

Concept of Hazard and Disaster

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Concept of Hazard and Disaster

Objectives :

- Distinguish between the concepts of hazard, disaster, hazard event, secondary and multiple hazards
- Classify and describe different types of hazards
- Explain hazard characteristics such as magnitude, frequency, intensity and rate of onset and their importance

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What is a hazard?

HAZARD is any substance, phenomenon or situation, which has the potential to cause disruption or damage to people, their property, their services and their environment

A Hazard is a threat and a future source of danger. It has the potential to cause harm to

- People - death, injury, disease and stress
- Human activity – economic, educational etc.
- Property - property damage, economic loss of
- Environment - loss fauna and flora, pollution, loss of amenities.

Some examples of hazards are earthquakes, volcanic eruptions, cyclones, floods, landslides, and other such events.

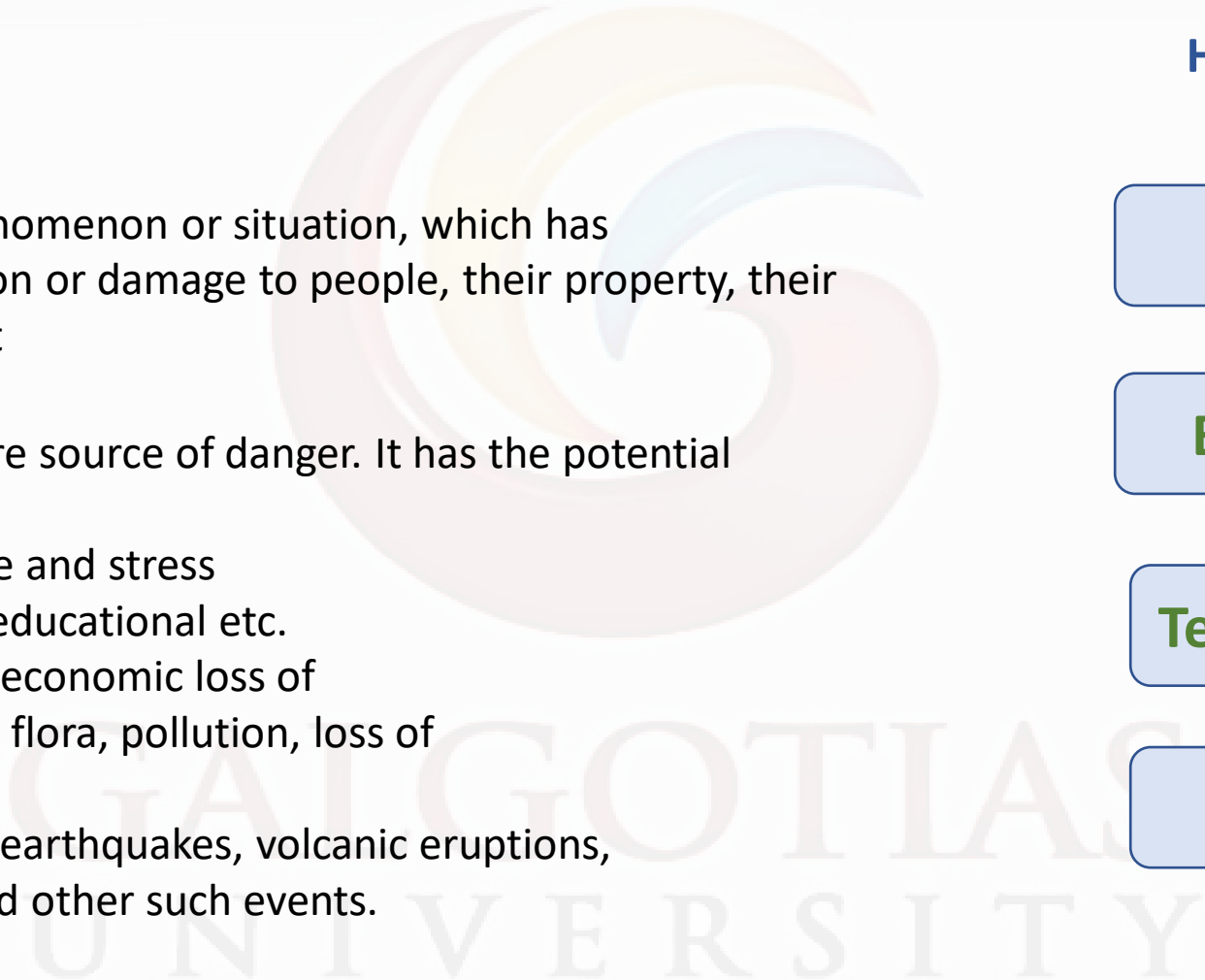
Hazard Classification

Natural Hazard

Biological Hazard

Technological Hazard

Societal Hazard



Hazard Classification

1. Natural Hazards:

- Natural hazards arise out of totally natural processes.
- They are involuntary in nature and cannot be controlled.
- They cause severe damages to life and property
- Examples: Floods, volcanoes, earthquakes etc.



Flood



Volcanoe



Earthquake

Hazard Classification

2. Biological Hazards:

- Largely include microorganisms which are visible under the microscope and also from normal animals like rats and pigs
- Generally causes epidemics and pandemics in humans, plants and animals
- Major sources include viruses, bacteria, spores from biological sources, fungi, bio-active substances



Hazard Classification

3. Technological Hazards

- A technological disaster is an event caused by improper functioning of a technological structure and/or some human error in controlling or handling the technology.
- Technology disasters include structural collapses, such as bridges, mines and buildings, but also industrial accidents, such as chemical or nuclear explosions












Hazard Classification

4. Societal Hazard

- Social hazards involve complex emergencies and seriously limit a population's access to health services, water, food, and transportation, all of which are determinants of health. They also often lead to a lack of safety and tend to come hand in hand with natural disasters such as floods.



Queensland Floods (2010-11)	East Jakarta Earthquake (2009)	Newcastle Earthquake (1988)
<ul style="list-style-type: none">• More than 70% of the state received a disaster alert and 25-3000 people affected• 30 fatalities and an estimated 100 injuries and 300 minor injuries 	<ul style="list-style-type: none">• 173 fatalities and 414 injuries• The human cost of deaths and injuries are estimated to be about \$420M• 400,000 houses burnt• Hospital injuries and resulting from two surfaces:<ul style="list-style-type: none">• Mental health issues - \$100,000• Physically non-abled compensation - \$400M• Chronic diseases/communicable diseases - \$20M• Family distress - \$200-4m• Environmental damage - \$47m    	<ul style="list-style-type: none">• Based on the methodology used to estimate consequences of the social impacts to the Queensland Floods and East Jakarta Earthquake, the GCOE also finds that the Newcastle earthquake in 1988 had an estimated \$71.2 billion in financial costs and \$7.7 billion in social costs, resulting in a total economic cost of \$78.9 billion (2011 values)  
<ul style="list-style-type: none">• The human cost of deaths and injuries are estimated to be around \$420M• Hospital injuries and resulting from two surfaces:<ul style="list-style-type: none">• Mental health issues - \$100m• Physically non-abled compensation - \$20m• Chronic diseases/communicable diseases - \$10m• Family distress - \$70m• The estimated social costs associated with the Queensland Floods were at least as high as, if not larger, than the financial costs of at least \$7.7 billion in social impacts and \$71.2 billion in direct financial impacts  		

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Secondary Hazard

These are hazards that follow as a result of other hazard events. Hazards secondary to an earthquake may be listed as follows to illustrate the concept. Primary hazard is the earthquake. Secondary hazards are

- Building collapse
- Dam failure
- Fire
- Hazardous material spill
- Interruption of power/ water supply/ communication/ transportation/ waste disposal
- Landslide
- Soil liquefaction
- Tsunami (tidal wave)

Multiple Hazards

When more than one hazard event impacts the same area, there arises a multiple hazard situation. These different hazard events may occur at the same time or may be spaced out in time

Return Period of Hazard

Majority of hazards have return periods on a human time-scale. Examples are five-year flood, fifty-year flood and a hundred year flood.

This reflects a statistical measure of how often a hazard event of a given magnitude and intensity will occur.

References:

1. Hewitt, K. and Burton, I. (1971) *The Hazardousness of a Place: A Regional Ecology of Damage Events*, University of Toronto
2. Burton, I. And Kates, R.W. (1964) The perception of natural hazards in resource management, *Natural Resources Journal* 3, 412-41

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The logo of Galgotias University is a stylized 'G' composed of three curved, overlapping bands in shades of yellow, blue, and red. It is centered in the background of the slide.

Thank You !!!

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