PART 1 HAZARDS AND DISASTERS

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LEARNING OBJECTIVES

After reading the material and completing the exercises you should be able to:

- *define the key terms of disaster management*
- *describe the causes of disaster vulnerability*
- *reproduce the disaster management continuum diagram*
- *identify the most important hazards and how they affect society*
- *distinguish between natural and human made hazards*
- *identify at least two ways that development can lead directly to a disaster*
- *describe at least four ways that disasters disrupt development*

■

CHAPTER 1

Introduction to disasters

Q. How do you define "hazard" and "disaster"?

A. Write your ideas in the following space, then compare your definitions with those provided in the text.

Before going any further we should establish a common understanding of the terms *hazard* and *disaster*.

Definition of hazard

A hazard is a rare or extreme event in the natural or human-made environment that adversely affects human life, property or activity to the extent of causing a disaster.

Definition of disaster

A disaster is a serious disruption of the functioning of a society, causing widespread human, material, or environmental losses which exceed the ability of affected society to copy using only its own resources. Disasters are often classified according to their speed of onset (sudden or slow), or according to their cause (natural or man-made).

Definition of natural phenomena

This part of the module will focus on the above two terms but we need to examine them in relation to another term: natural phenomena. Natural phenomena are extreme climatological, hydrological, or geological processes that do not pose any threat to persons or property. A massive earthquake in an unpopulated area, for example, is a natural phenomena, not a hazard. So is the annual flood along the Nile, an essential element to the well being of its neighboring inhabitants.

Definition of emergency

Another term closely related to disaster and used throughout this module is emergency. A disaster might be regarded as a particular type (or sub-set) of an emergency. "Disaster" suggests an intense time period and level of urgency. Whereas a disaster is bound by a specific period in which lives and essential property are immediately at risk, an emergency can encompass a more general period in which

- there is a clear and marked deterioration in the coping abilities of a group or community, or
- coping abilities are only sustained by unusual initiatives by the group or community or by external intervention

The disaster problem

This section will describe certain phenomena leading to disasters and emergencies: disaster trends, where they occur and who is most affected by them.

From the outset it is worth reminding ourselves that disasters and emergencies are all too often regarded as aberrant events, divorced from "normal life." In reality, however, the opposite is true. Disasters and emergencies are fundamental reflections of normal life. They are consequences of the ways societies structure themselves, economically and socially; the ways that societies and states interact; and the ways that relationships between the decision makers are sustained. Hence a flood or an earthquake is not a disaster in and of itself.

The disaster stems from the fact that certain communities or groups are forced to settle in areas susceptible to the impact of a raging river or a volcanic eruption. It is essential to make a distinction between hazards and disasters, and to recognize that the effect of the former upon the latter is essentially a measure of the society's vulnerability.

The following diagram illustrates this combination of opposing forces. Vulnerability is seen as the progression of three stages:

1. **Underlying causes:** a deep-rooted set of factors within a society that together form and maintain vulnerability.

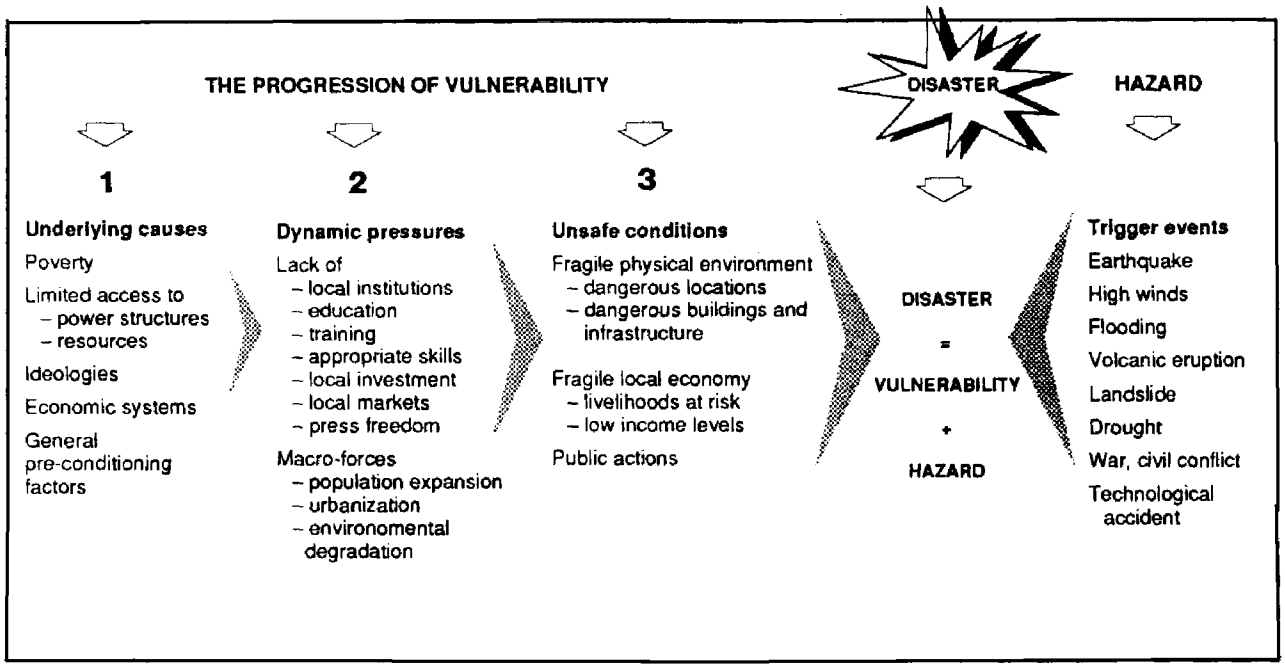
2. **Dynamic pressures:** a translating process that channels the effects of a nagative cause into unsafe conditions; this process may be due to a lack of basic services or provisionor it may result from a series of macro-forces

3. **Unsafe conditions:** the vulnerable context where people and property are exposed to the risk of disaster; the fragile physical environment is one element; other factors include an unstable economy and low income levels.

Figure 1.1

The Disaster Crunch Model

This material has been drawn from the first chapter of the forthcoming book: *At Risk—Vulnerability and Disasters*, by Piers Blaikie, Terry Cannon, Ian Davis and Ben Wisner (Harper Collins, London and New York).



Causal factors of disasters

The magnitude of each disaster, measured in deaths, damage, or costs for a given developing country increases with the increased marginalization of the population. This is caused by a high birthrate, problems of land tenure and economic opportunity, and the lack or misallocation of resources to meet the basic human needs of an expanding population. As the population increases, the best land in both rural and urban areas is taken up, and those seeking land for farming or housing are forced to accept inadequate land. These offer less productivity and a smaller measure of physical or economic safety. The following section considers each of these issues.

Photo credit: UNHCR/ M Vanappelghem

Poverty

The most important single influence on the impact of a disaster is poverty. All other factors could be lessened if the affected population were not also limited by poverty. Virtually all disaster studies show that the wealthiest of the population either survive the disaster unaffected or are able to recover quickly. Across the broad spectrum of disasters, poverty generally makes people vulnerable to the impact of hazards. Poverty explains why people in urban areas are forced to live on hills that are prone to landslides, or why people settle near volcanos or rivers that invariably flood their banks. Poverty explains why droughts claim poor peasant farmers as victims and rarely the wealthy, and why famines more often than not are the result of a lack of purchasing power to buy food rather than an absence of food. Increasingly, poverty also explains why many people are forced to move from their homes to other parts of their countries or even across borders to survive. Such crisis-induced migration poses considerable challenges both in terms of immediate assistance to the displaced and of longer-term development.

Population growth

There is an obvious connection between the increase in losses from a disaster and the increase in population. If there are more people and structures where a disaster strikes, then it is likely there will be more of an impact. The growth of population has been so spectacular that it is inevitable that more people will be affected by disasters because more will be forced to live and work in unsafe areas. Increasing numbers of people will be competing for a limited amount of resources (such as, employment opportunities, and land) which can lead to conflict. This conflict may result in crisis-induced migration. Such growth occurs predominantly in developing countries, resulting in various contributors to disasters.

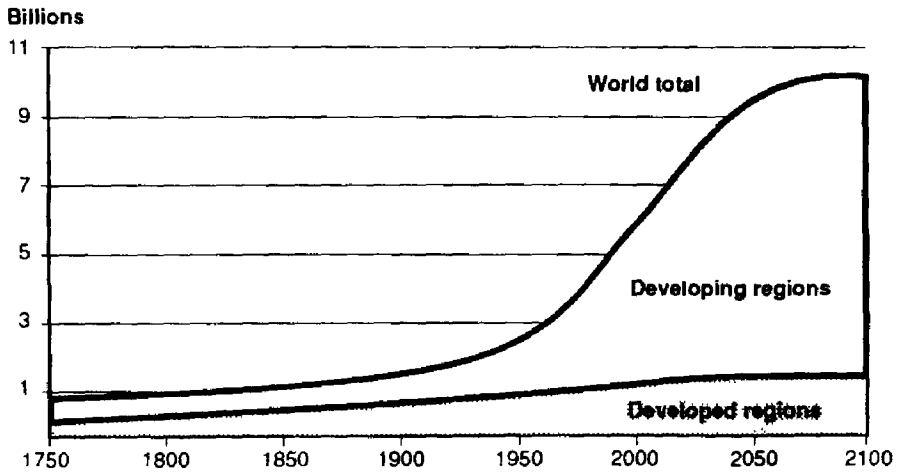


Figure. 1.2

Population growth, 1750-2100.

Source. Thomas Merrick, et al., "World Population in Transition," *Population Bulletin*, Vol 42, No 2 (1986)

Rapid urbanization

Rapid population growth and migration are related to the major phenomenon of rapid urbanization. This process is also accelerated in developing countries. It is characterized by the rural poor or civilians in an area of conflict moving to metropolitan areas in search of economic opportunities and security These massive numbers of urban poor increasingly find fewer options for availability of safe and desirable places to build their houses Here again, competition for scarce resources, an inevitable consequence of rapid urbanization, can lead to human-made disasters.

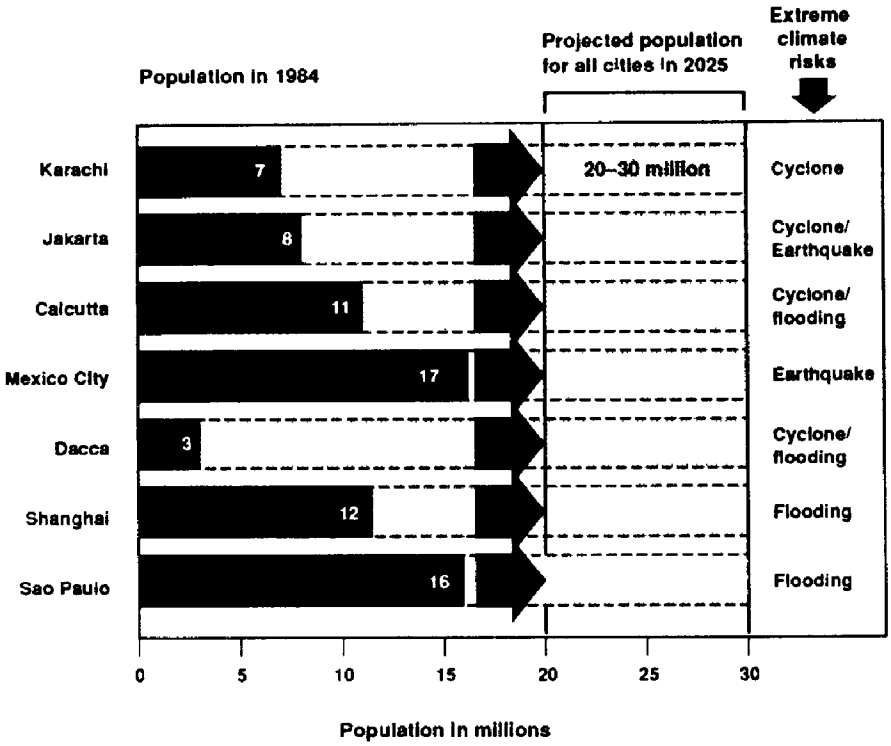
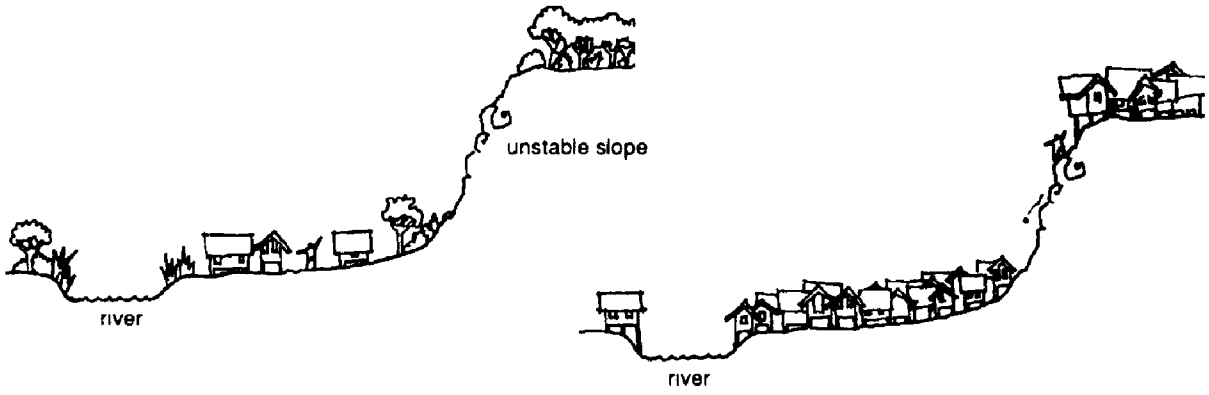


Figure 1.3
Population projections for some disaster-prone cities.

Many landslides or flooding disasters are closely linked to rapid and unchecked urbanization which forces low-income families to settle on the slopes of steep hillsides or ravines, or along the banks of flood-prone rivers. Many earthquake victims in urban areas have been impoverished families whose sites have failed rather than their houses, usually through landslides onto the house or out from under it.

Figure 1.4
As population continues to grow, settlements spread to marginal and even unsafe areas.



Transitions in cultural practices

Many of the inevitable changes that occur in all societies lead to an increase in the societies' vulnerability to disasters. Obviously, all societies are constantly changing and in a continual state of transition. These transitions are often extremely disruptive and uneven, leaving gaps in social coping mechanisms and technology. These transitions include nomadic populations that become sedentary, rural people who move to urban areas, and both rural and urban people who move from one economic level to another. More broadly, these examples are typical of a shift from non-industrialized to industrializing societies.

One example of the impact of these transitions is the introduction of new construction materials and building designs in a society that is accustomed to traditional materials and designs. This often results in new materials being used incorrectly. In disaster prone areas, inadequate new construction techniques may lead to houses that cannot withstand earthquakes or wind storms (see the following figure).

Compounding this problem is the new community where the disaster survivors find themselves may not have a social support system or network to assist in the relief and recovery from the disaster. The traditional coping mechanisms may not exist in the new setting and the population becomes increasingly dependent on outside interveners to help in this process.

Conflicting as well as transitional cultural practices can also lead to civil conflict, for example, as a result of communal violence triggered by religious differences.

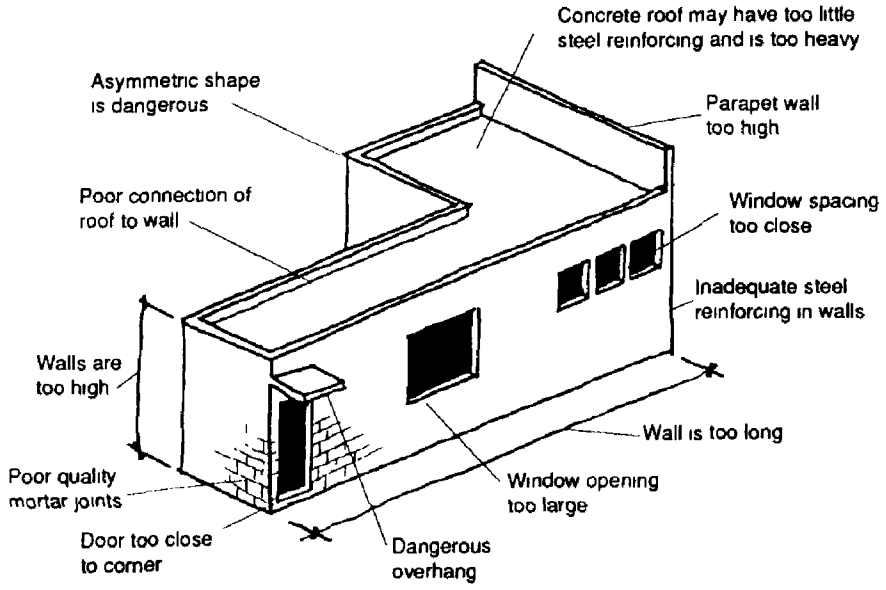


Figure 1.5
New house badly built using modern materials.

Environmental degradation

Many disasters are either caused or exacerbated by environmental degradation. Deforestation leads to rapid rain run off, which contributes to flooding. The destruction of mangrove swamps decreases a coast line's ability to resist tropical winds and storm surges.

The creation of drought conditions — and the relative severity and length of time the drought lasts — is mainly a natural phenomena. Drought conditions may be exacerbated by: poor cropping patterns, overgrazing, the stripping of topsoil, poor conservation techniques, depletion of both the surface and subsurface water supply, and, to an extent, unchecked urbanization.

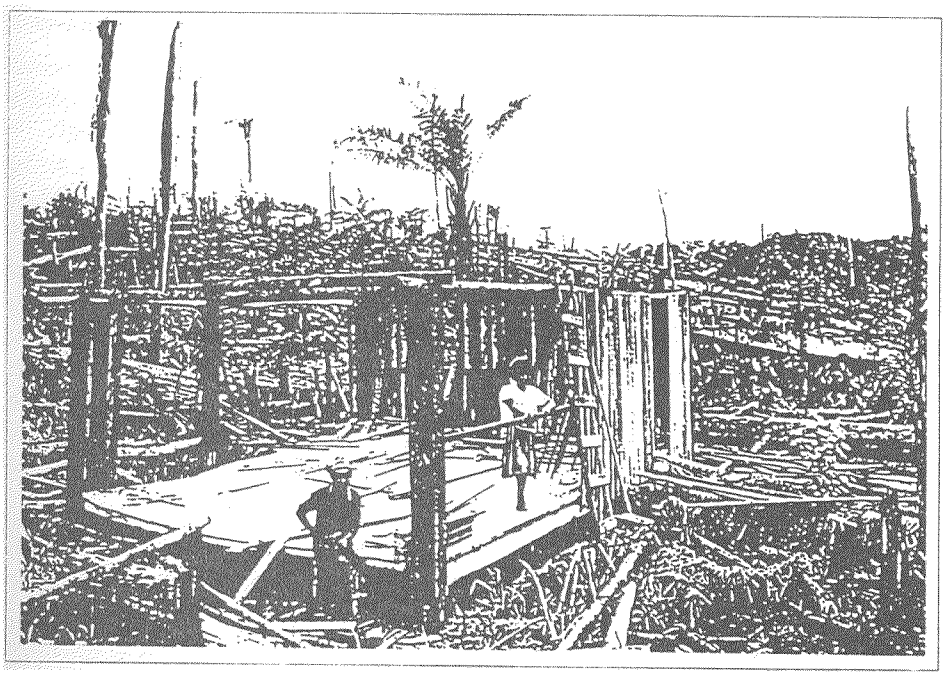


Figure 1.6
Deforestation for "development"

Lack of awareness and information

Disasters can also happen because people vulnerable to them simply didn't know how to get out of harm's way or to take protective measures. This ignorance may not necessarily be a function of poverty, but a lack of awareness of what measures can be taken to build safe structures on safe locations. Perhaps some people did not know about safe evacuation routes and procedures. Other populations may not know where to turn for assistance in times of acute distress. Nevertheless, this point should not be taken as a justification for ignoring the coping mechanisms of the majority of people affected by disasters. In most disaster-prone societies, there is a wealth of understanding about disaster threats and responses. This understanding should be incorporated into any efforts to provide external assistance.

War and civil strife

In this text war and civil strife are regarded as hazards, that is, extreme events that produce disasters. War and civil strife often result in displaced people, a target population of this training programme. The causal factors of war and civil strife include competition for scarce resources, religious or ethnic intolerance, and ideological differences. Many of these are also byproducts of the preceding six causal factors of disasters.

Q. *Of the seven causal factors of disasters discussed above, how would you rank them for the region in which you live?*

A. List the most serious contributor first.

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7 _____

CHAPTER 2

Disaster terminology and phases

Disaster terms

Some terminology of disaster management has already been introduced in this module. A brief glossary follows to highlight some of these working definitions.

This glossary lists the disaster management terms as used in the Third Draft of "A list of Disaster Management related terms with their definitions to be included in an internationally agreed multilingual glossary" prepared by UNDRO, and in the UNDP/UNDRO Disaster Management Manual. However, consensus does not exist among all disaster management practitioners or academicians regarding these definitions. A standardized and universally accepted glossary would obviously be desirable, but is not likely to exist within the next few years. Consequently, the following definitions represent one effort toward developing a consensus. Users of the DMTP training materials are encouraged to adopt these working definitions for the sake of uniformity and to be tolerant of other groups' definitions.

Q. Can you think of an example of how to use each of these terms? Write your example in the space below each definition.

Disaster management

Disaster management is the body of policy and administrative decisions and operational activities which pertain to the various stages of a disaster at all levels.

A. _____

_____

Human-made disasters

Human-made disasters are disasters or emergency situations where the principal, direct cause(s) are identifiable human actions, deliberate or otherwise. Apart from "technological" and "ecological" disasters, this mainly involves situations in which civilian populations suffer casualties, losses of property, basic services and means of livelihood as a result of war or civil strife, for example. Human-made disasters/emergencies can be of the rapid or slow onset types, and in the case of internal conflict, can lead to "complex emergencies" as well.

A. _____

_____

An even broader definition of human-made disaster acknowledges that all disasters are caused by humans because they have chosen, for whatever reason, to be where natural phenomena occurs that result in adverse impacts on people.

A. _____

_____

Risk

Risk is the expected losses (lives lost, persons injured, damage to property and disruption of economic activity) due to a particular hazard. Risk is the product of hazard and vulnerability.

A. _____

_____

Vulnerability

Vulnerability is the degree of loss (for example, from 0 to 100 percent) resulting from a potentially damaging phenomenon.

A. _____

_____

The following terms are key to understanding slow onset disasters and their impact on populations.

Population displacements

Population displacements are usually associated with crisis-induced mass migration in which large numbers of people are forced to leave their homes to seek alternative means of survival. Such mass movements normally result from the effects of conflict, severe food shortages or collapse of economic support systems.

A. _____

_____

Complex emergencies

Complex emergencies are a form of human-made emergency in which the cause of the emergency as well as the assistance to the afflicted are bound by intense levels of political considerations. This sort of emergency is normally associated with the problems of displaced people during times of civil conflict or with people in need caught in areas of conflict.

A. _____

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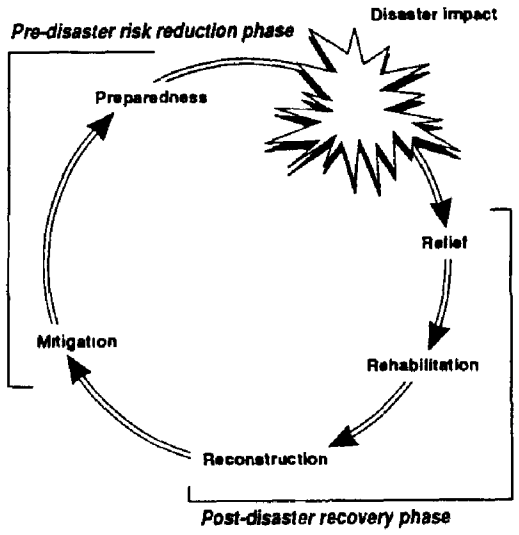
Figure 2.1
Rapid onset disaster management continuum



Phases of a disaster

Disasters can be viewed as a series of phases on a time continuum. Identifying and understanding these phases helps to describe disaster related needs and to conceptualize appropriate disaster management activities.

Rapid onset disasters

The definitions below correspond to the time sequence following the occurrence of a rapid onset disaster. See Figure 2.1.

Relief phase

The relief phase is the period immediately following the occurrence of a sudden disaster (or the late discovery of a neglected/deteriorated slow-onset situation) when exceptional measures have to be taken to search and find the survivors as well as meet their basic needs for shelter, water, food and medical care.

A. _____

_____

Rehabilitation

Rehabilitation is the operations and decisions taken after a disaster with a view to restoring a stricken community to its former living conditions, while encouraging and facilitating the necessary adjustments to the changes caused by the disaster.

A. _____

_____

Reconstruction

Reconstruction is the actions taken to reestablish a community after a period of rehabilitation subsequent to a disaster. Actions would include construcion of permanent housing, full restoration of all services, and complete resumption of the pre-disaster state.

A. _____

_____

Mitigation

Mitigation is the collective term used to encompass all actions taken prior to the occurrence of a disaster (pre-disaster measures) including preparedness and long-term risk reduction measures. (Mitigation has been used by some institutions or authors in a narrower sense, excluding preparedness.)

A. _____

_____

Preparedness

Preparedness consists of activities designed to minimize loss of life and damage, organize the temporary removal of people and property from a threatened location, and facilitate timely and effective rescue, relief and rehabilitaiton.

A. _____

_____

Slow onset disasters

The sequence of a disaster continuum for slow onset disasters is similar in framework but has important distinctions. The following terms and definitions reflect those additions or modifications. See Figure 2.2.

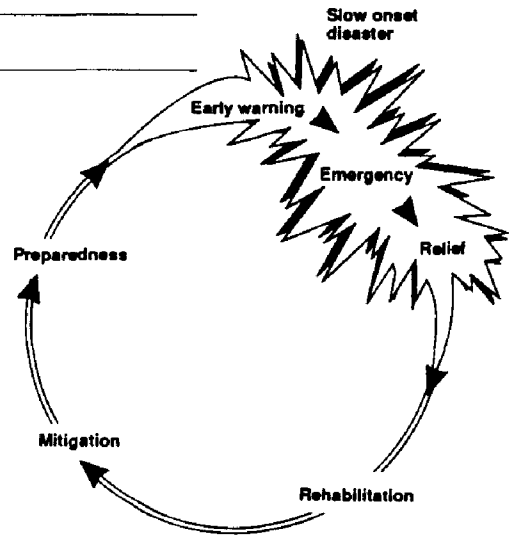


Figure 2.2.
Slow onset disaster management continuum

Early warning

Early warning is the process of monitoring situations in communities or areas known to be vulnerable to slow onset hazards. For example, famine early warning may be reflected in such indicators as drought, livestock sales, or changes in economic conditions. The purposes of early warning are to enable remedial measures to be initiated and to provide more timely and effective relief including through disaster preparedness actions.

A. _____

_____

Rehabilitation

The emergency phase is the period during which extraordinary measures have to be taken. Special emergency procedures and authorities may be applied to support human needs, sustain livelihoods, and protect property to avoid the onset of disaster. This phase can encompass pre-disaster, disaster alert, disaster relief and recovery periods. An emergency phase may be quite extensive, as in a slow onset disaster such as a famine. It can also be relatively short-lived, as after an earthquake.

A. _____

_____

Emergency phase

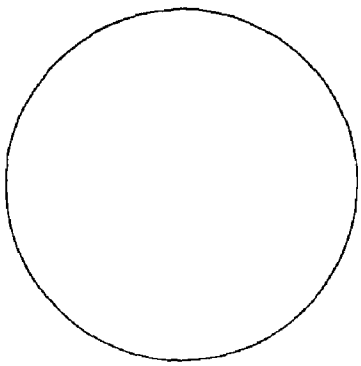
Rehabilitation is the action taken after a slow onset disaster where attention must be given to the issues of resettlement or returnee programmes, particularly for people who have been displaced for reasons arising out of conflict or economic collapse.

A. _____

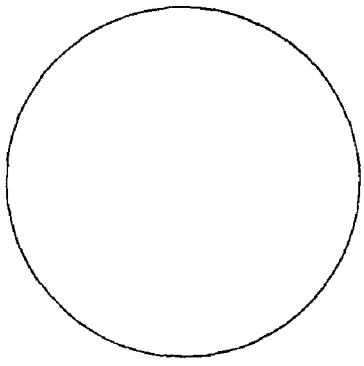
_____

Q. Test your recall of the two disaster continuum diagrams. Label each circles below with the phases of a rapid onset and slow onset disaster.

A.



Rapid onset disaster



Slow onset disaster