

Chapter 03: Environmental Protection

1– Environmental Protection and Sustainable Development

The continuous degradation of ecosystems and their biodiversity, the level of pollution on land, in the air, and in the oceans, as well as the consequences of climate change, are very alarming. The environmental objective of sustainable development aims to implement daily actions to reduce waste, limit pollution, and save resources in order to preserve and maintain life on Earth.

1–1– Main Pillars of Sustainable Development

The main pillars of sustainable development are:

- **Economic Growth:**

Building a strong and competitive economy while ensuring the availability of terrestrial ecosystems and sufficient natural resources to support growth and the modern requirements of sustainable development.

- **Environmental Protection:**

Contributing to biodiversity improvement, using natural resources responsibly, minimizing waste and pollution, adapting to and reducing climate change, and especially transitioning globally toward a low-carbon economy.

- **Social Inclusion:**

Supporting strong, active, and healthy communities by meeting human needs and protecting the rights of future generations (creating high-quality development with accessible local services such as healthcare, social and cultural well-being).

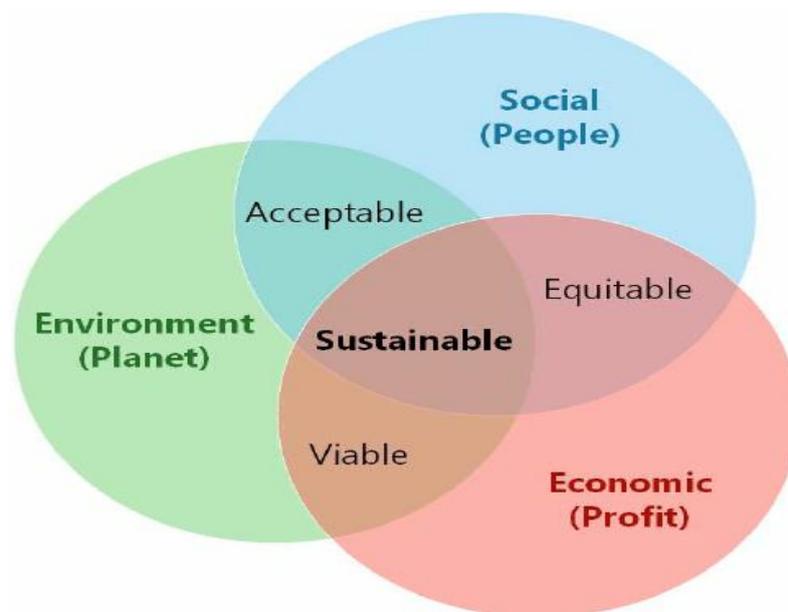


Figure 01. Main axes of Sustainable Development

2- Environmental Protection and Biodiversity Conservation

Managing natural resources consists of inventorying, characterizing, assessing, conserving, and restoring the diversity of animal and plant species, as well as all ecological ecosystems. To achieve this, two types of biodiversity conservation are implemented:

✓ In situ Conservation

This type of conservation consists of maintaining the protection of living organisms in their natural habitat. It is the least costly and the most widely used conservation method. It allows animal and plant communities to continue their evolution in natural conditions by adapting to environmental changes (e.g., national parks, regional parks, protected areas).

✓ Ex situ Conservation

This is the preservation of species outside their natural habitat, under controlled conditions (e.g., zoological gardens, public aquariums). It can also be conducted in research laboratories, where certain biological materials (embryos, somatic cells, DNA, etc.) are collected at a specific stage of life (in vitro) from living animals and preserved at a specific temperature. It is a preservation method of sustainable preservation of natural resources outside their collection sites.

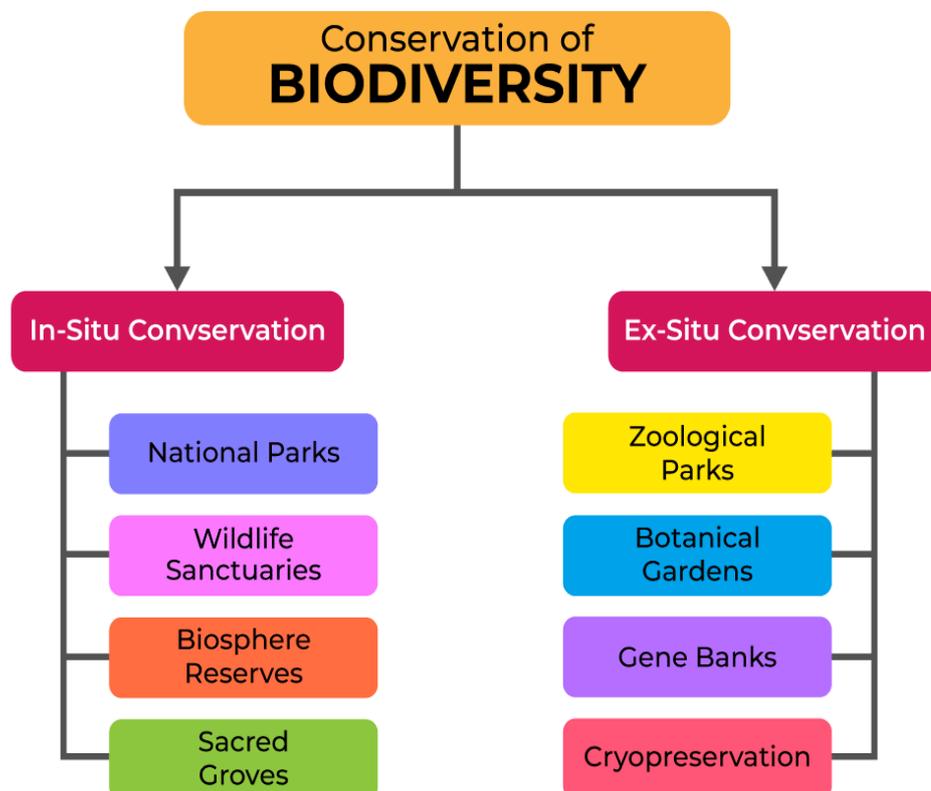


Figure 02. In-situ and Ex-situ Conservation of Environmental Biodiversity

3– Other Practices for Environmental Protection

3–1– Habitat Restoration

This refers to the process of assisting in the recovery of a degraded, damaged, or destroyed ecosystem so that it reflects its intrinsic values and provides the goods and services people rely on. The goal is to restore the ecosystem to the state it would have been in had the degradation not occurred, while considering anticipated changes. Restoration projects include:

- **Vegetation:**

Establishing vegetation on sites where it was previously lost, often with erosion control as the main objective.

- **Habitat Improvement:**

A process aimed at increasing a site's ability to serve as a habitat for specific species.

- **Mitigation:**

Legally providing restoration efforts in cases of loss of protected species or ecosystems.

3–2– Ecosystem Remediation

Environmental remediation involves removing contaminants or pollution from soil, groundwater, sediments, surface waters, or cleaning up after an oil spill. It includes improving an existing ecosystem or creating a new one to replace a degraded or destroyed one. The main objective of environmental remediation is to restore contaminated sites or resources in order to reduce the negative impact of pollutants on human and natural health. Ecosystem rehabilitation can be:

- **Bioremediation:**

A detoxification and degradation process of heavy metals using microorganisms (in soils or aquatic ecosystems).

- **Phytoremediation:**

A method that helps absorb heavy metals present in polluted ecosystems by using plants and trees to clean and restore the environment.

3–3– Recycling of Natural Resources

Recycling and reusing waste reduce the need to extract and use new materials from the Earth. This, in turn, reduces disruptions and harmful damage to the natural world (fewer forests cut down, fewer rivers diverted, fewer wild animals injured or displaced, and reduced water, soil, and air pollution).

4– Environmental Legislation

Environmental legislation refers to all regulations and guidelines that frame the fundamental principles of environmental management. It is based on the protection, restructuring, and enhancement of natural resources,

as well as the restoration of damaged environments, in order to combat all forms of pollution and environmental nuisances.

4-1- International Environmental Law

International environmental law encompasses international texts adopted to defend and promote the environment, based on the principle of solidarity. It emerged in the 1970s, following growing awareness of the negative anthropogenic effects on the environment.

This concept of international law is gradually shaped by the development of international conventions and treaties. It consists mainly of principles and recommendations based on voluntary commitments, often referred to as “soft law” (less binding). Some international agreements, such as the 1997 Kyoto Protocol and the 2015 Paris Agreement have helped limit greenhouse gas emissions, although their goals are still far from being achieved.

4-2- International Conventions for Environmental Protection

4-2-1- Definition of an International Convention

It represents an agreement between two or more states or international organizations involving the reciprocal granting of rights and the acceptance of obligations. This agreement, concluded between entities (member states of a federal state–provinces–departments) within the framework of legally binding international treaties, has the main objective of conserving biological diversity.

4-2-2- Main International Conventions for Environmental Protection

❖ Ramsar Convention:

Its objectives are to conserve and minimize the irrational use of wetlands through local and regional actions. It was signed in the city of Ramsar, Iran, in 1971.

❖ London Convention:

Aimed at protecting seawater from pollution by oil discharged from ships. It was signed in 1973 in England and prescribes specific equipment and design characteristics for tanker ships.

❖ Washington Convention:

Adopted in the USA in 1973 to combat the illegal international trade of endangered wildlife and plant species.

❖ Bonn Convention:

Focuses on protecting migratory wildlife species and their natural habitats. It was signed in Germany in 1979 and has been in force since 1983.

❖ Montreal Convention:

Ensures the protection of the ozone layer by gradually eliminating substances that contribute to its depletion. It was signed in 1987 in Canada.

❖ **Rio Convention:**

Adopted declarations that advanced the concept of rights and responsibilities of countries in the field of environmental protection. Known as the “Earth Summit,” it emphasized the recognition by member countries that the Earth is essential to our existence. It was signed in Brazil in 1992.

❖ **Bali Convention:**

Its objective was to plan a protocol on climate change. Signed in Indonesia in 2007, it aims to reduce the movement of hazardous wastes.