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Capacity of local communities in pre and post disasters situation in coastal area of Pakistan

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Abstract

The present study attempted to assess the vulnerability of coastal areas of Pakistan that cashed in one's chips in the monsoon flood, 2010. This assessment helps to recognize the vulnerability of local people of coastal communities for planning better developmental work. The study conducted through field work in two districts “Thatta and Badin” of coastal area of Sindh Province of Pakistan. Multistage cluster sampling technique has used to select the sample size of 360 households from the area. Data was collected through well-structured questionnaire. Most of population in the study area is illiterate i.e. about 61% of population. This is not only due to lack of awareness and lack of passion to seek education, but, government also ignores these areas in the provision of educational facilities. Considering the disaster vulnerability of coastal areas, these health facilities are very few and it leads to make them more vulnerable towards various diseases caused by frequent disasters. Depending on the disaster vulnerability of the target area, disaster management arrangement had analyzed through the availability of emergency camp along with its distance from the villages. Vulnerability of coastal communities assessed using various indicators and in the end suggestions and recommendations put forward in the light of local vulnerability to have minimum loss in upcoming disasters.

Key Words: Disaster, Disaster Management, Vulnerability, Hazards, Global Warming, Rehabilitation, Awareness, Local Community.

Capacity of Local Communities in Pre and Post Disasters Situation in Coastal Area of Pakistan

1. Introduction

Natural disasters are instigated by hasty and extreme changes in the geophysical system (lithosphere, hydrosphere, biosphere or atmosphere); and they most frequently occur as floods, landslides, debris flows, avalanches, drought, and earthquakes.

Worldwide climate changes trends potentiates disasters in the world. However the impact of disasters varies from country to country on the basis of its economic and political situation. (Bernard et al. 2001) Developing countries are more vulnerable to disasters because of their deteriorating socioeconomic conditions, corruption, and unrest in politics (UNFCCC, 2007). These climate changes impact other South Asian countries more severely in nature but its risk is higher in Pakistan due to vulnerability of poor communities to respond (Yodmani, 5-9 February-2001). Vulnerability connected with social, economic and ecological values heightens the severity of the disaster. In case of developing countries, vulnerability is highest due to poverty, mismanagement and other socioeconomic and political constraints (Thomas E Downing and Anand Patwardhan, 2002). Especially in Pakistan, poor communities are extremely vulnerable because of severe political, economic and security stress over their government, besides corruption and terrorism and have huge poverty along with illiteracy and lack of awareness. Ecologically Bangladesh, India and Vietnam are more vulnerable, but Pakistan is facing high risk due to its social, economic, and political and security crisis (Asif 2007).

The present study plays a central role in the development of disaster management in coastal areas of Pakistan. This study considers as significant manuscript for identifying the extent of expected damage in upcoming disasters and hence will help to determine the longer term needs of the population that are exacerbating the vulnerability and will therefore contribute to the development of sustainable relief strategies.

2. Literature Review:

With the rising climate change the whole world is undergoing more severe disasters and therefore most of countries are busy in preparing new disaster management techniques to cope with increasing severity and frequency of disasters (Asif 2007). Asia is the biggest continent of the world and has a variety of economies; most of countries are developing countries that have less capacity to cope with disasters hence Asia is bearing more damages by disasters (Debby. et. al.).

Moreover the rate of these disasters increased after 1990s, due to sudden rise in Global warming and its other corresponding impacts (Pascal Peduzzi). The frequency and severity of these disasters is still increasing because of the sudden rise in global temperature and due to continuous climate changes, as in Pakistan only in 1 year 4 disasters occurred (James K. Mitchell and Neil J. Ericksen, 1992). Climatic disasters and their effects are more predictable than geological disasters i.e. an earthquake (Popp, 2006).

In Pakistan floods enter Sindh after two to three weeks of their start from the northern mountainous region, extent and severity of flow of water followed from northern regions warned Southern regions about expected losses (Webster et. al 2011). Despite this none of preventive measures adopted in the Southern region and people take flood as a political tool and start losing each other through the water. Therefore the area affected due to various disasters in Pakistan is much greater as compared to other regions in South Asia. (Din, 2010)

As the climate changes start impacting Pakistan from 1900 in significant figures, therefore rate of disasters increased after 1990s. On the other hand Pakistan become socio-economically more vulnerable due to various political crises in the region after 1990s and hence overall exposure become feeble (Hussain, 2010).

This Study is undertaken with a development objective aimed at identifying key issues essential for formulating long term planning and mitigation measures for reducing disaster vulnerability of coastal community in Pakistan, analyze the impact of previous disasters and the role of Public and private sector on it.

3. Research methodology

The present study conducted in two districts from coastal area of Sindh i.e. Badin and Thatta. However, the study would be applicable to coastal area of Balochistan also. The total length of Pakistan's coastal line is 990Km. From it Sindh coast stretches over 350Km from the Hub River to Sir Creek. It has two parts; Karachi coast and Indus Delta.

Thatta district has the population of 1.1 million according to 1998 census. Two Union Councils Kothi and Karmalik with a population of 23,439 and 19,936 respectively have been selected from selected Taluka Jati. Thus 97 respondents were selected from UC Kothi and 83 from UC Karmalik as a sample size. Similarly, Badin district has a population of 1.2 million. Bughra Memon and Seerani are the selected UCs from Taluka Badin with the population of 32,089 and 29,674 respectively. Thus 86 respondents from Bughra Memon UC and 94 respondents from Seerani have been selected as a sample size. About 160 respondents from each district have been taken.

Table 3.1: Multistage sampling for selection of households

District	Stages				Total
	First	Second	Third	Fourth	
	Selected Taluka	UCs/Taluka	Villages/UC	H.H/ village	
Badin	Badin	2	10	9	180
Thatta	Jati	2	10	9	180
Total					360

A total sample of 360 households has been selected from two districts. The sample size is appropriate at 5% error rate, 95% level of confidence, with 60% of the response distribution of the population 105138. A multistage sampling plan has been used to select households.

In the first stage, one Taluka was selected from each district; in the second stage, 2 union councils were selected from each Taluka; in the third stage, 10 villages were selected from each union council; and in the fourth stage, 9 households were selected from each village. Thus, a sample of 160 households has been selected from each district.

4 Analysis/ Results

4.1 Disasters in Sindh:

The Sindh Province lies in the South of Pakistan and is the second largest province of Pakistan. The province is enriched with natural resources and developmental opportunities. The coastal belt of Sindh comprises 48% of fish export from Pakistan.

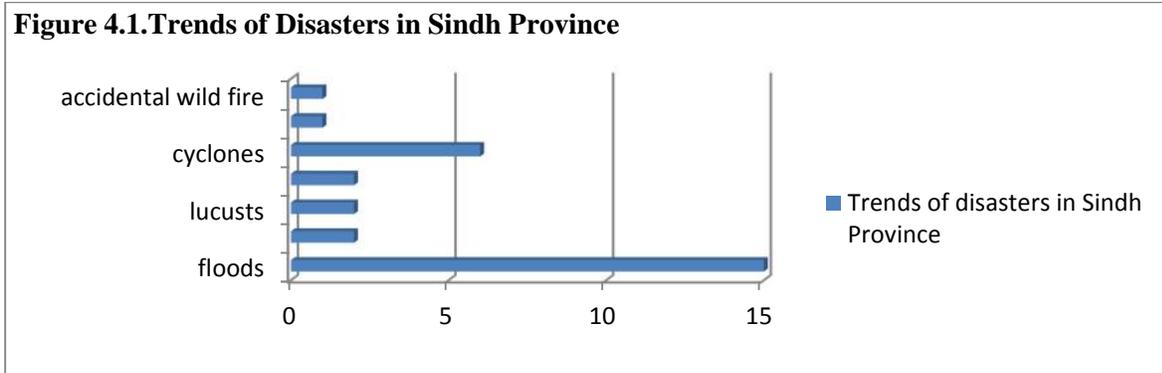
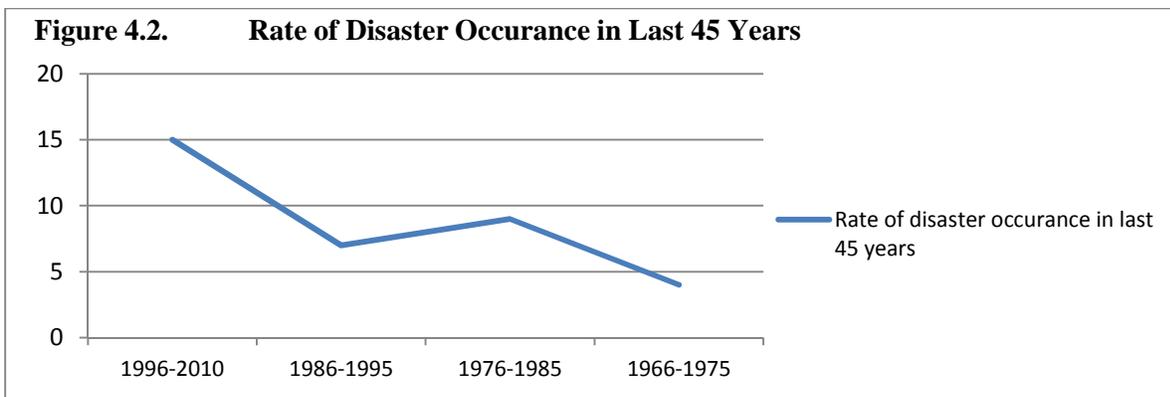
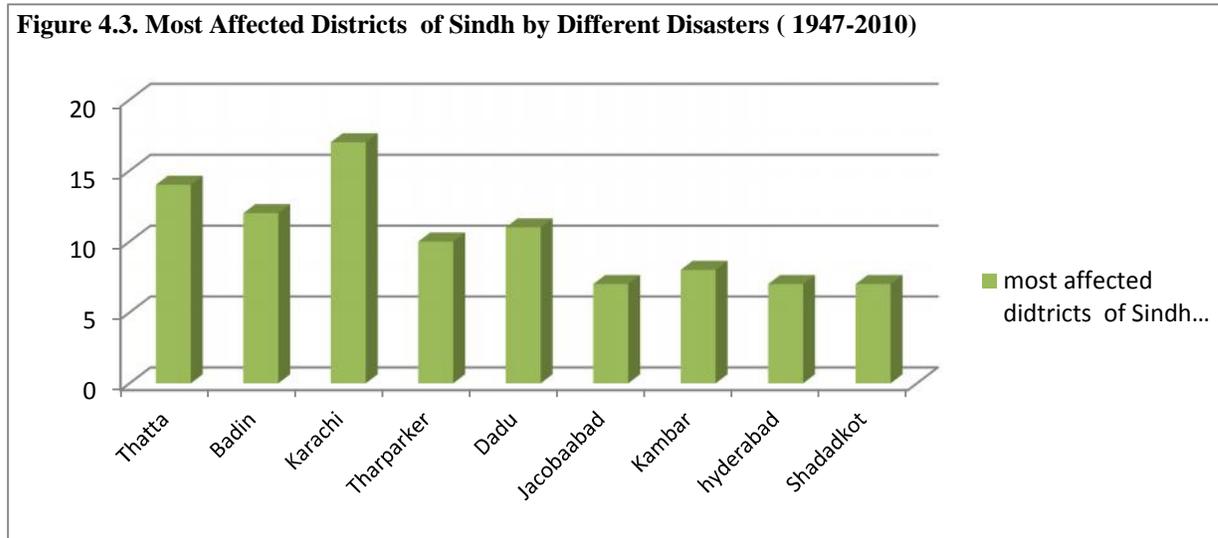


Figure 4.1 shows that Sindh province has faced Flood and cyclone in Past. These two disasters are predictable and now needs proper post and pre-disaster management practices as rising climate changes will hit the coastal areas of Asian regions with more severe cyclones and floods as shown by the graph in figure 4.2 that after 1990s Sindh faced more disasters than previous years. This shows that if proper preventive measures do not adopt to cope with disasters then their intensity will become severe due to the extreme vulnerability of coastal land and coastal communities.



The coastal belt of Sindh province is the most vulnerable area in whole Pakistan to disasters. Most of the fishing community resides there and hence these disasters will make them poorer and poor and they will become unable to give maximum productions. Heretofore, the

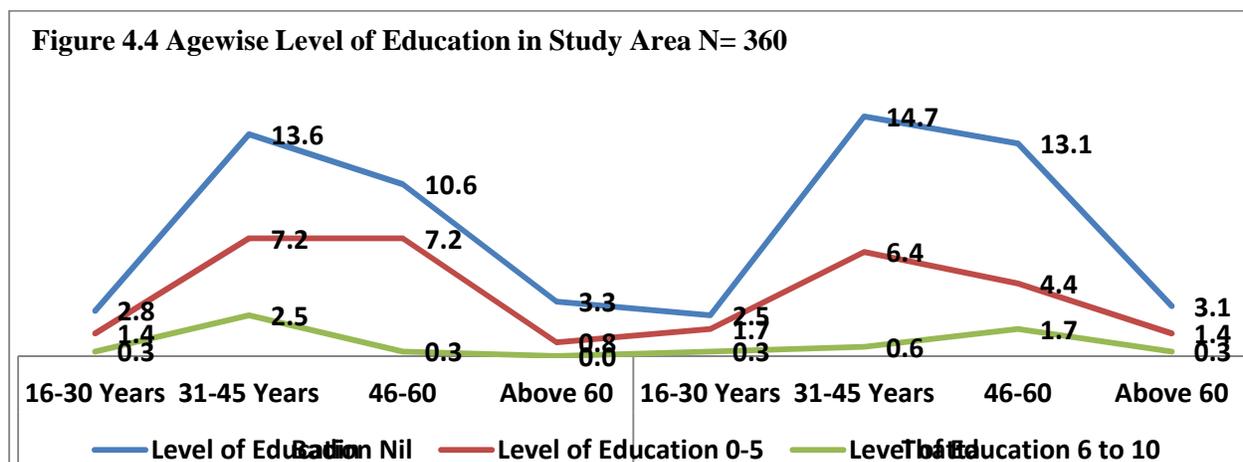
vulnerability of coastal communities could give huge loss to the national economy. Graph in figure 4.3 shows the most affected districts of Sindh due to various disasters from 1947 to 2010



Source: PDMA annual report 2010

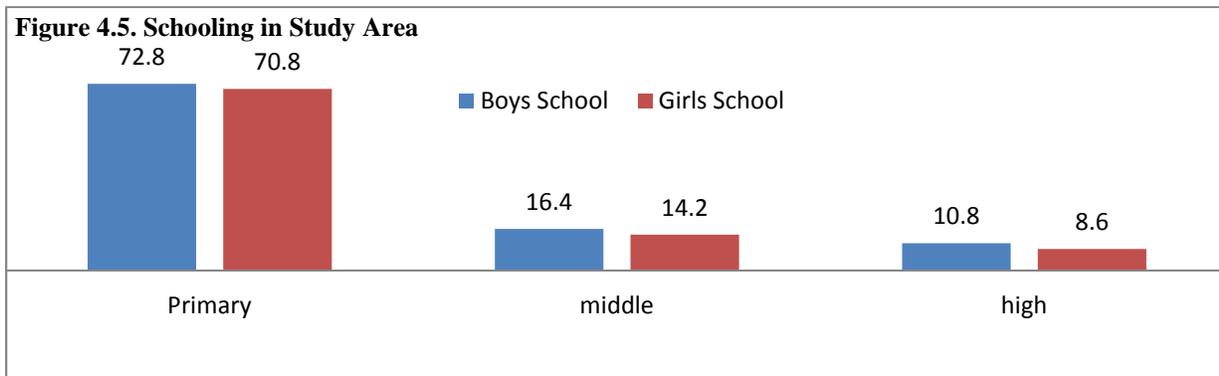
The above figure shows that after Karachi, Thatta and Badin are most affected by disasters. Karachi is the big commercial hub but people of Thatta and Badin districts are extremely vulnerable to disasters due to socioeconomic constraints. Major areas of both districts are in the coastal belt of the province. Water logging and salinity have also increased in the area, due to lack of proper drainage facility. The soil fertility has been extremely damaged.

4.2. Situation of Educational facilities: The Education standard and provision of educational facilities in the area is very much worst. Following figure 4.4 shows the age wise level of education of the people in the study area.



Source: survey results 2010

The above graph shows that most of population in the study area is illiterate i.e. about 61% of population. Among the remaining literate population only 6% of the population is educated more than primary level and 32% of the population is primary pass. These trends are not only due to lack of awareness and lack of passion to seek education, but, government also ignores these areas in the provision of educational facilities. The figure 4.5 shows that there are few middle and high schools in the area.



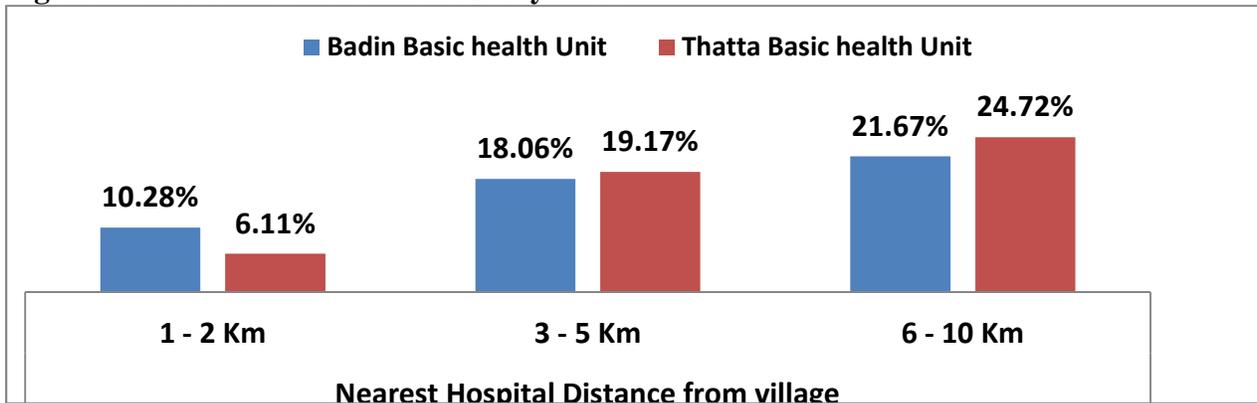
Source: survey results 2010

The above graph shows very low percentage of high schools in the whole study area, this is highly regrettable situation for a developing country. Moreover, primary education does not contribute to develop or enhance their skills to cope up with disasters, when all of their livelihood resources vanished and they have no skills to start new livelihood patterns. This alternatively contributes to increase their vulnerability to disasters. Moreover, the distance of very few schools is in approach of villagers. In Badin 66% of population's claims that nearest school distance from their village is 3-5 km and 52% of the target population from Thatta districts claims the same. In Thatta district most of people do not know the presence of any school in the nearby village, because of absence of motivations by government and NGOs towards education besides the absence of schools in a nearby location.

4.3 Situation of health facilities

In figure 4.6 situation of health facilities will be discussed through analyzing type and distance of hospitals from the village.

Figure 4.6 Health Facilities in the Study Area



Source: survey results 2010

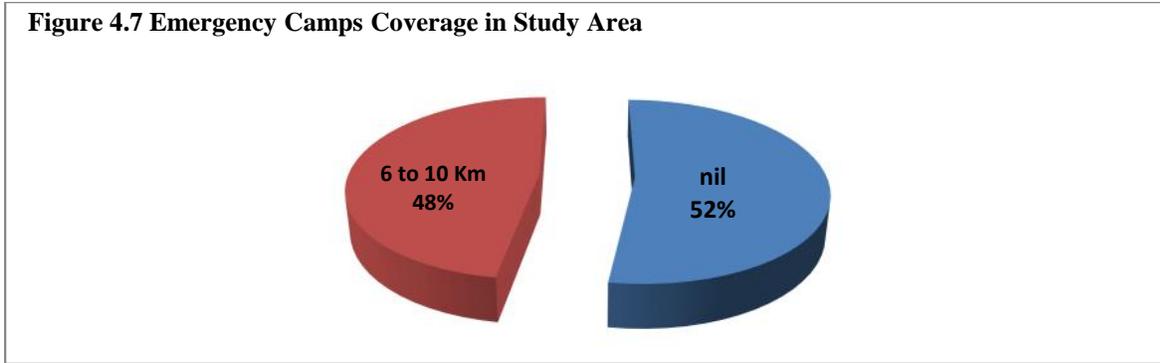
In the study area there are no nearby big hospitals. All health facilities provided there through BHUs, which are not well equipped to deal with serious cases. Moreover most of these BHUs are about 6 to 10km away from villages and hence in any serious case people could not access BHUs without proper resources. These BHUs have no proper doctors as well. Therefore in case of any disaster, there is a total absence of health facilities to deal with injured people and to save lives in case of disasters. These BHUs are highly substandard and for severe diseases they have to go to the City that is mostly inaccessible for local poor people due to financial as well as conventional problems. Therefore, this whole situation further potentiates the local vulnerability. Considering the disaster vulnerability of coastal areas, these health facilities are very few and it leads to make them more vulnerable towards various diseases caused by frequent disasters

Ultimately, it is deducted that local people of coastal areas have no access to basic needs that are highly important to have better and healthy life. Healthy and well educated people could have more capacity to respond disasters. Besides physical health, it provides them mental health as well that contributes to decide better in pre and post disaster events.

4.4. Absence of proper disaster management

Depending on the disaster vulnerability of the target area, disaster management arrangement had been analyzed through the availability of emergency camp along with its distance from the villages.

Figure 4.7 Emergency Camps Coverage in Study Area



Source: survey results 2010

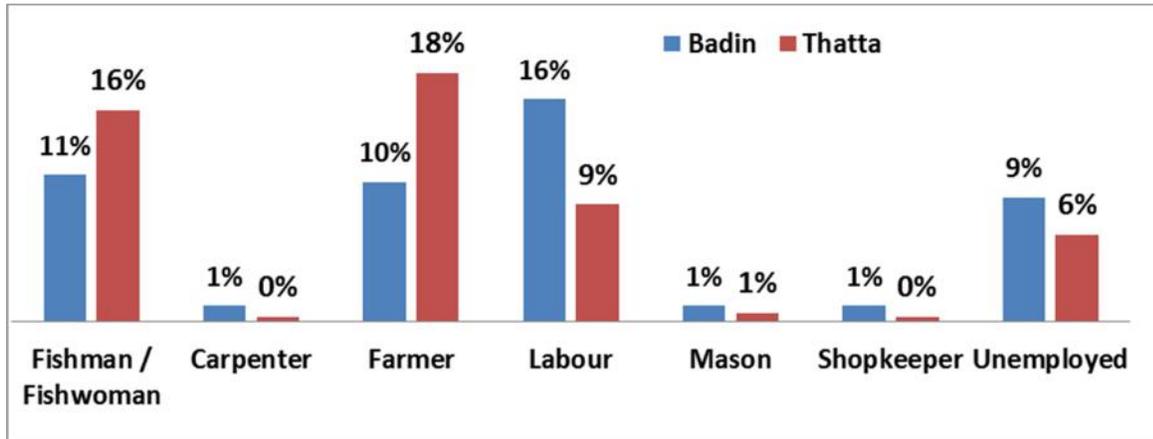
Figure 4.7 shows that 48% of the population knows about any emergency camp present in the area and 52% do not know about any emergency camp and they totally negate about the presence of any emergency camp in the area. This shows that emergency camps present there are not active enough in disaster management and therefore most of the population do not know about them. As mentioned earlier that about half population do not know about any emergency camp therefore they have no information about their distance also. According to those 48% who assures the presence of emergency camps in the area, they are about 6 to 10km away from the village. Although 6km is not a big distance that half of the population does not know about it, therefore it as a whole shows the absence of any active emergency camp in the area. Even among those who know about those camps does not prefer them in case of disasters

Therefore, absence of active disaster management arrangements in the disaster prone area of vulnerable community reveals high negligence by government and NGOs. Hence, vulnerability of local people rises due to mismanagement as well.

4.5. Poverty and lack of income opportunities:

In the following figure 4.8 the occupational trends consider along with income levels of both male and female groups in order to analyze the status of their income resources towards vulnerability. Occupational trends in both the districts depend on the availability of opportunities.

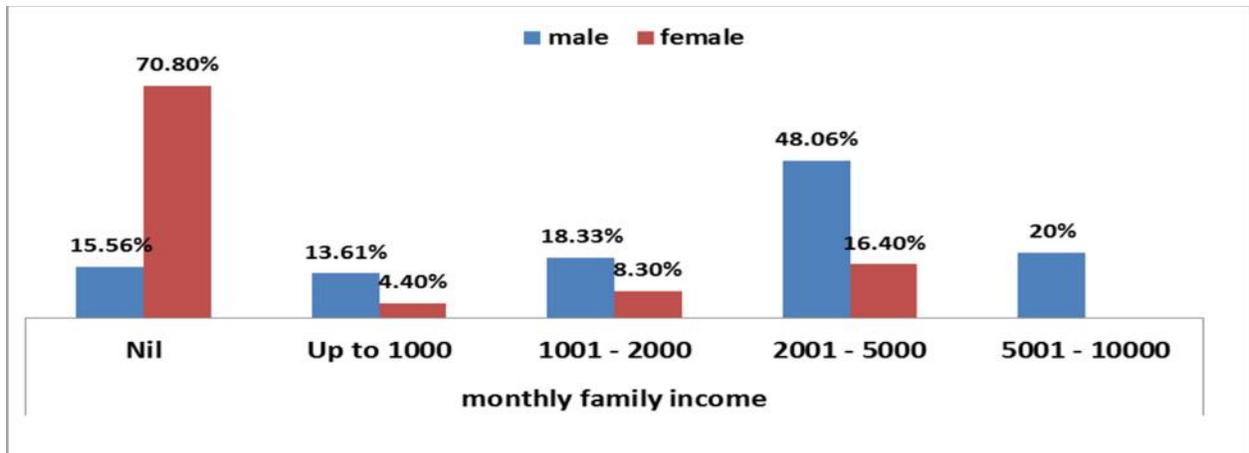
Figure 4.8 Occupational Trends in the Study Area



Source: survey results 2010

In Badin most of target population involved in the labor sector, because of agro-industrialization in Badin. After labor sector, most of the people involved in fisheries as well as in agricultural sectors. In Thatta district most of the target population is involved in the agricultural sector, then in fisheries and then in labor.

Figure 4.9 Monthly Family incomes in the Area

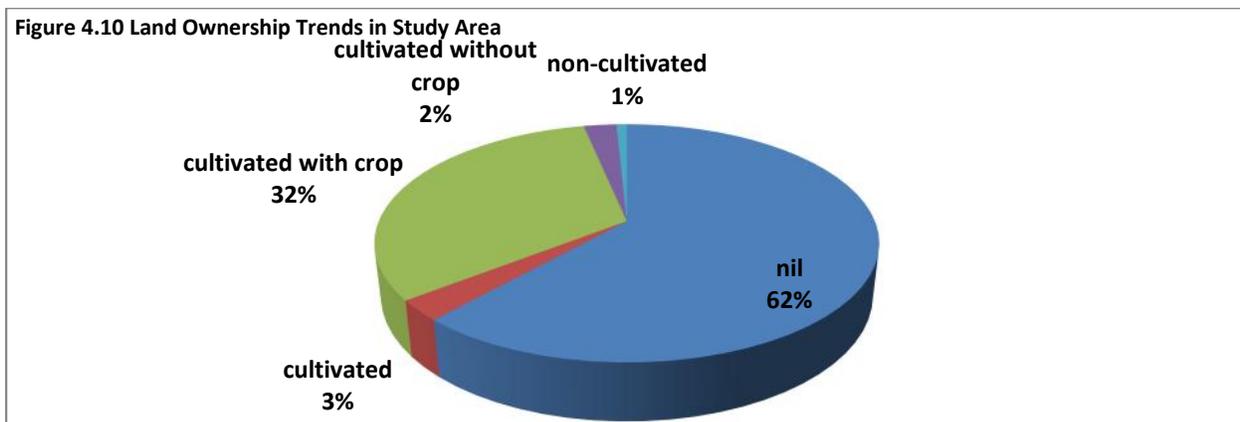


Source: survey results 2010

Above figure 4.9 shows that 45% of target population earn less than 2000 per month and 48% of male family members earn between ranges of 2001-5000 and only 20% earn between 5000 - 10000. This shows that in case of large families they could not meet their basic needs in the present trends of price hikes. This further strengthens their vulnerability and vulnerability put one towards more risk in case of disasters. Only 8% females could earn 1000 to 2000 and only 16% could earn 2000-5000. It is deteriorating towards the disaster vulnerability of coastal areas.

Because, females of such areas must be empowered enough financially that in case of any accident i.e. loss of the bread earner in disaster, she could be able to support her family after him. The females of these areas are expert in handicrafts, as 10% of females earn through those skills; they need proper marketing of it. Other sources of income i.e. agriculture, livestock and fisheries are mostly at risk due to frequent disasters. However, their skills in handicrafts could be used for their proper income through exhibitions and other proper marketing for foreign attraction.

Other than income opportunities, availability of land make one economically empowered. However in the study area, although most of people involved in agriculture sector, but, most of them do not have their own land. Figure 4.10 shows land ownership trends in the study area.



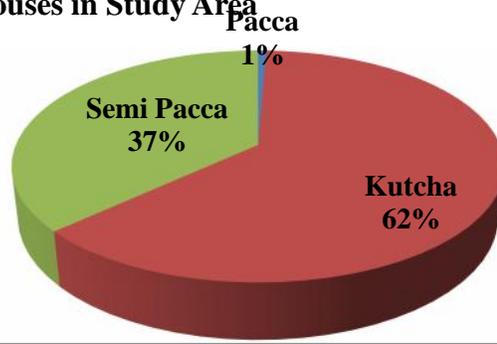
Source: survey results 2010

Above figure tells that how many local people are empowered by land ownership. Analysis shows that more than 60% population in both the districts does not have their own land. This further shows their economic vulnerability.

4.6. Poor Humane settlements

Human settlements refer to type of houses, their condition and location. It was observed that most of the houses in the study area are highly fragile and do not have the capacity to withstand disasters. These types of houses could not improve because of poverty, lack of resources and ignorance of government. Following figure shows the analyses of different types of houses in the study area.

Figure 4.11. Type of Houses in Study Area



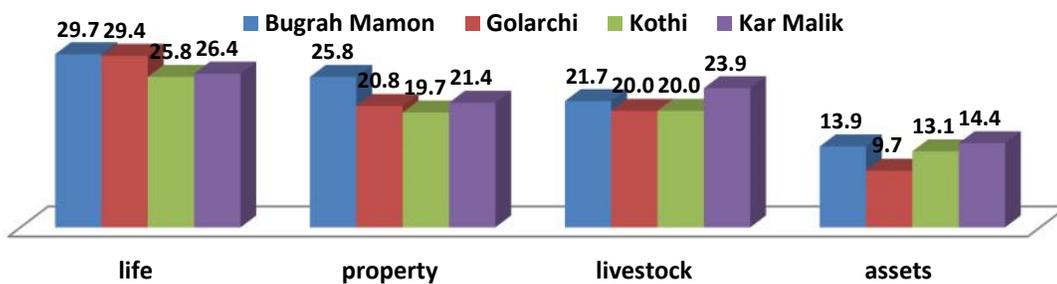
Source: survey results 2010

Above figure 4.11 shows the patterns of housing settlements in the study area. According to the given data 62% of the population has Kutcha houses; Kutcha means “house made of mud”. Such housing pattern is too much vulnerable to disasters but due to poverty people mostly build Kutcha houses. Therefore in case of any disaster this 62% of the population will be completely homeless. Further in case of remaining 37% with semi Pacca houses are also vulnerable to disasters because of their location and condition as well. Hence, before any other disaster, there is an urgent need to improve their housing settlements.

4.7. Impacted badly by previous disasters:

Any communities impacted badly by previous disasters become vulnerable to any upcoming disaster nearby. The coastal areas of Sindh bear two disasters in one year and in one summer of 2010. The rural population of those areas was already highly vulnerable due to their own living standards and due to impacts of all last disasters and current disasters further put them on marginal survival. The following figure shows various losses to coastal communities in last 10 years.

Figure 4.12. Losses to Target Population in Previous Disasters (1999 to 2010)



Source: survey results 2010

In the above figure 4.12, the summary of overall losses of life, property, livestock and assets in the disasters from 1999 to 2010 had depicted. Further disasters of 2010 make them more vulnerable and put them on marginal line of survival. These people receive mostly short term help from the government and non-government organizations which include rescue and relief stages of disaster management. They provide them food, shelter and basic needs for the temporary needs. These people were so poor that they could not recover their losses themselves without loans or credit. They could not recover previous losses and are facing further disasters. And according to climate change reports, coastal areas are getting more vulnerable ecologically towards disaster and their socioeconomic vulnerability put them more at risk. It is easy to say that, if they could save their lives from disaster, then fell into poverty and could famish.

Conclusion and Recommendation

Coastal area of Sindh Pakistan is becoming highly vulnerable to disasters due to rapid climate changes and sea level rise following the year 2010 floods; it is again drowning in heavy rains of 2011. Survey results shows that this area is highly socio-economically vulnerable and also badly affected by previous climatic disasters. Besides this it do not rehabilitated for long term in previous disasters moreover government does not use any flood control techniques in the area. Although such measures failed due to political interference but most of work obstructed due to corruption and ignorance. However considering the huge economic and lives losses due to every upcoming disaster there is a need to put special concerns over disaster management in coastal areas. The present study recommends the following recommendation on the basis of its study in two most vulnerable districts of coastal belt i.e. Thatta and Badin.

1. Implement flood control measures to mitigate the flood damage not to prevent floods as it is a natural phenomenon.
2. There should be disaster management units within the villages of local people that force people to save themselves and to adopt long term indigenous preventive measures that they know from their parentages.
3. Improve drainage system and adopt spate irrigation to have maximum benefit from flooding in spite of losses.
4. Provide advance educational facilities along with developed health facilities and motivate people towards education.

5. Provide vocational trainings to local people according to needs and opportunities available there to enhance income opportunities.
6. Adopt watershed-scale management practices i.e. Floodplain zoning, planned urbanization, restoration of abundant channels and lakes, dredging rivers and streams, increased elevation of roads and village platforms, efficient storm sewer systems.
7. Promote forestation and cropping in coastal belt using spat irrigation and also develop tourism resorts in the coastal belt for the socioeconomic development of the area.

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