

Education (general)
Semester -6th
Paper -6.02
(Environmental Education and Population Education)

Unit-4
Environmental Stressors and Disaster Management

Meaning of Environmental Stressors

The term 'stress' means hardship or constraining influences or pressure. 'Environmental stressors' means any agent or factor which causes stress on the environment. Environmental stressors adversely affect the life or create a potential health hazard of any living organism including plants. Some natural process or human activities are responsible for this environmental stress which aggravates natural environmental process to cause disaster for human society such as earthquake, flood, drought, volcanic eruption etc. The abnormal process which cause environmental disaster or disturb the environmental or ecological balance resulting in a state of highly disturbed natural environment is called "environmental stress" and the factors responsible for it are known as environmental stressors. It is also called as pressure to the environment by any sudden event or phenomenon causing injury, loss of life, damage to property, social or economic disruptions or environmental degradation. Stressors that are found in our surroundings are called environmental stressors.

Types of Environmental Stressors

There are two types of environmental stressors. They are-

- 1. Natural stressors**
- 2. Manmade Stressors**

1. Natural Stressors

Natural stressors are those natural factors which cause stress on the environment. These factors are again divided into two broad categories.

- A) Planetary stressors**
- B) Extra - planetary or extra - terrestrial natural stressors.**

A) Planetary Stressors: The most disastrous events of our planet earth can be included under planetary stressors. On the basis of the sources of the origin of extreme events planetary natural stressors are divided into two categories.

- i) Terrestrial or endogenous stressors**
- ii) Atmospheric or exogenous stressors**

i) Terrestrial or Endogenous Stressors: Terrestrial stressors include those extreme events which evolve from within the earth. The factors which cause such extreme events and hazards are hidden deep within the earth which is not observable. But their effects can be observed and experienced. Volcanic eruptions, earthquakes and landslides are the extreme events which are caused by endogenetic thermal conditions of the interior of the earth. Disequilibrium in any part of the earth's crust results in these events. These types of stressors

are inter-related to each other and these are also causative factors to one another. Landslides in the hilly areas occur due to earthquakes. These stressors inflict great damage to human life and property. These have their worst effects on buildings, roads, rails, factories, dams; bridges etc and deteriorates the quality of the environment to a great extent. The severe earthquakes of Darbhanga in Bihar (1988) and Bhuj in Gujarat (2001) are examples of severe natural hazards and disasters which inflicted great damage on human life and property.

ii) Atmospheric or Exogenous Stressors: Atmospheric stressors are related to weather and climatic extreme events. The atmospheric environmental natural stressors are caused by atmospheric process which originates from within the atmosphere and hence these natural stressors are also called as exogenous natural stressors. The factors causing these events are not observable but these may be recorded by meteorologists to forecast about the weather conditions. These are further divided into two categories:

a) Abnormal or Infrequent Events: These lasts for a very short time such as tropical cyclones, severe lightening, fires, hailstorms. The tropical cyclones in India are an example of abnormal exogenous hazards. It comes from over the Bay of Bengal, become hazardous to the east coastal lands of India which affects West Bengal, Orissa, Andhra Pradesh and Tamil Nadu.

b) Cumulative Atmospheric Stressors: These are the events which are caused due to cumulative effects of weather events which prevail for prolonged period of time ranging from a few weeks to several years depending upon the nature of weather events. The examples of these events are floods and droughts, heat waves, cold waves etc. Any hot day may not become hazardous but when very hot and dry days prevail for a few weeks in continuation, environmental hazards in the form of heat waves occur which affect the environment and human lives, plants and animals. Likewise, the persistence of exceptionally cold conditions for several days causes severe snowfall. Floods are still very severe environmental hazards which are related to atmospheric processes. Droughts also are deadly natural environmental hazards because these cause extensive damage to agriculture and natural vegetation adversely affecting human life and property. Many people from drought - affected areas of Rajasthan, Gujrat, Maharashtra and Andhra Pradesh in India have migrated to other states.

B) Extra Planetary Stressors: The disasters caused by the collisions between earth and other extra-planetary bodies of space like asteroid, meteorite and comet are called extra planetary stressors. Shift in the earth's axis of relation may be a cause of collision which produces enormous dust, hurricanes, change in sea level, climatic change and volcanic eruptions etc. The astrologists can predict about the occurrence of collisions, but nothing can be done to prevent these hazards which may cause damage to human lives and the environment as a whole at global level.

2. Man-Made Stressors:

Environmental degradation is also induced by human activities which cause irreversible and irreparable loss to human community. Human activities both deliberate and spontaneous cause man-made environmental stressors.

These can be classified into three categories.

i) Physical Stressors: Those factors causing damage or threat to the environment as a result of human activity such as landslides, earthquakes, accelerated soil erosion etc are called physical stressors.

ii) Chemical Stressors: Toxic chemicals, poisonous gases, Nuclear reactor plants, leakage of gases and crude oil etc are included under chemical stressors.

iii) Social Stressors: Population explosion, Downfall in moral and religious values, disorganisation of the society, use of chemical weapons during wars, construction of multi-storied building etc are some of the social stressors which adversely affect the human society and as a result the total environment.

Some Ways and Means for Management of Environmental Stressors

Following are the some ways and means for protection of environmental stressors

1) Control of population: The continuous increase in population leads to serious environmental problems which creates imbalance in the ecosystems. The problems of overpopulation should be tackled carefully. The government must take some initiative to control population. Efficient measures should be required to control these problems like economic measures, family planning measures, administrative measures etc.

2) Restricted use of pesticides: The excessive use of chemical fertilizers and pesticides by the farmers in agriculture sectors has resulted in the degradation of the environment quality and altered the ecological balance. Therefore the use of these chemicals pesticides should be restricted and pest control should be done by other methods. The use of Integrated pest management (IPM) can reduce the impact of pesticides

3) Afforestation: Afforestation is the effort to plant trees in a barren land to create forest. Planting trees is always beneficial whether it take place in a barren land or used as a method of regenerate a depleted forest. Planting trees is a great step towards the protection of our environment .It is very much important to plants trees because without plants and trees we will not be able to survive

4) Seminar and workshop: Seminar and workshop on environmental issues like soil erosion, floods, earthquakes, deforestation etc should be organised to make the people aware about these environmental stressors. Lectures should be delivered on how to face and control these problems.

5) Use of solar energy: Solar energy creates clean, renewable power from the sun and benefits the environment. With the use of solar energy we can replace current fossil fuels like coal and gas for generations of electricity that produces air, water, land and pollution. Solar energy will eliminate the unsafe unclean consequences from using conventional fossil fuels.

6) Role of the teacher: Teacher is the creators of the future of nation .They are the highly motivated and knowledgeable members of the society. Hence, they must try to spread awareness about the healthy environment either within the school or the community. The teacher must try to develop a sense of appreciation of natural resource in the mind of the students and also creates awareness about the environmental problems.

7) Legal Step: The government must take some initiative or legal actions to protect the environment, to protect the forest and to protect the wildlife also.

8) Use of technology: The most significant way to contribute to save the environment is to sustainably generate and use the available energy resources. Due to non renewability of Fossil fuels like coal, petroleum and gas; researchers are coming up with the new ways to generate energy with technology.

9). Pollution free vehicle: Use of motor vehicles like cars and trucks are one of the leading cause of air pollution. So to make the air clean and pollution free it is required to use eco-friendly or environmentally friendly vehicles that produces less harmful gases and will not be harmful to the environment.

10) Conservation of Natural Resources: Natural resource is important for us. We need to conserve and protect our natural resource because it is the main source of our daily needs .We need to conserve it because they are limited only. So we need to take proper care that we use them properly and not waste them.

11) Rapid Growth of Industrialization and Urbanization Should be Stopped: Rapid growth of industrialisation leads to the destruction of forest, unplanned urbanization, water wastage etc. So the government should make efforts to develop transportation among many cities. Social management should be improved in the process of urbanization.

12) Solved in a global way: All human beings on earth are facing these problems. Some environmental problems like global warming, acid rain, ozone layer, destruction of biodiversity are not merely national issues but are global issues and hence it should be solved in a global way with the help of international efforts and co operation.

13) Close relationship between Man and Nature: Man is closely related to nature .The relationship between nature and man has been changing through time with the development of science and technology. Man is an important part of biotic component. But with the change in science and technologies people are becoming selfish they are destroying the forest for their own purposes. Now it is important for man to understand how nature is important for us .Man needs to develop his love and respect for the nature and living things because the environment is very much important for us without nature we cannot survive on earth.

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