

Man and the Environment

Over the past decade all over the world, more and more attention has been focused on man's relationship with the environment, a relationship on which the very existence of humanity depends. The protection of the environment is now increasingly being seen as essential for mankind.

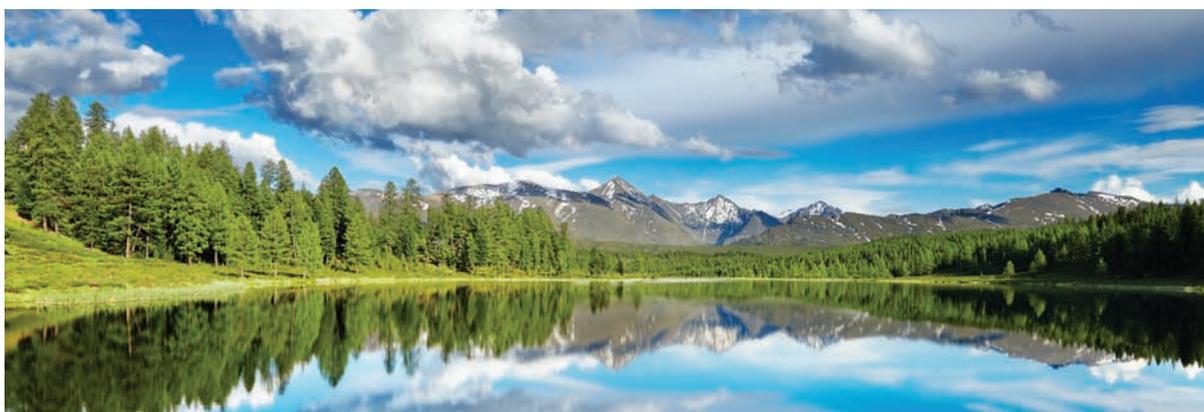
By environment we mean those natural things that surround us and are essential to sustain human life, such as the earth's atmosphere, healthy air and drinkable water, together with the non-essential natural things that help to make life sustainable and pleasant, such as wild animals or wild places or human living space.

The relationship between environment and human beings has varied from place to place throughout history. For example, early humans considered the environment to be a dominant, aggressive force. They were afraid of thunder and lightning, dense forests, wild animals, vast oceans and large rivers, among other things.

The environment has considerably affected human beings right from its evolution. The environment affects humans in many ways. The earth's population varies according to variations in the environment. The main factors which affect the distribution of population and human **settlement** are:

1. Relief of Land

The populations in the high mountainous areas, such as the Himalayas in India, the Andes in South America, the Rockies in North America, etc., have a very low settlement level. This is because the relief is **rugged** there and this represents obstacles in the construction of roads, railways and in communication. Due **to steep slopes**, agriculture is practised only with great difficulty and industry cannot flourish there. These places, having much less economic activity, obviously have smaller populations and for this reason only small isolated settlements have sprung up. On the contrary the flat areas of the world are most suitable for human settlement. The fertile plains of Ganga in India, Indus in Pakistan, Hwang-Ho in China and the plains of Europe have huge population concentrations with dense settlement.





2. Climate

Most of the areas of the earth with density less than two persons/sq. km are unsuitable for settlement because of their unfavourable climate.

Areas of cold climate – North Siberia, North Canada, Alaska etc. - have a low density of population. Equally, hot and arid regions – such as the Sahara Desert, the Kalahari Desert in Africa, the Great Australian Desert – are not suited to human settlement. In tropical regions, due to heavy rain and temperature, the density of population is very low, for example in the Amazon basin, population density is less than two persons/sq. km. But places with favourable climate and favourable terrain have dense population and compact settlement, such as Europe.

3. Soils

Fertile alluvial soils encourage dense population which **in turn** gives rise to the **compact** type of settlement. This is so because alluvial soils give rise to agricultural activities. The Java Islands of Indonesia, for example, have fertile soil of young volcanic material and agriculture is an important activity, which is why dense and compact settlements are found here. Where there is infertile soil, the population density is very low.

4. Mineral Deposits

Mineral **wealth** is yet another factor responsible for population distribution and density. The presence of coal and iron-**ore** in different parts of the world has attracted huge populations. Coal mining regions have become regions of dense population, for example, Jharkhand in India and the gold mines in the Australian desert.

5. Water supply

Population distribution is very much affected by water supply. The earliest settlements or civilizations developed on the **banks** of major rivers, example – the Nile, Indus, etc.

Adequate water supply provides irrigation facilities to farmers and the population increases in line with an increase in agricultural activities. In dry regions, the population is concentrated only in those areas where there is water.

Therefore we can say that the environment plays an important role in determining population distribution, density, settlement type and pattern.

With the passage of time, mankind is realising that preserving the essential ingredients of life and the rich natural diversity of the planet is fundamental. Therefore, protecting and saving the environment involves keeping nature's gifts to mankind in as good condition as possible.

Pollution, especially in the industrialised belt, and the ecological crisis are not wholly new, though **ecology** is a comparatively new science. The idea behind it, preservation of natural resources is, however, almost as old as man.

Now humanity has realised that we have been destroying valuable resources and that there must be a limit to our schemes and ambitions for development, expansion and growth. The "murder" of the environment, which involves the senseless poisoning of the earth, air and water, and destruction of forest wealth, may indeed be described as "ecocide".

COMPREHENSION

1. Answer the following questions.

- a. What is the environment?
- b. What was the earliest conception regarding the environment?
- c. What elements affect the distribution of the population all over the world?
- d. Why are flat, low-lying areas most suitable for human settlements?
- e. Why is Europe suitable for compact settlements?
- f. Why are dry regions less populated?
- g. What is an “ecocide”?

VOCABULARY

2. Match the following words with the right definition.

- | | |
|---------------|--|
| a. settlement | 1. the study of the relationships between living organisms and their environment |
| b. rugged | 2. the establishment of a new region; colonization |
| c. steep | 3. any naturally occurring mineral or aggregate of minerals from which economically important constituents, esp metals, can be extracted |
| d. slopes | 4. a great profusion |
| e. in turn | 5. closely packed together; dense |
| f. compact | 6. rocky , mountainous |
| g. wealth | 7. an elevated section, rising to near the surface, of the bed of a sea, lake, or river |
| h. ore | 8. in the proper order or sequence, duly, accordingly |
| i. banks | 9. hills or foothills/gradients |
| j. ecology | 10. having a sharp inclination |

a. **b.** **c.** **d.** **e.** **f.** **g.** **h.** **i.** **j.**

Pollution

The Industrial Revolution, which provided mechanical power, the invention of the steam engine and other machinery as well as the greater use of metals, gave people opportunities to modify the environment. At the same time agriculture provided abundant food so that people could settle permanently in one place. The family grew in size and people migrated to different places, via rail, road and sea, thanks to improvements in the transport system; for example the new lands in America and Australia were settled by people from Europe.

Another development which enabled humans to survive was scientific discoveries and the use of preventive steps taken to protect them from epidemics and diseases; this increased the span of human life considerably and reduced the mortality rate.

With the increase in knowledge and skills and the development of the human economy and industry, there was a gradual increase in carbon dioxide content. Carbon dioxide, or CO_2 , is a greenhouse gas. present in the atmosphere and formed during respiration, usually obtained from coal, coke, or natural gas by combustion. It is estimated that the carbon dioxide content in the atmosphere has increased by 25% in the last 100 years and the global temperatures have risen between 0.3 degree Celsius to 0.7 degree Celsius. The increase in carbon dioxide is attributed to large scale deforestation and will eventually lead to increase in sea level, causing the submergence of coastal regions. Burning of coal, oil and petroleum adds sulphur dioxide to the atmosphere. Lead, carbon monoxide and nitrogen dioxide are added to the atmosphere from automobile exhaust fumes. These gases result in acid rain, which affects aquatic life. An example is the acid rain found in industrial regions of Europe and North America.

Even now substances which were not present previously, are being introduced into the air, water and soils. The most dangerous are radioactive substance released into the atmosphere by nuclear explosions. They have adverse effects on organisms including man and may cause death, impairment of limbs, diseases and psychological disorders.

The catastrophic nuclear disaster at Chernobyl in Ukraine (1988) is a horrific example of the devastating environmental effects of the use of minerals such as uranium and thorium when combined with the most advanced and sophisticated technology.

The environment has already been so severely degraded in certain areas that people have been forced to migrate after facing the scarcity of resources like food and energy.

Man's impact on environment has resulted in the pollution of environment. Pollution is the introduction of contaminants into the natural environment that cause damaging changes. It

not only affects air, water and land but also the organisms of the biosphere. The main points summing up the impact of man on environment are described in the following paragraph.



POLLUTION

COMPREHENSION

3. True/False: say if the following sentences are true or false. Correct the false ones.

- | | T | F |
|--|--------------------------|--------------------------|
| a. The industrial revolution had a strong impact on the environment | <input type="checkbox"/> | <input type="checkbox"/> |
| b. New lands were colonised in Europe because of improvements in transportation | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Scientific discoveries caused the decrease of the mortality rate and of life span | <input type="checkbox"/> | <input type="checkbox"/> |
| d. We produce CO ₂ by respiration | <input type="checkbox"/> | <input type="checkbox"/> |
| e. The increase in carbon dioxide is responsible for global warming | <input type="checkbox"/> | <input type="checkbox"/> |
| f. Radioactive substances may have healthy effects on human beings | <input type="checkbox"/> | <input type="checkbox"/> |
| g. Pollution only damages water, air and land | <input type="checkbox"/> | <input type="checkbox"/> |

Forms of pollution

The major forms of pollution are the following:

Air pollution: the release of chemicals and particulates into the atmosphere. Common gaseous pollutants include carbon monoxide, sulphur dioxide, chlorofluorocarbons (CFCs) and nitrogen oxides produced by industry and motor vehicles. Photochemical ozone and smog are created as nitrogen oxides and hydrocarbons react to sunlight.

Water pollution: is caused by the discharge of wastewater from commercial and industrial waste into surface waters; discharges of untreated domestic sewage, and chemical contaminants, such as chlorine, from treated sewage; release of waste and contaminants into surface, runoff flowing to surface waters (including urban runoff and agricultural runoff, which may contain chemical fertilizers and pesticides); waste disposal; *eutrophication* and littering. Also leakage of petroleum from huge ships and oil tankers into the sea, causes great damage disaster to marine life and to humans depending on marine resources.

Light pollution: includes light trespass and over-illumination.

Littering: the criminal throwing out of inappropriate objects, unremoved, on public and private properties.

Noise pollution: includes roadway noise, aircraft noise, industrial noise.

Soil contamination occurs when chemicals are released by spill or underground leakage. Among the most significant soil contaminants are hydrocarbons, heavy metals, MTBE, herbicides, pesticides and chlorinated hydrocarbons.



Radioactive contamination, resulting from twentieth century activities in atomic physics, such as nuclear power generation and nuclear weapons research and manufacture

Thermal pollution, is a temperature change in natural water bodies caused by human influence, such as the use of water as coolant in a power plant.

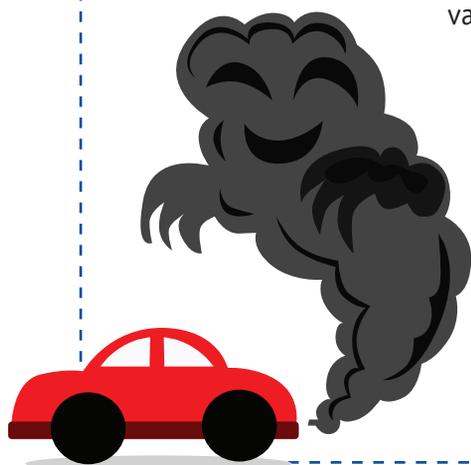
Visual pollution, can be referred to the presence of overhead power lines, motorway billboards, damaged landforms, open storage of trash, municipal solid waste or debris.

Consumption of resources: -population growth in the recent past has resulted in rapid consumption of all kinds of resources. The most striking example of such resource depletion is the food deficit faced by about 100 countries in the world.

Forest and soil resources are being consumed at a fast rate because of population pressure. Tropical forests are depleting at a rate of 2% per annum. It is estimated that the world is losing 7% of fertile soil per decade.

The consumption of resources is most significant in relation to non renewable mineral and power resources. The world is facing an energy crisis since existing oil resources may last for a few decades. Though coal reserves are adequate for a few centuries, it cannot replace oil, especially for transport.

Humans have just realized that our economic activities are threatening our survival on earth. Our survival depends on the awareness that we have to live in harmony with the various elements of the environment, which are interconnected. An understanding of the processes which take place in the environment, the relationship between biotic and abiotic components, and the assessment of resources with essential for our survival.



COMPREHENSION

4. Answer the following questions.

- a. What is pollution?
- b. What are the most traditional forms of pollution?
- c. What is noise pollution?
- d. What is water pollution?
- e. What are the main causes of land degradation?
- f. Why is resource depletion a big issue nowadays?
- g. What's the difference between renewable and non renewable resources?
- h. Do you know the difference between biotic and abiotic components? If not, do a research and try to explain using your own words.

WRITING

5. You might have heard the word eutrophication in your studies of chemistry or science. If not search the Internet or ask your science teacher, then write a paragraph on this process.



VOCABULARY

6. Match the words a-i to the words 1-9 to make sentences connected to environmental issues.

- | | |
|-----------------|--------------|
| a. acid | 1. pollution |
| b. nuclear | 2. waste |
| c. greenhouse | 3. change |
| d. health | 4. rain |
| e. global | 5. problems |
| f. noise | 6. effect |
| g. contaminated | 7. warming |
| h. oil | 8. spill |
| i. climate | 9. soil |

- | | | | | |
|---------|---------|---------|---------|---------|
| a. | b. | c. | d. | e. |
| f. | g. | h. | i. | |

VOCABULARY

7. Complete the sentences with words from the previous exercise.

- People who live near the airport often complain about
- The pollution from cars and planes has caused an increase in
- The doctor said my grandfather has because he worked in a chemical factory.
- When..... falls, it kills trees and plants.
- An can destroy all marine life in the area.
- is the recent increase in the world's temperature.
- Scientists say that recent extreme weather is due to
- It is almost impossible to farm on land with
- is radioactive waste left over from reactors and bombs production.



SPEAKING

8. Answer the following questions.

- What can cause the environmental problems mentioned in exercise 6?
- Which problem is the most serious? Put them in order, then compare with your classmates.

LAST BUT NOT LEAST

How Big is your Carbon Footprint?

You leave footprints when you walk in the sand, the mud and when you've got wet feet. You also leave something called a carbon footprint. You can't see your carbon footprint, but it impacts the earth and leaves a mark just like the ones in the sand and the mud do.

Definition

When you use fossil fuels, like heating oil to keep your house warm or gasoline for your family's car, these things create carbon dioxide, also called CO₂. Carbon dioxide is called a greenhouse gas. Many scientists believe that greenhouse gases are making the earth too warm. Your carbon footprint is the total amount of CO₂ you create. A big carbon footprint is bad for the planet.



Carbon Dioxide is Energy Waste

Every time you use energy that comes from fossil fuels, you create CO₂ and make your carbon footprint bigger. Think of CO₂ as energy waste. It's what remains after you use fossil fuels. You create carbon dioxide every day.

Electricity

According to the Environmental Protection Agency, which is the part of the government that makes sure our environment is cared for, the electricity you use in your home creates the biggest part of your carbon footprint. Although electricity doesn't make greenhouse gases when you use it, the power plants that make the electricity do. Power plants that use coal to make electricity create the most CO₂. As you know, coal is an important fossil fuel.

Heating Your Home

Keeping warm in the winter is the second biggest source of CO₂, and it adds to your carbon footprint. Your house probably uses fossil fuels like oil, natural gas or electricity to keep you warm. The amount of CO₂ your house makes depends on the type of fuel you use and how high you set your thermostat. You also add to your carbon footprint when you run the air conditioner to stay cool in the summer time.

Other Sources of Carbon Dioxide

When your family uses your car, it adds to your family's carbon footprint. That's because a car uses gasoline to run, and it produces CO₂ as waste. Buses, trains and planes also produce CO₂. Your trash also makes your carbon footprint bigger. The government estimates that every pound of trash you put in the garbage makes one pound greenhouse gases. That happens because, over time, trash produces CO₂ and methane, another type of greenhouse gas.

Figure Out Your Carbon Footprint

There are many websites that can help you figure out the size of your carbon footprint. To use them, you will have to answer questions about where you live, the type of house you live in, how much electricity you use, and how often your family uses a car.

Sometimes it is possible to **offset** your carbon footprint; for example, when you book a flight, some airlines tell you exactly how much the carbon footprint for your flight will be, and offer the opportunity to pay a small sum, which will be given to some ecological organisation, eg, one involved in reforestation.



Making Your Carbon Footprint Smaller

The best way to make your carbon footprint smaller is to use less electricity and less fossil fuels. Be sure to turn off your computer, television and lights when you're not using them. Lower the temperature in your house (less heating) during the winter and raise it in the summer (less air conditioning). Walk and bike whenever you can instead of using the car or bus. Reduce the amount of trash you create by recycling and reusing items.

The three Rs

If we want to continue living on the planet, and save it, we need to do four things:

REDUCE the amount of natural resources we use

REUSE: things again and again

RECYCLE: the things we can't reuse- glass, plastic, paper, metals

REPAIR: the things we have broken instead of throwing them away.