CONCEPTUAL FRAMEWORK OF DISASTER MANAGEMENT

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ABSTRACT
Disasters represent collective stress situations occurring at a community level as a result of major unwanted consequences. An event to be a disaster it must overwhelm the response capability of a community. Disaster is a severe, relatively sudden, and unexpected disruption of normal structural arrangements within a social system over which the system has no firm control. Disaster comprise of certain elements which make its main frame. These elements are Risk, vulnerability, Hazard, capacity and importantly disaster management itself. Disaster Management involves certain phases which include mitigation, preparedness, response, and recovery. These phases are the sum total of all activities, programs and measures which can be taken up before, during and after a disaster with the purpose to avoid a disaster, reduce its impact or recover from its losses.
Key-Words: Disaster Management cycle, Risk, vulnerability

DEFINING DISASTER
A number of definitions of 'disaster' have been proposed over time, many of them focusing on the actual hazard or event and its cost in terms of loss of life or damage to property. In 1961, Fritz defined disasters as events that are: "…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 fulfillment of all or some of the essential functions of the society is prevented" (Fritz 1961, p. 202 Picou & Martin, 2006; Pyles, 2007). The focus has however, recently moved towards the consideration of the situation created by these disasters rather simply studying the physical attributes of such hazards (origin, nature, size, speed of onset).
The Disaster Management Act 2005 defines disaster as "a catastrophe, mishap, calamity or grave occurrence affecting any area, arising from natural or manmade 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 magnitude as beyond the coping capacity of the community of the affected area".

In 1992 the United Nations recognized that for an event to be a disaster it must overwhelm the response capability of a community: An international disaster was defined as "a serious disruption of the functioning of society, causing widespread human, material, or environmental losses which exceed the ability of the affected society to cope using only its own resources" (United Nations in (Coppola, 2007) p. 25). Another defining aspect of disasters is that while disasters may impact upon individual victims, they do not *happen* to individuals per se (Hutton, 2001).

Disasters more accurately represent collective stress situations occurring at a community level as a result of major unwanted consequences. As explained by Gist and Lubin "a disaster is inherently defined by its relationship to community – a cataclysm qualifies as a disaster only to the extent that it

overwhelms the capacity of a community to contain and control its consequences". It is not at all, then, a collection of individual experiences, though these certainly merit address (1999,p. 352 in Hutton, 2001). These changes have been brought about by recognition of the limited capability for controlling such events and also from a realization of the social, economic, environmental, developmental and political consequences for the communities they affect. Although not all disasters affect all of these spheres, the consequences tend to be similar regardless of whether the disasters are "natural" or 'human made".

Other contemporary definitions of 'disaster' capture some or all of these elements: A serious disruption of the functioning of a community or a society causing widespread human, material, economic, or environmental losses that exceed the ability of the affected community or society to cope using its own resources (The World Bank, 2006, p. xlix).

In 2002 the Commonwealth Government defined a (natural) disaster as: …a serious disruption to a community or region caused by the impact of a naturally occurring rapid onset event that threatens or causes death, injury or damage to property or the environment and which requires significant and coordinated multi-agency and community response. Such serious disruption can be caused by any one, or a combination of the following natural hazards: bushfire; earthquake; flood; storm; cyclone; storm surge; landslide; tsunami; meteorite strike; or tornado (Commonwealth of Australia, 2002).

Barton (1974) was of the opinion that "Disaster is a severe, relatively sudden, and unexpected disruption of normal structural arrangements within a social system over which the system has no firm control".

Barkun (1977) viewed disaster as a "mental construct imposed upon experience. This is because to understand disaster, knowing the number of deaths, value of property destroyed, or the decrease in per capita income is not sufficient. The symbolic component requires knowledge of the sense of vulnerability, the adequacy of available explanation, and the society's imagery of death and destruction".

"A disaster occurs when a significant number of vulnerable people experience a hazard and suffer severe damage and/or disruption of their livelihood system in such a way that recovery is unlikely without external aid" (Blaikie et al 1994: 21).

Another sociologist Anderson says that "Disaster occurs when a crisis situation outstrips the capacity of a society to cope with" (Anderson and Woodrow 1993: 133).

"An event, concentrated in time and space, in which a community undergoes severe danger and incurs such losses to its members and physical appurtenances that the social structure is disrupted and the fulfillment of all or some of the essential functions of the society is prevented" (United Nations Disaster Relief Office/UNDRO as cited in McGuire 2003: slide 17)

A serious disruption of the functioning of community or a society causing widespread human, material, economic, or environmental losses which exceed the ability of the affected community or society to cope using its own resources (International Strategy for Disaster Reduction/ISDR 2004).

Disasters which occur globally with regular periodicity are either natural such as floods, cyclones, and earthquakes or human-induced such as conflicts, riots, environmental & industrial accidents. Irrespective of whether it is an "act of God" or human-induced, disasters create mass destruction and

impede developmental work. The approach towards management of disasters has undergone radical change over last few years. The way of tackling the occurrence of disasters, earlier have been reactive in nature. The course of action basically used to be emergency management and provision of relief and rehabilitation. Efforts are always directed towards bringing back the situation to the normal. But presently, governments all over the world are adopting a holistic approach to disaster management.

The disaster management activity attempts to integrate several interrelated components in an orderly and coordinated manner. This includes activities before or pre-disaster, during and after the occurrence of a disaster. Hence there is a growing realization universally to operationalise and formulate appropriate legal and institutional framework to deal with disasters. Disaster management as an activity involves measures to:

- Reduce the risks associated with disasters through timely measures, short-term and long-term policies;
- Provide required assistance to communities during and after the disasters; and
- Ensure rapid, sustained recovery and rehabilitation after the occurrence of disasters.

BASIC CONCEPTS AND TERMINOLOGIES IN DISASTER MANAGEMENT

HAZARD:

Hazard may be defined as "a dangerous condition or event, that threat or have the potential for causing injury to life or damage to property or the environment." The word 'hazard' owes its origin to the word 'hasard' in old French and 'az-zahr' in Arabic meaning 'chance' or 'luck'. Hazards can be grouped into two broad categories namely natural and manmade. **Natural hazards** are hazards which are caused because of natural phenomena (hazards with meteorological, geological or even biological origin). Examples of natural hazards are cyclones, tsunamis, earthquake and volcanic eruption which are exclusively of natural origin. Landslides, floods, drought, fires are socio-natural hazards since their causes are both natural and man-made. For example flooding may be caused because of heavy rains, landslide or blocking of drains with human waste. **Man-made hazards** are hazards which are due to human negligence. Manmade hazards are associated with industries or energy generation facilities and include explosions, leakage of toxic waste, pollution, dam failure, wars or civil strife etc.

VULNERABILITY AND RESILIENCE:

Vulnerability represents the susceptibility of an individual or population to injury or "the degree of possible/potential loss to a given element at risk resulting from a given hazard at a given intensity". For this discussion, vulnerability means *the susceptibility of the population and environment to the type (nature) of the event.* The degree of vulnerability depends upon the resilience of the society for the event. The *resilience* of the population/environment against the event is its *pliability, flexibility, or elasticity to absorb the event.* Resilience as is a counteracting component of vulnerability. **Vulnerability = 1 - Resilience**

Vulnerability may be defined as "The extent to which a community, structure, services or geographic area is likely to be damaged or disrupted by the impact of particular hazard, on account of their nature, construction and proximity to hazardous terrains or a disaster prone area."

CAPACITY:

Capacity can be defined as "resources, means and strengths which exist in households and communities and which enable them to cope with, withstand, prepare for, prevent, mitigate or quickly recover from a disaster". People's capacity can also be taken into account. Capacities could be:

Physical Capacity: People whose houses have been destroyed by the cyclone or crops have been destroyed by the flood can salvage things from their homes and from their farms. Some family members have skills, which enable them to find employment if they migrate, either temporarily or permanently.
Socio-economic Capacity: In most of the disasters, people suffer their greatest losses in the physical and material realm. Rich people have the capacity to recover soon because of their wealth. In fact, they are seldom hit by disasters because they live in safe areas and their houses are built with stronger materials. However, even when everything is destroyed they have the capacity to cope up with it.

RISK:

Risk is a "measure of the expected losses due to a hazard event occurring in a given area over a specific time period. Risk is a function of the probability of particular hazardous event and the losses each would cause." The level of risk depends upon:

- Nature of the hazard
- Vulnerability of the elements which are affected
- Economic value of those elements

A community/locality is said to be at 'risk' when it is exposed to hazards and is likely to be adversely affected by its impact. Whenever we discuss 'disaster management' it is basically 'disaster risk management'. Disaster risk management includes all measures which reduce disaster related losses of life, property or assets by either reducing the hazard or vulnerability of the elements at risk.

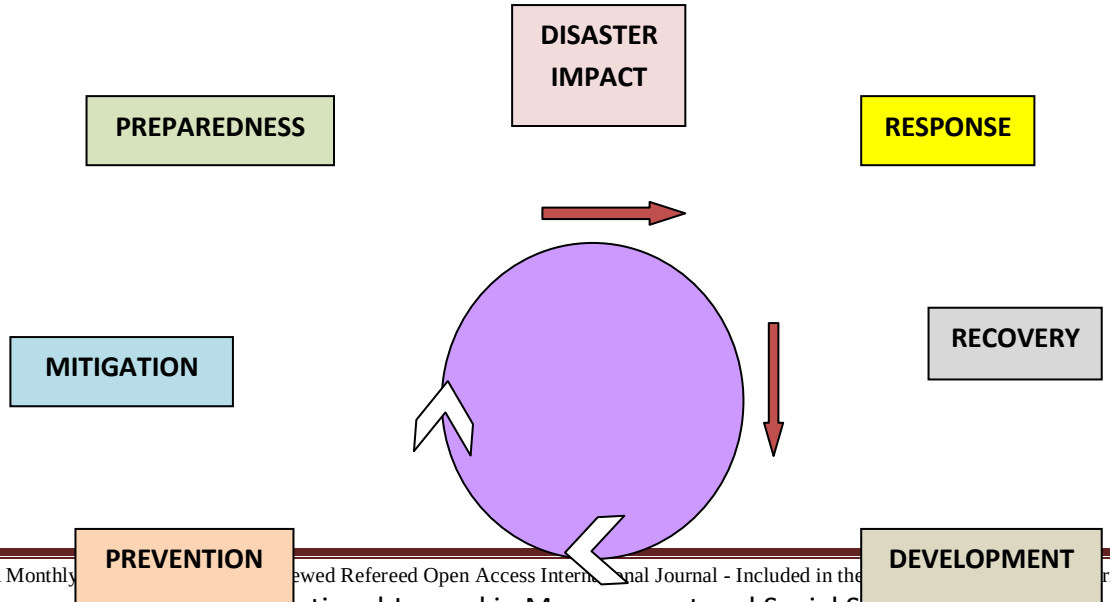
DISASTER MANAGEMENT:

Disaster Management is the *aggregate of all measures taken to reduce the likelihood of damage that will occur related to a hazard(s), and to minimize the damage once an event is occurring or has occurred and to direct recovery from the damage.* The effectiveness of disaster management determines the final result of the impact of the event on the environment and society impacted. Management of the damage/disaster either may be productive in minimizing the damage or it may be negative and, as such, contribute to the damage. The training of medical response personnel, as part of preparedness, and the actual responses of medical personnel to the persons injured by the event are both parts of management.

DISASTER MANAGEMENT CYCLE: An Overview

Disaster management activity comprises certain key components as indicated in the figure below:

Figure 1: Disaster management activities' cycle



Source: carter Nick,1991, Disaster Management: A Disaster Manager's Handbook, Asian Development Bank, Manila

This cycle indicates that the activities supplement each other. Prevention aims at impending the occurrence of a disaster event, while mitigation attempts to prevent some and reduce the effects of certain disasters. Preparedness comprises measures, which equip governments at various levels, organisations, communities and individuals to handle and respond effectively to disaster situations. The phase of response begins after the disaster impact, which is aimed at saving the lives and property, disruption and damage caused by disasters. The recovery encompassing restoration, rehabilitation and reconstruction intends to bring back the people, and the country affected to their proper levels of functioning. The short-term and long-term activities taken up in the aftermath of disasters need to aim at holistic development and bring within their purview, the prevention, mitigation and preparedness aspects of disasters. Developmental plans need to include disaster management as one of the components.

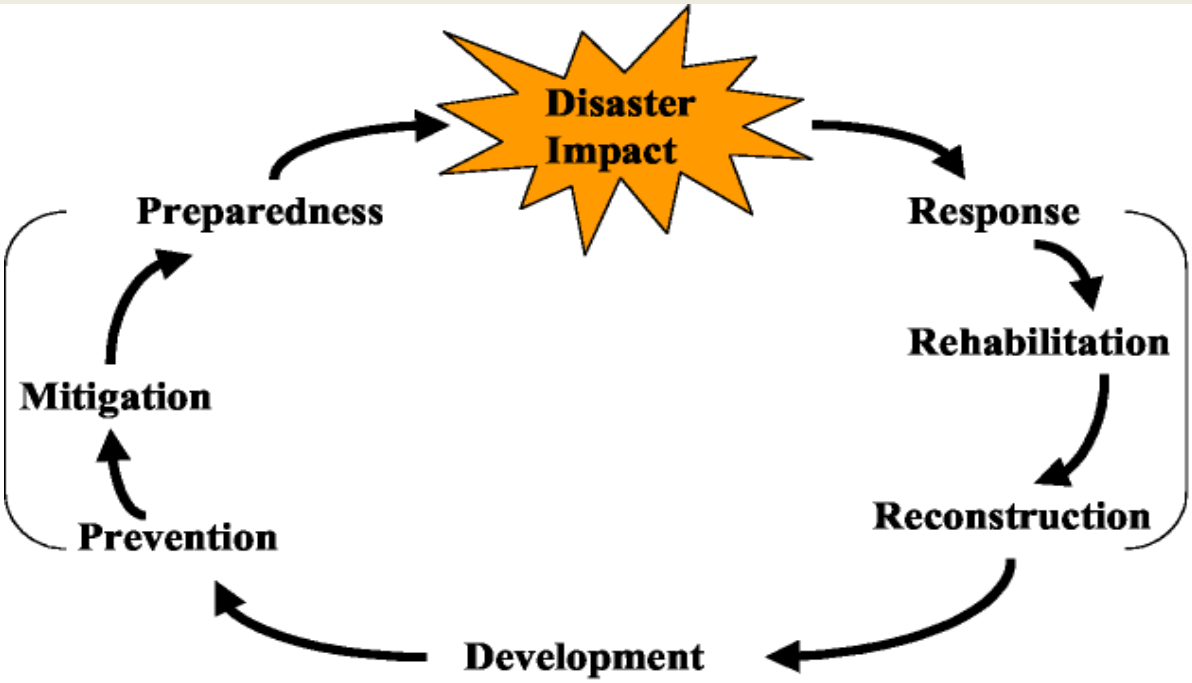
Disaster Risk Management includes sum total of all activities, programs and measures which can be taken up before, during and after a disaster with the purpose to avoid a disaster, reduce its impact or recover from its losses. The three key stages of activities that are taken up within disaster risk management are as follows:

- *Before a disaster (pre-disaster)*. Pre-disaster activities those which are taken to reduce human and property losses caused by a potential hazard. For example, carrying out awareness campaigns, strengthening the existing weak structures, preparation of the disaster management plans at household and community level, etc. Such risk reduction measures taken under this stage are termed as mitigation and preparedness activities.
- *During a disaster (disaster occurrence)*. These include initiatives taken to ensure that the needs and provisions of victims are met and suffering is minimized. Activities taken under this stage are called emergency response activities.
- *After a disaster (post-disaster).* There are initiatives taken in response to a disaster with a purpose to achieve early recovery and rehabilitation of affected communities, immediately after a disaster strikes. These are called as response and recovery activities.

According to Warfield (2008) disaster management aims to reduce, or avoid the potential losses from hazards, assure prompt and appropriate assistance to victims of disaster, and achieve rapid and effective recovery. The disaster management cycle illustrates the ongoing process by which governments, businesses, and civil society plan for and reduce the impact of disasters, react during and immediately following a disaster, and take steps to recover after a disaster has occurred. The mitigation and preparedness phases occur as disaster management improvements are made in anticipation of a disaster event. Developmental considerations play a key role in contributing to the mitigation and preparation of a community to effectively confront a disaster. There are four important phases of disaster. These phases do not always occur in isolation or in this precise order, rather, these phases of the cycle overlap and the length of each phase greatly depends on the severity of the disaster. The phases are as under:

a) Mitigation - Minimizing the effects of disaster. Examples: building codes and zoning; vulnerability analyses; public education.
b) Preparedness - Planning how to respond. Examples: preparedness plans; emergency exercises/training; warning systems.
c) Response - Efforts to minimize the hazards created by a disaster. Examples: search and rescue; emergency relief.
d) Recovery - Returning the community to normal. Examples: temporary housing; grants; medical care.

FIGURE 2: DISASTER MANAGEMENT DEVELOPMENT CYCLE



Disaster management is becoming multi-disciplinary covering wider aspects such as forecasting, warning, search and rescue, evacuation, relief, reconstruction and rehabilitation, education, training and awareness.

CONCLUSION

disasters as events that are: "…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 fulfillment of all or some of the essential functions of the society is prevented. The focus has however, recently moved towards the consideration of the situation created by these disasters rather simply studying the physical attributes of such hazards (origin, nature, size, speed of onset). Disasters more accurately represent collective stress situations occurring at a community level as a result of major unwanted consequences. As explained by Gist and Lubin "a disaster is inherently defined by its relationship to community – a cataclysm qualifies as a disaster only to the extent that it overwhelms the capacity of a community to contain and control its consequences.

Disasters comprises of certain components like hazard which is defined as "*a dangerous condition or event, that threat or have the potential for causing injury to life or damage to property or the environment;* Vulnerability representing "*the susceptibility of an individual or population to injury or "the degree of possible/potential loss to a given element at risk resulting from a given hazard at a given intensity";* Risk which is a *"measure of the expected losses due to a hazard event occurring in a given area over a specific time period;* Disaster Management defined as "*the aggregate of all measures taken to reduce the likelihood of damage that will occur related to a hazard"*

Disaster management activity comprises certain key component which frame the disaster management cycle. This cycle indicates that the activities supplement each other. There are four important phases of disaster. These phases do not always occur in isolation or in this precise order, rather, these phases of

the cycle overlap and the length of each phase greatly depends on the severity of the disaster. The phases are Mitigation, preparedness, response, and recovery.

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