Chapter 1: Environment

Course leader: Dr. Y.AMI

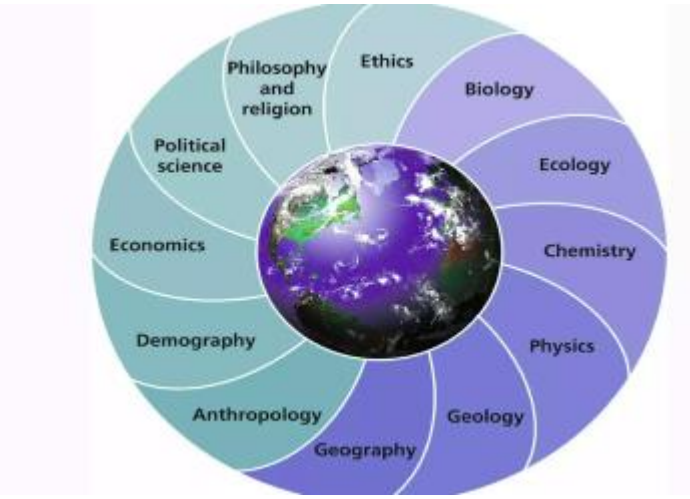
y.ami@lagh-univ.dz

I.1. Definition of environment

Abiotic and biotic natural resources such as air, atmosphere, water, soil and subsoil, fauna and flora including the genetic heritage, the interactions between these resources as well as sites, landscapes and natural monuments.

- The environment refers to the sum total of all **living** organisms and **non-living** variables, such as water, soil, climate, light, and oxygen around us.

I.2. Applications



- **Conservation:** Environmental science helps in preserving natural resources and protecting endangered species.
- **Sustainable Development:** Environmental science guides us in finding ways to meet current human needs without compromising the ability of future generations to meet their own needs.

- **Climate Change:** It addresses the causes and impacts of climate change, as well as strategies for mitigation and adaptation.

- **Biodiversity:** Environmental science studies the variety of life on Earth and the importance of maintaining biodiversity.

I.3. Components of environment

I.3.1. Human environment: people, infrastructures, activities, cultural and sociology.

I.3.2. Physical environment: air, water and soil.

I.3.3. Biological environment: plants, animals **(**Flora and Fauna) and other living communities.

- An assembly of mutually interacting organisms and their environment in which materials are interchanged in a largely cyclical manner is called an **ecosystem.** The environment in which a particular organism lives is known a **habitat**.

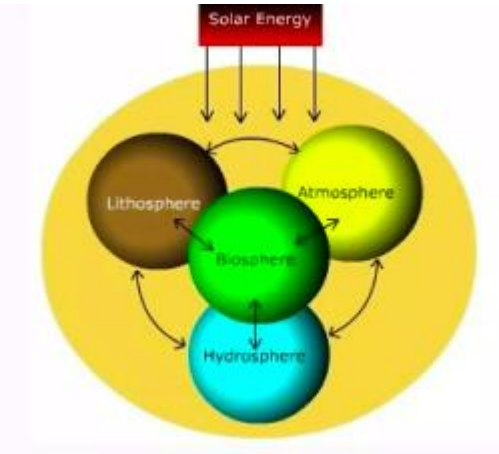
I.3. Environmental System

Biosphere:

-Atmosphere

- Hydrosphere

- Lithosphere



- **The environment is never static:** Physical forces continuously change the surface of the earth through: Weather, Action of waves, Natural phenomena such as volcanoes.
- Living organisms also play a dynamic role through respiration, excretion and ultimately death and decay (decomposition), recycling their constituent elements through the environment.

All parts of the environment are subjected to drastic change due to human overuse of natural resources:

- **Natural Resources Consumption**

  In the last two and half century, the industrial revolution has changed the face of the planet by natural resources at an alarming rate, especially **fossil fuel**.

- Every year natural resources consumption is **rising** as the human population increases and standards of living rise.

1. **Fossil Fuel**

- Fossil Fuels, which include petroleum, coal, and natural gas.
- Most of the energy that powers modern industrial society.
- Fossil fuels are largely composed of hydrocarbons (can also be processed into plastics, chemicals, lubricants, and other non-fuel products).

2. **Forest Wood**

- Forests are very important for maintaining ecological balance and provide many environmental benefits.
- Forests are also an important defense against **global climate change**.

- Forests produce life-giving oxygen and consume carbon dioxide, the compound most responsible for global warming through photosynthesis, thereby reducing the effects of global warming

1.4. Human and environment

1.4.1. Population Increase

- The world population is increasing at an alarming rate. From 1930 to present, it rose from 2 billion to 8 billion and it is expected to rise again to over 9, 8 billion in 2050.

- Global environmental degradation may result from a variety of factors, including **overpopulation** and the resulting overuse of land and other resources.

1.4.2. Human needs

1.4.3. Natural Resources Consumption

- In the last two and half century, the industrial revolution has changed the face of the planet by natural resources at an alarming rate, especially **fossil fuel**.

- Every year natural resources consumption is **rising** as the human population increases and standards of living rise.

I.5. Effect of industrialization of environment

1.5.1. Urbanization and the Environment

The term urbanization denotes redistribution of populations from rural to urban settlements. Urbanization occurs naturally from an effort to improve opportunities for jobs, education, housing, and transportation and reduce expenses in commuting and transportation.

However, along with the above social and economic benefits of urbanization comes a number of **environmental ills.**

1.5.2. Industrialization and the Environment

Industrial manufacturing processes may consist of the synthesis of a chemical from raw materials, casting of metal or plastic parts, or any of the other things that is needed to produce a certain product.

- Each of these processes carries with it the potential to cause significant air and water pollution and production of hazardous wastes.