



A STUDY ON VULNERABLE AND RESILIENT POPULATION OF KRISHNA DISTRICT, ANDHRA PRADESH

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ABSTRACT

Vulnerability conditions not only depend on the exposure and susceptibility of physical elements in hazard-prone areas but also on the socio-economic fragility and lack of social resilience and abilities to cope. Hence, vulnerability has to be understood from a comprehensive and multidisciplinary perspective encompassing exposure, susceptibility and lack of resilience. These factors capture conditions for the direct physical impacts (exposure and susceptibility), as well as for indirect and at times intangible impacts (socio-economic fragility and lack of resilience), of potential hazard events.

KEYWORDS : Disaster, Hazards, Livelihood, Resilient, Victims, Vulnerability

INTRODUCTION

India has been suffering from frequent multiple hazards and recognition of this fact has resulted in the establishment of a well-defined organization system at the Centre and the State levels for response and relief management in the event of occurrence of any kind of a disaster. Disasters are as inevitable as death. They have a multidimensional effect on several sectors, personal, social, economic and the like. They have a crippling effect on the economy and the infrastructure of the country. Disasters not only undermine development efforts and lead to wastage of scarce resources, but also put back development by destroying initiatives. The direct effect of disasters on economy is damage to infrastructure - crops and productive assets of the local population besides huge financial burden of relief and rescue operations. Indirectly, disasters also lead to decline in production, loss of income due to unemployment and indebtedness of the poor and increased cost of goods and services etc.

WHAT IS A DISASTER?

Whatever be the manner in which disasters are defined, how do the people in our study perceive them? These are the people who actually face disasters on a regular basis and survive. To those in the fishing village, the answer to the question- What is a disaster? Is that cyclones are disasters. All the respondents from the fishing village gave the same answer to this question. They consider cyclones as bringing devastation into their lives. Cyclones, which are accompanied by gale force winds cause havoc in their lives and their livelihood. They use the same word Uppena (which is the word for cyclone in the Telugu language) for disaster as well. Their understanding is that with cyclones being perennial and regular phenomena, a disaster is a cyclone. Situated just about 200 metres from the sea shore, a wind speed of even 70 kilometres per hour can destroy their vital assets (such as boats and fishing nets). The reason why cyclones and disasters are seen as coterminous is that their livelihood gets so severely affected each time a cyclone strikes. Moreover, in this part of India, cyclones are a recurring phenomenon and could strike several times a year. Even if the intensity of the cyclone or the storm was considered as relatively mild by the meteorological department, to these people a cyclone of even lower intensity would disrupt their livelihood because earnings would not be possible for days on end. This important point needs to be taken into consideration, because a conventional definition of disaster would include only large-scale death and destruction. Officials too do not consider that lower intensity cyclones require state intervention to support the people. When the impact of the cyclone greatly damages their means of livelihood and even blows away their kuchha (thatched roof) houses, then whatever others may say, to these people it is truly a disaster, even if no one died.

Farmers face devastation from cyclones, flash floods, and dry seasons or occasional droughts, which bring disasters that result in extensive crop losses. Agriculturists reported that only when there is a cyclone or heavy rain for many days, and water surges into their fields, that's when severe crop failure results, causing a major setback to their economic condition. Small storms may not be a major threat and, in fact, may benefit the crops (i.e. the rain) but cyclones are the real threat that results in crop damage although it may not cause physical harm to the people. What the agricultural villagers mention as the cause of their problems is their location near both the sea and a river basin. They are vulnerable to sudden disasters such as flash floods, though agriculture may at other times be affected at a relatively slower pace through a drought that ultimately causes considerable harm to them, and destruction of their crop.

RESILIENCE IN FACING DISASTERS

Resilience refers to the ability of human beings to respond and recover, and has considerable significance in the context of disasters. It includes inherent conditions that allow the communities to absorb the impact and cope with the disaster, as well as adaptive processes after the disaster that facilitate the ability of the system to reorganize, change and learn in response to the disaster. Resilience is also defined as- the buffer capacity or ability of a system to absorb perturbations, or the magnitude of disturbances that can be absorbed before a system changes its structure by changing the variables and processes that control behaviour. Adger defines social resilience as the ability of communities to withstand external shocks to their social infrastructure. In a critical manner, however, one can mention that the ability to respond to changes is not necessarily inherently desirable but the appropriate response is what is required. Similarly, whether responsiveness to changes is such a good thing is also questioned because some communities, despite being highly adaptive, have continued to be vulnerable, as for example nomadic societies.

Adger discusses the link between economic and social resilience, which is seen as the dependence of communities and their economic activities on ecosystems. Social resilience is an important component of circumstances under which individuals and social groups adapt to environmental changes. Ecological resilience on the other hand is related to the functioning of the ecological system rather than the stability of its component population, or maintenance of the ecological state. Certain social systems are dependent on an ecosystem as a whole such as the fishing communities who depend on the whole ecosystem and not the single resource of fish, as any disturbance to the ecosystem would impact on the quality and quantity of fish. Their livelihood, social order and stability of income depend on the stability of the ecosystem.

Any disturbance to the ecosystem has a major impact on the community. Therefore, ecosystems need to be made resilient to hazards, to make the coastal communities themselves resilient. Scholars have tried to find out what makes a community resilient. The scientific literature points to resilience of natural systems through the maintenance of wetlands, and keeping sand dunes intact, maintaining open spaces with no constructions on them, and controlling development as mechanisms to foster resilience. Social resilience on the other hand is enhanced by wealth, insurance, access to financial resources, social networks, community engagement and participation, and local understanding of the risks.

Cutter et al mention that in fostering resilience there can be various factors in the community such as local leadership, social capital and networks, the role of faith based institutions such as missionary institutions within the community, non-governmental organizations, and the values and ethics of collective responsibility towards the reduction of impact of the disasters within the community.

VULNERABILITY AND RESILIENCE

In the manifestation of a disaster a simple relation may be postulated where a hazard (external threat) has to be present, which has the potential to harm those people, who due to their vulnerabilities (internal characteristics of the people) are at risk of being affected by the hazard and thereby encounter a disaster. Diverse arguments have been propounded on various aspects of this relationship. One may want to deal with different factors and bring into focus one of them and leave the others in the background. In this regard, geographers and social scientists laid great emphasis on the hazards and their effects rather than looking at the people. When people were considered, it was classified as the war approach of treating the hazard as the main trigger event, and the rest just followed. There was, first of all, a need to recognise the importance of the people and then the presence of their internal characteristics that made them susceptible to the impact of the hazards. While some emphasise the hazard, others give more importance to the characteristics of the affected population. In our study we consider the conceptualisation of hazards as the external agent that has the potential to cause disasters, and hence, precedes a disaster. Its presence is essential to be able to cause a disaster, but it is not the disaster itself.

As this study reviewed the occurrences and impact of disasters observe that disasters caused by cyclones and floods or tsunami affect people to a large extent, disrupting their normal course of life and most importantly their livelihood. The situation is of particular concern when people stay in close vicinity to a hazard, and are therefore at greater risk. A disaster risk is present perennially in such cases, as with people living in coastal belts that are prone to cyclones or river beds prone to floods. Certain occupations compel groups to reside in such disaster prone places, and sometimes the occupation itself is risky, resulting in precarious conditions of living. However, we can hypothesise that there are considerable efforts towards vulnerable and resilience for survival by people who live in these disaster prone places. In the thesis aspects of vulnerable and resilience are explored by discussing the occupations and lifestyles of the fishermen and non-fishing population living in cyclone prone coastal Andhra particularly selected four mandals of Krishna district.

UNIVERSE OF THE STUDY

The fishing village is economically poorer than the agricultural village and almost all the people in the village, particularly the fishermen, fall below the poverty line. Many of the households in the agricultural village are economically in the same condition as well. However, despite being poor,

which adds to their vulnerability, these people have managed to survive disasters whenever they occurred. That being the case, we also need to examine the ways in which they have built up their resilience to cope with and survive disasters. Regarding the association between poverty and vulnerability, Chambers, Poverty is determined by historical processes that deprive people of access to resources, while vulnerability is signified by historical processes that deprive people of the means of coping with hazards without incurring damaging losses that leave them physically weak, economically impoverished, socially dependent, humiliated and psychologically harmed. Therefore, a person can be poor but not necessarily vulnerable to disasters if he or she is not directly near the hazard, and a person who is not poor may be vulnerable to disasters because s/he lacks the means to cope with the hazard even though s/he has access to other resources of living. We have a positive connection when there is access to resources and also the ability of people to prepare for or recover from hazards. Those who are poor and lack resources are more vulnerable to disasters because their resilience suffers due to the limited access to resources. Further, poverty in the Indian context has an intra-regional pattern and strongly depends on agro-ecological conditions vulnerable to natural disasters, and that needs to be taken into account while analysing disasters in India.

SOCIO-ECONOMIC PROFILE OF THE RESPONDENTS

Natural and man-made hazards continue to occur in our life and if not properly managed, hazards tend to become disasters. To avoid hazards turning into disasters and contain damages caused by them, a pre-disaster pro-active approach consisting of prevention, reduction and mitigation is called for. After occurrence of the disaster, a post disaster reactive approach for relief and rehabilitation is required to be taken up speedily for reducing misery and suffering of the affected people.

The ability of a disaster victim to prepare for, respond to, and recover from a disaster depends on a variety of factors that are often beyond the individuals' immediate control. The severity and longevity of the event, the efficiency of the warning systems, the victim's health status, and his or her access to resources are a few of the factors influencing the individuals' response and recovery capacity. Victims, who are house-bound, socially isolated, or who have impaired mobility may be compromised in their ability to respond to and recover from disasters. Therefore, the ability to mitigate problems of natural calamities depends heavily upon the socio-economic conditions of the disaster victims.

As mentioned above the first objective of the study is to "identify the socio-economic background of the victims" of the natural calamities hailing from four mandals *Avanigadda, Koduru, Machilipatnam and Nagayalanka* of Krishna district of Andhra Pradesh. To realize the above objective it is hypothesized that "there would be significant difference among the four mandals disaster affected people with regard to their Socio-economic background such as, age, gender, caste, educational background, type of family, marital status, occupational status, type of income, type of religion, type of house and family income. The total sample of 400 subjects of the present study including victims from disaster affected people hailing from four mandals of Krishna District are analysed and discussed below. The data was analyzed through by administrating simple statistics like frequencies and percentages. A detailed discussion of each of these variables is presented below.

1. DISTRIBUTION OF THE RESPONDENTS BY GENDER

Gender is also an important social dimension. Distribution pattern of population between males and females affects their relative and economic relations. The data in the table presents

gender wise distribution of the samples.

Table 1 Respondents by Gender

S. No	Category	Frequency	Percentage
1	Male	260	65.00
2	Female	140	35.00
	Total	400	100.00

Majority of the respondents were male with 65% and comparatively less percentage of the respondents were female with 35%. The total sample of 400 respondents selected 260 male and 140 female equally from four mandals of Krishna district of Andhra Pradesh.

2. AGE GROUP OF THE RESPONDENTS

Age is one of the important social factors which influences social, economic and demographic situation of any country. Age is an achieved characteristic in the life cycle of a human being. The position in a family or society or group and performance of certain activities and also achieving some other aspects of life in the human life cycle are determined by the age. The young age distribution of a population reveals the higher rate or growth of population in the country. The aging of the population implies high dependency ratio. The majority of the victims of natural calamities are from the age group of 46-55 years. Thus, the victims of the natural calamities are pre-dominantly from the middle age in the present study.

Table 2 Age Group of the Respondents

S. No	Category	Frequency	Percentage
1	25 to 35 years	80	20.00
2	36 to 45 years	90	22.50
3	46 to 55 years	160	40.00
4	56 and above	70	17.50
	Total	400	100.00

The above table depicts that majority of the respondents i.e., 40 percent of the respondents are from the age group of 46 to 55. About 22.5 percent of them are in the age group of 36 to 45 years; 20.00 percent of them are from 25 to 35 years and remaining 17.5 percent of them are from 56 and above year's age group. The data indicates that majority of the respondents are adults with an age of less than 50 years. Population of elderly people in the affected areas is less compared to the young and adult population.

3. RELIGION OF THE RESPONDENTS

Religion is one of the most prominent and sensitive aspects in the lives of the Indian which plays the dominant role in the society. Indian society otherwise known as Hindu society and no doubted this region also comprising with the more Hindus. That is the reason 240 (60%) more than half of the respondents taken from Hindu religion.

Table 3 Religion of the Respondents

S. No	Category	Frequency	Percentage
1	Hindu	240	60.00
2	Muslim	65	16.25
3	Christian	95	23.75
	Total	400	100.00

The above table reveals the details of the sample respondent's religion wise. The maximum number of the respondents 240 (60%) were selected from Hindus whereas 95 (23.75%) of the respondents belongs to Christians and remaining 65 (16.25%) of the respondents were Muslim minority.

4. CATEGORY OF THE RESPONDENTS

Indian society is broadly divided into different communities

such as forward Community Castes, Backward Community Castes, Scheduled Community Castes and Scheduled Tribes Community etc. The traditions and customs depend upon the community which in turn influences the social fabric. Caste is an important social variable, especially even in the present day Indian context. The communities are broadly subdivided into various sub-castes and the respondents in the study were grouped as per the caste criteria. In Indian context majority of the fishing communities hail from Backward Class or Backward Community Caste. In the present study it was also found that majority of the victims of natural calamities belong to fishing community hailing from Backward Class Community (47.5 percent).

Table 4 Category of the Respondents

S. No	Category	Frequency	Percentage
1	General	50	12.50
2	Backward class	190	47.50
3	Scheduled caste	90	22.50
4	Scheduled tribe	70	17.50
	Total	400	100.00

The data in the above table reveal that majority of the respondents 190 (47.5) are from Backward Class Community. 22.5 percent of them (90) belonged to Scheduled Caste 17.5 percent of them are from Scheduled Tribe and rest of the less representation 50 (12.5) from General category. The Backward Castes are predominant in affected villages of the four mandals and mostly depending on fishing.

5. DISTRIBUTION OF THE RESPONDENTS BASED ON THEIR OCCUPATION

A glance at the demographic structure of Indian society would reveal that most of the households are involved in caste based occupations. However, occupational mobility is the resultant of expansion of education and phenomenal change in organization process etc. In the present study, majority of the households hail from Backward Class Community and their main occupation is fishing. Rightly, 52.5 percent of the respondents are involved in fishing related occupation. The data is presented in the below table.

Table 5 Occupation of the Respondents

S. No	Category	Frequency	Percentage
1	Fishing	210	52.50
2	Agriculture	105	26.25
3	Construction	55	13.75
4	Others	30	7.5
	Total	400	100

The data given in the above table clearly indicate that majority of the respondents i.e., 52.5 percent are involved in fishing occupation. 26.25% of the respondents depending upon Agriculture, 13.75% of the respondents lived on constructional occupation and rest of the 7.5% of the respondents were involved in other occupation that lived in the vicinity of the coastal region.

6. DISTRIBUTION OF THE RESPONDENTS BASED ON THEIR EDUCATION

Literacy is one of the important social variables that influence both social and economic development of the nation. Education certainly is a means to the all-round development of individuals. In other words, the path way to human development goes through the lanes of education. It is education which can ascertain ultimate peace for a human being. Education is considered the inner capability of man that guides him continuously at various levels. Education helps an individual to face situation of crisis effectively and with resilient challenge.

Table 6 Educational particulars of the Respondents

S. No	Category	Frequency	Percentage
1	Illiterates	195	48.75
2	Primary	85	21.25
3	Secondary	70	17.50
4	Others	50	12.50
	Total	400	100.00

The data given in the above reveal that majority of the respondents 195 (48.75) are illiterates and 85(21.25) of them had primary education and 70(17.5) of the respondents were secondary level of educates and rest of the least 50(12.5) percentage of them are others.

7. WHICH DISASTER YOU HAVE EXPERIENCED RECENTLY?

Table 7 Experience on Disaster

S. No	Recent Disaster	Frequency	Percentage
1	Flood	60	15.00
2	Storm	35	8.75
3	Sea erosion	45	11.25
4	Rain	210	52.50
5	Big waves	50	12.50
	Total	400	100.00

The data given in the above table indicate that majority of the 210 (52.50%) respondents experienced with frequently rain recently apart from Uppena. While 60 (15%) of the respondents were experienced with flood and 50 (12.50%) of the respondents experienced with big waves after the above said to badly disasters and only 45 (11.25%) of the respondents experienced with sea erosion and least number of respondents 35 (8.75%) experienced with storm in the study area.

8. CHANGE OF CLIMATE/MONSOON DUE TO DISASTER

Table 8 Opinion on Climatic conditions

S. No	Climate	Frequency	Percentage
1	Yes	275	68.75
2	No	108	27.00
3	No idea	17	4.25
	Total	400	100.00

Above table presents the respondent's preference towards shelter during monsoon changes in the study area. Data given in the table shows that 275 (68.75%) of the total respondents reported that monsoon changes occur due to disaster. While 108 (27%) of the respondents said that no monsoon changes occurred due to disaster and rest of the respondents 17 (4.25%) having no idea about this aspect.

9.HAVE YOU RETURNED TO NORMAL LIFE AFTER DISASTER?

Table 9 Opinion on normal life after disaster

S. No	Opinion	Frequency	Percentage
1	Yes	175	43.75
2	No	195	48.75
3	Time factor	30	7.50
	Total	400	100.00

This detail reveals the respondents' perception towards the cause for tsunami and change in their habitation. The data in the above table mentioned that the majority 195 (48.75%) of them not returned to the normal life. However 175 (43.75%) of the respondents returned to normal life after disaster and rest of the respondents 30 (7.5%) perceived that it is time taking process.

10.WHAT WAS YOUR EXPERIENCE DURING THE DISASTER?

Table 10 Experience during Disaster

S. No	Opinion	Frequency	Percentage
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1	Fear for life	280	70.00
2	Risk to save	75	18.75
3	No opinion	45	11.25
	Total	400	100.00

The information in the above table presents that the majority 280 (70%) of them feared for the life due to the experience of the tsunami and 75 (18.75%) of them risk to save life and rest of the respondents 45 (11.25%) were neutral in this aspect. It is conclude that majority of the respondents opined they have fear for life during the disasters.

11. DO YOU HAVE KNOWLEDGE OF MONSOON REPORTS?

Table 11 Knowledge on monsoon

S. No	Opinion	Frequency	Percentage
1	Yes	110	27.50
2	No	210	52.50
3	No opinion	80	20.00
	Total	400	100.00

The above information reveals the respondents knowledge regarding monsoon report. It presents that 110 (27.50%) of the total respondents' reported that they know about the monsoon report. However half of the above respondents 210 (52.50%) having no knowledge of monsoon reports and rest of the 80 (20%) of them not known anything about monsoon.

12. WHAT IS THE ROLE OF PANCHAYAT AND GOS AND NGOS

Table 12 Role of Panchayat and GOs and NGOs

S. No	Role of Panchayat	Frequency	Percentage
1	Weekly arrange meetings for preparedness	242	60.50
2	The GO's and NGO's to arrange EWS for Government	102	25.50
3	No idea	56	14.00
	Total	400	100.00

The data presents the respondents' perception towards the role of panchayat and GOs/ NGOs to minimize the disaster. The information in the table shows that maximum majority 242 (60.5%) of the total respondents reported that the panchayats arranged meetings for preparedness weekly. However 102 (25.5%) of the respondents reported that GO/NGOs give announcement and arrange village meetings and discussions about preparedness weekly; and 56 (14%) of the respondents have no idea about the role of Panchayat, GOs and NGOs.

13. WHICH GROUP WAS MORE VULNERABLE IN THE DISASTER

Table 13 Vulnerability in Disaster

S. No	Vulnerable Group	Frequency	Percentage
1	Children	81	20.25
2	Pregnant women	80	20.00
3	Women	91	22.75
4	Old age people	76	19.00
5	Disable people	72	18.00
	Total	400	100.00

The above table depicts that majority of the respondents i.e., 91 (22.75%) of the respondents reported that women were more vulnerable in the disaster; followed by 81 (20.25%) of them were children; 80 (20.00%) of them were pregnant women; 76 (19.00%) of the respondents opined that old age people more vulnerable in the disaster and 72 (18.00%) of the respondents said that disable people are more vulnerable in the disaster.

14. DISTRIBUTION OF THE RESPONDENTS' BASED ON THE IMPLEMENTATION OF PUBLIC DISTRIBUTION SYSTEM FOR THE CAUSE OF DISASTER VICTIMS.

Table 14 Implementation of Public Distribution System

S. No.	Opinion	Frequency	Percentage
1	Yes	335	83.75
2	No	50	12.5
3	No Opinion	15	3.75
	Total	400	100

The data in the above table clearly indicates that majority 335 (83.75%) of the respondents opined that Public Distribution System is very essential for them. However 50 (12.5%) of the respondents opined that public distribution system is not essential and remaining 15 (3.75%) of the respondents not known about public distribution system. They opined that at the time of cyclones or tsunamis the scarcity of food is common; there is no pure drinking water. The suggestion is to drink boiled water to prevent diseases. At that situation distribution of rice and kerosene through PDS was very useful. (From 1998-99 A.P Government introduced rice and kerosene distribution through PDS) (Source: Planning Commission, Tenth Five Year Plan 2002-07). Also a holistic and integrated approach evolved by disaster management emphasizes on building strategic partnerships at various levels.

15. DO YOU FEEL THAT THERE IS A NEED OF IMPROVEMENT THE COMMUNICATION SYSTEM IN THE DISASTER AREA?

Table 15 Improvement the communication system in the disaster area

S. No.	Improvement of communication	Frequency	Percentage
1	Yes	268	67
2	No	90	22.5
3	No Opinion	42	10.5
	Total	400	100

The data in the above table clearly mentioned that the overwhelming majority of the respondents 268 (67%) report that there is a need for improvement of communication system in the disaster area while 90 (22.5%) of them feels no need and rest of the 42 (10.5%) of the respondents having no opinion about this aspect.

FINDINGS OF THE STUDY

The historical annals which have been referred to in studying the first objective indicates the cyclonic disasters prevailing in this region is super cyclone (uppena) and earthquake disaster is Tsunami. This resulted in tremendous loss of human life, property damage and disruption normal ecosystem. This resulted in mass shifting of fisherman community from coastal region to cyclone shelter. The cyclone resulted in huge economic damage to the people and government. This provides a strong evident for the implementation of pro-active measures to the vulnerable community.

The socio-economic impact of the disaster has been studied which concludes that the impact of disasters on vulnerable groups such as women, children, and disabled and its long-term irreversible consequences of natural disasters on human capital in poor countries. The coastal communities fall in major high resilient and vulnerability zone which have potential to cause far-reaching impacts. These hazards are characterized by the frequency of occurrence and its severity. Krishna coast is having high risk exposure from multiple hazards such as cyclones, tsunamis, flooding, shoreline variations and climate variability and change. The multiple hazard in the Krishna district affected the socio-economic condition of the people more specifically fisherman community and farmer are at high range. The fisherman incurred a loss of property, boat, fishing nets and loss of life

and the farmers face problems due to cyclone and flood which result in destruction of crops due flood water undulation and damages due to high wind activity. The people have different problem from various disasters which affects day to day activity of the life.

Massive socio-economic programmes and disaster preparedness, pro-active role of community, NGO's, mass media and Government policies would help and prevent the problems of disaster affected people. The data found in the tables supported and proved that the role of NGO's, mass media and Government policies are helpful to avoid the problems in the resilient regions.

Resilient population perceive danger to live in the coastal areas. The analysis elaborates that 71% of them have perceived dangerous to live in the coastal area.

People perceive that different agencies support in the disaster affected area. The analysis elaborates that the agencies like GOs, NGOs, social work groups and panchayats are supported the vulnerable and resilience population in the study area in several ways. The overwhelming majority of the respondents accepted this support from above said agencies. Hence the hypothesis is proved.

There is a need to improve the communication system in the selected research area. It is found that 67% of the respondents perceived that certainly need of improving the communication system in the selected research universe. So this aspect also got the positive nod from the respondents.

CONCLUSION

The dimension on disaster knowledge includes data relating to four factors namely knowledge in hazard, disaster risk, vulnerability and resilience. In this dimension majority of the respondents are resilient and the remaining less number of respondents are do not have enhanced knowledge in disasters. The present study aims to analyse the existing level of community resilience in the coastal villages of Krishna District. It focuses more on the disaster knowledge, vulnerable and resilient population and disaster preparedness, recovery and mitigation measures of the communities. A safe and resilient community is knowledgeable and healthy and has the ability to assess, manage and monitor its risks. It is open to learn new skills and build on past experiences. It is organised and has the capacity to identify problems, establish priorities and act. The resilient community is well connected with external actors who provide a wider supportive environment, and supply goods and services when needed. It has all required infrastructure and services. It has strong housing, transport, power, water and sanitation systems.

REFERENCES

- Adger, W. N. (2000) "Social and Ecological Resilience: Are they related?" *Progress in Human Geography*, Vol.24 (3), pp.347-364.
- Bankoff, G (2001), *Rendering the World Unsafe: 'Vulnerability' as Western Discourse*. *Disasters*, 25 (1), p.2.
- Birkmann, J.2006. *Measuring vulnerability to promote disaster-resilient societies: Conceptual frameworks and definitions*. Research Brief (1), Tokyo: United Nations University.
- Cutter, S., Barnes, L., Berry, M., Burton, C., Evans, E., Tate, E., & Webb, J. (2008). *Community and regional resilience: Perspectives from hazards, disasters, and emergency management*. Columbia, South Carolina: Hazards and Vulnerability Research Institute.
- Dalziell, E. and McManus, S (2004), *Resilience, Vulnerability, and Adaptive Capacity: Implications for System Performance*. International Forum on Engineering Decision Making. Stoos, Switzerland, 2004.
- Frank Thomalla and Rasmus Klockner Larsen (2010), *Resilience in the context of tsunami early warning systems and community disaster preparedness in the Indian Ocean Region*. *Environmental Hazards*, Vol.9 (3): 249-265. DOI:10.3763/ehaz.2010.0051.
- Geis, D. E. (1996), "Creating Sustainable and Disaster Resistant Communities." Aspen, CO: The Aspen Global Change Institute.
- Melissa Leach., *Reframing Resilience a Symposium Report*, Brighton, 2008.
- Quarantelli, E.L., (2005) *A social science research agenda for the disasters of the 21st century*. In R.W. Perry & E.L. Quarantelli (Eds.) *What is a Disaster: New answer to old questions*, Philadelphia, Xlibris Publishers, pp.325-396.
- Srivastava, S K (2009), *Making a Technological Choice for Disaster Management and Poverty Alleviation in India*. *Disasters*, Vol.33 (1), pp.58-81.