IMPACT OF NATURAL HAZARDS ON ECOSYSYTEM

Dr. Nandini P. Wagh
Departmetn of Geography
Pankaj Arts & Science College, Chopda,
Dist. Jalgaon

Abstract: *An ecosystem is an integrated unit consists of interacting plants, animals and micro organisms. Whose survival is depending upon the maintenance and regulation of their biotic and a biotic Structures and functions. Thus ecosystem is a unit or a system which is composed of a number of subunits which are directly or indirectly correlated to each other.A widely accepted definition characterizes natural hazards as "those elements of the physical Environment, harmful to man and caused by forces extraneous to him. More specifically, in this document, the term "natural hazard" refers to all atmospheric, hydrologic, geologic (especially seismic and volcanic), and wildfire phenomena that, because of their location, severity, and Frequency, have the potential to affect humans, their structures, or their activities adversely. The Qualifier "natural" eliminates such exclusively manmade phenomena as war, pollution, and Chemical contamination. Hazards to human beings not necessarily related to the physical Environment, such as infectious disease, are also excluded from consideration here.*

Key Words *:- Ecosystem, Environment, Natural hazard, Atmosphere*

Introduction:-

Recent development literature sometimes makes a distinction between "environmental projects" and "development projects." "Environmental projects" include objectives such as sanitation, reforestation, and flood control, while "development projects" may focus on potable water supplies, forestry, and irrigation. But the project-by-project approach is clearly an ineffectivemeans of promoting socioeconomic well-being. Development projects, if they are to be sustainable, must incorporate sound environmental management. By definition, this means that they must be designed to improve the quality of life and to protect or restore environmental quality at the same time and must also ensure that resources will not be degraded and that the threat of natural hazards will not be exacerbated. In short, good natural hazard management is good development project management.

Indeed, in high-risk areas, sustainable development is only possible to the degree that development planning decisions, in both the public and private sectors, address the destructive potential of natural hazards. This approach is particularly relevant in post-disaster situations, when tremendous pressures are brought to bear on local, national, and international agencies to replace, frequently on the same site, destroyed facilities.

Natural Hazards :-

Not with standing the term "natural," a natural hazard has an element of human involvement.A physical event, such as a volcanic eruption, that does not affect human beings is a natural phenomenon but not a natural hazard. A natural phenomenon that occurs in a populated area isa hazardous event. A hazardous event that causes unacceptably large numbers of fatalities and/or overwhelming property damage is a natural disaster. In areas where there are no human interests, natural phenomena do not constitute hazards nor do they result in disasters. This definition isthus at odds with the perception of natural hazards as unavoidable havoc wreaked by the unrestrained forces of nature. It shifts the burden of cause from purely natural processes to the concurrent presence of human activities and natural events.

Volcanoes erupt periodically, but it is not until the rich soils formed on their ejecta are occupiedby farms and human settlements that they are considered hazardous. Finally, human intervention reduces the mitigating effect of natural ecosystems. Destruction of coral reefs, which removes the shore's first line of defense against ocean currents and storm surges, is a clear example of an intervention that diminishes the ability of an ecosystem to protect itself. An extreme case of destructive human intervention into an ecosystem is desertification, which, by its very definition, is a human-induced "natural" hazard.

Earthquakes :-

Earthquakes are tremors which are produced by the passage of vibratory were through the rocks of the earth. Earthquakes are caused by the sudden release of slowly accumulated strain energy along a fault in the earth's crust. Earthquakes and volcanoes occur most commonly at the collision zone between tectonic plates. Earthquakes represent a particularly severe threat due to the irregular time intervals between events, lack of adequate forecasting, and the hazards associated with these:

- Ground shaking is a direct hazard to any structure located near the earthquake's center.
- Structural failure takes many human lives in densely populated areas.
- Faulting, or breaches of the surface material, occurs as the separation of bedrock along lines of weakness.
- Landslides occur because of ground shaking in areas having relatively steep topography and poor slope stability.
- Liquefaction of gently sloping unconsolidated material can be triggered by ground shaking.
- Flows and lateral spreads (liquefaction phenomena) are among the most destructive geologic hazards.
- Subsidence or surface depressions result from the settling of loose or unconsolidated sediment. Subsidence occurs in waterlogged soils, fill, alluvium, and other materials thatare prone to settle.
- Tsunamis or seismic sea waves, usually generated by seismic activity under the ocean floor, cause flooding in coastal areas and can affect areas thousands of kilometers fromthe earthquake center.

Volcanoes:-

Volcanoes are perforations in the earth's crust through which molten rock and gases escape to the surface.

Volcanic hazards stem from two classes of eruptions:

- Explosive eruptions which originate in the rapid dissolution and expansion of gas from the molten rock as it nears the earth's surface. Explosions pose a risk by scattering rock blocks, fragments, and lava at varying distances from the source.
- Effusive eruptions where material flow rather than explosions is the major hazard.
- Flows vary in nature (mud, ash, lava) and quantity and may originate from multiple sources. Flows are governed by gravity, surrounding topography and material viscosity.
- Hazards associated with volcanic eruptions include lava flows, falling ash and projectiles, mudflows, and toxic gases. Volcanic activity may also trigger other natural hazardous events including local tsunamis, deformation of the landscape, floods when lakes are breached or when streams and rivers are dammed, and tremor-provoked landslides.

Landslides:-

The term landslide includes slides, falls, and flows of unconsolidated materials. Landslides canbe triggered by earthquakes, volcanic eruptions, soil saturated by heavy rains or groundwater rise, and river undercutting. Earthquake shaking of saturated soils creates particularly dangerous conditions. Although landslides are highly localized, they can be particularly hazardous due to their frequency of occurrence.

Classes of landslide include:-

Rock falls, which are characterized by free-falling rocks from overlying cliffs. These often

- Collect at the cliff base in the form of talus slopes which may pose an additional risk.
- Slides and avalanches, a displacement of overburden due to shear failure along a structural feature. If the displacement occurs in surface material without total deformation it is called a slump.
- Flows and lateral spreads, which occur in recent unconsolidated material associated with a shallow water table. Although associated with gentletopography, these liquefaction phenomena can travel significant distances from their origin.

Flooding :-

The river, streams, have capacity to accommodate some maximum water. However due to hoaryRains or sudden snow fall and snow melt the quantity of water increases and thus water overflows and reached into surrounding land this situation is known as flood.Two types of flooding can be distinguished:

1. land-borne floods, or river flooding, caused by Excessive run-off brought on by heavy rains, and
2. sea-borne floods, or coastal flooding,caused by storm surges, often exacerbated by storm run-off from the upper watershed. **Tsunamis** are a special type of sea-borne flood.

Coastal flooding:-

Storm surges are an abnormal rise in sea water level associated with hurricanes and other stormsat sea. Surges result from strong on-shore winds and/or intense low pressure cells and ocean storms. Water level is controlled by wind, atmospheric pressure, existing astronomical tide, waves and swell, local coastal topography and bathymetry, and the storm's proximity to the tuWave impact and the physical shock on objects associated with the passing of the wave front. Hydrostatic/dynamic forces and the effects of water lifting and carrying objects. The mostsignificant damage often results from the direct impact of waves on fixed structures. Indirect impacts include flooding and undermining of major infrastructure such as highways and railroads.Flooding of deltas and other low-lying coastal areas is exacerbated by the influence of tidal action, storm waves, and frequent channel shifts.

River flooding:-

Land-borne floods occur when the capacity of stream channels to conduct water is exceeded and water overflows banks. Floods are natural phenomena, and may be expected to occur at irregular intervals on all stream and rivers. Settlement of floodplain areas is a major cause of flood damage.

Tsunamis :-

Earthquake generated water waves called tsunamis .Tsunamis waves travel with the speed upto1000 km/hr and may have 15 m to 65m in height can causes massive destruction along coastal areas. Tsunamis are long-period waves generated by disturbances such as earthquakes, volcanic activity, and undersea landslides. The crests of these waves can exceed heights of 25 meters on reaching shallow water. The unique characteristics of tsunamis (wave lengths commonly exceeding 100 km, deep-ocean velocities of up to 700 km/hour, and small crest heights in deep water) make their detection and monitoring difficult. Characteristics of coastal flooding caused by tsunamis are the same as those of storm surges.

Hurricanes:-

Hurricanes are tropical depressions which develop into severe storms characterized by winds directed inward in a spiraling pattern toward the center. They are generated over warm oceanwater at low latitudes and are particularly dangerous due to their destructive potential, large zone of influence, spontaneous generation, and erratic movement. Phenomena which are associated with hurricanes are:

Winds exceeding 64 knots (74 mi/hr or 119 km/hr), the definition of hurricane force. Damage results from the wind's direct impact on fixed structures and from wind-borne objects.

The environment, natural hazards, and sustainable development :-

Environmental Degradation and sustainable development has become well felt issue in the state and country as well. Survival and well being of any country is depending on sustainabledevelopment of all the resources. Such kind of development is the process of betterment of life in all the aspects like socio-economic , food, energy, education ,security etc. However, in thissituation we want environment at the one hand and the development on the other. Development in any sector should be provided without altering or disturbing environment. Also the)adevelopment should not affect the needs of future generations. Therefore it is necessary to protect the environment.

The work of the OAS/DRDE is focused upon helping countries plan spatial development and prepare compatible investment projects at a prefeasibility level. In a general sense, these tasks may be called "environmental planning"; they consist of diagnosing the needs of an area and identifying the resources available to it, then using this information to formulate an integrated development strategy composed of sectorial investment projects. This process uses methods of systems analysis and conflict management to arrive at an equitable distribution of costs and benefits, and in doing so it links the quality of human life to environmental quality. In the planning work, then, the environment-the structure and function of the ecosystems that surround and support human life-represents the conceptual framework. In the context of economic development, the environment is that composite of goods, services, and constraints offered by surrounding ecosystems. An ecosystem is a coherent set of interlocking relationships between and among living things and their environments. For example, a forest is an ecosystem that offers goods, including trees that provide lumber, fuel, and fruit. The forest may also provide services in the form of water storage and flood control, wildlife habitat, nutrient storage, and recreation. The forest, however, like any physical resource, also has its constraints. It requires afixed period of time in which to reproduce itself, and it is vulnerable to wildfires and blights.

These vulnerabilities, or natural hazards, constrain the development potential of the forest Ecosystem.

Conclusion:-

To address hazard management, specific action must be incorporated into the various stages ofthe integrated development planning study: first, an assessment of the presence and effect of natural events on the goods and services provided by natural resources in the plan area; second, estimates of the potential impact of natural events on development activities, and third, the inclusion of measures to reduce vulnerability in the proposed development activities. Within this framework, "lifeline" networks should be identified: components or critical segments ofproduction facilities, infrastructure, and support systems for human

settlements, which should be as nearly invulnerable as possible and be recognized as priority elements for rehabilitation following a disaster.

Refrences:-

- Dave,R.K.: Disaster Management in India. Lucent Publication New Delhi,2016.
- Singh,R.K.: Devlopment Of Disaster Management ,McMahon Books,Banglore,2018
- Reddy,A.Y.: Disaster Management Challenges, Descent Publisher, Chennai,2017
- www.geographersofindia.org
- www.inflibinet.ac.in