**Definition of Disaster**

The Centre for Research on the Epidemiology of Disasters (CRED) has defined disaster as “a situation or event which overwhelms local capacity, necessitating a request to a national or international level for external assistance; an unforeseen and often sudden event that causes great damage, destruction and human suffering”. According to the National Policy on Disaster Management, Disaster is “a catastrophe, mishap, calamity or grave occurrence from natural or man-made causes, which is beyond the coping capacity of the affected community”.

The United Nations defines natural hazard as “the occurrence of a sudden or major misfortune which disrupts the basic fabrics and normal functioning of a society or community. Today the term disaster is commonly used to denote any extreme events, be it natural or manmade. A natural disaster could occur due to an immediate extreme event or it could be the result of a long duration process, which disrupts normal human life in its established social, traditional and economic system to a considerable extent. The misery of the affected community is usually increased by poverty, high population density, weak infrastructure, proximity to river, sea or mountains, lack of cooperation within the community and poor governance. In a broad way, disaster can be categorized as 1. Natural disaster and 2. Man-made disaster.

There are different types of disasters. For example earthquakes, storms, hurricanes, intense precipitations, droughts, heat waves, thunderstorms and lightning. Earthquakes in Gujarat, El Salvador and Peru; floods in many countries of Asia and Africa; droughts in Afghanistan, Africa and Central America; cyclone in Odisha and Madagascar; tsunami in South Asia; Hurricane Katrina in New Orleans (USA); wild fire in Greece are some examples of disaster (CEE, 2007)..

**Types of natural disaster**

 On the basis of their origin disaster may be classified as follow.

* Wind and/or Water related natural disaster

 Floods

 Drought

 Tsunami

 cyclone

* Climate related disaster

 Heat and cold waves

 Global warming

 Sea level rise

 Ozone depletion

* Mountain area disaster

 Landslide

 Snow avalanches

or damage to property or the environment.

* Geological disaster

 Earthquakes

 Volcanic eruptions

**DEFINATION OF HAZARD**

 The term Hazard denotes a dangerous condition or event, that or have the potential for causing harm or injury to life or damage to property or the environment. It is a natural situation. For example, the Himalayas have potentiality to landslide because of its slope. So the steep slopes of the mountain are Hazard.

 It can target to harm of life. The international Secretariat for Disaster Reduction (ISDR) defines a hazard as” a potentially damaging physical events, phenomenon or human activity that may cause the loss or injury of life, property damage, social and economic destruction or environmental degradation. So, hazard is defined as a potential or a latent/dormant cause for occurring disaster. For example, a chemical plant in a populated area is a potential threat to life and property within definite vicinity; hence a it is a hazard for that community.

**Classification of Hazards**

Mainly hazards are classified into two main categories. First is natural hazard, most of the time referred as act of God. Second is a man-made hazard, caused by the carelessness of mankind (Whittow, 1980). This division is based on two main parameters. They are the total number of people killed and the periodicity of the event. After realizing the long term impact of environmental pollution on human health and wellbeing two other hazards came into picture. They are social hazards and quasi-natural hazards. Finally hazards are classified into Natural, Quasi-Natural, Social and Man-Made, according to public perception of the degree of disruption and their ability to control the event (Whittow, 1980). The figure below shows different hazards according to the ways in which people perceived the degree of disruption and the severity of the threat in terms of their ability to control the event.

(a) Natural Hazards: These hazards are the most uncontrollable. Tornado, flood, earthquake are examples of natural hazards.

(b) Quasi-Natural Hazards: These hazards are the results of man’s careless exploitation of his environment. Therefore, majority of these hazards can be avoided, alleviated or modified. Atmospheric pollution like global warming is an example.

(c) Social Hazards: They are created in the society by mankind. Riot is an example of social hazard.

(d) Man-Made Hazards: Sometimes hazards are created by mankind. It may be an attempt to offset existing natural hazards. For example, dams are constructed for irrigation purposes. This may trigger off earthquakes in critical seismic zones. Building collapse, fire, accidents are other examples of man –made hazards.

 **Difference between Disaster and Hazard**

 Centre for Environment Education (2007) has defined hazard as “a man-made or natural event that can potentially trigger disaster (earthquakes, mud-slides, floods, volcanic eruptions, tsunamis, drought, economic collapse and war)”.

 According to Asian Disaster Preparedness Centre (ADPC, 2015) a physical event that does not affect human being is a natural phenomenon. For example, volcanic eruption, a natural phenomenon that occurs in a populated area is a hazardous event. A hazardous event that causes large number of fatalities and property damage is a natural disaster. In areas where there are no human habitations, natural phenomena do not constitute hazards nor do they result in disasters.

 The internet site www.DifferenceBetween.com has given the following relationship between hazards and disaster.

(a) A hazard is a **situation** where there is a threat to life, health, environment or property. A disaster is an **event** that completely disrupts the community. It brings on human, economic and environmental losses to the community and it is difficult for the community to bear it alone.

(b)Both hazards and disasters are natural and man-made. Hazards are termed as disasters when they cause widespread destruction of property and human lives.

(c) If precautionary steps are taken and mankind lives in harmony with nature then hazards can be prevented from becoming disasters.

It is not necessary that all hazards will result in disasters. Therefore, an important question is when a hazard becomes a disaster? Centre for Environment Education (2007) has given a simple formula which explains how a hazard results in a disaster.

H\*V/C = R

Where H: Hazard: Potential threats to human and their welfare

V: Vulnerability: Susceptibility to loss of life or dignity

C: Capacity: Available and potential resources

R: Risk: Probability of occurrence of disaster

The above formula implies that risk is determined by hazard combined with vulnerability and capacity of the community. Vulnerability and capacity has an inverse relationship. The higher the vulnerability, lower is the capacity of the community and that results in higher risk. The realization of a risk is a disaster/

DEFINATION OF VULNERABILITY

The United Nations Office for Disaster Risk Reduction (2007) has defined vulnerability as “the characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard”.

Centre for Environment Education (CEE) has defined it as “a set of conditions and processes resulting from physical, social, economic, and environmental factors which increase the susceptibility of a community to the impact of hazards”. If one is vulnerable to a hazard, then the risk of being affected is higher. For example, in coastal area, people living in huts are more vulnerable to wave than who live in concrete buildings.

Cannon (1994) has defined vulnerability “is a characteristic of individuals and groups of people who inhabit a given natural, social and economic space, within which they are differentiated according to their varying position in society into more or less vulnerable individuals and groups. It is a complex characteristic produced by a combination of factors derived especially (but not entirely) from class, gender and ethnicity”. Other related terms are resilience, marginality, susceptibility, adaptability, fragility and risk.

Lewis (1999) has defined vulnerability as “the degree of susceptibility to a natural hazard”. There are natural forces like earthquake and hurricanes. They have impact on human settlements. The degree of damage, destruction and death in those settlements depend on the decisions and actions of the society over time.

Cannon (1994) has divided vulnerability into three aspects.

(a) Economic or Livelihood Resilience: This is an individual or group’s degree of resilience of the particular livelihood system and their capacity for resisting and capacity for recoverability.

(b) Health Component: It includes the strength of individuals and the operation of social measures like preventive medicine.

(c) Degree of Preparedness: This is determined by the protection available. People’s ability to protect themselves depends on their livelihood strength and their relationship with other social and political structure like state.

These three components are summarized in the following table. According to the bundle of these characteristics, an individual or a group has different degree of vulnerability (Cannon, 1994). A highly vulnerable group may be badly affected by a weak hazard and a low vulnerable group may be less affected by a strong hazard. For example, two natural hazards of same intensity and characteristics strike areas of same population density. Out of that one may be a disaster and the other may cause only minor disruptions in the society.

**Types of Vulnerability**

Lewis (1999) has discussed about five types of vulnerability

(a) National Vulnerability: This is the impact of natural disasters with threats to environmental, territorial, political and economic security. Small countries are physically more vulnerable to the impacts of hazards and poor countries are most economically vulnerable. This is a reflection of prevailing socio-economic and local conditions.

(b) Social Vulnerability: This is vulnerability of communities and people manifested in social groups. Some social groups are more vulnerable to others. For example, very young or very old people, groups separated by ethnicity, settlement and religious differences (Lewis, 1999). According to UNISDR this vulnerability refers to the inability of people, society and organizations to meet the adverse impact of hazards. These are aspects related to education, security, basic human rights, good governance, social equity etc.

(c) Institutional, Military and Systems Vulnerability: Institutions have their different and separately identifiable vulnerability (Lewis, 1999).

(d) Economic Vulnerability: This vulnerability may be in agricultural production. Impacts of damage in islands are higher compared to other areas (Lewis, 1999).According to UNISDR this vulnerability is highly dependent on economic status of individuals, communities and nations. Generally poor people are more vulnerable than rich people.

(e) Environmental Vulnerability: Environments are themselves vulnerable and vulnerable environments have implications for the vulnerability of environments. For example trees destroyed by hurricane may deprive a community from food and monetary source (Lewis, 1999). According to UNISDR, resource degradation and depletion of natural resources are main aspects of environmental vulnerability.

(f) Physical Vulnerability: According to UNISDR, this is another form of vulnerability. This is determined by population density level, remoteness of a settlement, design and material used for a construction. For example, during earthquakes wooden homes are less likely to collapse. However, they can catch fire easily.

 **Hazard, Vulnerability and Disaster: A Relationship**

A hazard need not produce a disaster every time. Disaster is the impact of a natural hazard upon vulnerable people (Cannon, 1994). If vulnerable population exists in an area, which is exposed to hazard, then disaster is predetermined. Hazard is only a trigger mechanism. The depth and extent of disaster will be determined by the intensity and duration of any given hazard and different components of vulnerability like lack of self-protection, social protection, strength of individual health and livelihoods. Cannon (1994) has defined livelihoods as “an enormous range of activities, some of which may involve direct production for subsidence, or waged work by means of which basic needs can be purchased”. These livelihoods are functions of socio-economic and political factors like class, gender, ethnicity and state. These socio-economic factors which give rise to vulnerability are subordinated to national and international political economy like civil security, debt crisis and environmental degradation (Cannon, 1994).

CONCEPT OF RISK:

 For disaster management purposes risk is defined as the expected losses of lives, persons injured, damaged to property and disruption of economic activity caused by a particular phenomenon. Risk is a function of possibility and probability of certain occurrences and losses each would cause.

 Thus in disaster terminology, Risk is defined as “the likelihood of a specified undesired events occurring within a specified period or in specific circumstances. It may be a frequency or a probability. It is often expressed in mathematical terms as:

Risk= f(frequency or probability, consequence)

 Frequency is usually expressed as events per year and probability is a number between o (zero) and 1 (one).Consequence is usually measured in terms of either money and fatalities.

**Hazards vs. Disasters**

The word hazard is used interchangeably with the word disaster. However, there is a difference in both the words. Centre for Environment Education (2007) has defined hazard as “a man-made or natural event that can potentially trigger disaster (earthquakes, mud-slides, floods, volcanic eruptions, tsunamis, drought, economic collapse and war)”. According to Asian Disaster Preparedness Centre (ADPC, 2015) a physical event that does not affect human being is a natural phenomenon. For example, volcanic eruption. A natural phenomenon that occurs in a populated area is a hazardous event. A hazardous event that causes large number of fatalities and property damage is a natural disaster. In areas where there are no human habitations, natural phenomena do not constitute hazards nor do they result in disasters. The internet site www.DifferenceBetween.com has given the following relationship between hazards and disaster.

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**Compiled by;**

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