

MODULE 10 - ENVIRONMENTAL THREATS

OBJECTIVES

After the study of this e-content module the learners will be able to:

1. Name the major environmental threats.
2. Describe the major environmental threats in brief.
3. Describe the issues raised by environmental threats.

SUMMARY

Because of science, technology, industrial revolution and business activities the new environmental trends are being observed. The main trends are population growth, rising temperature, falling water tables, shrinking cropland per person, collapsing fisheries, shrinking forests and loss of plant and animal species. The new trends are becoming threats to the environment and are raising a number of issues before the human race.

TRANSCRIPTION

NEW ENVIRONMENTAL TRENDS

Advancements in science and technology, modern industries and fast growing economy have enabled us to possess material prosperity unequalled in our history. On one side technology has equipped us to understand, manipulate and control nature, while on the other hand it has polluted our environment and rapidly depleted our natural resources. With the beginning of twenty first century, several new environmental trends are being

set which will effect the future civilization. These are population growth, rising temperature, falling water tables, shrinking cropland per person, collapsing fisheries, shrinking forests and the loss of plant and animal species. In fact these new trends are threats for the environmental balance.

POPULATION EXPLOSION

The world population increased from 2.5 billion to 6.1 billion just in fifty years, between 1950 to 2000. Although the birth rates have decreased in most of the world, the population is projected to grow to 8.9 billion by 2050. This population growth is supposed to take place in the developing world where countries are already populated. Our numbers are continuously growing but the earth's natural resources are either same or decreasing. For example the amount of fresh water produced by the hydrological cycle is same as it was in 1950 and is expected to be in 2050.

TEMPERATURE RISE

The second change that is affecting the entire world is the rise in temperature. This is happening because of increasing atmospheric concentration of carbon dioxide. The average global temperature from 1969 to 1971 was 13.99 degree Celsius. It became 14.43 during 1996 to 1998, a gain of 0.44 Celsius. If carbon dioxide concentrations double the preindustrial level the global temperature is likely to increase at least by one degree Celsius. This increase in temperature may be up to four degrees. As a result the sea level is projected up to rise from minimum 17cm. to as much as one meter by 2100. This will result in the modifications in ecosystem of the earth. Already, it has been recorded that seventy percent of coral reefs have been wiped out from the Indian Ocean because of sea surface temperature over the last two years. The modest temperature rise in recent decades is melting ice caps and glaciers. Ice cover is shrinking in the Arctic, the Antarctic, Alaska Greenland, the Alps, the Andes and the Tibetan Plateau.

FALLING WATER LEVEL

The third and one of the least visible trends that is affecting our future is falling water level. According to Sandra Postal of the Global Water Policy Project, over pumping of aquifers in China, India, North Africa, Saudi Arabia and the United States exceed 160 billion tones of water per year. In consumption terms, the food supply of 480 million of the world's six billion people is being produced with the unsustainable use of water.

CROPLAND SHRINKAGE

On one side because of fast growing population the demand of food grains is increasing day- by-day. On the other side the cropland area per person is decreasing because of increasing demand of land for residential, industrial and other purposes like educational institutions, hospitals, roads, shops etc. Since the mid 20th century grain land area per person has decreased from 0.24 hectare to 0.12 hectare. If the world grain area remains more or less constant over the next half century, the area per person will shrink to 0.08 hectare by 2050.

LEVELING OFF OF THE OCEANIC FISH CATCH

No doubt food is one of the basic needs of human race which is fulfilled by various components of the environment. For food humanity is also heavily dependent on oceans. From 1950 until 1997, the oceanic fish catch expanded from 19 million tons to more than 90 million tons. According to a number of marine biologists, the oceans cannot sustain an annual catch of more than 95 million tons. Since the world population is growing continuously, therefore, fish catch per person will decrease steadily in coming decades.

In fact the three parallel trends – falling water tables, shrinking cropland area per person, and the leveling off of the oceanic fish catch will create a situation over the next half century where it will be a great challenge to keep up with the growth in the world demand for food.

SHRINKING FORESTS

Day by day forests are also being destructive by humans. Over the last fifty years the world's forest area has shrunk substantially because of human intervention. In the developing countries the depletion and deterioration of forests are comparatively more. At present the forested area per person is 0.56 hectares which will shrink to 0.38 acres in 2050. In a number of situations the rising demand for forest products like lumber, paper, fire wood etc. is already affecting the sustainable yield of forests.

EXTINCTION OF PLANT AND ANIMAL SPECIES

The accelerated extinction of plant and animal species is one of the environmental threats, which is affecting the human being in irreversible manner. The species of birds, mammals, and fishes vulnerable or in immediate danger of extinction are:

11% of the world's 8615 known bird species;

25% of the world's 4355 known mammal species; and

34% of all fish species.

The main cause for species loss is their habitat destruction. But habitat alterations because of rising temperatures. Pollution can also decimate both plant and animal species. Because of disappearance of more and more species local ecosystems have begun to collapse. If this trend of species extinction will continue then at some time the whole ecosystem will collapse.

ISSUES BECAUSE OF ENVIRONMENTAL THREATS

These environmental threats raise a number of ethical and technological questions before human society. For example:

1. What is the extent of the environmental damage produced by present and projected industrial technology ?
2. How large a threat does damage pose to the welfare of human being?
3. What values must the human society give up to hold or slow such damage?
4. Whose rights are violated by pollution and who should be given the responsibility of paying for the costs of polluting the environment?
5. How long our natural resources last?

So, intractable and difficult are the issues raised by these environmental threats that many observers believe that they cannot be solved. For example William Pollard, physicist says:

“ As the earth in a short few decades becomes twice as crowded with human beings as it is now, and as human societies are confronted with dwindling resources in the midst of mounting accumulations of wastes, and a steadily deteriorating environment, we can only foresee social paroxysms of an intensity greater than any we have so far known. The problems are so varied and so vast and the means for their solutions so far beyond

the resources of the scientific and technological knowhow on which we have relied that there simply is not time to avoid the impending catastrophe. We stand therefore, on the threshold of a time of judgment more severe, undoubtedly, any mankind has ever faced before in history.”

GLOSSARY

1. Population explosion: Fast growth of population.
2. Temperature: Degree of hotness.
3. Marine Biologists: Experts of marine life.
4. Extinction of species: Loss of all the creatures of a particular species.
5. Habitat: Immediate environment of a living organism.

FAQs

1. List the major environmental threats:

Ans. (a) Population growth

(b) Rising temperature

(c) Falling water table

(d) Shrinking cropland per person

(e) Collapsing fisheries

(f) Shrinking forests

(g) The loss of plants and animal species.

2. Why population explosion is in an environmental threat?

Ans. The world population increased from 2.5 billion to 6.1 billion just in fifty years, between 1950 to 2000. Although the birth rates have decreased in most of the world, the population is projected to grow to 8.9 billion by 2050. This population growth is supposed to take place in the developing world where countries are already populated. Our numbers are continuously growing but the earth's natural resources are either same or decreasing. For example the amount of fresh water produced by the hydrological cycle is same as it was in 1950 and is expected to be in 2050.

3. Why temperature rise is an environmental threat?

Ans. This is happening because of increasing atmospheric concentration of carbon dioxide. The average global temperature from 1969 to 1971 was 13.99 degree Celsius. It became 14.43 during 1996 to 1998, a gain of 0.44 Celsius. If carbon dioxide concentrations double the preindustrial level the global temperature is likely to increase at least by one degree Celsius. This increase in temperature may be up to four degrees. As a result the sea level is projected up to rise from minimum 17cm. to as much as one meter by 2100. This will result in the modifications in ecosystem of the earth. Already, it has been recorded that seventy percent of coral reefs have been wiped out from the Indian Ocean because of sea surface temperature over the last two years. The modest temperature rise in recent decades is melting ice caps and glaciers. Ice cover is shrinking in the Arctic, the Antarctic, Alaska Greenland, the Alps, the Andes and the Tibetan Plateau.

4. Why falling water table is an environmental threat?

Ans. According to Sandra Postal of the Global Water Policy Project, over pumping of aquifers in China, India, North Africa, Saudi Arabia and the United States exceed 160 billion tones of water per year. In consumption terms, the food supply of 480 million of the world's six billion people is being produced with the unsustainable use of water.

5. Why cropland shrinkage is an environmental threat?

Ans. On one side because of fast growing population the demand of food grains is increasing day- by-day. On the other side the cropland area per person is decreasing because of increasing demand of land for residential, industrial and other purposes like educational institutions, hospitals, roads, shops etc. Since the mid 20th century grain land area per person has decreased from 0.24 hectare to 0.12 hectare. If the world grain area remains more or less constant over the next half century, the area per person will shrink to 0.08 hectare by 2050.

6. Why leveling of the oceanic fish catch is an environmental threat?

Ans. No doubt food is one of the basic needs of human race which is fulfilled by various components of the environment. For food humanity is also heavily dependent on oceans. From 1950 until 1997, the oceanic fish catch expanded from 19 million tons to more than 90 million tons. According to a number of marine biologists, the oceans cannot sustain an annual catch of more than 95 million tons. Since the world population is growing continuously, therefore, fish catch per person will decrease steadily in coming decades.

7. Why shrinking forest is an environmental threat?

Ans. Day by day forests are also being destructive by humans. Over the last fifty years the world's forest area has shrunk substantially because of human intervention. In the developing countries the depletion and deterioration of forests are comparatively more. At present the forested area per person is 0.56 hectares which will shrink to 0.38 acres in 2050. In a number of situations the rising demand for forest products like lumber, paper, fire wood etc. is already affecting the sustainable yield of forests.

8. Why species loss is an environmental threat?

Ans. The accelerated extinction of plant and animal species is one of the environmental threats, which is affecting the human being in irreversible manner. The species of birds, mammals, and fishes vulnerable or in immediate danger of extinction are:

11% of the world's 8615 known bird species;

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The main cause for species loss is their habitat destruction. But habitat alterations because of rising temperatures. Pollution can also decimate both plant and animal species. Because of disappearance of more and more species local ecosystems have begun to collapse. If this trend of species extinction will continue then at some time the whole ecosystem will collapse.

9. What are the issues emerged because of environmental threat?

Ans. These environmental threats raise a number of ethical and technological questions before human society. For example:

1. What is the extent of the environmental damage produced by present and projected industrial technology?
2. How large a threat does damage pose to the welfare of human being?
3. What values must the human society give up to hold or slow such damage?
4. Whose rights are violated by pollution and who should be given the responsibility of paying for the costs of polluting the environment?
5. How long our natural resources last?