who have knowledge and skills to effectively take charge of climate change adaptation	96.6%	3.4%	100.0%
	% within Area	28.0%	1.4%	17.1%
Disagree	Frequency	7	2	9
	% within Attitude of the households towards community leaders who have knowledge and skills to effectively take charge of climate change adaptation	77.8%	22.2%	100.0%
	% within Area	7.0%	2.9%	5.3%
Strongly disagree	Frequency	1	0	1
	% within Attitude of the households towards community leaders who have knowledge and skills to effectively take charge of climate change adaptation	100.0%	.0%	100.0%
	% within Area	1.0%	.0%	.6%
Total	Frequency	100	70	170
	% within Attitude of the households towards community leaders who have knowledge and skills to effectively take charge of climate change adaptation	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding the attitude of the households towards community leaders who have knowledge and skills to effectively take charge of climate change adaptation, 62.9% and 35.0% of the households in Madhvad and Umarsadi strongly agree to the statement while 29.0% and 32.9% in Umarsadi and Madhvad agree to the statement. 28.0% of the households in Umarsadi are neutral towards this.

Table No: 136 : Table showing attitude of the households towards trust in community leaders to lead the community through climate change adaptation

Attitude of the households towards trust in community leaders to lead the community through climate change adaptation		Area		Total
		Umarsadi	Madhvad	
Strongly agree	Frequency	52	44	96
	% within Attitude of the households towards trust in community leaders to lead the community through climate change adaptation	54.2%	45.8%	100.0%
	% within Area	52.0%	62.9%	56.5%
Agree	Frequency	16	5	21
	% within Attitude of the households towards trust in community leaders to lead the community through climate change adaptation	76 2%	23.8%	100.0%
	% within Area	16.0%	7.1%	12.4%
Neutral	Frequency	23	1	24
	% within Attitude of the households towards trust in community leaders to lead the community through climate change adaptation	95.8%	4.2%	100.0%
	% within Area	23.0%	1.4%	14.1%
Disagree	Frequency	7	20	27
	% within Attitude of the households towards trust in community leaders to lead the community through climate change adaptation	25.9%	74.1%	100.0%
	% within Area	7.0%	28.6%	15.9%
Strongly disagree	Frequency	2	0	2
	% within Attitude of the households towards trust in community leaders to lead the community through climate change adaptation	100.0%	.0%	100.0%
	% within Area	2.0%	.0%	1.2%
Total	Frequency	100	70	170
	% within Attitude of the households towards trust in community leaders to lead the community through climate change adaptation	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding attitude of the households towards trust in community leaders to lead the community through climate change adaptation, 28.6% of the households in Madhvad disagree to this statement while 23.0% of the households in Umarsadi are neutral. 52.0% and 62.9% strongly agree to the statement in Umarsadi and Madhvad respectively.

Table No: 137 : Table showing attitude of the households towards ability of the leaders to inform them of national and regional climate change policy or initiatives

Attitude of the households towards ability of the leaders to inform them of national and regional climate change policy or initiatives		Area		
		Umarsadi	Madhvad	Total
Strongly agree	Frequency	40	64	104
	% within Attitude of the households towards ability of the leaders to inform them of national and regional climate change policy or initiatives	38.5%	61.5%	100.0%
	% within Area	40.0%	91 4%	61.2%
Agree	Frequency	39	4	43
	% within Attitude of the households towards ability of the leaders to inform them of national and regional climate change policy or initiatives	90.7%	9 3%	100.0%
	% within Area	39.0%	5.7%	25.3%
Neutral	Frequency	15	1	16
	% within Attitude of the households towards ability of the leaders to inform them of national and regional climate change policy or initiatives	93.8%	6.3%	100.0%
	% within Area	15.0%	1.4%	9.4%
Disagree	Frequency	5	1	6
	% within Attitude of the households towards ability of the leaders to inform them of national and regional climate change policy or initiatives	83.3%	16.7%	100.0%
	% within Area	5.0%	1.4%	3.5%
Strongly disagree	Frequency	1	0	1
	% within Attitude of the households towards ability of the leaders to inform them of national and regional climate change policy or initiatives	100.0%	0%	100.0%
	% within Area	1.0%	.0%	.6%
Total	Frequency	100	70	170
	% within Attitude of the households towards ability of the leaders to inform them of national and regional climate change policy or initiatives	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding the attitude of the households towards ability of the leaders to inform them of national and regional climate change policy or initiatives, 91.4% of the households in Madhvad strongly agree to the statement while 40.0% and 39.0% of the households in Umarsadi strongly agree and agree to the statement. 15.0% of the households in Umarsadi have remained neutral towards the statement.

Table No: 138 : Table showing attitude of the households towards ability of the leaders to inform them from where to get climate related information

Attitude of the households towards ability of the leaders to inform them from where to get climate related information		Area		
		Umarsadi	Madhvad	Total
Strongly agree	Frequency	46	44	90
	% within Attitude of the households towards ability of the leaders to inform them from where to get climate related information	51.1%	48.9%	100.0%
	% within Area	46.0%	62 9%	52.9%
Agree	Frequency	28	24	52
	% within Attitude of the households towards ability of the leaders to inform them from where to get climate related information	53.8%	46.2%	100.0%
	% within Area	28.0%	34.3%	30.6%
Neutral	Frequency	25	1	26
	% within Attitude of the households towards ability of the leaders to inform them from where to get climate related information	96.2%	3.8%	100.0%
	% within Area	25.0%	1.4%	15.3%
Disagree	Frequency	0	1	1
	% within Attitude of the households towards ability of the leaders to inform them from where to get climate related information	.0%	100.0%	100.0%
	% within Area	.0%	1.4%	.6%
Strongly disagree	Frequency	1	0	1
	% within Attitude of the households towards ability of the leaders to inform them from where to get climate related information	100.0%	.0%	100.0%
	% within Area	1.0%	.0%	.6%
Total	Frequency	100	70	170
	% within Attitude of the households towards ability of the leaders to inform them from where to get climate related information	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding attitude of the households towards ability of the leaders to inform them from where to get climate related information, 62.9% of the households in Madhvad and 46.0% of the households in Umarsadi strongly agree to the statement. 25.0% of the households in Umarsadi have stated that they are neutral.

Table No: 139: Table showing attitude of the households towards ability of the leaders to suggest what can the community people do to adapt to climate change

Attitude of the households towards ability of the leaders to suggest what can the community people do to adapt to climate change		Area		Total
		Umarsadi	Madhvad	
Strongly agree	Frequency	53	50	103
	% within Attitude of the households towards ability of the leaders to suggest what can the community people do to adapt to climate change	51.5%	48.5%	100 0%
	% within Area	53.0%	71.4%	60.6%
Agree	Frequency	22	5	27
	% within Attitude of the households towards ability of the leaders to suggest what can the community people do to adapt to climate change	81.5%	18.5%	100.0%
	% within Area	22.0%	7 1%	15.9%
Neutral	Frequency	18	15	33
	% within Attitude of the households towards ability of the leaders to suggest what can the community people do to adapt to climate change	54.5%	45 5%	100.0%
	% within Area	18.0%	21.4%	19.4%
Disagree	Frequency	6	0	6
	% within Attitude of the households towards ability of the leaders to suggest what can the community people do to adapt to climate change	100.0%	.0%	100.0%
	% within Area	6.0%	.0%	3.5%
Strongly disagree	Frequency	1	0	1
	% within Attitude of the households towards ability of the leaders to suggest what can the community people do to adapt to climate change	100.0%	.0%	100.0%
	% within Area	1.0%	.0%	.6%
Total	Frequency	100	70	170
	% within Attitude of the households towards ability of the leaders to suggest what can the community people do to adapt to climate change	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

With regards attitude of the households towards ability of the leaders to suggest what can the community people do to adapt to climate change, 53.0 % and 71.4% of the households in Umarsadi and Madhvad strongly agree to the given statement. It is to be noted that 18.0% and 21.4% of the households in Umarsadi and Madhvad are neutral.

Table No: 140 : Table showing attitude of the households towards ability of the leaders to provide them with resources needed for climate change activities

Attitude of the households towards ability of the leaders to provide them with resources needed for climate change activities		Area		Total
		Umarsadi	Madhvad	
Strongly agree	Frequency	37	64	101
	% within Attitude of the households towards ability of the leaders to provide them with resources needed for climate change activities	36.6%	63.4%	100.0%
	% within Area	37.0%	91.4%	59.4%
Agree	Frequency	37	2	39
	% within Attitude of the households towards ability of the leaders to provide them with resources needed for climate change activities	94.9%	5 1%	100.0%
	% within Area	37.0%	2.9%	22.9%
Neutral	Frequency	19	1	20
	% within Attitude of the households towards ability of the leaders to provide them with resources needed for climate change activities	95.0%	5.0%	100.0%
	% within Area	19.0%	1 4%	11.8%
Disagree	Frequency	5	3	8
	% within Attitude of the households towards ability of the leaders to provide them with resources needed for climate change activities	62.5%	37.5%	100.0%
	% within Area	5.0%	4.3%	4.7%
Strongly disagree	Frequency	2	0	2
	% within Attitude of the households towards ability of the leaders to provide them with resources needed for climate change activities	100.0%	.0%	100.0%
	% within Area	2.0%	.0%	1.2%
Total	Frequency	100	70	170
	% within Attitude of the households towards ability of the leaders to provide them with resources needed for climate change activities	58.8%	41 2%	100.0%
	% within Area	100.0%	100.0%	100.0%

With regards to attitude of the households towards ability of the leaders to provide them with resources needed for climate change activities, 91.4% and 37.0% of the households in Madhvad and Umarsadi strongly agree to the statement. 37.0% of the respondent households in Umarsadi state that they agree. 19.0% of the households in Umarsadi are neutral towards the statement.

Table No: 141 : Table showing attitude of the households towards ability of the leaders to encourage community members

Attitude of the households towards ability of the leaders to encourage community members		Area		
		Umarsadi	Madhvad	Total
Strongly agree	Frequency	37	64	101
	% within Attitude of the households towards ability of the leaders to encourage community members	36 6%	63.4%	100.0%
	% within Area	37.0%	91 4%	59 4%
Agree	Frequency	14	3	17
	% within Attitude of the households towards ability of the leaders to encourage community members	82 4%	17.6%	100.0%
	% within Area	14.0%	4.3%	10.0%
Neutral	Frequency	46	3	49
	% within Attitude of the households towards ability of the leaders to encourage community members	93.9%	6.1%	100.0%
	% within Area	46.0%	4.3%	28.8%
Disagree	Frequency	3	0	3
	% within Attitude of the households towards ability of the leaders to encourage community members	100.0%	.0%	100.0%
	% within Area	3.0%	.0%	1.8%
Total	Frequency	100	70	170
	% within Attitude of the households towards ability of the leaders to encourage community members	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding the attitude of the households towards ability of the leaders to encourage community members, 46.0% of the households in Umarsadi state its neutral while 91.4% of the households in Madhvad state that they strongly agree to the statement.

Table No: 142 : Table showing attitude of the households towards their voices being heard in community planning for climate change adaptation

Attitude of the households towards their voices being heard in community planning for climate change adaptation		Area		Total
		Umarsadi	Madhvad	
Strongly agree	Frequency	47	44	91
	% within Attitude of the households towards their voices being heard in community planning for climate change adaptation	51.6%	48 4%	100.0%
	% within Area	47.0%	62.9%	53.5%
Agree	Frequency	17	8	25
	% within Attitude of the households towards their voices being heard in community planning for climate change adaptation	68.0%	32.0%	100.0%
	% within Area	17.0%	11.4%	14.7%
Neutral	Frequency	36	18	54
	% within Attitude of the households towards their voices being heard in community planning for climate change adaptation	66.7%	33.3%	100.0%
	% within Area	36.0%	25.7%	31.8%
Total	Frequency	100	70	170
	% within Attitude of the households towards their voices being heard in community planning for climate change adaptation	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

Regarding the attitude of the households towards their voices being heard in community planning for climate change adaptation, 47.0% and 62.9% of the households in Umarsadi and Madhvad strongly agree to the statement. 36.0% and 25.7% of the households in Umarsadi and Madhvad respectively are neutral about this.

Table No: 143 : Table showing attitude of the households towards ability of the leaders to provide opportunity to participate in community level decision making

Attitude of the households towards ability of the leaders to provide opportunity to participate in community level decision making		Area		
		Umarsadi	Madhvad	Total
Strongly agree	Frequency	**23**	**64**	**87**
	% within Attitude of the households towards ability of the leaders to provide opportunity to participate in community level decision making	26.4%	73.6%	100.0%
	% within Area	23.0%	91.4%	51.2%
Agree	Frequency	**37**	**3**	**40**
	% within Attitude of the households towards ability of the leaders to provide opportunity to participate in community level decision making	92.5%	7.5%	100.0%
	% within Area	37.0%	4.3%	23.5%
Neutral	Frequency	**39**	**3**	**42**
	% within Attitude of the households towards ability of the leaders to provide opportunity to participate in community level decision making	92.9%	7.1%	100.0%
	% within Area	39.0%	4.3%	24.7%
Disagree	Frequency	**1**	**0**	**1**
	% within Attitude of the households towards ability of the leaders to provide opportunity to participate in community level decision making	100.0%	.0%	100.0%
	% within Area	1.0%	.0%	.6%
Total	Frequency	**100**	**70**	**170**
	% within Attitude of the households towards ability of the leaders to provide opportunity to participate in community level decision making	58.8%	41.2%	100.0%
	% within Area	100.0%	100.0%	100.0%

As regards attitude of the households towards ability of the leaders to provide opportunity to participate in community level decision making, 39.0% of the households in Umarsadi are neutral. 91.4% of the households in Madhvad strongly agree to the statement.

Part II: Qualitative Analysis:

Transect Walk:

Purpose:

The purpose of transect walk with community people was to understand the overall scenario of the community in terms of hazards, vulnerabilities and resilience. Being coastal communities, it was aimed to know the changes at the coastal area and the impacts on the community way of being. (The check list is provided in the annexure)

Observations at Madhvad:

Geographical Location and Ecological Setting:

- Vellan – Madhvad- Kotada is around 18 kilometers from Kodinar Taluka in Junagadh District. It is part of the Sodham Wetlands, one of the biggest and important wetlands of Gujarat State. One road from Vellan village goes to Kotada while another goes to Madhvad. People of the community fish for crabs and small fishes in the wetland, mangroves and check dam waters.
- On the way to Madhvad from Vellan, on the right is a small check dam which is connected to the road leading to the light house settlement through the part of Sodham Wetlands while on the right is the primary school and depleted buildings of the works department. It also has a well where the government tanker fills in water.
- As the road proceeds along, one can mark the mushrooming of the small Mangroves which are being planted since past two years. The road is a metal road which facilitates the transportation. There is a small pool in between which generally breaks down during heavy rainfall and disconnects the village from other villages.

Village Settlement:

- At the mouth of the village, on the right are the Prathana Mandir and Samaj Mandir while left is marked with construction work for new houses

and a depleted and abandoned building of Sub centre. There is also an Aanganwadi adjourning to it.

- The village internal main road is marked with houses on both the sides which are engulfed by the Arabian sea coast. The right part is known as the khadi area which is used for anchoring the boats and the waterway is also used to reach the settlement at light house which is situated on the top of a small hill.
- There were around 10-12 boats with multicolored flags anchored in the khadi.
- The coast is well lined with sand and some shells were also seen along with junks of garbage containing plastic, tins, parts of nets etc

Housing Pattern:

- There are around 14 lanes named after mythological characters. The houses face each other in the lane and the lanes are too narrow for a big four wheeler to move in.
- Each lane houses around 45 houses and there are 720 households in this village. The houses are like row houses sharing at least one common household wall making it difficult for air and light ventilation.
- Around 35-40% of the households are Pucca while the rest fall in the semi pucca houses with tiled roofs. Moreover, effect of weather is clearly marked on the houses especially those which are immediately near the sea shore. Around 20 houses of the lot showcase the damage they have suffered due to strong winds. Most of the houses have one room after the other in a lane like manner.

Water and Sanitation:

- Water facilities in form of taps are seen at the household level but there is no water in the taps. The streets are marked with water tanker where the villagers were seen buying water. The water is generally stored outside the houses in barrels.
- The used water from the houses is drained into small drain pits out side the houses. During the transect walk, it was seen that the same water is

then filled up in pails and carried out to the sea and thrown there since there is no drainage system in the village.

Other Facilities:

- The village also houses 4-5 provision stores with one kerosene depot too and small pan gallas.

Observations at Umarsadi Macchiwad-Mangelwad -Desaiwad :

Geographical Location and Ecological Setting:

- The village is part of the eco system which engulfs the waghai forest area in Valsad district. Pardi GIDC is also well known.
- The village is around 6 kms from Pardi Taluka with a well metal road
- The way to Umarsadi from the onset is marked with farms and a new colony which is around 3 kms from the main village.
- The jetty area is marked with bamboo pole structures for drying Bombay ducks.
- On the right of the jetty is the Par river while on the left and in front is the Arabian Sea.
- On the other side of Par river is Atul Limited and another village where people travel by water way. The Par Hill is also visible from the jetty area.
- Coastal erosion is visible along the coast in terms of inundation and abandoned houses since the sea has gushed in.

Village Settlement:

- Just before the main village starts, opposite the primary school, on the left is a road which leads to mangelwad and desaiwad.
- Further down are the Pump house for drinking water and the Gram Panchayat Building.
- There is a three road junction at the start of the village of which one leads to the market, one leads to Prathana Mandir and the other leads to another hamlet. Road transport in form of rickshaws and buses can be found at this junction

- In all there are more than 8 hamlets and at the junction of each, there is a small community meeting place named after the street it belongs to.
- There are two ponds in the village- a big one and a small one. People usually use this for animals and washing.

Housing Pattern:

- The village has a variety to buildings starting from huge villas to thatched houses and most of the houses in the village are pucca houses.
- Around 100 houses out of the total of about 1000 houses are situated on the coast. The seacoast is lined up with sea wall and there is a jetty for the boats. Some boats were anchored in the area.
- The village has a cascading style and at many places one has to climb down to reach the houses. This is especially so near the coast.

Water and Sanitation:

- The village has provision for drainage system and water facility also. Overhead tanks, taps and hand pumps are also marked at different locations in the village

Other Facilities:

- There are more than 20 shops in the village and two private doctor's clinics.
- There is a skill enhancement centre in the village near the village vegetable market.
- There is a big school primary school in the village which is marked as a shelter home in case of emergency. A relatively small primary school till 5th standard is also there at the hatpatathiya falia.
- Apart from the community halls, there is a big lakshminarayan temple where people gather and another one is a swadhyay prayer hall.

Focus Group Discussions:

In all there were eleven group meetings in each community. i.e. a total of 22 group meetings were held

Group composition:

Elderly Men: Men over the age of 50 were included in this.

Young Men: Men in the age group of 18- 40 were included

Elderly Women: Women over the age of 50 were included

Young Women: Women in the age group of 18- 40 were included

Community Leaders: Formal and informal leaders were included

Occupational Groups: People from different occupations were included

On an average, the groups consisted of 08 - 15 members.

Village Madhvad Bandar:

Village	Elderly Men's groups	Young Men's groups	Elderly Women's groups	Young Women' groups	Community Leaders' groups	Occupational Groups (Mix Group)	Total
Madhvad	2	2	2	2	1	2	**11**

Geographical Location and Village Set Up:

All the groups explained in detail the geographical location of the village as being a village which is part of Vellan-Kotada- Madhvad village, with taluka head quarters at Kodinar and district headquarters being Junagadh. 'Our village is surrounded by sea and wet land on three sides'. "The nearness to sea is a boon since we are primarily engaged in fishing and the wetland provides us small fish and crabs for our household consumption as well as for selling. This is especially the case for those who do not go to sea for fishing".

The woman's group could name the sarpanch and the community leaders of their Samaj and knew that there was someone called talati but had no knowledge as to who their talati was since "it's men who are more involved in the matters related to Panchayat than us" as stated by the elderly women's group. "We do not go to the Panchayat"

Community Resources:

All the groups were able to list down the major infrastructure in the village in the following ways:

Housing:

"Since we have recently laid down the pipeline under swajaldhara yojana, we know that there are 720 households in our village" stated the community leaders and elderly groups. "Our houses follow the traditional pattern since ancestral days which generally have storage facilities for fishing equipments and storage for fish. Being small fishermen, we have small houses. Our houses are lined one after the other since our families generally live side by side" stated the women's group. The young men's groups were more specific when they stated that 30% of our houses are now modern while the others are mixed type with slant roofs and roof tiles.

There were variations in number of at risk houses with respect to infrastructure. The women's groups, elderly groups and the community leaders groups were more consistent with a range of 25- 35% .

Water:

"We have incurred cost of around two lakh rupees for the swajaldahara yojana and laid down pipeline for drinking water at each household but we do not receive any water in the tap. People up the area in other villages damage the main pipeline so that we do not get water" was stated by the leaders groups. The women's groups –both the elderly as well as the young women's group were agitated-"all our day is used up in arranging for water for drinking and household consumption. We have to buy water daily and sometimes, we spend 150 rupees per day since our families are big. There are private tankers coming from Kodinar and surrounding villages through out the day and provide us water. We also have to fetch water from the tank near the primary school which is time consuming". The elderly groups of men and women stated that before 25 years, we used to rely on wells for drinking water

and household consumption. Well waters have turned salty. Also due to rocky land and nearness to the sea, wells are no more a feasible solution.

Both the women's group stated that first they wash their clothes with salty water from ocean or well and then soak them in normal water and then dry their clothes. Unavailability of water is one of the major reasons why they do not have lavatories and bathrooms in their households.

Drainage and Sanitation:

All the groups shared that there is no drainage facility in the village and people use soak pits for the same. Only the houses which are modern have facilities of bathrooms and lavatories. The men's and women's groups stated that each household has small pit in front of the house which collects the waste water of washing and bathing. Women then fill this water in pails and carry them to sea shore and throw it in the sea. "Most of our time is spent in this and we have to do it to keep our surroundings clean" stated the women's groups. "We face problem when we are having our periods "stated the young women's group.

Health:

"It is our faith healers blessings which take care of our health "stated the elderly women's and men's groups. "The charans curse our children if we do not abide to their needs". All the groups listed down health problems like Asthama, Arthritis, skin problems, hair problems and problems related to health and hygiene of women as the major ones. "We have a broken structure as a health centre and hence our doctors and ANM work from the Aanganwadi building. We prefer to go to Una or Kodinar for our health needs to private doctors since we do not trust government machinery. There is a PHC at Vellan but we do not prefer to go there too since doctors are not available".

The women's groups stated "We have to go to Kodinar for institutional delivery in whatever vehicle is available and the women have to suffer a lot since it takes more than forty five minutes to reach there. Many women have

lost babies due to this problem. "The elderly women's group shared "we still believe in traditional dais but our young women want to go to cities to have deliveries. We too bore children and a lot of them but these young women now do not want it at home." The young women's group shared that they have more confusions related to women's health problems since there is no one to guide them.

Education:

"Our forefathers never went to school and yet were happy and contented in life. Our trade does not need education. Our boys start going to sea when they are eight to nine years old and it is where they get practical training. Our boys generally study till 8-10th standard then they work full time for fishing. Fishing is not taught in the school but in the sea" stated the elderly men's group. There was a variation related to this in the young men's and occupational groups. "We are scorned at if we do not go to sea and want to study further. What we earn by being fishermen cannot be earned by studying and serving others. This is the main reason why we do not prefer to study further".

The elderly women's group stated "Our lives are all centered around fishing. We need to take care of our elders and children when our men go for fishing. We also have to weave nets and help in other works related to fishing. We have to be well versed at how to handle all this. So at a very young age, our training starts. We do not go to school. Presently the most educated woman in our community is a girl who has studied till 8th standard. Generally girls study till 5-6th standard since they are to be trained in household." The young women's group also supplemented by stating that they do not incline to study since they have to learn about their traditional way of living but that now they would like their daughters to study further since time has changed.

Occupations :

"Our main occupation is fishing" stated all the groups. Each household in our community is engaged in one or the other work related to fishing. Either people have small fishing business and around 7 people are engaged in this

and they sell their catch at Veraval. There are 5 big trawlers and around 200 small boats engaged for fishing. There is one matysyagandha boat of the swadhyay parivar. Around 600 to 700 women are engaged as workers in fishing industry at Veraval. There is one Public Distribution System (Fair Price Shop) in the village. There are two grosser in the village. Around 10- 12 people are engaged in Pan Shops in the village. Rest of the people is engaged in fishing.

"We are unable to think of any other occupation but slowly we will have to think about it for now fishing is getting a bit uncertain and we also have to go very far away from home. Also it is becoming increasingly necessary that we search for alternatives for our future generation" stated the young men's and community leader's groups.

Legal Services:

"Our samaj is our legal system" stated all the groups. "All our disputes related to marriage, family, kinship, ownership, crime etc is taken care of by our samaj. We have our own Kharva Samaj at the village level. It is functioning so well that there is no even a single case registered against anyone in government legal services. Our samaj is the backbone of our traditions and culture" stated the community leaders groups and the elderly men and women's group. "It is our samaj who takes care of our members whenever there is a need. People do not have to go out to seek support for themselves. Right from the childbirth till death, all the needs are taken care of by the samaj".

Vulnerable Groups:

All the groups stated that the since they have closely knit family ties and community ties, they are no cases where any elderly, widow or orphan child is left alone. There are no cases of any differently abled people in the community. "Our samaj has system where no family is left in crisis alone. Each member of our community contributes for the welfare of those who need it and hence they are taken care of by the community itself "stated the elderly women's and men's groups. The groups also stated that it was only when the

youngsters migrate to other places that the elders are left in the village by themselves. But the close knit community ties take care of their needs and hence they do not suffer like in other villages or communities. In times of crises the youngsters of the community first care for the elderly who are alone was stated by the young women's and men's groups.

Hazards, Disasters and Climate Change:

"In 1982, there was a devastating cyclone which claimed 14 lives and damaged around 200 big and small boats of our community. Our community suffered a loss of about one to one and half crores of damage in all" stated the elderly men's and women's groups and the community leaders groups. The oldest and intensive cyclone apart from this was of 1950 which hit the Vanakbara area on the opposite coast. Apart from this, they experienced cyclones in the year 1987, 1996 and 2007 also. But no life loss was there. The houses on the sea coast always sustain damage and people have to be shifted to other places in the village.

"Apart from cyclones, we experience floods and water logging almost in each season" stated all the groups. "Recently in 2007, we suffered due to heavy rainfall. There was hip deep water in the village and two people had taken refuge on a light tower in the sea for six hours before our fishermen could save them. Some of our men are at sea during monsoon who are trapped in the sea in high wind and rainfall. Our men know how to survive" stated the community leaders group. "Before that in 1996, there was dual impact of cyclone and rain and we had water in the temple which is the highest place in the village and where we are sitting now. Our pool was also damaged during the flood, stated the women's group ".

The elderly men's group and the community leader's groups also shared that earlier huge vessels used to come to anchor in the khadi area but now due to silt deposition this area cannot be used for navigating vessels of huge size. There were mangroves as huge as trees all along the coast of which are no more. "Our sea coast seems to have come more near than it was before. Some of our houses had to be vacated due to this. Our new residential plots

under government scheme have been built near the light house which is at a higher level".

The community also suffered damage in terms of house damage during the Earthquake in 2001. But this was negligible.

Traditional Knowledge, Warning and Evacuation and Disaster Preparedness:

"Our forefathers used to look at the location of the stars and clouds, feel the wind and water currents and could predict whether it was safe to go to the sea or not. They also used to calculate on the basis of nakshatras about the change in weather at sea. This enabled them to fish safely. Moreover, our customs and traditions are such that from May to October are months when most of our festivals are celebrated. Social customs like marriages, Kathas etc are also carried out during this period and we do not go to sea during this month", stated the elderly men and women groups and the community leaders groups. This was also supported by the occupational groups.

"Unlike our fathers and uncles, we do not understand the ways of nature. Weather has become so unpredictable now. We rely entirely on the government machinery for early warnings and we had gadgets for the same", stated the young men's group and occupational groups. All the groups stated that sometimes during the monsoon season, they heard about warnings being issued not to go to the sea by the government officials.

All the groups stated that to help each other is the basic value of their community and hence they feel that they do not need to rely on others for helping their fellow members. "We are like a closely knit family. We are all Hindu Kharvas".

The community leaders group and the elderly men's group stated that before five to six years some exercise was carried out in the village for disaster preparedness. Some of the members recalled that their names were there in committees but they could not recall what the present status of the same is.

The women's groups and the young men's groups were totally ignorant about any such thing as disaster preparedness plan.

Risk Knowledge and Disaster Recovery:

Risk knowledge in terms of geographical location, hazards and their impacts was vividly described by almost all the groups but the community leaders groups and the elderly groups were more vocal then the young men and women's groups.

Diversity: (Livelihood and Resource Dependency)

All the groups stated that their main source of livelihood is fishing in terms of either business or selling the fish or working in fish industry. Thus there is high dependency on sea and sea products for their livelihoods. They catch fish for selling and own consumption; use dry mangrove wood as fuel, catch crabs and prawns from the muddy water of mangroves and use them for their household consumption as well as for selling too. "Our lives are focused around our sea and the vegetation grown around it. Earlier we also use to sell Chip (Oysters), Shankh (Crouches), Kodi etc since they were available in plenty on our sea shore but now they are not found in abundance since the sea has become polluted", stated the elderly men's and women's group. The occupational group also supported this. The groups also stated that slowly from going to the sea, people are now turning towards working in fishing industry. Especially the women work in fishing industry for around 7-8 months.

"Our men are not able to find jobs since we do not have enough education. Moreover, since mainly fisheries are there in the area, we are heavily depended on this industry for our livelihood".

Three self help groups are there in the community for women and all of them are involved in saving activities. They are around two years old. They are yet to be productive, stated the women's groups.

"We are not able to come up with alternative livelihood options as community people since our girls and boys are not so much educated. Within our households we do have supplementary livelihoods like selling fish, crabs or prawns in the nearby villages and working in the fishing industry at Veraval. Around 400 to 500 women migrate to Veraval seasonally for working in the fishing industry there as workers", stated the community leaders groups and occupational groups. This was largely supported by the other groups also.

"We worship our sea and protection of coastal and marine life is part of our culture. We worship Lord Shiva, Lord Hunamana and Ramdev Pir Baba who are symbols of conservation of nature." Some of us had got greedy and so we were involved in fishing of whale also due to its high price. But now due to interventions of Prakruti Nature Club, we are involved in rescue work of whales and other marine and wild life" stated the elderly men's and women's groups.

Learning from Change:

"Over the centuries since we have come and settled down over here, our ways of living had not changed at least till twenty years back", stated the elderly men and women's groups and community leaders groups. "It is over the past two decades that we are facing gradual changes. Earlier our community had more big traders with big vessels now we have more small traders with small boats. The closure of the jetty and khadi has taught us an important lesson. Our men have to go all the way to Jakhau and beyond to fish. This is becoming expensive and time consuming. Moreover, our youngster's are now exposed to newer lifestyles and they want to lead easier life styles. Of late our community understands how important it is for us to adapt to the new ways. We are now sending our boys and girls for higher education since past 4-5 years".

Self Organization:

"Our community is governed by our samaj. Our samaj is our main link which provides us with all the help we need. We have the president of our community at Dwarka. Whenever we are not able to solve any problem at the

local level, we go to maha sabha which is held once in a year. In times of need, in emergency even before the government aid arrives, we have our own people helping us out ", stated the community leaders group and elderly women's and men's groups. "We go by our samaj rules and regulations not only in normal times but also in times of emergencies", stated all the groups. At the local level, they are supported by the village level samaj while at regional level, they are supported by twelve samaj which covers 12 villages and at the state level they are supported by the Maha Sabha which governs the entire Kharva Samaj. "We have accountability and responsibility at all the levels and hence there is transparency in our system. Decisions are mostly made on the traditional systems but we also take into account the current status of society at large. Family and societal conflicts are also resolved in our system of governance.

Apart from this, they do use the gram Panchayat machinery, the taluka Panchayat machinery and the Zilla Panchayat machinery for their related work but mostly it is for some or the other developmental work. They also have to work closely with coast guards and fisheries department since they are also directly connected with their occupations. They have their own Boat association and Swadhyay Parivar in the village. Prakruti Nature Club from Kodinar, Aga Khan Foundation and Ambuja Cement Foundations also work in the community for developmental work as stated the various groups. Most of the information they gain is through the Sarpanch, the community leaders and some of their men who stay in cities like Veraval.

Village Umarsadi Machiwad: (Total 11 FGDs)

Village	Elderly Men's groups	Young Men's groups	Elderly Women's groups	Young Women' groups	Community Leaders' groups	Occupational Groups (Mix Group)	Total
Umarsadi	2	2	2	2	1	2	11

Geographical Location and Village Set Up:

All the groups explained in detail the geographical location of the village as being a village which is part of Umarsadi- Desai Wada village, with taluka head quarters at Pardi and district headquarters being Valsad. "Our village has a coastline which is affected by coastal erosion" stated the elderly men's group. All the groups stated that "our village is very well developed as compared to other fishermen villages since we have more educated society"

All the groups knew who was the talati and sarpanch of the village. The groups also knew who the community leaders of their respective lanes were. In all they were conversant with the village set up.

Community Resources:

All the groups were able to list down the major infrastructure in the village in the following ways:

Housing:

"Our village has around 1000 houses of which 60% of the houses must be pucca houses while 40% must be kuccha houses" stated the community leaders and elderly groups. This was supported by the occupational group also. "Our house is different in different falias. While the old houses are big and are exceptionally huge, others are small and made according to modern architecture. The new colony has new houses which are made up of concrete cement while in the main villages, we have a mixed pattern. But there are very few thatched houses in the village since economically it is a sound village" stated the women's groups.

Water:

"Drinking water availability is not a problem at all in our village "stated the elderly men and women's group as was supported by the other groups too. "We have tap water from the Panchayat and also there are stand posts for water in the village. There are hand pumps too in the village but some of them are not functional. People also have bore wells in the upper side of the

village for the farms" stated the women's groups. "At times, some families have to fetch water from the falia tap but its part of our daily routine. There is plenty of water and hence we get enough for washing clothes too" stated the same groups. The other groups were supportive of the facts.

Drainage and Sanitation:

All the groups shared that there is no drainage facility in the village and people use soak pits for the same. "Sanitation wise also, our village is much better than other villages" stated the elderly men and women's groups. Common toilets are built near the sea coast for the women by the village Panchayat.

Health:

"There is a PHC at Desai Wad but we do not avail the facilities except occasionally. We prefer to go to the private clinics and hospitals at Pardi or Valsad and even go to Surat in case there is a serious issue "stated the elderly men's and women's group and also the young women's group. This was also supported by the community leader's groups.

"Due to the engagement in seamen's occupation, we have to eat frozen food which is high in fats and carbohydrates and hence there is a tendency of increase in problems of increased cholesterol, heart attacks etc. Moreover the seamen after they retire generally die within 6-7 years in our village" stated the occupational group. This is a major problem but people take it as part of life.

Apart from this, there is problem of rheumatism and Blood pressure amongst men and women due to nearness to sea. The joints start paining much earlier. The children have general ailments like cough and colds and cases of SASANI are also reported. Cases of diarrhea and vomiting are also reported shared the elderly men and women's groups and the young men and women's groups.

Education:

"Our village is educated village. Earlier we had a fisheries school which was operational from 1949 to 1999 and was started in 1917 as a primary school. There are two primary schools in the Umarsadi Macchiwad and one more at Desaiwada which is a secondary school. The literacy rate amongst male and female is nearly equal in the new generation" stated the community leader's group and elderly men and women's group. Since the first sea men went to sea in 1941, people were motivated to provide education to their children stated the community leader's group. The women's group stated that the women too study till MA and B.Ed since their men go away and they can continue their studies. Boys study till 12^{th} while the girls go on to do post graduation too. "There are more teachers in our community" stated the young women's and men's group. People also send their children to hostels for studies at Valsad and Surat shared the occupational group.

Occupations:

"We have diversified occupations in the village. There are seamen, teachers, industrial labours, fishermen, self employed etc in our village "stated the elderly men and women's groups which was supported by the young men and women's groups. "There are around 50-70 teachers in our village, more than 500 seamen and more than 500 women working in as labour in surrounding industries in packaging. There are more than 40 rickshaw drivers in the village and more than 30 shops in the village" stated the occupational groups. "It was because of the loss of lives in the Okha cyclone that our community turned to different occupations after leaving their main occupation of fishing" stated the community leader's group.

Income groups:

There are large variations regarding the income groups due to diversified occupations like seamen, fishermen, farmers, labours etc. While the seamen earn anything between 7- 12 lacs per annum, there are households who are BPL too in the village stated the occupational group and the elderly men and women's groups

Legal Services:

"We have our own legal services but over the period of time, this is disintegrating" stated the community leader's groups which was to a large extent supported by all other groups. "Most of our problems are solved by our Macchi Samaj and there are hardly any people who resort to the legal services of the government except in case of disasters or other kind of compensations and problems. We have a very traditional system of dealing with civil problems like marriages, elderly, property matters etc which are dealt within our own samaj. " stated the community leaders group and the elderly men and women's groups. "There are no instances of theft within our own community but the other community members who do not belong to Macchi Samaj do have such problems for which they refer to the government machinery" stated the occupational group.

Vulnerable Groups:

"Since we have close family ties and most of the people are related to each other by ties of blood or marriage, we don't have problems of vulnerable groups" stated the community leaders group. The widows, the elderly and the orphans are accommodated within their own households shared the elderly men and women's groups. "The system of our samaj is such that these kind of people are cared by the families and the samaj. We have charity for such groups also. In case of emergency also, our samaj is the first one to help out people" stated the young men and women's groups. "The religious groups like Swadhyay also help women and children out in times of need. They have also constructed houses for widows in the village" stated the men's group.

Hazards, Disasters and Climate Change:

"The worst cyclone that we faced was the Okha mandal cyclone which turned the lives of our people. We lost around 26 big vessels and 130 men at sea who never returned. This was the turning point after which people were so afraid that they left the trade of fishing or going to sea "stated the community leaders group. " . Our young generation does not go to sea any more" stated the elderly men and women's groups. "Cyclones do come and go nearly every year but they are not as severe as that of Okhamandal" stated the

community leader's group. "The main problem that we face now is coastal erosion which is wreaking havoc in our community. The sea has gushed in nearly 30 feet in the past few years. We had to shift our houses backward to save them. Our land is being submerged in water like other surrounding areas like bawan deep area which is no more, Udwada etc. 15- 20 years back we had rice farms but due to pollution and salinity, they are lost. There is salinity ingress of around 2 kms in past decade. Most of the bore wells and wells are saline now. The sea level has increased to 5-6 feet in past 25 years. In high tide, the water goes up by 6-7 feet. A protection wall has been constructed now by the irrigation department" stated the community leader's group. "Another hazard is pollution especially sea pollution due to surrounding industries the rivers have become acidic which damages the head of the machine of boats, the alfanso has got affected as the flowering does not lasts long, the kind of fish that was available is also not available now and people have to go deep into the sea so more time is consumed" stated the community leaders group and supported by the elderly men's and occupational groups. "Earlier we had mangroves which are seen no more" stated the elderly women's group.

Traditional Knowledge, Warning and Evacuation and Disaster Preparedness:

"Our traditional knowledge is in ruins since our young generation does not go to sea any more. Also the weather has become unpredictable in the past few years "stated the community leaders groups and the elderly men's groups. "We do not have trawler boats any more but just the machwara boats now so people try not to go too deep into the sea. In case of emergencies, warnings are issued by the sarpanch/talati office and sometimes the public address system is also used "stated the same groups. Very few members of the elderly men and women and the community leaders groups remembered that there was a village disaster management plan for their community and the awareness was nearly absent in the young men and women's groups. "Our samaj and the religious groups and the young men helps the community in case of any mishap or emergency and outside dependence is only in case of too grave an emergency" stated the community leaders groups.

Risk Knowledge and Disaster Recovery:

The community leaders group and the elderly men's groups were vocal on this issue though the knowledge was more related to the risk associated with their livelihood within the village. "Our village is facing problem of pollution and coastal erosion which has put at risk our livelihoods like fishing, farming especially of Alfonzo mangoes and rice ". In the earthquake of 2001, we had felt some tremors but no damage was reported. During the Okhamandal cyclone when we had lost vessels and our men, their families had received compensation in form of bonds. Two to three members were aware of the Village Disaster Management Plan of their village which was prepared before 5-6 years. The occupational group stated that they received compensation when any damage was there to their boats as per the rules and regulations of the fisheries department.

Diversity: (Livelihood and Resource Dependency)

"Our village has moved on after the Okhamandal cyclone (1998 Kandla cyclone) and hence there is diversity of livelihoods in the village. "We have fishermen, seamen, teachers, laborers, farmers, businessmen, rickshaw drivers, self employed, shop keepers etc. "stated the occupational group and the community leader's group. "The fishing community is rendered poor due to lack of marine resources in the area as a result of pollution. Earlier we use to get shrimps, crouches etc but they are nearly extinct now. The variety of fish that we use to get and the quality of fish we used to get is also very different and hence if we want to have a good catch, we have to go deep into the sea which our machwara boats do not permit" stated the group. "Earlier we used to use the mangroves for fuel but they have depleted entirely. There is flowering on the trees but they fall off before they bear fruit" stated the women's groups.

Learning from Change:

"Our greatest learning has come from the Okhamandal cyclone which devastated our people's lives. We lost so many vessels and so many men at sea that it is a living memory for us all these years also. We learnt to have new trades, we started sending our children to schools so that they can have

jobs, our present young generation does not go to sea at all and our girls are taking up higher education" stated the community leaders group which was largely supported by the elderly men and women's group. Almost all the groups shared that the community had learned to live a totally different style of living in term of their lifestyles which have grown lavish due to higher income over the period of time, their livelihood patterns have change, their family patterns are changing, they are now more open group then they previously were as community and they are now fishermen only in namesake.

Self Organization:

"Most of the people living in Umarsadi Macchiwad are fishermen by caste and are members of Dakshin Gujarat Machimar Mahamandal. Thus we all are supported by each other not only in one village but the entire community comprising of 12 areas. At the village level, each faliya (lane) has four members of the samiti who look after all the matters regarding to issues and development. If the issues are not solved there, they are taken to the village level nyay samiti and then further in Mahasabha. Due to this system, in times of emergency, our community is able to organize itself much quickly and chaos is minimized" stated the community leaders group. "We are a closely knit community and hence we are helpful to each other in times of need and if at all there are differences, we set them aside in times of need. The wealthy people in the community are always supporting the needy people" stated elderly women's group. The groups also shared that slowly there disagreements cropping up in the community but still they are a group.

Key Informant Interviews: N=36

Sr. No.	Key Informants	Madhvad	Umarsadi	Total
1	Sarpanch	1	1	2
2	Talati	1	1	2
3	Member of Parliament	1	0	1
4	Deputy Collector	0	1	1
5	Mamlatdar	1	1	2

6	Taluka Panchayat	1	1	2
7	School Principal	1	1	2
8	Health Functionary	1	1	2
9	NGO Functionary	3 (Aga khan Foundation, Ambuja Cement Foundation and Prakruti Nature Club)	0	3
10	Associations Representative	1 (Boat Association)	2 (Boat Association, Seaman's Association)	3
11	Shop Keepers	2	3	5
12	Religious Group Leader	1	2	3
13	Gram Mitra	1	1	2
14	Community Leader	2	2	4
15	Forest Guard	1	1	2
Total		18	18	36

Village Madhvad Bandar:

Brief History of the Village:

The village is located 18 kms from taluka head quarters at Kodinar with district head quarters at Junagadh. It is part of the greater eco system consisting of Gir Forest, Sodham Wetlands and the Arabian Sea. The Gir forest is the only home to Asiatic lions in the entire world. Whales and turtles are two important marine lives which are found along with other fishes along the coast. Madhvad bander is a part of Vellan- Kotada –Madhvad revenue village. Due to increasing population, Madhvad has applied for a separate Panchayat and from 2012; it will be a separate village. Madhvad bander is engulfed by the Arabian Sea on three sides and has part of Sodham Wetland and is connected to Vellan village by road. The area is part of Coastal Conservation Project.

The community has migrated from Vanakbara Bander on the other side of the sea before four centuries due to Portuguese war and till date, Vanakbara is an

important part of their community. Basically two types of community people reside here- the Kharvas and the Koli. While Kotada is dominated by the Kolis, the Kharvas is the only community which resides at Madhavad Bander.

Housing:

There are 720 houses in the village of which around 30% are pucca houses while the rest are all semi pucca. All the houses are row houses spreaded over 14 lanes. There is another section on the light house which houses Indira Awas Yojana and Sardar Awas Yojana.

Health:

There is a sub center at the village level which is not in a working condition. The PHC is situated at Vellan and CHC at Kodinar. There is an Ayurvedic doctor on visit at Vellan. There are two private doctors who come to village for offering their services. It is at Veraval, Una or Kodinar that people go for availing treatment from private doctors. There are three Aanganwadis in the village. One is run in an Aanganwadi building while the other two are run in rented buildings in the village.

Education:

There is a primary school in the village. Secondary school is at Vellan village. For higher education people have to go to Kodinar, Una, Veraval and other big cities.

Water:

There is water scarcity in the village. There is an over head tank near the school and a well where water is filled in by the government tanker which is far away from the village. Door to door pipeline has been laid down which is yet to become functional. People buy water from private tankers at the cost of Rs.3 per pail. In summer this problem becomes more intense. Ambuja Cement Foundation has constructed underground water tanks with roof top water harvesting system in the village in some houses including the Samaj Building.

Electricity:

The village gets electricity from the Government and most of the houses have this facility except the thatched houses. There are meters to monitor the usage of electricity in the houses.

Drainage:

The village does not have a drainage system. Houses have soak pits for drainage. There are very few lavatories in the houses and most of people go out to sea for defecation. The household water is collect in small pits constructed outside the houses, then filled in pails and thrown in sea by the woman.

Communication:

The village is well connected by road. Many people have their own mobile phones.

Legal Services :

There is a police outpost at Vellan for looking after legal system. There are beat guards of the forest department since the area belongs to Chara Forest Range. They look after the welfare of the chara range.

Family and Kinship Networks:

Madhvad is one big family. All the member are residing since generations in the same village. There are strong family ties. Earlier there were huge joint families due to common business but over the period of time, these have disintegrated into nuclear families now. The family cohesion is worth mentioning as it serves the basis of Kinship networks. Most of the relatives live within 12 villages that make a strong network. Sons and daughters are married within these 12 identified villages only which have sustained Kinship ties. In times of need, these Kinship networks are very useful as they provide material as well as non material support. Though there is an emerging pattern of nuclear family in the community, yet, the kinship ties have remained strong.

Occupation:

Since generations, the Kharvas is dominantly a fishing community. Almost all the people are dependent on fishing for their livelihood. There are 7-10 medium scale traders in the village, around 200 small fishermen, 5 grocers and 11 people engaged in other small shops like Pan Shops. Around 500-600 women are engaged in seasonal migration to fishing industries in Veraval. Also, daily women go to sell the catch of fish in the morning and evening in the surrounding villages. No major change is observed in the occupation in the community except from big and medium scale traders, people now have turned towards small fishermen. There is more dependency on labour then on trade after the demolition of jetty and silting of Khadi. Many people have migrated to other places like Veraval and Muldwarka permanently due to lack of jetty. People are not ready to change occupation since fishing is a profitable business.

Economic Status of the Community:

The people in the community are well off economically as compared to other people in nearby villages. Within the community there are different classes. Around 25-30 % of the people are rich, 35 % belong to middle class while the rest 35-40% are weaker class people especially engaged in labour work. People generally take loan for marriages, festivals, buying boat, in case of advance medication if required and for repairs of houses. Most of the time, they take loan from within the community from relatives. They also take loans from Bank as and when required. Poor people of the community have to depend on loan either from the samaj or from the well to do families.

Migratory Patterns:

After the 1982 cyclone due to mass scale damage, many people migrated to bigger cities like Veraval, Jakhao, Okha etc where big vessels can be anchored. There are no instances of in migration. Seasonal migration takes place for 6-7 months in the village when villagers go to Veraval for working in fishing industries. Around 500- 600 women on an average migrate in search of livelihood to factories in Veraval when their men go out to fish for six to seven months.

Health Status:

Being on the sea coast and due to salinity ingress, the entire Junagadh area has health problem like Kidney stone, renal problems and skin diseases. Malaria, diarrhea, common cold and cough are common amongst small children since vaccination is not adhered to by the community people. High rate of Infant Mortality Rate and Maternal Mortality Rates prevailed in the community which has now improved a bit after interventions. Blind faith and healing by faith healers is still practiced in the community for children as well as adults. Aga Khan Foundation is working on NRHM (National Rural Health Mission) in the village and has done a base line survey and is working since past three years on RCH(Reproductive and Child Health) project.

Special Needs Group in the Village:

There are widows in the community but they are living with their families. Cases of single women households are not there. During the seasonal migration, there are elderly who are left behind but the children and youth are there to take care of them. Also unlike cities, elderly are active and work as far as possible. Similarly, the families take care of children too and hence there are special needs groups in the village but they are all taken care of.

Climate Related Hazards/Disasters and other Hazards/Disasters:

The village is situated on the sea coast which is prone to frequent cyclones. Big cyclones which were devastating were 1982 and 1999 cyclones. Apart from this, cyclone warnings are issued in each monsoon season. Flooding and water logging are also common in the village since when due to heavy rainfall, the dam water is discharged, low laying areas like Madhvad gets flooded due to discharged water, rainfall and sea coast.

Social Networks:

The Kharva Samaj is the main network. People have faith based/religious organization in terms of Swadhyay Parivar which is working in the community since past 15 years and there has been tremendous change in the lifestyles due to this. It has helped people to connect to others through the Swadhyay moment. It conducts various religious activities like Prayers and Swadhyay,

conducts kendras for women and youth, conducts Bhav feris and in case of emergencies, is also involved in rescue and relief activities. The community also has a Matsyagandha boat, produce of which is distributed to all members.

Prakruti Nature Club is also working in Madhvad and in other villages for ecological conservation work. They are actively involved in rescue of whales, rescue of animals and other sea creatures. They are also involved in census of animals and work at local, national and international level. This has changed the perception of fishermen and they have also joined hands in rescue work of animals in the surrounding areas.

Aga Khan Foundation is working for Reproductive and Child Health Project of the government in the area since past three years. They provide training and conduct awareness programme for women and use local folk media like bhavai in the community. There is gradual decrease in Infant Mortality Rate and Maternal Mortality Rate due to NHRM and other interventions in the area.

Ambuja Cement Foundation had worked in the village and had constructed water harvesting structures in 10 houses.

There is a boat association in the village which enables the fishermen in their occupation and dealing with fisheries and marine department. It also helps by supporting the community in damage assessment of boats and nets, applying for loans etc.

Coastal and Marine resources :

Coastal resources in form of mangroves are utilized by the community people especially the poor people. Mangroves are used for their wood in building houses as well as the wood is used as fuel. The mangroves are also used to capture small fishes and crabs. Apart from this, the shells and conches have cultural value as well as they are sold to customers. Fishing being the main occupation for the community, they use them.

Livelihood sources for the community :

Fishing is the main source of livelihood in the community. Some members are involved in shops in the community. Women are engaged in selling fish in the nearby villages. Many women migrate to surrounding areas to work in the fishing industries.

Alternative and supplementary livelihoods :

Due to lack of education, the community has no alternative or supplementary livelihoods. People are not ready to experiment with alternatives as the income received from fishing is much higher than the income that is earned from a job of a labour or any office job that they can get with their limited education. Prawn culture is being practiced now in the area but the beneficiaries are not from the village. Government is planning to open a tourism centre near the village which may provide alternative livelihood to the people by developing coastal and marine tourism. There is also a plan to develop a road link between Vellan and Vanakbara which also will boost tourism from Saurashtra to Diu. People do visit the coast to view dolphins and whales which may be boosted.

Information about climate related knowledge :

It's the community leaders who are in touch with the other stakeholders outside the community who provide the necessary information or news related to changing climate of the region. Men are more aware about these then women since men are the ones who are in touch with the community leaders. Prakruti Nature Club also helps the leaders and people to know more about the nature and its changing course. Most of the conservation work is carried out with the help of the some agency or departments. The sarpanch also being from the same community is aware of the situation and takes interest in the community matters. Most of the people depend on the leaders for information but how to use the information for adaptation is still a question for them. More formalized structure is needed for proper use of the information holistically.

Formal and informal networks supporting climate hazard reduction and adaptation :

Prakruti Nature Club, Aga khan Foundation and the community leaders along with the sarpanch are the ones who support the climate hazard reduction strategies. Mostly it's in form of risk reduction and some adaptation measures like knowledge exchange, regeneration of mangrove cover, nature conservation work of species etc. At the community level, the samaj is the one that takes a leading role and acts as information dissemination network.

Ability of community to organize :

Due to the rule of the samaj, the community is able to organize itself quickly in times of emergency. The community leaders take an active role. In time of disasters also, even if they do not suffer, they organize to help others. During the 2001 Bhuj earthquake, they had mobilized three trucks worth of goods in term of food packages, blankets and clothes. People still need support to be engaged in long term measures of adaptation in case of climate change. Due to lack of highly qualified people in the community, they face problems in understanding the further impacts of climate change on the community. The leaders do plan at the community level but how to integrate it with the developmental polices requires a larger framework and support from the government machinery. People are adaptable but over the changing scenario, they need support from outside agencies. They have learnt from the past experiences and their traditional knowledge of forecasting weather is rendered useless.

Community's attitude towards governance and leadership :

People have faith in their Samaj. They comply to the rules and regulations of the samaj. There is dependence on the samaj for all the matters pertaining to development too. Its been functioning for a long time and mostly it has been able to take care of its members in almost all the emergencies so far. But the dependence on the government machinery in absence of any concrete measures to deal with climate change cannot be ruled out. Thus people have faith in the governance and leadership of their samaj which is strength of the community.

Village Umarsadi : (N=18)

Brief History of the Village:

Umarsadi village is an old village situated in Pardi Taluka 6 kms away from Pardi and is an important port along the 15 kms long coastline of the Arabian sea of Valsad District. On the right of the village is Damanganga river branch and on the left is the Par river. The village is to the south of the Valsad district. It also is in vicinity of Pardi GIDC and ATUL. The village has a jetty. To its left is Dungari village and to the left is Udwada . The Sayandri Mountain Range is visible from the jetty. The laxminarayan temple is nearly 450 years old and hence the village is older than that. There are 13 lanes (faliya) and it has four major communities of Tandels (Fishermen), Koli Patels (Farmers), Bhandaris (Farmers) and Halpatiyas (labour). There is an area called Desaiwad, mangelwad and Umarsadi macchiwad. Umarsadi Macchivad has applied for a separate Panchayat due to increasing population.

Housing:

Around 60 % of the houses are pucca houses while 40% of the houses are semi pucca and kuccha houses in the entire village. Around 10% of the houses of the pucca houses are huge triple storied houses belonging to rich fishermen. All the pucca houses are well maintained. Due to soft soil, the foundation of the houses are not so strong. Thus the kuccha houses which are around 10% are at risk. Most of the houses are well ventilated with bathroom and lavatories. There is ample space around the houses and have more than two rooms.

Health:

There is a sub centre in the village but it is generally closed. There is a primary health centre in the village at Desaivada and there are two private clinics at Umarsadi macchiwad. There are 15 hospitals in Pardi. People generally go to the private clinics which are at Pardi or Valsad. Hygiene wise, the village is very poor and hence there are instances of skin diseases, children suffer from Asthmatic bronchitis, cough and cold, vomiting, diarrhea etc, the adults have problems like Blood Pressure, alcoholism, diarrhea,

vomiting, lifestyle disease like general increase in cholesterol levels, heart problems etc. Ladies suffer from arthritis after the age of 40. People also avail services from as far away as Surat and Mumbai also in case of severe cases.

Education:

In the earlier generation, education was very low but now in the new generation, it is good. Boys generally study till 10^{th} or 12^{th} and then take up jobs but the girls study more doing their BA, MA or B.Ed. Some men who do not go in as seamen also study higher. There are around 50- 80 teachers in the village. There is a primary school which caters to 1-8 standards in the school faliya. There is 100% literacy in the age group of 6-14 yrs now. This school earlier was also teaching fisheries as one of the subjects and was one of the three schools of fisheries. It was established in 1917. There is another school which is at Sagiya faliya which caters to 1-5 standards. Families also enroll their children in hostels for studies in Surat, Vadodara and Ahmedabad for quality education.

Water:

The drinking water is provided by the Panchayat to the village. This water is purified by Atul industries at the filtration plant and the distribution is through the pipelines with the help of tap and water posts. Thus water is available in ample amount except occasionally in summers when people face drinking water problem. There are two ponds in the village which are also used to wash clothes and utensils by families residing on the fringe of the ponds.

Electricity:

It is the government which provides the electricity in the village. There are meters for the electricity. The farms are provided with electricity used for agriculture.

Drainage:

There is no drainage system in the village but there are soak pits for the same. Thus each house has to construct soak pits. Within the houses, the

pucca houses have the drainage facilities which are linked to the soak pits. Under the 13th Nana panch yojana, there is construction of sauchalaya for those who do not have toilets in their houses.

Communication:

The village has phone booths for making calls. People also have their own phones as well as mobiles as means of communication. In case of emergencies, the Panchayat office uses their public address system to communicate with the people.

Legal Services:

The fishermen's community has their own legal system which is hundred's of years old. They call it their Samaj. The machi samaj has a very well organized system. Each faliya in the community has 4 members who look after the people residing in the lane. Thus, first the issues are tackled by the lane leaders. Matters pertaining to marriage, property, relationships, social problems etc are first handled by the lane leaders. Then if they fail, the issue goes to the nyay samiti in the village. If at all a consensus is not reached, then the issue is tacked in the Mahamandal sabha which takes place once in the year. But most of the time, the issues are solved at the village level itself. There is no theft reported in many years, no case of abuse, divorces are very rare as people are governed by their samaj rules and regulations. Punishments are severe and hence people are law abiding. The system is very transparent and hence people have more faith. Very rarely people take help of the legal machinery of the government.

Family and Kinship Networks:

The community is a mixed community in the village and is divided into Umarsadi Macchiwad, Umarsadi Desaiwad and Umarsadi Mangelwad. In Umarsadi macchiwad, there are people belonging to fishermen community where the family and kinship networks are very strong. People are related to one another by ties of blood or marriage to a large extent. In times of need, it is the family and the neighborhood which helps first. Most of their relatives are there in the villages identified by their own Dakshin Gujarat Macchimar

Samaj. Thus they have strong family and kinship network. People value their customs and traditions which are very different from other castes, yet there is an increasing openness in their approach towards the others. Some people do marry outside their own castes also which is now widely being accepted. Thus there is a spirit of tolerance now in matters pertaining to kinship ties.

Occupation:

There is diversified occupation in the village. There are around 500 plus seamen, around 500 ladies engaged in packaging in surrounding industries, there are around 100 rickshaw drivers, 1000 people both male and female engaged in fishing and 70-80 teachers. People are also engaged in business, service sector, are self employed, there are medium scale farmers and farm labour too in the village. Thus there is diversity observed in the occupational sector in the village.

Economic Status of the Community:

There is diversity in the economic status of the community. People who are engaged in seamen trade are the rich and elite of the community while the people who are dependent only on fishing are the poor ones. Compared to other communities, they rank themselves on a higher side since their income is in lacs of rupees per annum.

Migratory Patterns:

Around 70-80 families have shifted to places like Vapi, Pardi, Valsad and Navsari and they have houses in the village also. This is a permanent migration since only for festivals they come to the village. Mostly people migrate due to jobs after leaving fishing. Also many people especially around 500 ladies go to surrounding industries for working in packaging daily.

Health Status:

There are two private doctor clinics in the village to cater to the needs of the community people. There is on sub centre at Umarsadi Macchiwad and a Primary Health Centre at Umarsadi Desaiwad. Moreover, people prefer to go to private health care providers at Pardi, the taluka head quarters or to

Valsad, Navsari and Surat in case of some specific diseases. Being near to the cost, women over 40 generally suffer from arthritis. Asthmatic Bronchitis is observed in the children. Vomiting and Diarrhea are common in the area. Due to poor hygiene, various skin diseases are observed like measles etc. The seamen, due to their lifestyle, suffer from increase in cholesterol levels, diabetes and BP. Hence they have some or the other problems related to the heart. Consumption of liquor in gents is also observed.

Climate Related Hazards/Disasters and other Hazards/Disasters:

26 big vessels and 130 men at sea were lost in the Okhamandal cyclone. Cyclones are experienced by the community every year but not much damage is incurred. The major problem identified by the community is coastal erosion and salinity ingress. The sea has gushed in nearly 30 feet in the past few years. Land is being submerged in water like other surrounding areas like bawan deep area which is no more and Udwada etc. There is salinity ingress of around 2 kms in past decade. Most of the bore wells and wells are saline. The sea level has increased to 5-6 feet in past 25 years. In high tide, the water goes up by 6-7 feet. A protection wall has been constructed now by the irrigation department. Another hazard is pollution especially sea pollution due to surrounding industries the rivers have become acidic which damages the head of the machine of boats, the alfanso has got affected as the flowering does not lasts long, the kind of fish that was available is also not available now and people have to go deep into the sea so more time is consumed. Flooding of Par River takes place in case of heavy rainfall but no damage is sustained by the people. A nearby bavan deep area is totally submerged in the water.

Social Networks:

Social Networks in form of Dakshin Gujarat Machimar Mahamandal is the main supporting network of the fishermen. Under the flagship of this, the entire community is governed. People are law abiding in this network. Most of their needs are catered to by their samaj. All cultural and familial issues are governed by their samaj. In time so emergency, this mandal becomes very active at the lane and village levels and is supported by the mahamandal

also. Widows, orphaned and special need people are taken care of by the families with the help of the mandal.

Another network that is catering to the community is the Swadhyay network. It is a religious group at the local, regional and national level. Apart from religious activities like regular prayers, it also carries out various developmental activities through it women's groups and youth groups. There is a concept of Matsysgandha boat know as tartu mandir. The produce of the day i.e. fish caught per day is distributed amongst the women for sell. Women also dry fish and sell them. Thus it helps economically to the poor persons. Same is the case with Vruksha Madir which is related to the agricultural produce. Youth groups are generally linked to awareness programmes and developmental programmes through character building and holistic development of the persons.

There is a seamen's association named seamen's brother's mandal which has 566 members. They are also active in providing assistance to the seamen during their tenure as seamen. This mandal also helps poor people in times of need or emergency.

There are 4-5 sakhi mandals in the village formed by Samaj Kalyan department i.e. social welfare department. These mandals are involved in saving credit schemes and are for income generation.

There is a Machi Mahajan Panch to cater to the needs of fishermen. They are actively involved in the welfare of the fishermen at the local level.

There is another religious group called Sadguru Sevak Samiti which caters to the religious cause as well as welfare of their members. In case of emergency, they too cater to the needy persons. Mostly they are involved in religious activities.

Coastal and Marine resources :

The cost was more resourceful earlier. Earlier, there were mangroves, crouches, shells available on the cost which were used by the community for goods and services. Due to coastal erosion and pollution, the mangrove cover is destroyed. Fish variety like crabs etc is not there any more. The crouches and shells are no more found on the coast and hence except for fishing, there is no dependency on coastal and marine resources. Except for Bombay duct, no other variety of fish is available on the coast. Moreover, the fishermen have to go deep in the sea for fishing which is both time consuming and energy consuming process.

Livelihood sources for the community:

There is diversity found in the livelihood sector. Working as Seamen, fishing, teaching, labour job, Auto rickshaw driver, self employment, saving credit groups like self help groups etc are the various sources of livelihood in the community.

Alternative and supplementary livelihoods:

After the Okhamandal cyclone .in 1999, people have switched over to alternative livelihoods like seamen, teaching, working as labour in surrounding companies, taking up jobs in other cities like Navsari, Surat and Pardi. The concept of supplementary livelihoods is not much practiced. Since people are literate, they help the others to have the knowledge. The opportunities are in abundance in the surrounding industrial areas for work. Threats in form of competition are acknowledged by the villagers.

Information about climate related knowledge:

It is from the community leaders that the people gain knowledge about climate change. This knowledge is poor in case of women since their role is limited in the governance. Moreover there are leaders to attend forums outside also share information with the villagers. Organized efforts at the community level are still missing for dissemination of information about climate related knowledge.

Formal and informal networks supporting climate hazard reduction and adaptation :

Both the government machinery and the informal leaders of the community in form of mandal together work for issues like sea pollution, salinity ingress, etc. But concrete measures for climate hazard reduction and adaptation are yet to be chosen and taken by the community. A sea wall has been erected for protection of the cost by the government.

Ability of community to organize:

The ability of the community to organize itself is high due to the existing structure of the Machi community. There are 13 lanes and each lane has 4 members elected every year. All these members are effective in organizing their community. There is cohesion and cooperation amongst the members. Small measure to help each other in issues of climate change are there but still it needs to be taken up as a holistic development. People have more faith in their own systems.

Community's attitude towards governance and leadership:

People have more faith in their own community leaders than the government leaders. This is partly because the system is in effect since a long period.

A comparative statement of the two communities:

Sr. No.	Particulars	Madhvad	Umarsadi	Remarks
	1. Geographical Location of the Community			
1	**Nearness to sea (Arabian Sea)**	Most of the houses are on sea shore	Only fishermen houses are on sea shore	Madhvad is more vulnerable
2	**Nearness to Taluka Headquarters**	18 Kms	6 Kms	Madhvad is more vulnerable
3	**Ecosystem**	Sodham Wetland and Gir Forest	Waghai Forest Range ecosystem	Madhvad is more sensitive
	2. Community Resources			
1	**Housing**	Congested, only 30% pucca houses, mostly small houses	60% pucca and with amenities	Madhvad is more vulnerable
2	**Water**	Wells water is salty, No hand pumps or bores, have to purchase water for drinking and washing	Hand pumps and stand posts along with tap water. Filtration plant. Scarcity only marginally in summer	Madhvad is more vulnerable

3	**Drainage and Sanitation**	No drainage system, some soak pits and open defecation	Soak pits, bathrooms and lavatories	Madhvad is more vulnerable
4	**Health**	Sub centre, nearness to PHC. Opt for private doctors but accessibility due to transportation is a problem	Sub centre, PHC, Private Clinic in the community. Nearness to pardi, easy accessibility	Madhvad is more vulnerable
5	**Education**	Primary School, Low level of education	3 primary school, high level of education	Madhvad is more vulnerable
6	**Occupation**	Fishing and working in fishing industry	Diversified-fishing, seamen, service sector etc	Madhvad is more vulnerable
7	**Legal Services**	Check post at Vellan, Samaj is active	Police station is there, Samaj is active	
8	**Communication**	Less sources	More sources	Madhvad is more vulnerable
3. Hazards, Disasters and Climate Change				
1	**Cyclones**	High incidences	Low incidences	Madhvad is more vulnerable
2	**Floods**	High incidence	Low incidence	
3	**Earthquake**	Low incidence	Low incidence	
4	**Depletion of Mangrove**	High incidence, regeneration work being carried out	High incidence	Umarsadi is more vulnerable
5	**Coastal Erosion**	Medium incidence	High incidence, lost 25-30 feet of land	Umarsadi is more vulnerable
6	**Sea Level Rise**	Low incidence	Medium incidence. Instance of total submergence in bawandeep area	Umarsadi is more vulnerable
4. Vulnerability and Resilience				
1	**Elderly**	No single elderly, taken care by family and kinship ties	No single elderly, taken care by family and kinship ties	Both communities are resilient
2	**Widows**	5 widow headed households, supported by kinship and samaj	10-12 widow headed households, supported by kinship and samaj	Both communities are resilient
3	**Special Need People**	Taken care by kinship ties	Taken care by kinship ties	Both communities are resilient
4	**Orphans**	Taken care by kinship ties	Taken care by kinship ties	Both communities are resilient

5	**Warning and Forecasting system**	Government	Government	
6	**Risk Knowledge**	Present in the community	Present in the community	
7	**Traditional Knowledge**	Traditional knowledge not enough due to changing climate	Traditional knowledge not being utilized except the senior generation	Umarsadi more vulnerable
8	**Livelihood diversity**	No diversity found	Highly diversified livelihoods	Madhvad more vulnerable
9	**Disaster Recovery**	Government mechanism	Government mechanism	
10	**Disaster Preparedness**	DRM exercise carried out before 5 years, less awareness	DRM exercise carried out before 5 years but no awareness	
11	**Coastal and Marine Resource Dependency**	High dependency	Low dependency	Madhvad is more vulnerable
12	**Learning from change**	Low	High	Madhvad is more vulnerable
13	**Self Organization**	High	Moderate	Madhvad is resilient
14	**Supplementary and alternative livelihoods**	None	Many	Madhvad is more vulnerable
15	**Migration Pattern**	Seasonal Migration for 7-8 months	No seasonal migration	Madhvad is more vulnerable
16	**Family and Kinship network**	Very strong	Strong	Umarsadi is vulnerable
17	**Social Networks**	Kharva Samaj	Dakshin Gujarat Machi Samaj	
18	**Formal and Informal Networks**	Samaj, Swadhyay, Boat association, Aga Khan Foundation, Prakruti Nature Club, Ambuja Cement Foundation	Samaj, Swadhyay, Seaman's association, boat association	Madhvad more resilient
19	**Ability of community to organize**	High since it small	Moderate to high due to being part of big community	Madhvad more resilient
20	**Attitude towards governance and Leadership**	Trustworthy, faithful towards their own samaj than government	Trustworthy, faithful towards their own samaj than government	

Thus it can be said that Madhvad is more vulnerable than Umarsadi but the presence of strong social capital can be built upon for making it more resilient especially in term of climate change.