Chapter – 2
Understanding Disasters: A theoretical and contextual discussion

Conceptualising disasters

Disasters afflict people from time to time, and in some areas with a higher degree of frequency to be considered as regular. They are a reality that needs to be understood. To begin with, the concept of disaster is discussed and its various definitions and theoretical groundings are analysed. 'Disaster' is referred to as a vague term as there is no simple interpretation available for it. However, disasters, whether actual or possible (hazards) are referred to by most social scientists in terms of the physical impact or problems caused by unplanned and socially disruptive events (Fritz in Kreps 1989: 32). They are perceived as phenomena that cause physical and social harm, are sudden occurrences and that the impact of the disaster can be mitigated (Perrow in Kreps 1989: 32).

There are several definitions available for the term disaster. According to the definition provided by the Government of India and United Nations Development Program, "A disaster is the product of a hazard such as earthquake, flood or windstorm coinciding with a vulnerable situation which might include communities, cities or villages" (GOI-UNDP n.d: 5). The Disaster Management Act, 2005 of India defines a disaster as, "A catastrophe, mishap, calamity or grave occurrence affecting any area, arising from natural or man made causes, or by accident or negligence which results in substantial loss of life or human suffering or damage to, and destruction of, property, or damage to, or degradation of, environment, and is of such a nature or magnitude as to be beyond the coping capacity of the community of the affected area" (Disaster Management Act 2005: 2). Both these definitions have been suggested by organisations that deal directly with disaster management activities and in providing relief to the affected. Both the definitions have certain crucial aspects, where the first one defines a disaster as an interaction between

"hazard" and "vulnerability", the latter defines it as something that causes 'substantial loss and human suffering' or 'damage to property or environment'. These point to the conditions to qualify as a disaster, and the outcome of the interaction between a hazard and vulnerability of people, or cities, must be on a large scale with considerable loss, or be a 'grave occurrence'. This grave occurrence must also be of such magnitude that it is 'beyond the community coping capacity'. The state has evidently imposed a crucial condition where only when a disaster is on a large scale will the disaster management authorities of the state intervene. However, when the situation is not so grave in terms of death and destruction, but definitely affects other aspects of livelihood and life, it presumably implies that state agencies will not have a role to play to mitigate the impact of the disasters.

There are also classifications available of the types of disasters, for example by the management plans that categorize the disasters for operational purposes. The Disaster Management Plan of 2007-08, Jagatsinghpur, Orissa, provides the following classification of disasters.

Types of Disasters:

- Natural Disasters: *Tsunami*, Flood/Heavy Rain, Earthquake Cyclone/Hailstorms, Drought, Heat Wave, Landslides, Forest Fire, and Pest Infection (affecting crops).

- Man Made Disasters: Road Accident, Communal violence, Riots, Chemical accidents, Railway accidents.

(Disaster Management Plan, Jagatsinghpur, 2007-08: 10)

They are further grouped into five categories. These are water and climate related disasters, for example, drought, flood, cyclone, heavy rains, tidal waves, gale force wind, whirlwind, tornado and hail storm etc.; geologically related disasters, e.g. earthquakes, volcanic eruption; chemical, industrial and nuclear related disasters; accident related disasters; and biologically related disasters such as epidemics.

The categorization of disasters has been made to ease the task of disaster management and make it more systematic and organized. If the classification was not provided, the task would be more difficult and cumbersome to understand what needs to be done during and immediately after the disaster. It is better to know beforehand what disasters ordinarily affect the particular place and how to deal with the situation. For instance, the reaction to a natural disaster, which may be to some extent predictable as with a cyclone, would be different from a man made disaster such as an industrial accident. Perry (2005) finds that defining and categorising disasters by dividing them into groups such as man made and natural disasters as a primitive phenotypical way of defining disasters, and he also sees it as very naïve. He claims that scholars have gone past this stage and are trying to bring genotypical classifications of disasters, classifying them in terms of social impact, social time i.e., time as a collective rather than individual experience (Zuzanek 1990).

Sometimes, however, classifications can be flawed or not all inclusive of complex categories, as in the case where a forest fire is put under natural disasters, whereas it may have been caused by a human act; or that flash floods may be caused by releasing large quantities of water from a dam. There have been disasters such as in the case where water was released from the Bhakra reservoir leading to flash floods in Ludhiana and Ferozpur in 1988 (Prakash 1994).

The Centre for Research on Epidemiology of Disasters (CRED) that is instrumental in creating and managing a vast database on disasters, containing core data on the occurrences and effects of disasters in the world from 1900 till date, has its definition as well. This Centre defines a disaster as, "A situation or an event, which overwhelms local capacity, necessitating in a request to national or international agencies for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering" (Hoyois et al 2007: 15). In CRED's Annual disaster statistical review report 2006 they indicate the criteria for considering a phenomenon to enter their database as a

disaster, and such phenomena should have fulfilled at least one of the criteria which are

- 10 or more people reported killed
- 100 or more reported affected[i]
- Declaration of state emergency
- Call for international assistance

This definition is also very specific in what they mean by a disaster, which refers explicitly to events that have substantial impact on the people and also involves a sudden occurrence of the event. However, there are disaster prone places, where people live with the knowledge of the likelihood of disasters striking the place. In such situations the disasters are not complete surprises and people are aware of the possibility that a disastrous event may occur. Not being taken entirely by surprise may not prevent losses due to the impact of the disaster, such as when a volcano erupts. There may be disasters affecting people due to certain other factors, such as the vulnerability of people due to poverty. Definitions of the type where a disaster is defined only as one that causes substantial losses, death and destruction, ignores those that are quite as disastrous to those affected by them, but may be on a smaller scale than the disasters so defined.

In anthropological research a disaster is defined as a process/event involving a combination of potentially destructive agents from the natural and or technological environment and a population in a socially and technologically produced condition of vulnerability (Oliver-Smith 1996: 303). This definition also points out the hazard-vulnerability relationship that can cause a disaster. Dynes (in Clarke and Short 1993: 377) states that, "While disaster agents are socially disruptive, one cannot understand this disruption solely from the knowledge of the agent." Thus, it is worth bringing in Quarantelli's discussion of a disaster, that "A disaster can be identified only in terms of some features of a social occasion, that is, some characteristics of the individuals and groups reacting in the situation" (in Clarke and Short 1993: 377), which means the emphasis is

on the response that is generated by the individuals and the groups and not to the disastrous event alone.

In the sociological field, the study of disasters entails the study of collective behaviour. There were earlier studies that interpreted a disaster as a disruption in the 'normal' course of life, a 'sudden' break in the continuity of normal life. The disasters were 'events', as crises situations that brought out social behaviour only in response to the event, 'intrusion of something alien'. This type of analysis assumed that disasters are something out of the ordinary, not part of normal social processes and when they occur those affected respond to them. The need to return to 'normalcy' as the state before the disaster occurred is stressed in this form of analysis (Clausen et al 1978). Fritz (in Parida 2005: 63) defines a disaster as an event concentrated in time and space, in which a society, or a relatively self sufficient subdivision of a society, undergoes severe danger and incurs such losses to its members and physical appurtenances that the social structure is disrupted and the fulfilment of all or some of the essential functions of the society is prevented. Disasters that disrupt normal social life are untoward events in society (Fritz in Parida 2005).

In considering disasters, Alexander (2000) defines natural disasters as complex and multifaceted events resulting from mismanaged and unmanaged risks that reflect current conditions and historical factors. As an alternative to this view on disasters, there is another point of view that rests on a vulnerability framework and argues that in certain situations it is difficult to distinguish between normal life and life during a crisis or disaster. The approach does not negate the importance of natural hazards as trigger events, but the emphasis is on the various ways in which social systems operate and make people vulnerable to disasters. This approach was developed from research done in places where normal life itself was difficult, and not easily distinguishable from disasters (Oliver-Smith 1986; Hewitt in Wisner et al 2003: 10). People who live in poverty are vulnerable to a higher degree, with difficulties even in the meeting of daily requirements of food, or health care. A disaster that has an external source only exacerbates their condition. As the people are so vulnerable

even in normal times, when a disaster strikes it becomes difficult to differentiate between how much more they have been affected, or their situation has deteriorated from what it was in the so called 'normal' life. Hence, the suggestion of going back to normalcy needs to be questioned. After a series of disasters occurred in Peru, East Pakistan (now Bangladesh) and Biafra (Nigeria) in the 1970s, which coincided with the Sahel famine during 1967–1973, along with drought in Africa, erosion in Nepal, earthquake in Guatemala in 1976 and a hurricane affecting Honduras in 1976 (Wisner et al 2003: 42), the notion of 'marginality' was included, with a new theory of disasters that dealt with the vulnerability of marginal groups in disasters (Ibid: 10).

Barkun (1977: 219) proposed "Three modalities of disasters" which he called the *homeostatic, metastatic and hyperstatic*. They result from what he calls "changes in predictability, source of stress and perceptions of solvability". He characterizes these modalities as follows: *Homeostatic disaster*: a natural catastrophe that reflects the rhythms and the limits of nature, and assumes a return to equilibrium. All the natural disasters fall in this category. *Metastatic disaster*: an artificial catastrophe caused by human behaviour and whose unclear spatial and temporal boundaries make a return to equilibrium problematic. This category consists of explosions, local economic fluctuations, and conventional warfare. *Hyperstatic disaster*: artificial catastrophe intensified to the point of completely obliterating discernible spatial and temporal boundaries, through global extension and system-destroying properties. Economic depression, nuclear war, genocide and large scale ecological imbalance comes under this category.

Some of the literature on disasters examine disasters from the standpoint of social structure, where the emphasis is on stability and change in social structures in a disaster. Kreps and Bosworth (1993) looked at this facet of disasters through the dimensions of organization and role enactment. Here, social structure includes police and fire departments, social clubs, churches, etc. One of the important aspects of this study was that of role stability/change from the time period of pre-disaster to disaster. The focus

was on the actual performance of roles, which is quite different from whether particular categories of individuals are expected to enact them i.e., status-role nexus. Role change is more clearly visible in roles that require less knowledge and are less formally organized such as in non-metropolitan communities. Role stability is seen when there is rapid involvement in less severe disasters and in roles that require more knowledge, such as in formal organized roles in metropolitan communities. A mayor or police chief, who acts as a search leader as compared to acting as a rescue worker, has role continuity before and after the disaster struck (Kreps and Bosworth 1993).

One can say that the most common feature included in the definitions of disasters is that they are social events concentrated in time and space, disruptive to social intercourse, they are sudden events overwhelming local capacity, and should be understood in the context of social change and adaptation. However, the vulnerability framework emphasizes not only the agent but also the responses, and suggests why different groups are affected differently and in certain ways. This provides a different way of looking at disasters, rather than treating them as events generated by external factors alone. Social structures and processes in the disasters have acquired a place in disaster studies. What is essential now is to look at disasters as part of the normal social process and not as a once in a lifetime event occurring as a sudden surprise. Here, the possibility of a disaster is always present but despite that life still goes on. This aspect needs to be further inquired into and included in a definition of disasters, rather than defining disasters only as an alien event or as a phenomenon completely out of the ordinary.

Studies of disasters have focused on different areas when undertaken by various scholars. Stallings (2002) discusses the growing detachment of sociology and disaster studies, and suggests the need to bring some coordination into the two domains. Without clear and explicit ties to core sociological questions and propositions, sociologists who are not involved in the study of disasters are unlikely to see the relevance of research findings for advancing their own understanding of social structures and

processes. Conversely, Sociologists who are involved in studies of disasters are likely to migrate farther from their disciplinary homeland. He considers that Weber's political sociology, which contains a conflict model focusing on structured inequalities of class, status and power, could be used in disaster studies. He talks about the need for theoretical grounding in the realm of sociology of disasters.

Another area of focus in the literature has been the emergent groups or emergent organizations or emergent phenomena. "Emergent groups can be thought of as private citizens who work together in pursuit of collective goals relevant to actual or potential disasters, but, whose organization has not yet become institutionalized" (Stallings and Quarantelli 1985: 84). Scholars have also noted that it is not always private citizens who form these groups. They are the new groups that come up after disasters strike, when the existing social groups or the traditional tasks and structures are inefficient in addressing the demands of the disaster affected people. Emergent groups can be rescue groups, damage assessment groups, and coordinating groups (Stallings and Quarantelli 1985). People who take part in them are those directly affected by disasters, such as emergency workers, volunteers, businessmen, government agencies, researchers etc. (Drabek and McEntire 2003). Scholars Quarantelli, Drabek and Borton have worked on this perspective. Quarantelli proposed a typology of emergent groups, such as, quasi emergence that occurs when there are only minor alterations in the organization's structure or function after a disaster; and structural emergence, which takes place when organizations maintain previous functions while developing new structures (Quarantelli cited in Drabek and McEntire 2003). A strand of recent literature inquires into the impact of culture and religion on disasters, such as the emergence of new citizens' groups to do rescue work. Bolin and Borton (in Drabek and McEntire 2003) have worked on these aspects and found that shared values and a culture of responsibility are positively related to emergent phenomena.

Turner (1967) looked at solidarity among people during the immediate post-disaster period. He suggested that there was a heightening of solidarity after disasters. People who have been neighbours but had not communicated easily with one another discover that barriers have broken down. When rescue agencies arrive on the scene, they usually find that local people, without formal training, have done much of the immediate rescue work. Furthermore, there is an indication that people sometimes disregard their own misfortunes while helping others. Their attitude towards outsiders may be of hostility, especially if they come just to see their condition, without providing any help. An augmented solidarity of a particular sort is seen when this attitude toward outsiders and the strengthened internal bonds are viewed together. According to Turner, it resembles Sumner's ingroup– outgroup differentiation and also Durkheim's mechanical solidarity. "The relation of comradeship and peace in the we-group and that of hostility and war towards others-groups are correlative to each other" (Sumner in Turner 1967: 61). Durkheim had conceptualized societies as being of two types, and depending on their stage of development either based on mechanical solidarity (an earlier stage) or organic society (a more advanced stage). A pre-literate or archaic society, which to him was an earlier stage of human development, was characterized by mechanical solidarity or solidarity of resemblance, based on 'collective conscience'. This referred to 'the body of beliefs and sentiments common to the average of the members of a society' (Durkheim in Aron 1974: 24). The individuals differ from each other as little as possible. They feel the same emotions, cherish the same values and hold the same things as sacred. The society is coherent because the individuals are not yet differentiated. As society advances, it moves towards organic solidarity, which implies consensus or coherent unity of the collectivity, and that results from differentiation. Members of the society are different from each other. They are free to believe, to desire and to act according to their own preferences. They perform different functions, are dependent on each other for their existence, and are indispensable to each other.

Durkheim assumed a unilinear passage of societies as they developed, from mechanical to organic solidarity (Aron 1974). When rescue operations are conducted from within the disaster area, Turner refers to Durkheim's conceptualization, and states that such operations are products of a largely undifferentiated labour, when the division of labour which supports organic solidarity breaks down. There is often a resurgence of mechanical solidarity (common consciousness, a sense of likeness with one's fellows), based on the vital sense of shared sentiments among the victims and other persons directly or indirectly involved in the disaster. The momentary isolation of the individual, and nullification of the division of labour when the impact is sudden and drastic, sends the group back to rebuild solidarity from the beginning. Thus, the group starts rebuilding group solidarity on the basis of mechanical solidarity.

There is another field of study in disasters that looks at the public health impact of disasters. The epidemiology of disasters provides tools for problem solving during natural, technological disasters, and emergencies caused by terrorism. Epidemiological studies of disasters help in identifying the population which is at risk to adverse health events. They have studied post disaster health effects of major disasters such as earthquakes, and tropical cyclones. They also bring out the role of survivors in the search and rescue work, and emphasize that panic is very rare in such disasters. They mention that "most post earthquake or post-building collapse search and rescue, for example, is carried out not by police, firefighters, and formally trained rescue teams, but rather by the survivors themselves (family members, neighbors, coworkers, friends, and those who just happen to be in the area)," (Ramirez in Noji 2005: 4). If ambulance vehicles are not available in sufficient numbers, they use whatever means of transport are available to take the injured to hospitals. The epidemiological studies of disasters also emphasize that in the midst of disasters what matters the most is the closeness of hospitals. Non-medical people also realize that the best emergency care that they can provide is to get the injured to a hospital as soon as possible. The closest hospital receives the maximum cases or casualties. Most injuries suffered during disasters are usually relatively minor injuries that can be treated in

outpatient centres, and urgent care centres, sparing the hospitals for more serious cases (Noji 2005). In certain disasters, such as earthquakes, there are more people who are severely injured, and require immediate hospital care. This is an important area of disaster studies that highlight the health impact of disasters on people.

Davis and Seitz (1982) examine why similar types of disasters differently affect countries around the world. Government effectiveness, government instability, available resources and the social context are incorporated into a structural model that seeks to explain differentials in impact. They have used different models to measure the effects of disasters. They have also tried to see the differences in the impact of disasters on developed and underdeveloped countries. One important finding is that with technological advancements, there is often greater loss of property than loss of life in developed countries. However, when a *tsunami* struck Japan in 2011, there were large numbers of deaths as well as loss of property.

Lavell (1999) discusses capacity building where he refers to it as a process by which individuals and organizations strengthen their ability to understand social, economic and environmental problems, to identify and mobilize resources in order to overcome them, and to maximize opportunities for sustainable improvements in the standard of living of the population. This depends on the institutions, and how they train and educate people and facilitate their participation in the decision-making process (UNCED in Lavell 1999). Lavell uses this concept in the context of the reduction of disaster risks and management of disasters. He brings out an interpretation, that a disaster is a product. He also notes that in the 1990s the emphasis has shifted to the consideration of risks, and focusing on disasters as not just a product of some happenings but a social process. Risk constitutes the latent, but at the same time objective and real condition that precedes a disaster. It is the probability of damage and loss occurring in the future. A disaster cannot occur without the previous existence of risk, and it can be conceptualized in the last instance as the actualization of existing risk (Lavell 1999).

The Concepts of Hazard, Risk and their relevance in disasters

The origin of the word hazard seems to be from either the French *hasard*, a game of dice predating craps, or from the Arabic *al-zahr*, which translates, to die. Looking at the meanings of the words from which hazard may have originated it appears that the term is rooted in the concept of chance. Hazards are defined as events or physical conditions that have the *potential* to cause fatalities, injuries, damage to property, infrastructure damage, agricultural loss, damage to the environment, interruption of business, or other types of harm or loss (Federal Emergency Management Agency cited in Coppola 2007: 24).

Hazards are not problems by themselves. For instance, if the epicentre of an earthquake is an uninhabited area, it would just be a natural event, but, when it occurs in a densely populated area with big houses and buildings that can collapse and kill people, it becomes a disaster. The existence of a hazard is not a disaster, but time and space are also crucial, such as where it occurs, whom it affects and when it occurs. Society is built on social structures[ii] (Radcliffe-Brown 1957). There are variations based on caste, class, sex, age and religion in society. When there is an interplay of these factors and hazards there is the risk of a disaster taking place, where there would also be differential effects of a hazard on the social units[iii] such as families and communities. The condition of "risk" arises in such a situation.

Risk in disaster management is also seen through an equation: risk = likelihood x consequences. Risk is the likelihood of an event occurring multiplied by the consequence of that event, if it were to occur. In other words it is the possibility of the event occurring multiplied by the impact it would have. Hence, risk can be stated as the possibility of exposure to a hazard, and therefore, the possibility of being affected due to such exposure.

> "Likelihood is expressed either as a probability (e.g., .15; 50%) or a frequency (e.g., 1 in 1,000,000; five times per year), whichever is appropriate for the analysis being considered. Consequences are

> a measure of the effect of the hazard on people or property. Expanding upon this definition, it can be said that by reducing either the likelihood of a hazard or the potential consequences that might result, risk is effectively reduced. Likewise, any action that increases the likelihood or consequences of a hazard increases risk"
>
> (Coppola 2007:24).

Risks can be in the form of terrorist attacks, technological hazards causing disasters such as the Chernobyl disaster, natural hazards causing disasters such as cyclones in Orissa and Andhra, *tsunami* etc. A *tsunami* is a risk that has the potential to cause tremendous loss of life and livelihood and is one of the greatest risks in the world. Risk is a measure of the expected losses (deaths, injuries, loss of property, economic activity) due to a hazard of a particular magnitude, occurring in a given area, over a specific time period (NCDHR n.d). Disaster risk emerges from the interaction between a natural hazard - the external risk factor – and vulnerability - the internal risk factor (Cardona 2006). Disaster then may be related to the natural event (e.g., a hurricane or earthquake) in combination with its damaging effects (e.g., the loss of life or destruction of buildings). "Hazard" refers to a natural phenomenon, and "vulnerability" to the susceptibility of a population or system (e.g., a hospital, water supply and sewage system, or aspects of infrastructure) to the effects of the hazard. The probability that a particular system or population will be affected by hazards is known as the "risk." Risk is a function of the vulnerability and the hazard, expressed as:

Risk = Vulnerability x Hazard

(Pan American Health Organisation 2000: 1).

A hazard has the potential to cause injury to life, livelihoods, and habitat (Ariyabandu and Wikramasinghe 2005). There are some other factors related to risk that have an important role in transforming a hazard into a disaster and causing it to differentially affect the social units or the people. These factors are: the location of the social unit such as a community in the hazardous area, exposure of important resources such

as water lines, communication network, transportation network, houses, and vulnerability of the exposed structures and systems to the hazards (GOI-UNDP n.d). Vulnerability is defined as a set of conditions that affect the ability of countries, communities and individuals to prevent, mitigate, prepare for and respond to hazards (Ariyabandu and Wikramasinghe 2005: 21). Thus, two important factors that are intrinsic to disaster risk are a hazard and vulnerability. One should add here that to some scholars a hazard is a potential disaster while for some it is the same as the disaster.

When we examine the disasters in India and analyze the vulnerabilities of people and communities, we can see that vulnerabilities often include physical attributes such as—the location of people and elements at risk like houses, infrastructure, their proximity to hazards and their capacity to resist the disasters. There is also socioeconomic vulnerability, and groups who are in a weaker position in society, such as women and children face such vulnerability. In cyclone or flood prone places, it is people's poverty, lack of alternative livelihoods, the marine and agricultural based occupations and their weak houses, which make them vulnerable to hazards like floods and cyclones (Sharma and Sharma 2005).

Ulrich Beck has defined risk as something that is not happening but has the potential to happen. Thus, it has the characteristic of predictability. Beck talks about risk in the following words, "Modern society has become a risk society in the sense that it is increasingly occupied with debating, preventing and managing risk that it itself has produced" (Beck 2006: 4). For Beck, risk is not a catastrophe but the anticipation of catastrophe. In the present world when technology has developed so far, the possibility of predicting certain types of disasters has also reached an extent that one can tell even 72 hours ahead when a cyclone will hit. The exact location where the cyclone would hit may not be accurately predicted so far in advance. In a broader sense, now the risk is no more just out there, but one can know to some extent about the existing or approaching danger, well ahead of its arrival.

According to Beck, without techniques of visualization, without symbolic forms, without mass media, risks are nothing at all. "In other words it is irrelevant whether we live in a world which is in fact or in some sense objectively safer than all other worlds: if destruction and disasters are anticipated, then they produce a compulsion to act" (Beck 2006: 4). Even if the risk is perceived it is essential to take steps towards preventing it from becoming a disaster or towards preparedness to minimize the effects of a disaster. For this to happen, however, what is also required is to pay heed and give importance to the anticipation of any disaster. Otherwise, there is no use being warned of an impending disaster. Ignoring early warnings has been seen in many disasters. One of them was that of the super cyclone of Orissa (1999) where early warnings of the cyclone were not taken seriously or acted upon, and thus the results were devastating. What also needs to be seen here is the cause of such indifference to projections. Risk entails a dilemma in that it cannot be accurately calculated. There is the problem of not knowing the intensity of the probable disaster, the exact nature of the expected disaster, or the locale where it would strike. Hence, the problem is also in not knowing before the disaster strikes exactly what kind of action has to be taken when or after it actually strikes.

While exploring the parameters of risk society Ekberg (2007) focuses on the theoretical works of Ulrich Beck and Anthony Giddens on the perspective of the risk society. Beck and Giddens in their independent theoretical works claim the omnipresence of technological and scientific risks or the low probability and high consequence technological risks that are the features of contemporary society, with the new modernity that they term as the reflexive age of modernity or the risk society (Ekberg 2007: 343). This new era of scientific modernity has new problems which cannot be solved by old solutions of industrial modernity, and hence we need new solutions. Reflexive modernity is characterized by "…an increased awareness of risk, uncertainty, contingency, and insecurity and an increase in attempts to colonize and control the near future" (Ekberg 2007: 345). This awareness is of the uncertainties, and unpredictable fears related to modern technologies. Beck and Giddens separate four

stages of modernity according to the way risk is dealt with in the discourse of modernity. According to them, pre-modern society attributed risk to supernatural powers and divine forces. In this stage, risk was accepted. In the modern stage of optimism there was belief in a linear progression and emphasis on social control and order, such as control on civil society, nature, national borders. In contrast to post modernity that rejected modernity with all its features of social, political and scientific enlightenment, the power of reason and ideology of progress, reflexive modernity does not negate modernity. It tries to accommodate modernity with the changing nature of risk. This emphasizes the shift that has taken place in the world from industrial modernity based on the production of goods, avoidance of scarcity and control over nature, to reflexive modernity based on the avoidance of risk and the preservation of nature, this modernity is also called ecological enlightenment (Ekberg 2007: 346-347).

The concept of risk is further analyzed by Giddens and Beck in terms of the changing nature of risk. They consider various forms of risk such as natural and technological risk, actual and perceived risk, and they also discuss the shift from natural to technological risk, the gap between perceived and actual risk, the progression from invisible to visible to virtual risk and the spatial and temporal and demographic distribution of risk. The salient features stated above characterize and differentiate risks from what they were in the earlier modernity and its present form in the risk society or reflexive modernity. The risks that theorists look at in a risk society are not the ones created by nature such as cyclones, or earthquakes, but those due to the excessive and ill advised use of technologies and political power. Tierney criticizes Beck's work for not addressing the range of disasters and risks that societies face, especially that he is too focused on technological risks of post industrial society, and saying nothing about natural disasters that still haunt and affect human life. However, what is interesting and relevant here is the argument that Giddens (referred in Ekberg 2007) presented, emphasizing the point that the boundary between nature and technology is fading away and hardly any aspect of nature is untouched by the interests of pure or applied

science. Giddens calls this 'the scientization of nature,' 'the colonization of nature' or 'the end of nature.' According to Giddens, "the end of nature took place the moment we stopped worrying about what nature can do to us and began worrying about what we have done to nature" (Giddens in Ekberg 2007: 348).

An important element common in the discussion of risk is the distinction between reality and possibility (Markowitz in Renn 1992: 56). If the future is predetermined or independent of present human activities, the term risk makes no sense. For example, in the case cited by Renn (1992: 56) he discusses of a tunnel collapse in Saudi Arabia, where the collapse was considered as inevitable by the people. There was the assumption that victims of the accident would have died in some other way if not by the accident, as the future is predetermined and anticipating it is just to please one's curiosity, and negative consequences can never be avoided. However, if the distinction between reality and possibility is accepted, the term risk denotes the possibility that an undesirable state of reality (adverse effects) may occur as a result of natural events or human activities (National Research Council referred in Renn 1992: 56). Renn remarks that according to this definition "humans can and will make causal connections between actions (or events) and their effects, and that undesirable effects can be avoided or mitigated if the causal events or actions are avoided or modified." He further mentions that "risk therefore is both descriptive and a normative concept" (Ibid).

There are arguments and distinctions between real and socially constructed risk. Realists argue that the risks are real which can be identified, measured, classified and predicted. The Culturalists and cultural relativists argue that nothing is risk in itself but anything can be risk, so it all depends on how we perceive the danger (Eswald in Ekberg 2007). This argument extends to perceived risk and actual risk. Perceived risk means that the risk may be real or imaginary but people believe in the presence of risk even though it is not present in reality. Perceived risk is said to be present in the 'private consciousness of society' which also influences personal, social, political and financial decisions of society (Ekberg 2007:

350-351). Psychometric research on the perception of risk has shown the influence of socio-demographic variables such as gender, ethnicity, age, education, occupation, and prior experience (Slovic in Ekberg 2007: 351). Perceived risks are also invisible risks, which mean that these risks are present beyond the natural limits of human perception such as atomic radiations, chemical pollution (Beck in Ekberg 2007). Another example is of swine flu where the virus is at the subatomic level but all are afraid and feel at risk. Luhman (in Ekberg 2007) argues that hazards exist as dangers irrespective of whether they are recognized or not recognized, but they become risks only when they are brought into the public consciousness.

In anthropology, the concept of risk has been analyzed by the way culture and ideology shape societal definitions of danger. Douglas and Wildavsky (in Tierney 1999: 218) consider views on risk not as reflections of objective reality but more as cultural phenomena that reflect the values of a group and society which must be interpreted in light of their broader cultural functions. Kirby (in Tierney 1999) argues that the individual's perception of risk is usually dependent on a social representation, which can be defined as a culturally conditioned way of viewing the world and the events that take place in the world.

Sociologists have disagreements with the view point of the realists in assuming that objects are 'out there' and just need to be perceived or defined as risky. Sociologists, likewise, view the estimation of risk as socially constructed. The argument presented by sociologists is based on the social constructivist approach which does not say that harm is non-existent. However, they try to explain sociologically, "How social agents create and use boundaries to demarcate that which is dangerous" (Clarke and Short 1993: 379). Robert Stalling provides an example of how the threat of an earthquake is socially constructed. He terms the engineers, scientists and representatives of federal agencies as the promoters of the threat or constructers of the threat. Stallings does not state that earthquakes do not occur or cause damage, but shows how the organized social actors that he calls the 'earthquake establishment' frame this

problem and then forward solutions to it in the form of programmes (Stallings in Tierney 1999). Eugene Rosa in his discussion on risk asks critical questions regarding the processes involved in the social production of knowledge, on risks and processes that are influenced by money, power and institutional interests. An example he states is that of asbestos manufacture, where the risks associated with the exposure to asbestos is real, but what is sociologically important is the fact that the manufacturers did not disclose this to the public for decades and kept them ignorant about the risks (Tierney 1999).

Risk is not static, as the social and physical systems with which risks interact tend to change. "Human activity and societal change continually modify societal, community, and individual vulnerabilities" (Tierney 1999: 228). The risks also undergo flux, and therefore, the analysis of future risks, based on data from past accidents and disasters, to project future risk is questioned in the sociological literature on risk analysis. Other than this, one of the important aspects of the study of risks that has not been emphasized in other disciplines is the imposition of risk, that is, the processes through which risk is imposed on certain sections of people, because their choices are socially constructed or they lack information on the risks to which they are exposed (Tierney 1999). For example, prior to U.S. legislation Superfund Amendments and Reauthorization Act (SARA) 1986, there were no legal obligations on chemical companies to inform the communities living near chemical industries about the hazards of these chemicals. Many decisions about the acceptable level of hazards are made by organizations and governments, and not the general public. Even in facing natural hazards the example of earthquake resistant housing is cited by Tierney (1999), where it is not the public who make the choices of particular earthquake resistant housing. The question of assuming risk does not come in here because the choice of housing is made on economic grounds by the property owner. The people who live and work in those buildings are faced with earthquake hazards not because they chose to be in this situation but because it was imposed on them by the property owners, without any prior information.

Another framework of risk analysis is discussed by Kasperson and Kasperson (1996) called 'the social amplification and attenuation of risk'. This concept focuses on how social institutions and structures process a risk, which will shape the effects of the risk on society, management institutions, and people. It starts by suggesting that risks are interactive phenomena and involve biophysical and social worlds. Hence, they not only involve the threat of harm to people and nature but also affect value systems, and community and political freedom. As risk is sensitive to social settings, and social interaction might attenuate or amplify the signals sent to society about the risk that is present, the importance of various social institutions and organizations is mentioned in the attenuation and amplification of risk. The information about risk reaches people through various sources such as the mass media, government reports, or even networks of neighbours and friends on whom they rely. But the mass media is the major agent or social station for risk amplification and attenuation. Important factors in shaping the group and individual views include the information provided by the media, the quantum of information that is provided, and the interpretation of the messages concerned with the risks.

As is known, the media provides news selectively, considering what has a higher story value, which would be highlighted. Society receives the distilled version of news. Certain risks that have the potential to harm people fail to get the required attention, and thereby spread more harm. While others, which are amplified, tend to not only cause physical harm to the people and ecosystem, but are also accompanied by ripple effects of the amplification that impact the economy, social institutions, perception of people. In 1987, in a place called Goiânia, Brazil, people were affected by radioactive particles called 'carnival glitter' which was 'cesium 137', a radioactive element. According to media reports some 250 people were feared to have been contaminated, but actually 42 persons were contaminated, and the rest had very little radiation. A highly sensational media report presented the case in such a way that even those people who had no contact with the element were portrayed as contaminated. This had major consequences on the people of this place as they had to

suffer losses, in business, hotels in the area were vacated, houses were sold, and people left the place. People of Goiânia were not even allowed to board planes because of the fear that they were affected by radioactive elements, all due to an exaggerated news report by a Sao Paulo television broadcast about the event, which got amplified (Kasperson and Kasperson 1996).

Attenuation of risk is seen in the case of the Sudano-Sahelian drought of 1983 that went unnoticed by the world until it reached its peak in 1984. In this case the Reagan administration in the United States was unwilling to help the affected people as they did not want to deal with the Marxist-Leninist regime that ruled Sudan. The problem of unstable government, political tension and remoteness of the affected areas, and fatalities, created a situation where this great famine went unnoticed by the world until the NBC evening news aired a BBC special report in October 1984. The report showed fly-ridden skeletons of starvation dead, after which the United States responded. The social amplification and attenuation of risk testifies to the interweaving of the physical and social phenomena in the composition of risk and also shows why society responds differently to different types of risks and disasters (Kasperson and Kasperson 1996).

Exploring vulnerability and its relevance in disasters

Vulnerability is a major aspect of disasters. Vulnerability to a natural hazard includes all kinds of physical, structural or socio economic elements, that can be damaged, destroyed or lost (Barton 1969). Barton analyses the local specificities of vulnerability caused by ethnic and economic differences. The focus is on the impact of ethnic and economic factors on the accessibility of communities to crucial resources after a disaster strikes. He also talks about two approaches to vulnerability. One of the approaches attributes the cause of vulnerability solely to natural hazards, while the second approach looks at vulnerability through socio-economic causes such as that of structures and processes. The latter analyzes the local specificities of vulnerability due to ethnic differences, and economic inequalities.

Vulnerability is also taken as the central concept to understand disasters and their magnitude and impact. Attributes such as local knowledge, domains of disaster response such as local practices, and coping mechanisms were studied in the western countries by Bankoff and Hilhorst (2006). Cutter (in Cutter et al 2008) defines vulnerability as a pre-event, inherent characteristics or qualities of systems that create the potential for harm or differential ability to recover following a disaster.

According to Kesavan and Swaminathan (2006: 2193), "Vulnerability to disasters has social, gender, ecological and economic dimensions in addition to the well-acknowledged technological capacities of the countries. It describes the degree to which a socio-economic system or physical assets are either susceptible or resilient to the impact of natural hazards." They argue that those development practices that do not take into account the susceptibility to natural hazards lead to the enhancement of vulnerability. In this context, they provide the example of coastal areas of Orissa that had suffered the degradation of mangrove forests, and severe losses and damage during the 1999 super cyclone. This indicates a close connection between environmental degradation, higher human vulnerability and increased intensity of natural disasters.

Parasuraman and Acharya (2000) talk about three types of vulnerability of people (a) on account of their economic status, (b) social vulnerability on account of the various forms of discrimination, which is heightened or reduced as a result of newer emerging entitlement systems. They also talk about (c) personal vulnerability which is a troubled state of an individual, a feeling of being uprooted, and facing the threat of exploitation due to disruptions of an individual's entitlement system. In a discussion on earthquakes in India, they consider the different forms of vulnerabilities. They indicated social vulnerability as being one of the forms, and where age, social position and disability are considered important variables to analyze vulnerability. However, they also stated that due to limitations of their data, occupation and caste factors were not analyzed in their study of disaster and vulnerability in the earthquake hit areas of Latur and Osmanabad districts of Gujarat, India, in 1993.

Vulnerability is experienced at various levels or sectors such as national, economic, psychological and environmental. Poorer countries are more vulnerable to disasters than developed countries. The physical level of vulnerability includes infrastructure such as buildings, transport; vulnerability at the social level includes the disruption of social organisations, the vulnerability of communities and their members such as the aged, women; economic vulnerability includes the costs incurred due to the physical loss of assets and production, and the costs incurred to replace the losses, epidemics, seasonal and permanent migration of people; psychological vulnerability talks about the emotions experienced due to the loss of family members; environmental vulnerability is the vulnerability of the environmental fabric and degradation caused by disasters (Parida 2005).

The significance of vulnerability is that it may turn a hazard into a disaster. Vulnerability has been talked about in every discipline that deals with risk and poverty related aspects. Wisner et al (2003) discuss vulnerability by introducing the human factor in their discussion, and try to link political economy and the actual hazards that people face. They emphasize people's access to the resources that they need for their livelihood. The focus, therefore, is on people at risk due to their livelihood being threatened by disasters, who also find it hard to retrieve their livelihood after disasters, and thus increasing their vulnerability to future hazards (Wisner et al 2003). The future exposure to hazards is an important factor not only in discerning the vulnerability of a community, but also in relation to the community's inherent characteristics (Bolin in O'Hare 2001; Wisner et al 2003). All people are not equally vulnerable to hazards. There are variations in vulnerability because of different factors. Certain social and demographic groups are more vulnerable than others, and face greater difficulties in recovering from disasters (Bolin in O'Hare 2001). These groups include people marginalized due to their class, caste, gender, race, ethnicity, age, geographical location, health status, age and immigration status and the nature and extent of social networks (Bolin in

O'Hare 2001; Wisner et al 2003). When they interact with hazards these are the characteristics that produce differential impacts. Therefore, vulnerability here refers to people, not to buildings and economies or fragile slopes on the earth's surface, and relates to social characteristics as mentioned earlier, that of ethnicity, gender and health (Wisner et al 2003). Vulnerability also has a time dimension, that is, it can be predicted in terms of future damage to livelihoods and not just what happens to life and property at the time of disasters (Wisner et al 2003).

The very fact that some people are poor, pursue a specific occupation, or belong to a particular caste that has lower social status which also affects their access to resources, adds to their vulnerability. Thus, various identities within a group are also involved in increasing their vulnerability to hazards. Poor people lack choices in habitat. Their occupation forces them to stay in disaster prone areas. Risky livelihood and hazardous locations of settlements owing to a hazardous occupation leads to physical vulnerability (Ariyabandu and Wikramasinghe 2005). The lack of alternative occupational locations also forces them to settle in such hazard prone areas (Samanta 1997). The most obvious factor contributing to community vulnerability is the location or proximity to hazard-prone areas such as cyclone prone coasts, floodplains, seismic zones, and contaminated sites, also for example those communities who stay on the shore in islands rather than inland are more vulnerable (Cutter et al 2008).

Certain studies have taken into consideration not just the 'vulnerability' of people that limits them, but also their capacity to protect themselves, even though they are a vulnerable group. These studies look at not only their weaknesses, but the capabilities that they have to build, or be resilient to disasters, even when they are vulnerable. These studies focus on self protection and group action, people's capacity to adapt, and their ability to avoid and resist disasters. This is important because most of the studies tend to focus on people's weaknesses and limitations, and identify the socially vulnerable groups as special needs groups. Thus, the problem arises out of treating people as passive recipients and incapable victims

(Cannon 2000; Hewitt in Wisner et al 2003). Often, vulnerability is seen as the characteristics of systems that create the potential for harm or the differential ability to recover following an event (Cutter n.d: 03). Therefore, due to certain characteristics (such as caste, class, and gender) the ability to recover from a disaster also differs from people to people, and group to group.

The association between community and place needs to be discussed. As Scherer (1972) states, we cannot ignore the possibility that some kinds of environment are more conducive to the formation of community than others. If we take this as a starting point we can argue that the very fact of being situated in disaster prone areas, where the occupation is also linked to the uncertain weather, may enhance the feeling of community.

A continuing tradition in disaster research in general, and in anthropology specifically, tends to view hazards and disasters as challenges to the structure and organization of society, and has focused on the behaviour of individuals and groups in the various phases of disasters, their impact and aftermath. The emergence, adjustments and interactions of individuals, groups and organizations to the stress of warning, impact, and immediate aftermath, have been central themes developed by the research (Oliver-Smith 1996: 305).

Various definitions and interpretations of vulnerability are found in different disciplines such as economics, sociology, disaster management, and study areas such as livelihood studies (Alwang et al 2001). Economics, for example, focuses on the sources of economic risks such as price, and weather variability, when discussing vulnerability. Vulnerability is conceptualized as an *outcome* of a *process* of household response to risks, given a set of underlying conditions. Due to their cumulative process of risk and response these vulnerable households move into a state of poverty, or are likely to move into it. Further, economics uses money as the means to compare and measure vulnerability, as they consider it to be more convenient to measure vulnerability by income variance; it also uses poverty and its determinants to measure vulnerability. Pritchett et al

(2000: 2) consider "vulnerability as risk a household will fall into poverty at least once in the next few years".

Coudouel and Hentschel (in Alwang et al 2001) however, encompass not only income vulnerability but risks such as those related to health, risks from violence, and those from social exclusion, and all of these can have major effects on households. They also indicate that vulnerability related only to income or consumption change covers only one facet among several facets of vulnerability. Hence, there are some limitations in the way vulnerability is analysed in economics and poverty related literature. In the asset based literature the focus is about managing risks through household assets, where they analyse how assets help reduce vulnerability and mitigate risks, with the assumption that those households with more assets (higher income and other welfare generating assets) are less vulnerable than those who have fewer assets (Moser and Holland 1997).

One of the main issues that affects the lives of people and needs to be mentioned is their livelihood, which is susceptible to shocks of various types. Livelihood means the ways in which people satisfy their needs and earn a living, or in other words it is "a set of flows of income, from hired employment, self-employment, remittances or (usually in developing rural areas) from a seasonally and annually variable combination of all these; should be sufficient to avoid poverty; implies systems of how rural people make a living and whether their livelihoods are secure or vulnerable over time" (Ahmed and Lipton 1999: 6). Two sides of vulnerability are identified, where one is related to external shocks and the other is the internal side that is the lack of defence or coping mechanisms (Chambers 1989). Davies (1993) talks about structural vulnerability, where the households show characteristics such as having old and infirm members, which make them vulnerable.

During any crisis situation one of the effects is the insecurity of food. This is measured through consumption, child malnutrition etc (Chung et al in Alwang et al 2001). The other strand of literature that deals with vulnerability is that of disaster management, which looks at vulnerability

with respect to natural disasters. Vulnerability is defined here as the characteristics of a person or group in terms of their capacity to anticipate, cope with, resist, and recover from the impact of a natural disaster (Wisner et al 2003: 11). The focus is on the hazards that may be present all the time but tend to become disasters because of the inherent vulnerabilities of the people affected (Prowse in Makoka and Kaplan 2005; Cardona 2006).

Sociologists often considered poverty as a state resulting from a combination of circumstances, and measures such as income or consumption fail to adequately describe the poor. They also use vulnerability as an alternative means of characterizing poverty, which money cannot always measure. Thus, the concept of social vulnerability is used by them rather than economic vulnerability. The identification of vulnerable households is on the basis of characteristics such as those with elderly and disabled persons, and households headed by women who have low income. Others, such as Putnam (1993) use social capital and strength of household relations as assets which are useful in building resilience in vulnerable groups.

Environmental changes that may be ecological, economic, social, political, seasonal or sudden shocks threaten the welfare of the people. Due to these changes there may be increases in risks and uncertainties. As people move in and out of poverty, vulnerability which means "the insecurity of wellbeing of individuals, households, or communities in the face of changing environment" (Moser and Holland 1997: 2) better captures the process of change than static measures of poverty, and goes beyond an economic discussion of poverty.

While discussing the state of Orissa, India, the manifestation of poverty includes a substantial section (46.8 %)[iv] of the population who are below the poverty line. They do not alternate between being in poverty and then out of it, but are perennially in poverty. Further, poverty that we see among people in India refers to absolute poverty rather than a state of relative deprivation. Most people who live in the two villages that we studied fall into the category of absolute poor, i.e. below the line of

poverty[v]. In a general sense this would suggest that they do not have adequate housing, do not get enough to eat in terms of calories per day, are not able to keep their children in school for longer periods, and usually withdraw their daughters from school in a very short time, probably just after finishing primary school. Meeting medical expenses or even to manage their lives within their income is also most difficult, even with several members of their families going out to earn a living. All these put them in a state of vulnerability that is in addition to the effects of external factors such as cyclones or floods.

Vulnerability has also been seen as the susceptibility of social groups to the impact of hazards, as well as their lack of resiliency, or ability to adequately recover from them (Cutter and Emrich 2006: 103). Social vulnerability is seen as the product of social inequalities. According to Cutter, "…..it describes those characteristics of the population that create differential social burdens of hazards and help explain why the same natural event produces dramatically different impact within the same geographical area" (Cutter n.d.: 5). This vulnerability is contingent upon demographic characteristics of the population such as age and gender, as well as wealth and also to other factors such as social capital, health care provisions, and access to life lines (Cutter in Cutter and Emrich 2006). Cutter states that when Hurricane Katrina struck the United States in August 2005, and specifically the three coastal counties of Mississippi, Alabama and Louisiana, there were considerable differences in the responses to the disaster in these counties. It was evident that the city of New Orleans had the most vulnerable population, which was also visible through the socioeconomic and demographic indicators. In the social sphere, the vulnerabilities were based on race, gender and class. People living in the Orleans parish were vulnerable not only on the basis of race and gender but also in their economic condition. It was their dependence on a single sector economic base of agriculture that made them vulnerable because any damage to this sector meant that there was no income, as there was no alternative source of income. Place vulnerability is highlighted in social vulnerability because the place also decides the vulnerability of the population. Place vulnerability includes two

components, one being those factors in the environment that increase the possibility for disasters to occur and second, those characteristics of people which make them less able to cope with disasters.

Social vulnerability received a further momentum in the study of disasters when it was noticed that there was excessive emphasis on the 'external destructive agent' or the hazards, and 'reaction of the people was the only indicator of the nature of the agent'. Dombrowsky suggested "a creative reformulation in studying a disaster as a social action taking place within societies" (Dombrowsky in Gilbert 1998: 25). It is necessary to focus on those aspects in a disaster which are internal to the people. He argued that the role of agent (i.e. the hazard) in the context of disasters needs to be replaced by the importance of social vulnerability, analyzing it structurally and contextually and looking at the disaster as a process.

Gilbert (1998: 6-7) identified three paradigms in his classification of theoretical approaches to the study of disasters. The first paradigm is the war approach where the natural hazards are seen as external destructive agents, which like bomb attacks elicit mechanical reactions from the people who are seen as victims. This approach saw the response of people as more out of panic, and has the role of disaster as the destructive factor. In his second paradigm, a disaster should be seen as a social consequence rather than as merely a reaction to some hazard. The shift is from perceiving a disaster as merely an effect of a hazard to perceiving "disaster as a result of the underlying logic of the community" or internal risks that are present within a community. Therefore, social risks within a community are emphasized in this paradigm. According to this paradigm one needs to talk about those lacunae or loopholes, or risks that are internally present than focusing on some external agent such as a storm which caused this disaster. We look at the process of the disaster and do not consider it as mere reaction. A disaster is thus seen as a process where the activities carried out by actors and structure in the community start breaking down. The third paradigm sees a disaster as uncertainty, which occurs when a danger real or imaginary threatens the community and the community is not able to understand it through its causes or effects and it upsets the system of meaning. Thus, there is an

inappropriate interpretation of chaos or confusing situation, and inability to understand the reality or define a situation through already existing knowledge or traditional understanding.

Surviving disasters: Coping and Adaptation

Whether disasters strike on only rare occasions, or as with cyclones it could be on several occasions every year, people devise various means to cope with these disasters. While preserving their lives would be the immediate concern, depending on whether they are rare occurrences or the more regular disasters (such as cyclones), people have various means of coping with them. 'Coping strategies' have been defined by Davies (1993) as individual or community responses to change in environmental conditions, or responses to its consequences such as declining food availability. Coping strategies are short-term responses to secure the livelihood system against periodic stress. The term adaptive strategies means the way in which individuals, households and communities have changed their mix of productive activities, and modified their community rules and institutions over the long term in response to economic or environmental shocks or stresses, in order to meet livelihood needs (Roy et al 2002: 6). According to the literature on food security, coping strategies are defined as the actions taken by households when faced with extreme food insecurity which might be caused by diverse factors such as climate extremities to wars (Adger 2000).

Table 2.1 Characteristics of coping and adaptive strategies

Characteristics	**Coping mechanism**	**Adaptive strategies**
Time dimension	Short-term	Long-term
Cause	Locally or externally induced	Locally or externally induced
Space	Acting within the prevailing rule system	Change the rule systems, or moral economy
Efficiency	Efficient in short terms	Efficient in long term
Nature	Socio-economic in nature	Socio-economic and environmentally responsive. Interactive and dynamic
Resilience	Reversible in short term	Can be sustainable one.

Source: Roy et al (2002)

According to Murphy and Moriarty (in Wisner et al 2003: 113) coping "Is the manner in which people act within the limits of existing resources and range of expectations to achieve various ends". To them it means nothing more than 'managing resources', but doing so in situations of 'adversities and abnormalities'. Thus, managing resources here is done in the form of defence mechanisms, handling stress and solving problems. 'Resources' to Wisner et al (2003) refer to "physical and social means of gaining a livelihood and access to safety". They also include land ploughing tools, seeds, livestock, draught animals, cash and jewellery, other items of value that can be sold, storable food stock, as well as skills. Other than these resources, the detailed knowledge of the place and availability of resources also matter, such as where to find wild food or timber (this knowledge would be lacking in people who are resettled in a new place).

Although it is mostly believed that the motive behind coping is survival in the face of adverse events, Maslow (in Wisner et al 2003) mentions that even in such a situation there is a hierarchy of human needs. He states that there are certain levels of human needs, and each level incorporates and depends on the satisfaction of needs below them. Hence, needs for love, affection and respect may be the highest in the hierarchy, but for these to be satisfied requires the fulfilment of an acceptable standard of living or even satisfaction of the bare minimum of shelter and food for survival. Then, lower in the order comes the minimum security from violence and starvation. The fulfilment of the higher order needs requires the prior fulfilment of the lower level needs. Doyal and Gough (in Wisner et al 2003) indicate that a core of basic human needs can be identified, and the satisfaction of these basic needs is important to fulfil other needs. However, Wisner et al (2003) present certain studies that show mixed reactions. Jodha and Scott (in Wisner et al 2003) showed the importance of higher level needs such as social status and dignity even in adverse conditions, as seen in studies on Gujarat. Scott (in Wisner et al 2003) indicated the resistance to authorities shown by survivors of disasters. Even when they were in adverse circumstances, sometimes people submit to the needs of the hour and undertake activities that may be a compromise with higher level needs. This was the case reported by Rao

(in Wisner et al 2003) in Medak district (Andhra Pradesh) where the Reddy caste, which is considered a higher ranked caste had to sell vegetables to earn a living, an activity that in the past they normally considered as below their dignity, but had to take up now due to their present difficult conditions of life.

The coping strategies of the communities mentioned in various works (Roy, et al 2002; Salagrama 2006) include the diversification of income sources. Fisher folk have fishing as their main occupation, but take up income generating activities such as rearing livestock, and weaving mats to counter the effects of a declining income from fishing. Women from marginal farm households as well as landless agricultural labourers engage in multiple activities such as backyard poultry, duck rearing, small animal rearing, rope making, mat weaving, and part time non-farm jobs. Many poor families reduce their consumption and expenses on social obligations such as marriages, and drastically reduce their food intake, as mechanisms to cope with disasters. The reduction in food consumption causes malnutrition. They survive mostly on food supplied to them by relief agencies. Children are also sent out to earn by their families as a means of augmenting their income after disasters. Schooling was reduced for girl children, who were withdrawn from school and engaged as daily labourers. Communities also draw upon common property resources to a greater extent during periods of calamity. For example, during a drought, whatever water that is available as in rivers, streams, village ponds, and mangrove forests, are common property resources that benefit all the rural people of the area. Though the collection of fuel wood from the forest, or catching fish/turtles in the rivers and streams is banned for environmental reasons, poorer households normally defy such restrictions in times of extreme hardship (Roy et al 2002; Salagrama 2006).

People come together to help one another such as in a village named Gupti, in Kendrapara district of Orissa, which was studied by Roy et al (2002), where neighbours helped in rebuilding cyclone affected dwelling units of the poor people's households in the village. There was also co-operation among the village residents to build cyclone shelters. Other than

helping each other, people also extended their social support networks to those who came within a wider shared identity such as their clan, tribes and caste. Longhurst (in Wisner et al 2003) mentions *meskel*, a form of community redistribution in parts of Ethiopia, where needy people are provided with credit to celebrate the festival of this name, thus enabling them to acquire food.

Whenever they have a good agricultural crop some farmers stored surplus food grains, and a few also purchased grains when prices were low, and stored them for the future, thereby building up stock and inventories. Kendrapara (Orissa) farmers were reported to have done this as a mechanism to face drought. However, landless daily labourers are unable to generate or obtain surpluses (Roy et al 2002). They neither grow their own crops nor do they have the resources to buy grain and store them.

Sharecropping is a means that reduces risks for both the landowner and the tenant, and although not meant primarily to reduce risks in farming, at times it serves the farmers by mitigating the effects of droughts. It allows the households to make better use of their resource base, where labour is provided by the tenants and cash by the landlords. Crop insurance, though an important means of managing risk, is practiced by only a small number of households, mostly by the large farmers or those who have the ability to pay the premiums. Migration is also identified as a means of coping with the effects of disasters. Many fisher folk and farmers resort to migration during cyclone seasons or droughts, to take up wage labour in other places. This strategy is mostly followed by poor households (Roy et al 2002).

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 (Cutter et al 2008). 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" (Hollings et al in Adger 2000: 349). Adger (2000) 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 (Fabricius[vi] in Leach 2008).

> United Nation/International Strategy for Disaster Reduction (quoted in Ahmed 2006: 15) defines resilience as "…the capacity of a system, community or society potentially exposed to hazards to adapt, by resisting or changing in order to reach and maintain an acceptable level of functioning and structure. This is determined by the degree to which the social system is capable of organizing itself to increase its capacity for learning from past disasters for better future protection and to improve risk reduction measures". Walker et al (in Ahmed 2006: 10) define resilience as "…the capacity of a system to absorb disturbances and reorganize while undergoing change so as to still retain essentially the same function, structure, identity and feedbacks."

The Subcommittee on Disaster Reduction (in Cutter et al 2008) suggests certain characteristics of resilient communities that include the recognition of relevant hazards, the communities at risk know when a hazardous event is imminent, and individuals at risk are safer from hazards in their homes and work places, and the communities experience minimum disruption to life and economy after the disaster is over.

Adger (2000) 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" (Ibid 2000: 347). 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 (Pimm in Adger 2000). 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 (Adger 2000).

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 (Burby et al in Cutter et al 2008). 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 2008).

Cutter et al (2008) mention that in fostering resilience there can be various factors in the community such as local leadership, social capital (also mentioned by Harriss and de Renzio in Adger 2000) 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.

Vulnerable groups

A *tsunami* may be a once in a lifetime event even though it is extremely destructive, floods are slow onset disasters that affect people more gradually, and droughts have features of even slower onset. Among disasters, cyclones are one of the most destructive in terms of loss of life and property, and the impact on livelihood. The first to be affected by cyclones and flash floods are farmers and fishermen who live in flood and cyclone prone regions, and who are the traditional food producers. The psychological trauma of losing whole families lasts a long time, and the effects of the cyclone of 1999 in Orissa remained for a long time in the memories of the people who were affected (Roy et al 2002). A study of the coping strategies of communities in Kendrapara district of Orissa, frequently affected by natural disasters such as cyclones, droughts and floods, reported severe effects on the people and communities, especially the fishermen and farming communities. The super cyclone of 1999 caused a large number of deaths in this place as well as in Jagatsinghpur district. People also suffered loss of livelihood. The loss of the main income earners of the families caused even more hardship, and gravely affected the economic condition of these families, besides the immediate and tremendous impact of the loss of family members. For several fishing and farming communities, livestock is an important source of livelihood and food security and in some cases also constitutes a form of savings. Following the super cyclone, loss of livestock affected the lives and livelihood security of the communities, when more than 6.32 lakh animals and 18.83 lakh poultry perished in the two districts of Kendrapara and Jagatsinghpur of Orissa (Roy et al 2002: 5). Families also incurred losses of productive and other assets and even their houses. During disasters there is lack of food. Ill-health and other disabilities prevalent in the aftermath of a cyclone drastically reduce the ability of people to get work and also to acquire food. An important aspect of vulnerabilities of people who live in these disaster prone areas is that poorer people are more vulnerable to the effects of these disasters than those who are economically better off. In these parts of Orissa, recurring disasters such as cyclones make it even more difficult for them to recover because that

takes time, and before they have recovered from the earlier disaster a fresh one may strike, leaving a trail of mounting problems.

Fishing communities: Livelihood pattern and their vulnerability

In India, when the east coast is struck by cyclones, the people who are most affected are the fishing communities (we mention east coast only because this study is focused on the coast of Orissa). The reason for a marine fishing community being most affected by such occurrences is that their entire dependence is on the sea, and any disturbance in the sea often results in loss of life, and most often affects their livelihood. High tidal waves destroy equipment of the fishermen by washing away or breaking the fishing boats and nets. Livelihood opportunities of fishing communities are constantly disrupted due to cyclones. As the majority of the people are poor, such natural disasters have made them even more susceptible to additional problems. There is an increased sense of vulnerability that makes life more difficult for most fishermen. There is always the fear of another cyclone in their mind (Roy et al 2002; Salagrama 2006).

Tietze (1985:80) identified five functions in the division of the traditional fishing economy: (i) production, i.e. catching fish; (ii) processing; (iii) marketing; (iv) finance and credit; and (v) manufacture of the means of production, e.g. boat building, engine repair and net making. These functions are interwoven and in some places performed by the same people. In others, they are separate and performed by different groups, depending on the stage of development of particular communities. While production activities are largely carried out by traditional fishing communities, which are generally caste-based, shore-based activities are pursued and even dominated by people of non-fishing castes (Salagrama 2006). Some examples have been cited from Orissa where there are traditional Oriya fishing castes such as Gokhas and Kaibartas who are involved in fishing, and also sometimes owned boats and nets, while non-traditional fishermen castes such as Harayans, Khandayat, Radhi, Teli, Ganda, Barik (barber caste) and Kumar (blacksmith) also entered sea

fishing, mostly owning fishing boats and nets, and occasionally going fishing too (Kalavathy 1984).

Ordinarily in a year, the livelihood pattern of fishermen consists of fishing in some months and then a lean season, i.e. fishing is a seasonal occupation. During the lean season the fishermen do other work such as repairing their fishing equipments, and in crafts such as rope making, mat weaving (Roy et al 2002). But this is for those fisher people who have substantial income during the fishing season. It is different for poor people who depend on daily earnings. They will starve during the lean period if they do not migrate to other places to get work. Some families reduce their food intake to only one meal a day as a coping strategy to reduce expenses, but starvation leads to malnutrition and illness, and especially for older people the condition is worse (Murickan 1991; Roy et al 2002). Hence, it is often the poorest of the fishermen, already caught in a debt trap, who face the worst effects of the disasters, because their livelihood is affected (Department of Fisheries, in Salagrama 2006).

Livelihood pattern and vulnerability of farming communities

Farmers are the other group most affected by flash floods, floods and droughts. Their standing crops get washed away by flood water, lands are sometimes inundated by salty water (if they are very near the sea), or crops perish due to lack of irrigation, and through ground water depletion during drought. Their land becomes barren, resulting in no crops being harvested, and they suffer a near starvation existence.

A look at village studies in India shows that more emphasis was placed in caste society and the social order of kinship, and lesser importance was given to social relations of production and prevailing structures of dependency/ exploitation in the rural agrarian peasantry. In India the peasantry has a large number of landless labouring poor who had been part of the agrarian economy and had been working for landowners for long years. Due to the lack of adequate income they became indebted, borrowing to meet expenses such as their own marriage, sister’s marriage

and other family necessities. Low wage rates, and lack of any alternative source of income led to perpetual debt (Jodhka 2007).

In a similar tone, while discussing the agrarian economy, Jan Breman (cited in Jodhka 2007) mentions the case of *Dublas* who were landless bonded servants of Hindu landowners. Placed at the lowest rung of the caste hierarchy, they belonged to a local tribal group in Surat, Gujarat. Breman talks about domination and subordination. A patron-client relation existed, where the landowner as a patron master was obliged to ensure that the labourer could meet his basic needs and gave him a part saved from the grain produced from his land. The client or labourer had to work as an agricultural labourer and his wife worked at the landowner's house. The labourer earned barely enough and had to borrow from the landowner, getting enmeshed in the vicious cycle of indebtedness. After Independence, economic prosperity brought a change in the landowning classes, making landless labourers more vulnerable. The economist's perspective of numbers failed to capture the complex reality of social relations and longer value frames within which the struggle for survival of the poor took place.

Jeffery Sachs (in Dasgupta 2007) stated that periodic disasters such as epidemics and flooding can create conditions that make it incredibly difficult for the poor to escape from poverty through normal routes. Floods can devastate the physical and social capital of societies and destroy whatever tiny amounts of savings that poor households have. Dasgupta (2007: 3167) raises two important questions citing the case of floods and their effects on the poor in New Orleans, USA, in the wake of the hurricane Katrina (2005) disaster. The questions are, "Did the disaster primarily highlight the problems of poverty and race among households in inner-cities, common in New Orleans and other US cities (whether flood-prone or not)? Or, (ii) Did it highlight the effects on poor households of living in flood-prone lands in the Mississippi Delta, independent of community and household characteristics?" She mentions that if it is the former, then public policy interventions should aim at helping the households, while if it is the latter, then interventions should target at

mitigating the impact of floods, which is necessary for households living in flood-prone lands.

Dasgupta's study also suggests that not all floods are bad. Small scale flooding fertilises the soil, and in fact small annual floods are beneficial and also necessary for agriculture. Beyond a certain point i.e. five feet of water and depending upon the duration of the flood, the relationship between floods and crops changes and becomes negative. Policymakers need to focus not on preventing the smaller and useful floods, but the catastrophic floods. Dasgupta (2007) raises the research question to understand poverty in poor and backward regions around the world, in terms of their causes. Among others, the findings also include one that suggests that flood prone districts tend to have consistently greater headcount ratios of poverty.

Impact of disasters on Gender

Social stratification operates during disasters, making some people more vulnerable to the effects of the disasters than others. The impact of disasters on groups such as women has been discussed in the literature on disasters as well. In discussing the interplay of women's vulnerability and the impact of disasters, we can look at various aspects of social life such as economic, cultural, political, and health, and through the available literature discern how women face disasters and how their pre-existing vulnerabilities affect them in disasters.

Ariyabandu (2009) mentions that gender relations in society are broadly reflected in gendered identities. A combination of physical and behavioural characteristics set apart boys from girls, men from women; perceptions or views as to how they are differentiated in their roles as men and women; attitudes and actions guided by the perceptions and status; and the places occupied by men and women in the family, community and society. Ariyabandu says gender based prejudices and divisions in societies led to gendered attitudes towards women and girls that have also been extended to crisis situations during disasters, and where women were identified as passive and incapacitated victims who needed to be rescued.

Women and men have distinct functions in disasters. Ariyabandu also states that in many societies women outnumber men in taking an active part in disaster mitigation initiatives in the community. In their study conducted in five South Asian countries, women were found to have valuable knowledge and experience in managing and coping with disasters, mainly due to living with regular disaster cycles and managing risks associated with them. For example, in the Nawalapitiya Township in Sri Lanka, where communities live with the threat of landslides and rock falls, women were more likely to witness early signs of landslides and anticipate rock falls as they stayed and worked near and around the house, whereas men went outside to work. Women in these parts created vigilance groups along with men to watch for rock falls (Ariyabandhu and Wickramasinghe 2005). However, in many emergency planning organizations, the representation of women is rare, especially in decision making positions (Enarson and Morrow 1998).

Social and Cultural effects on gender

There is a predetermined space in society i.e., gendered space. This space is divided into public and private space. For generations, women were forced to stay within the private space of the home owing to their capacity to bear children and so called physical frailty. Their access to public space was restricted to a minimal level, such as, fetching water. According to the gendered space the tasks are also divided according to the two genders. The woman, who stays at home, does the entire household work, and the man deals with outside work which also includes employment and earning a living. This gendered space and the gendered division of labour led to various forms of discrimination towards women such as lower access to information, lower access to employment, hindered mobility and so on (Bhasin 2000). Chakravarty (in Ray-Bennett 2009) mentions that women's vulnerability and subordination in India is grounded in the Hindu caste system and patriarchal practices that place women in highly disadvantaged positions in their everyday lives. Cannon (2002) states that this subordinate position increases women's vulnerability to environmental hazards. In normal circumstances they have restricted access to amenities

such as education, employment, and health care. During disasters, women suffer even more. The gendered division of labour is often re-intensified due to additional work and changes in the environment brought about by a disaster. Tasks such as cooking and caring for family members become even more difficult due to scarce resources and restrictions on women's mobility (Narseem in Ariyabandu and Wickramasinghe 2005). Since women's mobility during floods is largely dependent on men, for women on their own and with small children or other dependants, the struggle is against both nature and social norms. Ikeda (1995) found that during cyclones in Bangladesh, gender plays an important role in victimisation, resulting in a higher rate of deaths of females than males. She noticed differences in receiving information on disasters, and in preparedness and taking decisions in emergencies. Women are ill informed about approaching disasters. Even the evacuation decisions are made by male members at home, and even though women may want to move to safer places their suggestions are rejected if the men do not share the same view.

In the *tsunami* of December 2004, about 8,90,885 people were affected in the state of Tamil Nadu, and 7,893 persons lost their lives, among whom the majority were women and small children (Chandran 2004b). This was because women had to wait on the shore for the boats to come in with fish, which they would collect, clean, and sell in the market. When the fast moving waves came in, these women on the seashore were washed off along with their children who accompanied them (OXFAM 2007). After the *tsunami*, girls whose parents died in the disaster suffered another fate, of marriage without their consent. They were left with relatives who were not willing to support them for a longer time, and they were often married off to men not suitable for the girls. They were either very old or had poor or irregular incomes. Sometimes, the age at which the girls were married was also very low. Instances were reported in Cuddalore, Tamil Nadu, where a few girls whose marriages were fixed before the *tsunami*, had lost their parents in the *tsunami*. They were left with the extended family and relatives who got them married to some other men without their consent (OXFAM 2007).

Disasters have a strong negative impact on girls' education. When the parents or either of the parents is killed in a disaster, the first sacrifice a girl makes is to leave her school to take care of the household and siblings. An instance is that of Bhagyalakshmi who had to leave school because her mother died in the *tsunami* of 2004, and she had to take care of her siblings, especially her mentally challenged brother who was earlier looked after by her mother. She was in class 10 when she had to drop out from her school for her family (OXFAM 2007). Similarly, after disasters in Orissa, girl children were withdrawn from schools and engaged as daily labour to meet the subsistence needs of the family (Roy et al 2002).

Effects on the economic condition

Following the effects of disasters on women, we now consider the economic status of women, and the interplay between their status and disasters. As mentioned earlier, because of the gendered division of labour women are deprived of various opportunities in the normal course of life such as better pay, equal pay, scope of promotion, accessibility to land and property, etc. When the context is that of a disaster, the situation becomes worse. Women constitute the majority of those working in agriculture and the informal economy, which consists of low-paying jobs with little or no security and benefits. When a disaster strikes, these are the hardest hit areas, resulting in women being the majority of the unemployed in the post-disaster phase (White Paper: Disaster Relief 2007).

Relief is usually extended to male heads of the household, without looking at the household, and the differential impact of disasters on members depends on their gender, social status, age and access to resources. For instances, the allotment of sites for the construction of houses after a disaster is invariably in the names of husbands and sons, which does not consider the specific vulnerability of single, deserted, widowed or old women (Ahmed 2004). House building grants allotted in the Indira Awas Yojna were 'self-help house models' which needed the family members to construct them once they were allotted the grants. Women headed houses had difficulties as they did not know how to construct concrete houses,

and some did not have male members to help. Construction work also took up the time that they may have been able to use to earn their living as daily wage labourers (Ray- Bennett 2009).

After the disastrous super cyclone of 1999 in Orissa, wage opportunities declined for both men and women, because of salt water inundating the land, rendering it useless for agricultural activities (Suri 2000). Inundated land requires additional expenses to make it fit again for agriculture, and this is more difficult for poor people who have also lost much of their assets in the disaster. Men can still migrate to work and earn, but women cannot do so. This is because migrating alone is not safe, and they cannot leave their children and older family members in the disaster struck conditions. Thus, their ability to earn gets drastically reduced.

According to a study in Gujarat, in many drought affected households across the state, women found it difficult to leave children at home and go out to work. They also faced conditions of low wages and gender restrictions on tasks and occupations, which made it even more difficult to support their families (Ariyabandu and Wickramasinghe 2005).

Effects on health

Health is another important issue to look at when assessing disasters. The literature looks at how disasters have affected the reproductive health of women, and why they have not been provided with special assistance such as health care facilities, particularly if they were in an advanced stage of pregnancy, or nursing infants (WHO 2002; Ariyabandu and Wickramasinghe 2005). Physical constraints due to conditions of pregnancy, delivery, nursing, and social and economic handicaps also contribute to the increased vulnerability of women during disasters (Kesavan and Swaminathan 2006). There are cases of miscarriage and premature births, and others where women carried their pregnancies under conditions of severe deprivation. Premature babies and inadequate breast milk indicate the levels of stress and malnutrition that some mothers face. Women were giving birth in unsanitary conditions without medical assistance, some in the open air in the rain (APWLD 2005). WHO

(2002) mentions that the chances of women contracting diseases increases if they were menstruating during disasters. This is due to the lack of clean water and sanitary conditions. Issues related to women's health, such as the availability of food and medicine for girls and women other than pregnant women need to be addressed too. A UNDP report (1999) states that women had to eat less during disasters because of patriarchal norms of male members of the family to be provided with food first, and in larger quantity, while the female members were given food later and in lesser quantity. Cultural considerations are important here, such as the preference for a son and less for girl children, which have led to discrimination in providing for the allocation of food and health care. This trend is prevalent in India, Bangladesh, and Pakistan (Kabeer 1999). During disasters, when the availability of food and other relief materials is already low, these norms cause further hindrance to women being able to access food, medicine and shelter, threatening their survival.

As the disaster relief is usually provided by male relief workers, these aspects described above are not well tackled. Male relief workers cannot freely interact with women in some cultures as in India, thus, counselling to women, related to psychological stress, and the trauma of the death of loved ones is difficult. It is, therefore, essential to include women in relief work during disasters, especially when it is a matter related to reproductive and sexual health, which in Indian society would be far more acceptable if women were to carry out these tasks (and when they interact with other women) (WHO 2002).

Effects on physical safety

One of the worst effects of disasters on women is that of sexual abuse, and an increase in violence against them. If a woman is in a violent relationship already, her condition is further aggravated during disasters. During disasters such as floods or cyclones, family members get separated from the rest of the household**.** Thus, women who would otherwise be rescued from the abuse of husbands or in laws by their neighbours, or get less abused out of the fear of neighbours reporting to the police, are now left at the mercy of the abusive husbands. Further,

when resources are less, there are greater chances that the women who are in violent relations would be neglected by their husbands and not provided with relief materials. Women suffer from increased domestic violence in camps and temporary shelters as well (WHO 2002; Asia Pacific Forum on Women, Law and Development 2005).

The trafficking of young women and girls in human trade is found to be a major gender-specific outcome following from natural disasters (Kesavan and Swaminathan 2006). The World Health Organization Report (2002), states that women and girls are dragged into the sex trade by local individuals from within the communities. Orissa faced this problem too and this became noticeable after the super cyclone of 1999. Coastal districts such as Bhadrak, Jagatsinghpur, Cuttack, and Jajpur were engulfed in this trade. Poor, landless families, where there are marriageable daughters but a dearth of dowry, are not able to get them married, and illiterate women and girls, deserted women, and widows, are targeted for this trade (Jena 2003).

Subjective experiential accounts of women facing disasters

Valdés (2009) brings in a gender approach to disaster risk reduction, where she discusses the 'Hyogo Framework for Action 2005-2015: Building Resilience of the Nations and Communities to Disasters' which was adopted by 168 countries in January 2005, at the World Conference on Disaster Reduction held in Japan. This framework provides a commitment meant to guide policy makers and the community at large to engage in disaster risk reduction. It also places disaster risk reduction within the ambit of sustainable development planning, programming, poverty reduction, and provides an opportunity for these issues to be discussed in emergency preparedness and recovery based programmes.

In disaster risk reduction, gender sensitivity is required, for example in efforts to reduce the vulnerability of coastal populations. Teaching women and girls to swim may enable women to survive water related disasters. Women have proven to be very active leaders and have worked for disaster risk reduction, as in the case of the 1976 demonstration against

deforestation by women's civil society in India (Action for disaster Reduction and Inclusive Development Dasholi Gram Swaraj Mandal). The International Strategy for Disaster Reduction (ISDR) of the United Nations, held in 2000 was partnered with governments, civil society and communities with the aim of building communities that can withstand disasters. However, it should be emphasised that gender equality in disaster risk reduction requires women to be a part of management, decision making, and leadership. Six principles for engendered relief and reconstruction were presented to make the actions and reports of ISDR gender sensitive. They are: to think big i.e., to plan now to respond in ways that empower women and local communities, and ensure that women benefit from economic recovery; include women in design and operation of emergency shelters and housing as well as constructions etc; get the facts right, among others collect specific data and train women in community based assessment and follow up research; work with grass-roots women; resist stereo types, and recognise that women are vital first responders and re-builders, not passive victims; not all women are mothers and live with men, women are not economic dependants but earners and community workers too, and men and boys are at risk as well; take a human rights approach, and take note of issues such as sexual harassment and rape, exploitation by traffickers, forced migration; develop the capacities of women and try and identify women's contributions to informal early warning, school and home preparedness, utilize the skills of grass-roots women who are able and ready to partner with organizations (Valdés 2009).

Blaikie et al (1994) suggest that vulnerability is structured by relations of gender and power intersecting at different institutional sites. According to Enarson and Morrow (1998), the most vulnerable among women are those who are poor, elderly women, those with disabilities, heads of households with several dependants, homeless, indigenous people or tribes, immigrants, isolated rural women and women affected by violence. The WHO (2002) report states that women's vulnerability to disasters also increases by the socially determined differences in roles and responsibilities of women and men, and the inequalities such as high level

of illiteracy, low ownership of assets, less exposure to the outer world, low social status, lower employment rate, and lower or no decision-making power.

Disasters affect men and women differently because of the differences in status that they occupy in society, and the different roles and responsibilities given to them. How women and men are impacted by a disaster, and how they react to its effects depends on social practices and cultural values of the region and community, as well as the intensity of the disaster. At times cultural/social practices restrict women more than men. Instances of such limitations may be their access to public space and information available on disasters (Ariyabandu and Wickramasinghe 2005).

Sometimes gender roles induce vulnerabilities not only in women but also in men. In a refugee camp in western Ethiopia, many young Sudanese men gathered together after walking for long stretches to escape being forced to join the army. They were provided food immediately, but it was noticed that many were dying. Investigations showed that the food supplied needed to be cooked before it could be eaten, but due to the gender roles they had never learnt cooking. These men were starving in the camp despite food being available, as they could not cook it. The gender roles made these men vulnerable. When aid workers realised the problem, they organised the few women who were also taking shelter in the camp to cook the food. Understanding the gender context helped with the aid providing process. This also means that the gender processes need to be understood at length even in managing disasters to make the management process better organised (Anderson 1994).

Cupples (2007) indicates the need for gender sensitive disaster relief, and research, focusing on both how women are more vulnerable in disasters, as well as focus on their capabilities as leaders or natural resource managers who are most often underutilised by emergency managers. Criticising the fact that most disaster studies focus only on women as being more vulnerable than men, or on different coping mechanisms of men and women in disasters, a more nuanced look at the experiences of

women is missing and needs to be taken into account. She mentions the need for more careful thinking about how 'disaster intersects with survivor's previous life experiences as well as other social and political positioning'. In her study, the differences in the perceptions of the same event of Hurricane Mitch (1998) by different women in different communities and families render this conclusion. For example, while becoming homeless is usually seen as a negative spatial shift, for one woman (respondent) it also brought her freedom from a violent relationship.

In this study five communities in Nicaragua were studied after hurricane Mitch, to observe their responses to the disaster. The observations were at the community level to see how communities react, and at individual levels to observe the experiences of women. These communities showed differences in the levels of solidarity, political mobilisation, aid dependency, and post disaster conflict. While one of the communities, El Hatillo, had high levels of community cohesion when the hurricane occurred, its disaster resilience was also much stronger. The community seemed organised and made best use of the aid, where women formed groups to participate in the reconstruction works in the community such as clearing the debris from roads, building new homes, and reforesting hillsides. In another community, which was a resettled community called El Mirado, what was observed was a lack of organisation and greater dependency on aid as well as on the NGO for everything. They called the NGO even to repair a toilet rather than getting it repaired on their own. Various scholars such as Oliver-Smith, Maskrey, Hoffman (referred in Cupples 2007) have stated that aid can have a potentially negative impact on community solidarity, replacing it with self-interest, and generate a dependency syndrome while reducing people's ability to cope with future disasters. In El Mirador, women envied and fought with other women if one of them got a job, as there was a scarcity of jobs and people were not happy with aid alone. In El Hatillo, there was no such conflict.

While discussing individual experiences and the creation of subjectivities among women in the communities, Cupples (2007) narrates the

differences in the construction of subjectivities in two respondents who otherwise faced similar situations in the disaster. Both were relocated to the Communal Movement (NGO) housing settlement in El Mirador after rising water claimed their homes. Both of them belonged to the same class, age, marital status (separated from their husband) and felt similar problems of homelessness. Ramona is optimistic, accepting the changes that had come into her life after Hurricane Mitch, as her husband (who physical abused her) left her as she had become homeless with five children after the disaster. Later she got a legal title to a house with which she felt contented. For another respondent called Marcia, whose husband had left her when she was pregnant with her sixth child, the disaster unleashed in her a feeling of victimhood. Before the disaster she had done cleaning and ironing jobs. After the hurricane she was given the role of treasurer (a better position in the society and better income) in the El Mirador community committee. However, she considered herself to be a disaster victim rather than a survivor. Hence, the same disaster created two different subjectivities in two women who otherwise faced almost similar problems. These two cases highlight the subjectivities that are involved in the understanding of a disaster, and may differ from one person to another.

While discussing gender in the context of disasters, Fothergill (2003) brings out the interplay between class, gender and race in perceptions and feelings of stigma attached to charity i.e., receiving disaster relief. She discusses the perception of poverty and welfare by women of white middle class background from North Dakota, when they survived the North Dakota floods in 1997, but lost their houses and all their belongings in the floods. From this longitudinal study, Fothergill perceived that women from these white middle class backgrounds found it very hard to accept disaster assistance as they are culturally taught to be strong, and they are supposed to help the destitute. They had to "swallow their pride" and accept help after the floods, feeling a sense of shame that they had to take food and clothes from others without doing any work in return. This caused a stigmatized feeling in them as they felt that they had suddenly become poor. These women had been mostly providing care and help to

others in their family and community, such as donating to the poor through the church. Accepting help from others made them think that they are no longer care givers but are being helped by others. Some among these women felt more at ease in accepting help, but also felt the need to help society by joining the Red Cross and give back to society what they got in terms of help and care, a plan that restored their care giving role. Race, class and gender are constructed in their consciousness and produce the effect of stigmatisation when they received charity (Fothergill 2003).

Surveying the literature we found several issues being discussed in the context of a disaster. A disaster is not an isolated event in itself but has several aspects that surround it. Scholars have dealt with different types of disasters and the impact that they have on the lives and livelihood of people. However, what seems interesting is to look at the disaster from a perspective that has more scope to deal with details, i.e., the perception of disasters by the communities or the people who face disasters, and secondly, the factors that enhance survival in disasters. An essential issue that was discussed in the literature is the one about livelihood and its link with disasters. These are crucial points that will be further examined in the successive chapters. What needs to be emphasised is that disasters are not sudden events in the lives of people or groups who face it regularly. It has an inherent meaning in their lives. Understanding group identities and their relations with disasters, and in surviving disasters, is essential.

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[i] People affected are those requiring immediate assistance during a period of emergency (i.e., requiring basic survival needs such as food, water, shelter, sanitation and medical assistance). People reported injured or homeless are aggregated with those reported affected to produce a 'total number of people affected' (WDR 2010).

[ii] All social relationships of a person to person or patterned interaction.

[iii] Social units are the parts of social system, Parsons in Cuff (1990)

[iv] It shows the percentage of rural population that was below the poverty line in the year 2004-05, provided by the Government of India, Press Information Bureau, New Delhi, 2007.

[v] The poverty line for the year 2004-05 was Rs.325.79, per person per month, for the rural population in Orissa.

[vi] Views expressed by Christo Fabricius as discussant of Neil Adger's presentation on Resilience and Vulnerability in STEPS symposium on Reframing Resilience at Sussex University 2008.