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Unit 1 Introduction to Environmental Studies

Introduction

The term environment is derived from **French** word **environner** which means ‘**surrounding**’. It can be defined as follows:

“The social, cultural and physical conditions that surrounds, affect and influence the survival, growth and development of people, animal and plants”.

- Environmental studies deals with every issue that affects an organism.
- It is essentially a multidisciplinary approach that brings about an appreciation of our natural world and human impact on its integrity.
- It is an applied science as it seeks practical answer to making human civilization sustainable on the earth's finite resource.

Goals of Environmental Educations:

“To develop a world population that is aware of and concerned about environment as a whole and the problems associated with it and committed to work individually as well as collectively towards solutions of current problems and prevention of future problems”.

Components of Environment:

1. Physical Component
 2. Biological Component
 3. Social Component
- Atmosphere – Blanket of gases surrounding the earth.
 - Hydrosphere – Various water bodies.
 - Lithosphere – contains various types of soil and rocks on the earth.
 - Biosphere – Composed of all living organisms and their interactions with the environment

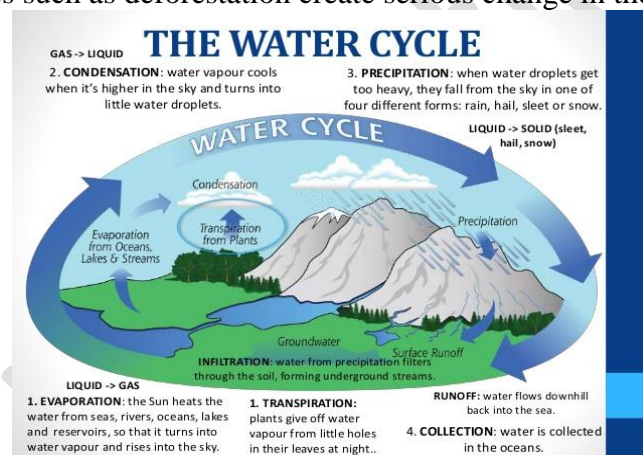
Atmosphere:

- The atmosphere forms a protective shell over the earth.
- The lowest layer, the troposphere, the only part warm enough to us to survive in, is only 12 kilometres thick.
- The stratosphere is 50 kilometres thick and contains a layer of sulphates which is important for the formation of rain.
- It also contains a layer of Ozone, which absorb ultraviolet light.
- Troposphere and Stratosphere together called atmosphere.



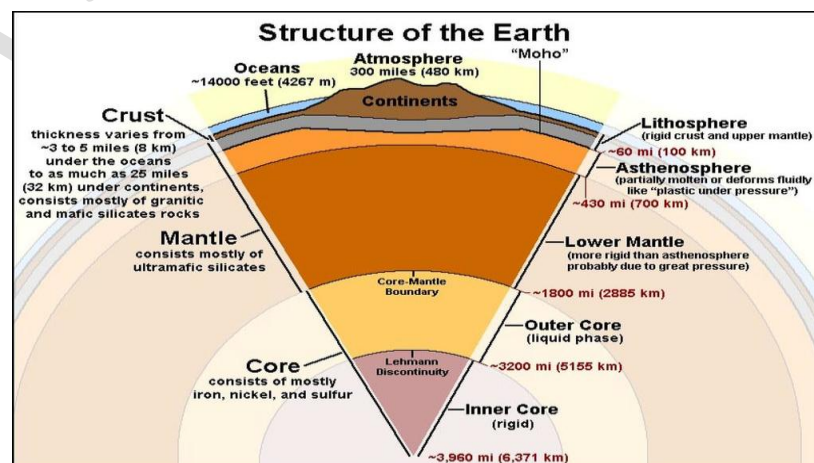
Hydrosphere:

- The hydrosphere covers three quarters of the earth's surface.
- A major part of the hydrosphere is the marine ecosystem in the ocean, while only a small part occurs in fresh water.
- Fresh water in rivers, lakes and glaciers, is perpetually being renewable by a process of evaporation and rainfall.
- Some of this fresh water lies in underground aquifers.
- Human activities such as deforestation create serious change in the hydrosphere.



Lithosphere:

- The crust of the earth is 6 to 7km thick and lies under the continent.
- Rocks which broken down, form soil on which man is dependent for his agriculture. Their raw material used in various industries.



Biosphere:

- This is the relatively thin layer on the earth in which life exist.
- Within it the air, water, rocks and soil and the living creatures, form structural and functional ecological units, which together can be considered as one giant global living system, that of our Earth itself.
- Within this framework, those characterised by broadly similar geography by broadly similar geography and climate, as well as communities of plant and animal life can be divided for convenience into different bio geographical realms.



Multidisciplinary Nature of Environmental studies:

- The environment is a multidisciplinary science because it comprises various branches of studies like chemistry, physical, medical science, life science, agriculture, public health, sanitary engineering, etc.,
- It is the science of physical phenomena in the environment. It studies about the source, reaction, transport effect and fate of physical and biological species in the planet which interacting with air, water, soil and its effect.
- As the environment is complex and actually made up of many different environment like natural, constructed and cultural environment, environment studies is inter disciplinary in nature including the study of biology, geology, politics, policy studies, law, religion, engineering, chemistry and economics to understand the humanity's effect on the natural world.
- Thus subject educates the students to appreciate the complexity of the environmental studies.

Scope of Environmental studies:

Environmental studies as a subject has wide scope. It includes a large number of areas, which may be summarized as follows:

- Natural Resources – their conservation and management.
- Ecology and Biodiversity.
- Environment pollution and control.
- Human population and environment
- Social issues in related to development and environment.

Career Opportunity:



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- R and D in environment.
- Green Advocacy.
- Green Marketing – Eco marks or ISO14000 certified products they are ecofriendly
- Green media
- Environment consultancy- NGO and Industries working systematically to solve problems related to environmental studies.

Importance of Environmental studies

Some global issues must be tackled with international efforts and cooperation. They are

- Global Warming
- Ozone layer depletion
- Acid rain
- Marine pollution
- Loss of biodiversity

Problems Cropped in the wake of development

Development, in its wake gave birth to

- Urbanization
- Industrial growth
- Transportation system
- Agriculture
- Housing

Explosively increase in population:

- India has 16% of the world's population and only 2.4% of its land area, there is a heavy pressure on the natural resources including land.
- Agricultural experts have organized soil health problem like deficiency of micronutrient and organic matter, soil salinity and damage of soil structure.

Need for wise planning of development

- Our action should be planned ecologically for the sustenance of the environment and development.

Sustainability and sustainable development:

- Sustainability and sustainable development are extremely topical issues for modern society.
- The concept of sustainability was brought to the attention of humanity during the 20th century, when the increasing developments of some countries originated environmental concerns and stimulate humans to gain a deeper.

Sustainable development

Meeting the needs of the present without compromising the ability of future generation to meet their own needs.

Important components of sustainable development:

- Economic Development
- Community development

- Environmental protection



Aspects of Sustainable Development:

- Inter generational equity: It states that we should hand over a safe, healthy and resourceful environment to future generation.
- Intra national equity: A technological development of rich countries should support the economic growth of poor countries and help in narrowing the wealth gap and lead to sustainability.

Approach for Sustainable Development

1. Developing Appropriate Technology:

Technology which is

- Locally adoptable.
- Eco-friendly
- Resource efficient
- Culturally suitable should be adopted.

It uses local labour, less resource and produces minimum waste.

2. Reduce, Reuse and Recycle (3R approach)

- Optimum use of natural resources using it again and again instead of throwing it on wastelands and water and recycle the material into future products.
- It reduces waste generation and pollution.

3. Providing environmental education and awareness:

Thinking and attitude of people towards earth and environment should be changed by providing environmental awareness and education.

4. Consumption of renewable resources:

- It is very important to consume the natural resources in such a way that the consumption should not exceed the regeneration capacity.
- Non-renewable resources should be conserved by recycling and reusing.
- By population control we can make sustainable development.

Factors affecting Sustainable Development:

1. Excess exploitation of non-renewable resources.
2. Increasing population growth and population density
3. Decreasing gross domestic product per capita.
4. Uncontrolled consumption of energy and environmental pollution.
5. Deterioration of land

Awareness of the Global Dimension of Environmental Problems



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- The conference was held in Stockholm as Sweden first suggested United Nations in 1968 the call for a UN conference to focus on human interaction with the environment.
- After the conference it become clear that environmental protection and societal development have significant political implications, as they are directly linked with human rights.
- In fact, environmental human rights can be derived from other human rights like the right to life, the right to health, the right to private family life and right to property (among many others).
- The onset of various environmental issues, especially those related to climate change, has created potential conflicts between different human rights.

United Nations Summit:

The issue addressed in the above United Nation Earth summit includes:

- Systematic scrutiny of pattern of production particularly of toxic components such as lead in gasoline or poisonous waste including radioactive chemicals.
- Alternative sources of energy to replace the use of fossil fuels which delegates linked to global climate change.
- New reliance on public transportation system in order to reduce vehicle emission, congestion in cities and the health problems caused by polluted air and smoke.
- The growing usage and limited supply of water.

Bottom up approach for Risk Management:

- The imperative necessity to identify and design for sustainability calls for a systematic approach to cope with the impacts of human activities.
- Mitigation, adoption and resilience are instrumental to secure resources and opportunities for the future generation but it is necessary to identify priorities and global technical solutions.
- Actually, while the importance of sustainability is widely recognized we still lack a coherent picture of technical strategies to be designed in the context of engineering.

Multiple Choice Questions:

1. The term 'Environment' has been derived from the French word which means to encircle or surround
 - a) **Environ/Enviornner**
 - b) Oikos
 - c) Geo
 - d) Aqua
2. The objective of Environment studies is
 - a. Raise consciousness about environment conditions
 - b. To teach environmentally appropriate behaviour
 - c. Create an environmental ethic sensitive society
 - d. **All of the above**
3. Development activities on the hydrosphere cause
 - a. Air pollution
 - b. Soil pollution
 - c. **Water pollution**
 - d. Soil erosion



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4. The basic requirements of human beings are provided by
 - a. Industrialisation
 - b. Agriculture
 - c. **Nature**
 - d. Urbanisation
5. Environment is the life support system that includes
 - a. Air
 - b. Water
 - c. Land
 - d. **All of the above**
6. Biosphere is
 - a. The solid shell of inorganic materials on the surface of the earth
 - b. **The thin shell of organic matter on the surface of the earth comprising of all the living things.**
 - c. The sphere which occupies the maximum volume of all the spheres
 - d. All the above
7. Atmosphere consists of 79 percent Nitrogen and 21 percent Oxygen by
 - a. Volume
 - b. **Weight**
 - c. Density
 - d. All of these
8. The word 'Environment' is derived from
 - a. Greek
 - b. **French**
 - c. Spanish
 - d. English
9. Which among the following is a climatic factor?
 - a. pressure
 - b. humidity
 - c. temperature
 - d. **all of the above**
10. World environment day is on:
 - a. 5th May
 - b. **5th June**
 - c. 18th July
 - d. 16th August
11. Which of the following are major environmental issues involved in mining?
 - a. air pollution
 - b. water pollution
 - c. soil degradation
 - d. **all of the above**
12. Sustainable development means
 - a. **meeting present needs without compromising on future needs**
 - b. progress of human beings
 - c. balance between human needs and the ability of earth to provide the resources
 - d. all of the above
13. The most important remedy to avoid negative impact due to industrialisation is
 - a. industry should be closed



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- b. don't allow new industrial units
 - c. **industry should treat all the wastes generated by it before disposal**
 - d. industries should be shifted far away from human habitats
14. Sustainable development will not aim at
- a. Social economic development which optimizes the economic and social benefits available in the present, without spoiling the likely potential for similar benefits in the future
 - b. Reasonable and equally distributed level of economic well being that can be perpetuated continually
 - c. **Development that meets the needs of the present without compromising the needs of future generations to meet their own needs**
 - d. Maximising the present day benefits through increased resource consumption
15. The adverse effect of modern agriculture is
- a. Water pollution
 - b. **Soil degradation**
 - c. Water logging
 - d. All of the above
16. Soil erosion removes surface soil which contains
- a. **Organic matter**
 - b. Plant nutrients
 - c. Both a and b
 - d. none of the above
17. What would you do to prevent environmental damage
- a. Plant trees
 - b. Halt deforestation
 - c. Control pollution
 - d. **All of the above**
18. Which of the following is the most environment friendly agricultural practice?
- a. Using chemical fertilizers
 - b. Using insecticides
 - c. **Organic farming**
 - d. None of the above
19. If in a population, natality is balanced by mortality, then there will be
- a. Decrease in population growth
 - b. Increase in population growth
 - c. **Zero population growth**
 - d. Over population
20. Which of the following is not an inexhaustible form of energy?
- a. Water
 - b. Wind
 - c. **Solar**
 - d. Fossil
21. Biogas contains mainly
- a. **Methane**
 - b. Propane
 - c. Butane
 - d. Carbon dioxide
22. Loss of forest has led to



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- a. Erosion of fertile soil
b. Global warming
c. Loss of habitat of plants and animals
d. **All of the above**
23. 5th June is observed as
a. **World environment day**
b. World forest day
c. World population day
d. World wildlife day
24. The word 'Sustainable Development' came into existence in the year?
a. 1992
b. 1978
c. **1980**
d. 1987
25. The United Nation's Commission on Sustainable Development (CSD) was started by the UN General Assembly in the year.
a. 1995
b. 1994
c. 1993
d. **1992**