

Disaster Management: Toward a Human Behavioural Approach

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Introduction and Assumption

This paper is written with a basic assumption that natural disaster cannot be treated as physical phenomena rather the human and behavioural issues should be integrated with the overall environmental as well as for disaster management programme of a country. In the past mankind faced different natural and man-made disasters. "Disasters hurt people. They injure and kill. They cause emotional stress and trauma. They destroy homes and business, cause economic hardships and spell financial ruin for many. And the people hit worst are the poor." (Cuny 1983:3). In recent years the numerous death, destruction of properties and human habitation and the significant socio-economic changes caused by different disaster-agents have drawn tremendous attention from statesmen, public leaders, policy planners, social scientists and the world community. It is important that a pragmatic and effective disaster management programme should be undertaken taking the human behavioural issues into consideration.

In this paper disaster is defined as social phenomena emphasizing the need for generic approach in disaster planning. Human dimension of disaster problem, the tasks during different phases of disaster cycle, and also the disaster mitigation and preparedness programmes have been discussed. We will substantiate the discussion in the paper with examples from Bangladesh.

The paper is mainly based on information derived from secondary sources containing mostly sociological and anthropological literature published till late 1980s. However, one case example (i.e. Bangladesh) has been used in the paper to illustrate how generic approach which

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emphasizes human behavioural issues is important in understanding natural disaster like flood. The data for the case study is derived from research which the author conducted after the 1988 flood in a village in the Manikgang district. It is also important to point out here that the purpose of the paper is to bring into limelight that generic approach is important which has been ignored in the literature and not to make any critical review of the literature mentioned.

Environment and Disaster Management

Environmental and disaster management is interlinked. There is evidence of causal links between environmental degradation and vulnerability to disaster. This link is obvious from the fact that the worldwide incidence per decade of extreme weather events such as, typhoons, hurricanes, floods and drought have increased about 50% on average each decade between 1900 and 1990 and accelerating significantly since 1950 (OFAD 1990 quoted in Alcira and Munasinghe 1991). The number of deaths from natural disaster has increased considerably and it is increasing day by day. Besides,, the damage caused by extreme weather events to socio-economic infrastructure, homes and business, crops and properties have increased to an unimaginable proportion in the last three decades or so. It is suggested that economic costs per-decade have increased from about US \$ 400 billion in 1950-59 to 90 times that value in 1980-89 (Alcira and Munasinghe 1991 : 3).

The increase in the frequency and quantum of damage caused by natural disaster is due to increase in environmental degradation. In fact, environmental degradation intensifies the effects of disaster. Take for example, floods which are normally triggered not only by excessive rainfall but by silt deposit within the rivers, the reduced absorptive capacity of soil, unplanned building of physical infrastructure such as roads, bridges built obstructing natural flow of water filling up of natural lakes and canals for human habitation, developing industrial estates and also poor and inadequate management of existing facilities.

In recent years, desertification has become a real problem which is caused by unplanned and unrestricted felling of trees, population growth leading to over utilization of and grazing of livestock and also

over use of both ground and surface water for irrigation purpose. There has been also deterioration of urban environment. This deterioration has been compounded in Bangladesh and other developing countries by growth of population, high rural-urban migration, inadequate infrastructure, lack of housing, sanitation and other facilities. It is causing congestion, overcrowding and air-pollution putting millions of people vulnerable to different health hazards.

Therefore, environmental management and disaster management reinforces one another and the measures to manage disaster will contribute in the environmental management too. Disaster management is used here to refer to environmental management in Bangladesh. We would further add that flood would be referred to as the main disaster while discussing disaster management. This is because among the various types of disaster i.e. flood, famine, drought, tidal-bore, pest-attack, riverbank-erosions flood is unquestionably the most recurrent and devastating kind of natural disaster in Bangladesh. The annual flood affected areas usually varies between 25,000 sq. km to 40,000 sq. km. The flood vulnerable area is much larger. Experts estimate that out of the total 1,42,777 sq. km, 82088 sq. km (58%) area is flood vulnerable in Bangladesh. Another estimate says that on rush of water from upstream drainage areas could create havoc by flooding about 80% of the country. In the last thirty five years since 1954, there are 31 occurrence of flood, out of which 12 floods were devastating and 7 were most devastating.

Disaster and Development

The link between disaster and development is not properly understood. It is important to recognize that through various development activities impact of disaster can be reduced and potential victims of disaster can be made more prepared to fight disaster as well as to reduce impact on individual and community. Normally disaster affects those people who are more vulnerable because of social, economic and physical reasons. As a result the capacity to withstand disaster and the coping strategies differ across different vulnerable groups. Therefore, the crux of the disaster management issue is how to reduce the vulnerability of the most vulnerable people? A policy package incorporating both social and economic programmes is needed. Disasters are linked to poverty. In the developing and underdeveloped countries it is the poor people who suffer most from disasters and environmental degradation.

So poverty alleviation programme can go a long way in reducing peoples' vulnerability and increase people's capacity to fight and survive from disasters. Although poverty alleviation programmes have become an important component in the development endeavor of many countries like in Bangladesh, it is not explicit how these programmes are linked to vulnerability reduction and thereby disaster management programme. It is emphasized that disaster reduction programme should be treated as a part of overall development activities of the country linking and integrating it with the development plan.

Disaster as a Social Phenomenon

Since the social science research on natural disasters gained momentum in different parts of the world, disaster is viewed more a social rather than a natural happening. The established notion and perception about disaster have been significantly changed since 1950 when increasing emphasis is put on social and human aspects of disaster. One 1986 UN report depicts the scenario as follows:

"Since the 1950s conceptions of "natural disaster" have changed. Earlier conceptions were based largely on the characteristics of the physical forces and the resulting impact or damage. For example, most disaster preparedness efforts were then concerned with improving warning equipment and with scientific study of physical phenomena. With the increasing attention given to the social science study of emergency situations, the perception of "natural disaster" has shifted from consideration of the technical aspects of the physical phenomenon as the primary focus, to a perception that the extent of deleterious effects is predominantly a social issue based on whether the people are aware of the potential threat and take the necessary actions to minimize physical destruction and social disruption. The definitions of "disaster" have reflected this change, with increasing attention being given to the social aspects of disaster situations" (1986:48).

From a sociological point of view, Dynes defines disaster as follows :

"Sociologically, a disaster is an event, located in time and space, that produces the conditions whereby the continuity of the structure and process of social units becomes problematic. Disaster agents may differ as to their cause, frequency, controllability, speed of onset, length of forewarning, duration, scope of impact, and destructive potential" (Dynes, quoted in UN 1986).

It is obvious from the above quotes that a disaster is a disaster because this effects human beings, disrupts life and causes sufferings. Now-a-days various disasters have attracted attention because more and more people are now being affected in different parts of the world. The analysis of social issues in disaster situations requires an understanding of many important social units that include the following:

- Individuals; • Households • Communities; • Small Groups;
- Institutions; • Organizations; • Societies;

When one considers natural disaster as a social rather than natural phenomenon there are significant implications of this position for disaster planning and mitigation which are summarized below (Box: 1)

Box : 1 Implications for Planning and Mitigation

- ◆ "Prevention and mitigation must stress social, rather than physical solutions.
- ◆ Disaster planning is not primarily the search for the implementation of technological solutions.
- ◆ The emphasis on the social allows for the opportunity for proactive, rather than reactive strategies. Thus, it is possible to take actions prior to the appearance of the physical agent.
- ◆ The emphasis in planning can be on internal, rather than on external factors. The potential threat is not "out there", but resided in the "internal" flaws within the social system.
- ◆ The view of disasters as social phenomena allows such happenings to be incorporated as a part of the nation's development process. In fact, what is often called the "recovery" process after a disaster is development in and of itself. That is, the recovery process is a process in which the population improves its level of adaptation to its environment and also lowers to its future vulnerabilities"

Source : Dynes (1991)

Need for Generic Approach

The social implications of natural disaster require that disaster planning should be approached with more *social* and *human-oriented* outlook. This calls for a *generic* rather than *agent-specific* approach. The agent-specific approach assumes that each type of disaster agent or class of

agents has certain distinctive characteristics that affect what occurs. The generic approach on the other hand, assumes that there are more individual and organizational behavioural similarities than differences for all disaster (Ouarantelli 1991). This is because whatever the agents of disaster (i.e. flood, drought, earthquake, cyclone, landslide, riverbank erosion etc.), some general activities, such as warning, evacuation, sheltering, rescue, search, relief and rehabilitation have to be undertaken to face disaster.

Generic approach is more relevant for disaster mitigation programme emphasizes the social and human aspects of the problem. Disaster-planning that incorporates preparedness, relief and rehabilitation should not be treated as a mere physical, technical or engineering problem. It is also important that one also understands the inherent short and long run implications of ways of approaching problems dealing with preparedness, responses, recovery and or mitigation. The task is not easy. The basic question in this regard is how to plan and implement specific programmes. Some discussions on the above mentioned issues can be found in the following quotes. For example, an UN report (1986) reveals that,

"The separation of technical and social considerations in disaster planning also continues to be a major problem. Pre-disaster planning is often treated primarily as a technical exercise. With inadequate consideration of the human and organizational issues in many communities little is known about how the general public perceive and understand disaster warnings; what people believe to be the necessary precautions to be taken. These are a few of the many examples that could be cited as evidence of this separation".

Dynes (1991) also emphasizes how a generic approach can help in disaster mitigation :

"The importance of a generic approach may be less so for engineering and technical solutions to specific techniques of mitigation. Mitigation, however, is the social attempt to reduce the occurrence of a disaster, to reduce the vulnerability of certain populations and to more equitably distribute the costs within the society".

The Human Dimension of Disaster Problem

When one conceptualizes disaster as social phenomena, human issues emanating from disaster become a major consideration in disaster planning and mitigation. For quite a long time we have heard various natural disasters affecting many parts of the world. However, it seems that natural disaster is drawing more and more attention in the last two decades or so. This is understandable because more countries and more people are now being affected by disaster creating great anxiety and concern for both the affected and unaffected societies. No country can think in isolation of one another. The sorrow of one is the sorrow for the others and the humanity. Now there is more or less a universal consensus that disasters should be faced not by conquering nature but by learning to live and coexist with nature. So we find different attempts by different countries to get rid of from the scourges of the impact of natural disaster.

In recent years, the human problems associated with natural disasters got a new dimension. This is due to an increasing interaction of nature and human and also due to growth of population, limited availability of land, settlement of people in the marginal and disaster-prone (say flood-prone) areas.

Perception of Disaster

The human dimension of disaster problem is very much linked to how the different actors involved in disaster management perceive and define disaster. This is because perception is linked with how people devise various survival strategies and adopts to withstand a natural disaster. Several researchers delineated how people in flood-prone areas of Bangladesh perceive and describe flood in Bangladesh. Perception is formed and effected by several factors. There might be cross-country and cross-cultural difference in the perception of a disaster. Even within a country there might be inter-regional and intra-regional variation. However, certain common factors may be discerned in perception formation. In a study on household perception of flood Alam (1989) suggested several factors in the formation of perception.

A distinction must be made between how "we" (insider) and "they" (outsider) perceive "disaster" say, for example, flood. Here "they"

indicate donors, NGOs, government officials, policy-makers and researchers and "we" include those who are actual victims, sufferers and also the target of disaster mitigation and reduction programme. This may be called "insider's" and "outsider's" perspective of disaster. Perception does not indicate only an understanding of disaster-agent, it also includes people's view and attitude regarding warning, evacuation, rescue, relief-need, rehabilitation and over all response to a disaster. Haque (1988) states that,

"An examination of perception allows one to determine how people view occurrences or threat of extreme events, how such attitudes are influenced, and how such views related to options they consider in coping with hazard effects".

Regarding the importance of perception, Alam (1989) writes :

"People in every society share a comprehension which is not independent of social history, values, dogmas, attitudes and world views which is in many instances are embedded in belief system influenced by religion. Furthermore, perception whether by an individual or group is closely linked to socio-economic, cultural or ecological context in which people live, make decisions and derive their livelihood. The factors that influence perception may be endogenous or exogenous to the niche they live. It is also, important, to determine to what extent peoples perception is effected by their personal and livelihood considerations".

It will be worthwhile to find out how different stakeholders perceive and describe disaster. In Bangladesh, the equivalent term for natural disaster is *praketic durjog*. People use different expressions to refer to natural disaster.

"It was found that this term can have a variety of referents, including *khrap Samaya* (which may be translated as "bad time"), *khotin samay* ("hard time"), *bipoder samaya* ("time of risk"), *sankat kal* ("time of crisis"), and even *Samasher Samaya* ("time of problem"). Some people and *durjog* was unpredictable, uncontrollable and the cause of incalculable damage to human life and property" (Alam, 1990).

Cuny (1983) portrays the victims' perception of disaster as follows :

"It is difficult for the poor in developing countries to conceptualize a disaster. Life is always a struggle and the potential for the survival of the members of any family is only marginal. Early death is not an unusually event; in countries with low nutritional status and a high infant mortality rate, deaths within a family occur at rather regular intervals. At first, disasters are perceived in terms of human loss and injuries, then material loss, and finally economic consequences".

Governments' perceptions disaster is viewed from three perspectives: 1) in terms of social and economic range of consequences, 2) maintenance of the social and economic status quo and 3) opportunity for the future (Cuny 1989). Government always thinks in terms of mitigation and facing disaster through different measures. Disaster management strategy is often donor-driven and influenced by external factors.

Case Study: Perception of Flood in Bangladesh

While concluding this section on perception we would draw attention to how people perceive flood and how it is different from the conventional definition of flood. Alam (1991) describes the Bangladesh flood situation as follows:

"Floods which affect the people significantly have become a part of life in the area for centuries. Rice is grown in water and fish that are caught in the rivers during floods constitute the main source of protein for Bangladesh. In this consideration, flood is not a hazard but also a resource. People's conceptualization of floods also depicts floods as benevolent agents for providing sustenance to them".

Therefore, a distinction should be made regarding what is a flood or not a flood? And what is harmful and not harmful? This distinction is crucial in a flood plain agricultural country where a certain amount of inundation is essential for growing deep water rice. In Bangladesh, a large part of the country remains under water during the rainy season. The question remains: Is this flood? Alam (1991) writes,

"If one flies in a helicopter over Bangladesh during the monsoon months, he will notice that almost one third of the country is under water where people plant deep water rice, catch fish, and use various types of boats to move around.

They are very adapted to this flood situation. This is what is called normal flood or *barsha* which is considered blessing in the deltaic floodplain of Bangladesh. *Barsha* becomes *bonna* (Flood) and *bonna* becomes *mahaplaba* (deluge) when it gradually exceeds normal limit, causes significant damage to life and property bringing incalculable hardship and misery".

It will be quite pertinent to give some illustrations from a village study by Alam. In the study respondents made a distinction between normal and abnormal floods in their own words. Alam (1991) provided the following picture from his village study:

"Respondents in the study villages distinguished between normal water-logging (*barsha* or *brishti*) and an abnormal water rise, or flood (*bonna*). Some people in Comilla distinguished between a "normal" flood (*shababik banna*) and a "big" or "abnormal" flood (*ashababik banna*). A flash flood, caused by a sudden onrush of water from the hills, was called *ban*. The intensity of a flood was measured not only by the water level but also by the shortage of food and the prices of essential goods in its aftermath".

The main features of people's perceptions of *barsha* and *bonna* are presented below (Box-2):

Box : 2 Features of <i>Barsha</i> and <i>Bonna</i> Described by informants	
<i>Barsha</i>	<i>Bonna</i>
Normal water level	Abnormal rainfall
Normal rainfall	Houses submerged
Gradual rise of water	Sudden rise of water
No problem of movement	Transport problems
Helpful to cultivation	Large scale crop damage
No shortage of food	Food shortage
Normal work possible	Normal activity disrupted
Less hardship for livestock	Need to live on raised platforms in houses
Normal market activity	Lack of cooking space
No sickness	Need to build separate hearths
No problem with sanitation	High incidence of disease
Silt storage	Large and small market places submerged
Normal business activity	High business losses
No fuel shortage	Fuel shortage

So it can be discerned from different researchers findings that people in Bangladesh flood prone areas perceive flood which is different from the mainstream perception of flood. So any programme on flood mitigation and management should consider this important variation in perception of flood by Bangladeshi people.

Different Dimension of Population Response

The impact of natural disaster is also likely to differ requiring different approaches in disaster management. In this respect, therefore, "*cultural and resource-context*" of a particular country is important. There is a great value in looking at the disaster behaviour and response from cross-cultural perspective. Dynes (1990) describes the nature and type of individual and family responses in different socio-cultural setting:

"At the level of individual and family response in all societies, there is striking continuity. Cultural differences are most frequently revealed in terms of the organizational structure and the political structure. Some societies are rich with community organizations which can deal with disaster; others are not. Some societies assume a helplessness and dependence on the government; others do not. Some societies expect a diffuse and decentralized decision making system; other reflect centralized and direct governance. For some societies, a disaster is a problem to be solved; for others, it is an opportunity to replace the problem solving structure in the society. In some societies, disaster response and recovery is an individual and private affair; in others, it is a corporate and governmental task".

Human problems and the responses to natural disaster are linked to the area where people live, their socio-economic backgrounds, vulnerability and also the built-in social and cultural mechanism that existed in a particular society for a long time to mitigate different hazards. Hagan et. al. argued that in order to properly look into the problem, it is essential that we agree and understand the distinction between "disaster-prone" and "vulnerable". A pertinent definition of what is meant by disaster-prone given by Hagan et. al. (1994) is quoted below:

"The term disaster-prone is mostly related to the disaster agent. Disaster proneness is usually determined by the history of past event and the risks of new events in the future. A certain person, community, population or place, area or country is thus regarded as prone to one of several types of disasters which have occurred in the past under conditions which continue to exist, or to new hazards that may have been added when conditions have changed".

People affected by natural disasters represent different groups, mentality and socio-economic backgrounds. As such their responses to extreme events like natural hazards are different. Kate (1980) provides four major modes of human response to natural hazards.

- i. *Absorption*: Human beings and societies develop so as to be able to absorb significant extremes of natural events with little or no harmful effects. The mechanisms of absorption can be biological (physical adaptation to live with extreme circumstances), cultural (migration, nomadism) and incidental (technical or social intervention to reduce vulnerability incidental to some other function).
- ii. *Acceptance*: Individuals and societies bear their losses of life and property when they occur or sometimes share them with kith and kin; organized insurance or relief from community; national and international helps bear the loss.
- iii. *Reduction*: Consequences of extreme natural events are reduced by means of adjustments designed to either modify or prevent the natural event or to diminish the damage potential.
- iv. *Change*: A radical coping mode that involves fundamental change either in livelihood system, location or birth" (Kates 1980 quoted in Rahman 1990).

The level of development of a society significantly determines these response patterns. In an underdeveloped disaster prone country like Bangladesh people are adapted and learnt to live with disaster and therefore have high absorptive capacity. People have devised certain indigenous mechanisms and share the pains of disaster in a collective manner and thereby developed a collective mentality to face disaster. The challenge is how to mobilise people and who will take the lead in such situation.

Human Vulnerability

All people are not equally vulnerable. Due to this difference in vulnerability all people are not equally affected. Some people are more affected and take time to recover while others are less affected or not at all affected. Yet some other people also die because of the impact of a particular disaster-agent. The inherent issue in this situation is what we already called vulnerability. An understanding of the issues relating to vulnerability is important for undertaking programs for disaster mitigation and loss reduction.

Sources of vulnerabilities

In the context of underdeveloped disaster-prone countries perpetuating poverty appear to be the fundamental cause of vulnerability. However, there are many other sources of vulnerability. Due to the differences in poverty situation similar events may cause different consequences in poor and rich countries but those events may differ in their impacts on various groups within a population. Cuny (1983) in this context writes as follows:

"The increase in disaster potential is one result of the cycle of poverty common to developing countries. The roots of poverty, which are also the predominant roots of vulnerability, are the increased marginalization of the population caused by the high birthrate and the lack of resources (for the failure of governments to allocate resources) to meet the basic human needs of an expanding population. At the center of the resource issue are the parallel problems of land and economic opportunity. As the population increases, land in both rural and urban areas become more scarce and those seeking new land for farming or housing are forced to accept marginal lands. These offer less productivity and a smaller measure of physical or economic safety. Such trends result in both rapid and unchecked urbanization and massive deforestation of mountainous and jungle regions that occur as small farmers put into less tenable areas for farming".

Household is the basic unit of a society in every country. Therefore, household ability to fight disaster determines the ultimate capacity of people to fight, to mitigate and to reduce loss. Furthermore Rahman (1990) has also portrayed the nature of vulnerability of woman and children. The following quote is very pertinent:

"Women and the children belonging to the small and marginal groups are even more vulnerable. They become malnourished and become easy victims of diseases. The moral economy too breaks down and the males may shrug off their traditional responsibilities towards these women and children. The society may not be sympathetic enough to give extra coverage to women because of its own prejudice and ideology. This the labour market for women can be highly segmented offering only the worst paid, most casual and often most subservient from of income earning activities. Norms of *purdah* (seclusion) make certain public forms of labour a source of considerable stress and insecurity for women. Man's very strategy of abandoning family may mean extra hardship for women who need to support the very old and young members of the family".

There is little mention of how women adopt and survive in natural disaster in the early social science literature on natural disaster in the 1980s which is the main focus of this article. However, in recent years there has been an increase in research dealing with women role in natural literature. However, this can be discussed in a separate review.

Disaster Management

Disaster management refers to a number of activities and tasks both in the pre-disaster and post-disaster situations. These activities have been evolved through experience over the years and are mainly aimed for reducing human sufferings and loss reduction by preparing people to face disaster in a planned manner. Prevention, mitigation and preparedness are all aimed at facing disaster in different ways and constitute what is called pre-disaster planning. In preventions structural aspects is emphasised while in mitigation both structural and non-structural measures of disaster management are considered. Activities immediately preceding a disaster are termed as preparedness.

Disaster Prevention

Prevention involves long-term measures which are capital intensive and need huge investment. Prevention covers those measures which are aimed at slowing down the occurrence of a disaster event and/or preventing such on occurrence having harmful effects on communities.

The best example of disaster prevention is the construction of dams and embankments to prevent flooding. Prevention is costly and time consuming. Government sometime delays it. For example, a nation may have lived with a recurring major flood problem. In such a situation need for preventive measures is not recognized. The decision regarding prevention requires national policy, consensus, political will and commitment as well as provision for fund to implement a plan.

Disaster Mitigation

In many countries control of flood is not only costly but also not even feasible. The building of embankments and reservoir in the upstream will require billions of dollars with serious potential environmental consequences. Moreover flash flood which is a sudden on rush of water from hilly areas is unpredictable and uncontrollable. Therefore, as opposed to preventive measures the growing emphasis is on disaster mitigation and preparedness.

Mitigation measures have non-physical and non-structural components which more rely on the experience and capacity of people where disaster occurs. Mitigation activities are sometime classified as passive and active. Passive measures include building codes, land use zoning and urban regional planning techniques to reduce vulnerability. Active mitigation encompasses those activities that require direct contact with people. Therefore, active mitigation has built in human element that should be taken into consideration within any disaster reduction programme.

The loss caused by disaster can be significantly minimized by several mitigating actions. These include reducing physical vulnerability, reducing vulnerability of the economy and also strengthening of the social structure of the community. These actions can be undertaken at individual, community and state levels. The NGOs may also play an important role in this respect. Various voluntary and socio-cultural organizations, local social welfare workers, school teachers can be utilized to implement programmes of disaster mitigation.

Public Awareness

In pre-disaster mitigation phase public education and creation of public awareness by mobilizing and utilizing local initiatives is important. The utilization of radio, television, news papers and also special hand-outs

and leaflets in local language may prepare public in mitigating flood effectively thus reducing flood loss. It is not always enough to talk only public awareness programme. Designing an effective awareness programme is crucial. Several important features of an effective awareness programme can be identified. Public and community participation are two important elements. More specifically an effective awareness programme for the public should have the following components (Box-3):

Box 3: Features of Public Awareness Programme

- ◆ "Be participatory in design;
- ◆ Be community specific;
- ◆ Be based on an assessment of the information needed;
- ◆ Be integrated with existing disaster warning and response systems;
- ◆ Include information on prevention, mitigation, and long term recovery;
- ◆ Be established as an on-going process; and
- ◆ Include as a priority the most vulnerable people."

(Source : UN 1986)

Disaster Preparedness

Preparedness include actions, such as warning and evacuation during disaster, maintaining communications and protecting critical facilities and life lines, and immediately following the disaster, including search and rescue, disaster assessment, evacuation and treatment of injured persons and securely in the disaster-affected area (Cuny 1983). In designing a disaster preparedness programme, it is important to identify the people and the organization who will be able to mobilize local resources for disaster mitigation and loss reduction. In many countries with disaster prone areas, there is local, regional as well as national preparedness programmes in order to effectively face disaster. Sometime local and regional programmes work within the purview of national programmes. Best-managed programmes are those which utilize and involve people of the community affected by natural disaster. In the many societies community devise various methods to manage flood hazard.

Apart from community as an entity, family as a basic and established institution of every society has a crucial role in flood mitigation. The management of natural disaster by families depends upon several factors: past experience with respect to different types of flood, initial resource endowment, social and kin networks, knowledge and training. In recent years, however, various formal and informal organizations are also playing an important role in the both pre disaster and post disaster situations. In this regard the roles of NGOs are mentioned quite prominently in many literatures. The school teachers, boy scouts, social welfare workers and socio-cultural organizations play significant role. The leadership may also come from outside the effected community.

In a poor and flood effected community when people fight for survival, the question of helping one another become secondary. Self-survival becomes the primary consideration. An organization which may be either NGOs, voluntary and professional organizations, women groups, boycotts, and church-groups from outside the community come forward with help. Sometime women groups are found quite effective in the post-flood periods in reaching the destitute, poor and women headed households. In most instances women cannot come out because sometime they loose everything and sometime because of shyness. So leadership during the time of disaster does not show any single rather multiple patterns. In such a situation state organizations should play a supporting as well as a coordinating role for maximum benefit of the effected population.

Role of Community

The mitigation capacity of individuals and households is further strengthened if the problems emanating from flood situation are fought at a more wider community level. Lately there has been a growing realization that a disaster reduction programme is likely to be more effective if the strength of individuals is mobilized under a community banner.

"It is initially useful to think of a community as a system that has evolved to meet needs or deal with problems. These needs generate a series of activities. The activities are usually carried on by a variety of groups. In their normal everyday operations these groups or organizations have developed routine ways of

handling their tasks, handling their communications, assigning authority and otherwise functioning" (Fellowmen and McCarthy 1983).

It also constitutes an important step in "bottom up" approach to flood mitigation instead of prevalent "top-down" no approach. In devising a proper community mitigation programme for flood reduction, it is essential that we know more about the internal socio-political and economic dynamics of a particular community.

Role of NGOs

In many Third World countries NGOs are a reality and playing important role in the socio-economic development of these countries. Alam (1990) has pointed out that NGOs are providing on "Institutional alternative" in many developing countries. It is, therefore, important that the NGOs roles are made more effective and useful during the period of disaster. In fact, in many disaster prone countries of Asia, Africa and Latin America NGOs role in relief and rehabilitation programme are looked upon with great appreciation. In ' Bangladesh and India, there are hundreds of NGOs who are involved in disaster-related activities. Rahman (1991) highlights the role of NGOs in Bangladesh in a positive way.

" NGOs have also tried to internalize much of their valuable experiences of 1988 flood. ADAB (Association of Development Agencies in Bangladesh), the federating body of NGOs now looks more organized and there is a great deal of coordination among the NGOs. Some of the NGOs have reshaped their development programmes in a manner so that they can increase the capabilities of the people. For example, Proshika has been providing credit for housing programme, group irrigation, vegetable production which ultimately make economic base for the poor stronger to withstand disaster. Grameen Bank not exactly a traditional NGO, has always avoided giving handouts to its members and insists on improving their material and social base to face calamities".

In spite of the important role played by NGOs, there is no scope to overemphasise their positions. The effectiveness of their operation will depend upon to what extent the NGOs could utilize the indigenous strength of people to fight flood.

"During and in post disaster periods government and in recent years NGOs play an important role. It is important to realize that there is no reason to unnecessarily highlight and sometimes exaggerate their roles which are often very much "complementary" and "subsidiary" to peoples' resilience and courage which they always demonstrated in the past and also during the deluge of 1988. The emphasis here is no individual and social responses to fight back disaster " (Alam 1991).

Conclusion

An in-depth understanding and appreciation of human behavioural issues is a *sine quo non* for any disaster preparedness programme in Bangladesh. It is emphasised that although disaster is basically a physical phenomena, however, a disaster becomes "real" when these effect human being causing harm to life and livelihood. Mankind is familiar with natural disasters since time immemorial, however, these have drawn tremendous attention in recent years because of human sufferings associated with natural disasters. Disaster and development is very linked and therefore, it is argued that disaster reduction programme should be treated as a part of overall development planning of the country.

Considering disaster as a social rather than exclusively physical happening, the paper draws attention to many social units such as individuals, households, communities and other social and economic institutions which may play important role in disaster mitigation. This will allow for proactive rather than reactive strategies. The importance of generic approach is emphasised as opposed to agent specific approach in disaster mitigation. In this respect perception of disaster is important. A distinction is made how "we" (insider) and "they" (outsider) perceive disaster-providing example how flood is perceived.

In disaster mitigation social mobilization is important. It is the people who are the target and beneficiaries of disaster management programme. The people have inherent strength and resilience to face and fight disaster. It is important that people should be mobilized for this purpose. Much depend on the nature and character of the state and their willingness to rely on the strength, dignity and resilience of people.

Another issue that has been discussed in the paper is the concept of vulnerability. It appears that endemic poverty is the fundamental cause of vulnerability. Due to the differences in poverty situation similar events may cause different consequences in poor and rich countries but those events may differ in their impacts on various groups within a population. Therefore, vulnerability reduction is recognized as a milestone for disaster mitigation.

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