Chapter 1: Introduction to the concept of the environment

1- Definition of the Eenvironment

The environment is everything that surrounds us. It is the combination of natural and artificial elements within which human life takes place. The environment can also be defined as the composition of natural physical, chemical or biological conditions that affect living organisms and human activities.

1.1. Definition

More generally, the environment is consideredall factors that influence the human environment. This definition places humans at the center of civilization. A much broader concept of the environment concerns the protection of the natural environment, land use planning and the protection of natural or historical sites.

1.2. Legal definition

In 1967, an initial European directive legally defined the environment as: water, air and soil, as well as the relationships between these elements on the one hand, and with all living organisms on the other.

Currently, the following definition exists in legal texts: ‘all the elements which, in the complexity of their relationships, constitute the framework, environment and conditions of human life as they are or as they are perceived.’

In Algeria, legislation defines the environment in Law No. 03-10 of 19 July 2003 as follows: ‘abiotic and biotic natural resources such as air, the atmosphere, water, soil and subsoil, fauna and flora, including genetic heritage, interactions between these resources, as well as sites, landscapes and natural monuments.’

2. Brief history

Before the 19th century, the concept of the environment was associated with respect for life and living beings. The concepts of economic, natural or urban environment did not seem to exist.

From the 19th century onwards, the artistic community, such as the Romantic movement, highlighted the beauty of wild natural landscapes and therefore the need to preserve these precious assets.

The first protected natural site was created in 1864 in the United States by President Lincoln in the form of a national park in Yosemite Valley. Several national parks have since been created in different countries around the world.

In 1896, Arrhenius studied the effect of increased CO2 in the atmosphere. He was the first to cite water vapor and CO2 as greenhouse gases.

At the end of the 19th century, the first ecological disasters appeared with the development of the industrial revolution, which caused a sharp increase in the consumption of natural resources.

The 20th century saw the first visible ecological disasters, such as oil spills and industrial pollution. Scientists began to understand the phenomena of pollution and to warn the international community about its effects. Following an awareness of these problems, several international conferences were held and protocols were signed.

The first international conference was held in Stockholm in 1972, followed by another in Rio de Janeiro in 1990.

Algerian environmental protection legislation comprises several laws that are constantly evolving over time in line with new developments. The first laws date back to 1978 and 1983 and concern the protection of sites and the creation of national parks. More recent laws, the latest of which date from 2015, concern the creation of the National Observatory for the Environment and Sustainable Development and the National Environment Fund, not to mention other laws and decrees on coastal protection and the development of clean energy.

3. Components of the environment:

The environment is the world around us. It includes living and non-living things.

3.1. Living things

• All living things are born, live for a certain amount of time, and die.

• All living beings draw water and nutrients from their environment to satisfy their bodily needs and ensure their growth. However, it is not always easy to tell when a living being is feeding. Some living beings stop feeding at certain times of their lives (marmots hibernate, trees lose their leaves in winter) and plants feed in ways that are not easily visible.

• The ability to move does not distinguish between living and non-living things. Air moves in the form of wind, but we cannot consider wind to be alive.

• At first glance, one might think that all living beings breathe. However, some microbes, such as the tetanus bacterium, live in an anaerobic environment (without oxygen) and therefore do not breathe.

• All living beings have the ability to reproduce, to ensure offspring. This ability is sufficient to characterise them as living.

3.2. Non-living matter

Non-living matter cannot reproduce. It includes mineral components (atmospheric gases, water, rocks), elements derived from living organisms, and human products.

3.2.1. Mineral components

• The gaseous atmosphere contains various gases: approximately four-fifths nitrogen (commonly referred to as nitrogen), one-fifth oxygen, traces of carbon dioxide (formerly known as carbonic gas) and rare gases, and varying amounts of water vapour.

• Water can be fresh or salt, frozen, liquid or gaseous. It covers four-fifths of the Earth's surface. It is a fundamental component of the environment.

• Soil is the thin layer between the atmosphere and the subsoil. It is formed from the decomposition of living organisms after their death and the breakdown of rocks in the subsoil.

• The subsoil contains rocks that differ depending on the location and the conditions that prevailed there.

3.2.2. Elements derived from living organisms and human creations

• A bird feather, a piece of wood, a leaf that has fallen from a tree, etc., and all animal carcasses are no longer part of the living world because they are no longer capable of reproducing.

• All human creations are part of the non-living world: a painting, a computer, a building, a car, etc.

4. Humans and the environment

Humans are primarily responsible for the changes taking place in the environment due to their constantly evolving activities and lifestyles. They have both harmful and beneficial effects on the environment.

4.1. Harmful effects of humans on the environment

Among the destructive effects of humans on the environment, the increase in the world's population has led to the construction of more and more homes and the expansion of cities. This expansion has resulted in the emergence of construction sites, land clearing and the development of roads and links between cities, which has significantly altered the landscape and transformed nature. The increasing number of means of transport causes air pollution. The enormous quantities of household waste generated by the increase in the world's population are very difficult, if not impossible, to manage at present, despite the various techniques that exist for destroying it while minimising pollution.

The extraction of minerals and materials needed for construction, such as rock, sand and gravel from quarries, also alters the landscape and disrupts the surrounding natural environment. Deforestation and dam construction also play a harmful role in destroying the balance of natural environments and contribute to the disappearance of animal and plant species.

Industry produces all kinds of waste: solid, liquid or gaseous, which currently poses a real environmental problem. The chemical industry pollutes rivers and waterways, rendering them unsuitable for fishing and consumption. Water quality is deteriorating and dozens of diseases affecting humans, aquatic fauna and flora are emerging.

Oil spills in seas and oceans are ecological disasters because they cause the loss of hundreds of fish and seabirds.

Intensive fishing is responsible for the disappearance of certain marine species and the decline in global fish stocks.

Finally, the introduction of certain destructive species disrupts the natural balance and causes the extinction of species native to the environment in question.

4.2. Positive effects of humans on the environment

Humans also have favorable effects on the environment. This is demonstrated by environmental legislation in almost every country in the world.

Current trends around the world to reduce pollution are beginning to be felt. Some industrial and household waste is recycled. The law increasingly regulates the disposal of harmful waste. This waste is sorted, recovered and treated in appropriate facilities such as incinerators, or converted into energy. Recycling also makes it possible to recover raw materials and thus save them, while preventing them from polluting the environment.

Wastewater treatment plants also enable the recovery of wastewater treatment residues and their conversion into biogas used to produce thermal and electrical energy.

The protection of forests against desertification and deforestation is another positive human action on the environment. Fauna and flora are safeguarded and the species that live there are thus preserved. The creation of national parks and protected reserves, as well as the regulation of hunting and fishing, are currently helping to significantly reduce the destructive effects of humans on nature.