

Natural Environmental Hazards and Its Management

H A Patel

SIR P T Science College, Modasa

Abstract- The earth environment is important for human being and for other live organisms. It is necessary to sustain it for better life. Among all living beings man is intelligent and is able to think what is good and what is bad for his existence. He can think that any unwanted changes in the atmosphere (environmental imbalance) are dangerous for our existence. Before few years, man was living natural life without disturbing environment. So at that time there was less number of environmental issues. After that he has started artificial luxurious life with more and more facilities. In the name of development he has started deforestation for infrastructure development and industrialization and urbanization, vehicle production, making of nuclear and chemical weapons. All these manmade activities are ultimately responsible for environmental imbalance. There are two main types of environmental hazards. One which can directly created by man and can be controlled at maximum level and the second which is natural which is indirectly related to manmade activities and can be controlled but the risk due to that can be minimized by proper management.

Index Terms- environmental imbalance, deforestation, hazards

INTRODUCTION

Natural hazards with far reaching and severe physical, ecological and socio-economic consequences can occur suddenly like earthquakes, floods, tsunamis, volcanic eruptions, cyclones and landslide. They can occur also slowly, like drought and desertification which are caused by natural phenomenon or by natural phenomena coupled with overt effects of human actions. Natural disasters are becoming increasing by significant – both in terms of number of events and magnitude of impact. Evidence suggests that the frequency of natural disaster has increased in recent decades although there has been a marked increase in awareness of natural hazard phenomena.. the description of natural events as disasters can be applied to those which have a major effect on populated areas or on those of economic importance to mankind. The most widely accepted reason for the rise in number of natural

natural hazards over the last few decades is that the hit rate has increased considerably due to continuing growth of the world population. This population growth has led to an increase in building density. Natural environmental hazards occur suddenly and swiftly. It causes severe damage to the society and surrounding environment. Such events cannot be prevented from occurring but their impact can be reduced by proper action taken to reduce their size, frequency and severity. For this, hazard-coping measures are necessary which includes planning for disaster, preparation based on appraisal of the magnitude of risks in the past and those anticipated in the future. The preparation of maps of hazards zone is the first prerequisite of these measures. These zones require identification of vulnerable zones, sites of past occurrences and predicted future events as well as estimation of the actual damage to the settlements, communication systems and essential supply lines. In addition the geologists investigate the way, in which the intensity of the anticipated event could be moderated. The rising of mountains and their subsequent erosion to sea level, the drifting of continents and the sliding of earth's plates are among the planet's large scale phenomenon but these are so slowly that they are not generally regarded as threaten to society. But events like earthquake, volcanic activity, floods, storms and landslide can put people and property at risk due to their sudden and unexpected occurrence.

NATURAL HAZARDS:-

EARTHQUAKE

An earthquake is also known as a quake, is the shaking of the surface of the Earth, resulting from the sudden release of energy in the Earth's lithosphere that creates seismic waves. Earthquakes can range in size from those that are so weak that they cannot be felt to those violent enough to toss people around and destroy whole cities. The seismicity or seismic activity of an area refers to the frequency, type and

size of earthquakes experienced over a period of time. At the Earth's surface, earthquakes manifest themselves by shaking and sometimes displacement of the ground. When the epicenter of a large earthquake is located offshore, the seabed may be displaced sufficiently to cause a tsunami. Earthquakes can also trigger landslides, and occasionally volcanic activity.

An earthquake is a potent natural hazard and more infrequent than other types of natural disaster. It can cause devastation and loss of life on a scale far greater than any other natural hazard and therefore it is generally regarded as the most destructive force of nature.

In recent studies, geologists claim that global warming is one of the reasons for increased seismic activity. According to these studies melting glaciers and rising sea levels disturb the balance of pressure on Earth's tectonic plates thus causing increase in the frequency and intensity of earthquakes.

TSUNAMI

Tsunamis are long-wavelength, long-period sea waves produced by the sudden or abrupt movement of large volumes of water - including when an earthquake occurs at sea. It is seismic sea waves - large ocean waves generated by impulses from geophysical events occurring on the ocean floor or along the coastline activities such as earthquake, landslide and volcanic eruptions. In the open ocean the distance between wave crests can surpass 100 kilometers, and the wave periods can vary from five minutes to one hour. Such tsunamis travel 600-800 kilometers per hour, depending on water depth. Large waves produced by an earthquake or a submarine landslide can overrun nearby coastal areas in a matter of minutes. Tsunamis can also travel thousands of kilometers across open ocean and wreak destruction on far shores hours after the earthquake that generated them.

They are hardly noticeable at sea and can reach gigantic proportions as they reach shallow coastal waters. Tsunami have been known to reach 30 m in height and can travel 10,000 Km at velocity exceeding 900 Km/h with little loss of energy and are therefore capable of hitting areas not directly affected by the inducing event has led to the establishment of

a tsunami early warning service for the whole circum-pacific area.

The principal cause for occurring of a tsunami is the displacement of a substantial volume of water or perturbation of the sea. This displacement of water is usually attributed to either earthquakes, landslides, volcanic eruptions, glacier calving or more rarely by meteorites and nuclear tests. The waves formed in this way are then sustained by gravity. Tides do not play any part in the generation of tsunamis.

WINDSTORM

Windstorm can be said to be most significant of all natural hazards judged by the frequency with which they cause damage and by surface area of the regions they strike. The influence precipitation systems, floods and cause severe destruction to crops and properties. Severe tropical cyclones named hurricanes, typhoons, cyclones, tornados and thunderstorm affect every country on the seashore in the world.

FLOODS

The strength of major flood has increased in the recent decades. They are not only caused by high amount of precipitation, but also by manmade changes to the earth's surface. The properties of soil surface layers alter due to poor management of agricultural land, increased deforestation, and urbanisation resulting in greater run-off and increased erosion. Each year flood kills thousands of people and cause much more damage to property.

VOLCANO

An active volcano occurs where magma (molten rocks) reaches the earth's surface through a central vent or a long crack. Volcanic activity can release ejecta, liquid lava and gases vapour into the environment.

NATURAL HAZARD MANAGEMENT:-

EARTHQUAKE

The damage due to an earthquake can be reduced by

- Avoiding the settlement on the earthquake zones and construction of the development structure on it.
- Prediction of earthquake ahead of time to reduce damage of properties.

-By proper land use planning and good construction.

TSUNAMI

The effect of tsunamis can be decreased by standard operating procedure for immediate evacuation or reliable, rapid communication systems capable of receiving real-time warning from tsunami warning Centre.

WINDSTORM

Its effect can be reduced with

- Forecasting and warning of possible hazards of probable cyclone hit areas.
- Temporary evacuation of population from effected sites.
- Maintain and preserve barrier islands and coastal wetlands.
- Construct and maintain physical barriers.

FLOOD

It can be managed by

- Construction of barrages, dams and implementation of proper watershed management schemes
- Tree plantation
- Manage watershed to minimize erosion.
- Construct and maintain flood walls as physical barriers.

LANDSLIDE

The effect of landslide can be reduced by controlling of human activities in landslide zones. It also controlled by reforestation and by reducing preventing and controlling infiltration and erosion.

CONCLUSION

There should be proper Public policy for hazard management including land use classification, building codes, capital investment by governments, public information, education and warning. Policy plan includes formulating and enforcing laws and regulations for preventing or restricting development and use of the lands prone to hazards as indicated in hazard-zoning maps.

The government can acquire such zone for alternative land use such as Recreation Park, wildlife sanctuaries, forestation or allowing the original owners to pursue agriculture but forbidding construction of building etc. Thus the productive use of hazard zone land reduces the degree of risk.

REFERENCES

- [1] Ohnaka, M. (2013). *The Physics of Rock Failure and Earthquakes*. Cambridge University Press. p. 148. ISBN 9781107355330.
- [2] S.C. Santra 'Environmental Science' 2005
- [3] Spence, William; S. A. Sipkin; G. L. Choy (1989). "Measuring the Size of an Earthquake". United States Geological Survey. Archived from the original on 2009-09-01. Retrieved 2006-11-03.
- [4] Geoscience Australia Wyss, M. (1979). "Estimating expectable maximum magnitude of earthquakes from fault dimensions". *Geology*. 7 (7):336-40. Bibcode: 1979Geo.....7.336W. doi:10.1130/0091-7613(1979).