

COURSE : DISASTER MANAGEMENT (MA PART I)

Paper : I

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Topic : Concept of disaster

What is disaster?

The word “*disaster*” is derived from Middle French “*désastre*” and that from Old Italian “*disastro*”, which in turn comes from the Ancient Greek prefix ‘*dis-*’ “bad” and ‘*aster*’, “star”. The root of the word “*disaster*” (“bad star” in Greek) comes from an astrological sense of a calamity blamed on the position of planets.

A **disaster** is a sudden, calamitous event that seriously disrupts the functioning of a community or society and causes human, material, and economic or environmental losses that exceed the community's or society's ability to cope using its own resources. Though often caused by nature, disasters can have human origins. The combination of hazards, vulnerability and inability to reduce the potential negative consequences of risk results in disaster.

One of the most difficult concepts in the literature is to arrive at a definition of a disaster. There have been many attempts to define disasters, but all run into the problem of either being too broad or too narrow. Having a definition of a disaster is extremely important in epidemiology for identifying which events to include or exclude from your analysis. If events are identified with a common definition, then they can also be more easily compared.

Disaster can be defined as a serious disruption, occurring over a relatively short time, of the functioning of a community or a society involving widespread human, material, economic or environmental loss and impacts, which exceeds the ability of the affected community or society to cope using its own resources.

In contemporary academia, disasters are seen as the consequence of inappropriately managed risk. These risks are the product of a combination of both hazards and vulnerability. Hazards that strike in areas with low vulnerability will never become disasters, as in the case of uninhabited regions.

Developing countries suffer the greatest costs when a disaster hits – more than 95 percent of all deaths caused by hazards occur in developing countries, and losses due to natural hazards are 20 times greater (as a percentage of GDP) in developing countries than in industrialized countries.

In general, most disaster events are defined by the need for external assistance. Perhaps, one reason for this observation is that the disaster relief agencies are often the only organizations with comprehensive and systematic data. There should be some caution

applied to data defined in this circumstance. Notably, the decision on which situations require external assistance may differ by country or region. In some situations, it may be a political decision as well.

Characteristics of Disasters

A disaster can be defined as an event that occurs in most cases suddenly and unexpectedly, causing severe disturbances to people or objects affected by it, and resulting in loss of life and harm to the health of the population, the destruction or loss of community property, and/or severe damage to the environment. Such a situation causes a disruption in the normal pattern of life, generating misfortune, helplessness, and suffering, effects on the socioeconomic structure of a region or a country, and/or the modification of the environment, to such an extent that there is a need for assistance and for immediate outside intervention.

Disasters can be caused by a natural phenomenon, by man, or can be the result of a technical failure of industrial or military systems.

Some disasters of natural cause represent threats that cannot be neutralized since their origins can hardly be forestalled, although in some cases they can be partially controlled. Earthquakes, volcanic eruptions, tidal waves (tsunamis), and hurricanes are examples of hazards that still cannot be prevented in practice, while floods, drought, and landslides can sometimes be controlled or mitigated by applying drainage systems and stabilization of soils.

Here is an extensive list of natural phenomena that can cause disasters or calamities:

- Earthquakes
- Tsunamis (tidal waves)
- Volcanic eruptions
- Hurricanes (storms, gales)
- Floods (slow, rapid)
- Massive land movements (landslides, collapses, mudflows)
- Droughts (desertification)
- Epidemics (biological)
- Pests

These are what might be called basic phenomena, since occasionally they generate other effects, as is the case with avalanches or mudslides, and the ash rains or lava flows that are directly associated with volcanic eruptions, or other kinds of phenomena that may be considered equivalents, such as tornados, tropical cyclones, or hurricanes. Most of these phenomena are cataclysmic, that is, they occur suddenly and affect a not very large area. However, there are cases such as desertification and drought which occur over a long period and affect extensive areas in an almost irreversible way.

Man-made disasters can either be deliberate or due to a technical failure, which can trigger a series of other breakdowns and cause a major disaster

Other man-made disasters include:

- Wars (terrorism)
- Explosions
- Fires
- Accidents
- Deforestation

- Contamination
- Collapses (impacts)

In general there exists a broad range of possible disasters of technological origin. At present, urban centers and ports are highly vulnerable to this type of disaster due to the high density of industry, building, and mass cargo and passenger transport systems.

Types of Disasters :

Disasters are routinely divided into natural or human-made, although complex disasters, where there is no single root cause, are more common in developing countries. A specific disaster may spawn a secondary disaster that increases the impact. A classic example is an earthquake that causes a tsunami, resulting in coastal flooding.

The most widely recognized types of disasters are those listed here. Disasters related to extreme weather events (floods, cyclones, tornadoes, blizzards, droughts) occur regularly. Events related to extremes of the earth's geology (earthquakes, volcanic eruptions) occur less frequently, but result in major consequences when they happen. Tsunamis often result from earthquakes. Avalanches result from massive accumulations of snow.

Disasters are commonly categorized by their origin; natural or man-made. Most disasters investigated in the literature are natural disasters. Recently, however, industrial accidents have been categorized as disasters. The Bhopal gas release and the Chernobyl nuclear accident are two examples of a man-made disaster. Forest fires (initiated by man) may be another example.

Disasters may occur suddenly in time (a quick onset), or they may develop over a period of time (a slow onset). Most occur suddenly and perhaps unexpectedly. However, some events develop gradually, including some floods and famines related to drought.

Categories of Natural Disaster : Natural disasters are broadly categorized as

Atmospheric disasters, including blizzard, thunderstorm, lightning, tropical cyclone, tornado, drought, hailstorm, frost, heat wave, cold waves, etc.

Terrestrial disasters, including earthquake, volcanic eruption, landslide, avalanches, subsidence, etc.

Aquatic disasters, including flood, tidal waves, storm surge, tsunami, etc.

Biological disasters, including fungal, bacterial, and viral diseases (e.g., bird flu, dengue, Covid-19, etc.).

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Topic : Traditional Indian Knowledge of Disaster

Introduction

Indian history cites many instances of coping with natural and human-made disasters, from invasions and wars to droughts, floods, famines, earthquakes, and cyclones. The location of the sub-continent with its unique geoclimatic features, together with a dense population, makes for an interesting mix of vulnerability and resilience. Through the centuries, people have had to cope with frequent hazards through distinctive settlement patterns, livelihood preferences, sociocultural practices, and traditions.

In addition to religious literature promoting the need for harmony between humans and their environment, scholastic and scientific literature in ancient India dealt with aspects of disaster preparedness and mitigation. One example is the philosopher astronomer mathematician Varahamihira (505-587 AD) who wrote about earthquakes, their causes, and predictability in the Brihad Samhita. In it he discusses signs of earthquakes and correlates them with cosmic and planetary influence, underground water and undersea activities, unusual cloud formations, and abnormal behavior of animals. These became part of folklore and form the basis of coping mechanisms extant at community level today. The Atharva Veda discusses drought mitigation strategies and the Arthashastra, a treatise on public administration by Chanakya (4th century BC), has a section on famine relief and mitigation measures.

India is a vast country that is extremely vulnerable to a large extent and diversity of natural as well as man-made disasters, with boundaries between the two blurred due to increasing human influence superseding over natural systems. Natural disaster's impact on the community and development's sustainability are occurring in aggravated and multiplied size and intensity due to complexity of environmental disfigurements, ecological imbalances and socio-economic disparities. Ecosystems sustain themselves in a dynamic balance based on cycles and fluctuations, which are non-linear processes..... ecological awareness, then, will arise only when we combine our rational knowledge with an intuition for the non-linear nature of our environment. Such intuitive wisdom is characteristic of traditional, non-literate cultures.

Besides, documented practices like in "*Arthashastra*" a world famous book of Vishnu Gupta written as *Kautilya* recognized as first known book on political science and public administration, although not a reference under catalogue on environment but depicted several important provisions and guidelines on natural resource management and disaster risk reduction. It held strong attitudes on forests, fauna, punishments, town planning, etc. and have enumerated the clauses on provisions for water management,

relief and preparedness, etc. Work on documenting traditional knowledge with the ethnic communities in the hilly states of India has already started and taking a good pace. Rawat and Sah (2009) have documented and discussed the traditional knowledge on water and drought management in Kumanon Himalaya that in turn also reduced flood risk and likely impacts of flash floods on community's resources. Indigenous knowledge is often used interchangeably with local knowledge, but sometimes a distinction is drawn between the 'indigenous' to describe primitive communities living in remote areas and the 'local' to describe people or community who have lived in an area for a long period of time. There are two major cosmovision traditions in India. *The 'Great Tradition'*, which represents the Sanskrit or classical tradition described in the Vedas and the 'Folk Tradition', representing popular Hindu tradition and the tradition of the tribal peoples. The rituals and practices of the Hindu tradition, both classical and folk, is a continuing history. Traditional knowledge for disaster risk management and response comprised from drawn from the three facets, i.e. – ecological, social, and nature-human interface, and addresses issues of risk perception and warnings, disaster avoidance or reduction, impact control and preparedness for the situations. Fig. 1 depicts example set of environmental hazards as driver of changes that cause or aggravate various disasters related with water and climate.

Indicators : In all dryland regions of the world are found local communities who have long histories of interaction with the natural environment. Associated with many of these communities is a cumulative body of knowledge, know-how, practices and symbolic representations. These sophisticated sets of understandings, interpretations and meanings are part of a cultural complex that encompasses language, naming and classification systems, resource use practices, ritual, spirituality and worldview. This local and indigenous knowledge is a key resource for empowering communities to combat desertification .

Traditional ecological knowledge represents experience acquired over thousands of years of direct human contact with the environment. Indigenous and local communities often have their own names and classifications (or 'taxonomy') for resources, places (particularly significant sites such as fishing grounds, and possibly fish spawning aggregation sites), and marine-related activities.

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Topic : Role of Panchayati Raj Institutions in Disaster Management

What is Panchayati Raj ?

In India, the Panchayati Raj generally refers to the local self-government of villages in rural India as opposed to urban and suburban municipalities, this system was introduced by a constitutional amendment in 1992. Although it is based upon the historical *panchayat* system of the Indian subcontinent. In India, the Panchayati Raj now functions as a system of governance in which gram panchayats are the basic units of local administration. The system has three levels: Gram Panchayat (village level), Mandal Parishad or Block *Samiti* or *Panchayat Samiti* (block level), and *Zila Parishad* (district level). It was formalized in 1992 by the 73rd amendment to the Indian Constitution. Currently, the Panchayati Raj system exists in all states except Nagaland, Meghalaya, and Mizoram, and in all Union Territories except Delhi.

The Panchayati Raj Institutions (PRIs) have become an opportunity and instrument for people from the grassroots level to directly join in the decentralized decision making processes. PRIs provide a platform to discuss local developmental problems and community needs, and PRIs are also able to mobilize people and resources to meet the needs of the community.

In 2005 a study was conducted on 'community approach to flood management' with support from World Meteorological Organization (WMO) in Assam, West Bengal, and Bihar. It was found that 'Gram Panchayats' are known as community based organization. West Bengal has the longest experience of functioning of three tiers Panchayati Raj Institutions and the structure has 29 been working for flood disaster management. Few gram panchayats had good communication with local officers, doctors, and NGOs for disaster management.

Another study was conducted in 2001 on the efforts of drought affected Karunga Gram Panchayat of Okha Mandal Taluka in Gujarat. It was found that PRIs and community had successfully taken efforts to supply drinking water during drought. The collaboration and coordination among the Gram Panchayat, Tata Chemical Company and villagers for supplying drinking water effectively met the basic needs during drought.

An important workshop was organized by Basin-South Asia, in 2005 where Gram-Panchayat members from different parts of India discussed the importance and responsibilities of PRIs in Disaster Management. The main focus of the workshop was on post-disaster reconstruction and rehabilitation. The representatives from Bihar,

Maharashtra, and Kerala shared their experience in different dimensions of disasters management at the panchayat level. The most important finding of this workshop was the importance given to capacity building of communities and implementing community based disaster mitigation measure. According to Basin-South Asia (2005), PRIs are located at the best place to motivate people to get involved in disaster mitigation process. It was also recognized that people's participation and involvement in Gram Sansad Sabha help to identify the vulnerable community and potential disaster and its preparedness. Though PRIs are working for local level developmental planning, many time voices of villagers have not been recognized. As a result, the disaster management efforts of PRIs are transformed into mere partisan political activities.

Though Gram Sansad Sabha and PRIs are often politicized, the Gram Panchayat member who belongs to the village has reciprocity with the villagers. There is an argument that the Gram Panchayat member, from a socially deprived community may not have enough voice in the GramPanchayat. But, during Gram Sansad Sabha, the members of community share their needs and problems with PRIs. As Gram Panchayat member belongs to the village, the existing reciprocity between Gram Panchayat member and the community may lead to PRI decision's that are favourable to the community. Many researchers also argue that vulnerable people in the community do not participate in Gram Sansad Sabha. But, if there is a hazard, then everybody is a victim and they share their problems with Gram Panchayat member and PRIs.