

ENDEMIC SPECIES & Their REGIONS:

1. Hangul Deer:	Kashmir
2. Barasingha or Swamp Deer:	Tarai Region
3. Nilgiri Tahr:	Shola Grassland
4. Indian Wild Ass:	Little Runn of Kutch
5. Snow Leopard:	Himalayas (found in Great Himalayan National Park)
6. Asiatic Lion:	Gir forest region of Gujrat
7. Lion tail Macaque:	Western Ghats and Annamalai regions
8. Golden Langur:	Manas region in Assam
9. Black Langur:	Nilgiri region
10. Great Indian Bustard:	Semi - Arid region of Rajasthan

CONSERVATION OF BIODIVERSITY: IN-SITU AND EX-SITU

1. **In-Situ Conservation**- Conservation of a species is best done by protecting its habitat along with all the other species that live in it in nature. This is known as in-situ conservation, which is conserving a species in its own environment by creating National Parks and Wildlife Sanctuaries. i.e. Conservation of wild life in their natural place itself. e.g. Wildlife sanctuary, National Park, Biosphere reserve.
2. **Ex-Situ Conservation** – When there are situations in which an endangered species is so close to extinction that unless alternate methods are instituted, the species may be rapidly driven to extinction. This strategy is known as ex-situ conservation, i.e. outside its natural habitat in a carefully controlled situation such as a botanical garden for plants or a zoological park for animals, where there is expertise to multiply the species under artificially managed conditions. These breeding programs for rare plants and animals are however more expensive than managing a Protected Area.

There is also another form of preserving a plant by preserving its germ plasm in a gene bank so that it can be used if needed in future.

Wildlife Sanctuaries and National Park:

- This Provision having wildlife sanctuaries and National park was brought by a regulation in the year 1972 under Wildlife Conservation Act of 1972.
- In India around 500 Wildlife Sanctuaries & 89 National park are present. Wildlife Sanctuaries are designated by the State Legislature and national parks are created by Union government.

Biosphere Reserve:

- This concept was propagated by UNESCO in the year 1971 when they started the Program called 'Man and the Biosphere Program' (MAB).
- Biosphere Reserve came into India through Environment Protection Act of 1986. Currently there are 18 Biosphere Reserves in India.

Biosphere Reserves:-

1. The Great Run of Kutch
2. Simlipal (Orissa)
3. The Gulf of Mannar
4. Amarkantak
5. Sunder bans
6. Manas (Assam)
7. Cold Desert in Ladakh
8. Kanchenjunga (Sikkim)
9. The Nanda Devi
10. Agastya Mala (Trivandrum)
11. The Nilgiris (Oldest Reserve)
12. Great Nicobar
13. Dehang Debang
14. Nokrek
15. Pachmarhi
16. Dibru Saikhowa
17. Seshachalam
18. Panna

7 of them which have been recognized by UNESCO under MAB Program are: Nilgiris, Sunder bans, Gulf of Mannar, Nanda Devi, Nokrek, Simlipal and Pachmarhi.

National Legislations on the Environment

Constitutional provisions:

- **Forty Second Amendment** in the Constitution of India, 1976 has introduced Articles 48A and 51A (g) which form Directive Principles of State Policy and the Fundamental Duties respectively. The Supreme Court referred to the concept of 'Sustainable Development' and 'Polluter pays' principle and held that right to healthy environment is a part and parcel of 'right to life' guaranteed under article 21 (fundamental rights) of the Constitution. The Supreme Court in its judgment *Chameli Singh v. State of U.P.* held that Article 21 includes right to food, water, decent environment, medical care shelter and education.
- **Article -48A:** Protection and improvement of environment and safeguarding of forests and wild life: The State shall endeavor to protect and improve the environment and to safeguard the forests and wild life of the country.
- **Article -51A(g):** It is the fundamental duty of Indian citizens to protect and improve the natural environment including forests, lakes, rivers and wild life, and to have compassion for living creatures;

Statutory Acts:

1. **Wildlife Conservation Act of 1972:** It refers to a sweeping package of legislation enacted in 1972 by the Government of India. Among other reforms, the Act established schedules of protected plant and animal species; hunting or harvesting these species was largely outlawed. The Act provides for the protection of wild animals, birds and plants; and for matters connected therewith or ancillary or incidental thereto. It extends to the whole of India, except the State of Jammu and Kashmir which has its own wildlife act. It also provides for declaration of an area as Wildlife sanctuaries by states and National parks by the central government.
2. **Environment (Protection) Act of 1986:** The Environment (Protection) Act, 1986 not only has important constitutional implications but also an international background. The spirit of the proclamation adopted by the United Nations Conference on Human Environment which took place in Stockholm in June 1972 was implemented by the Government of India by creating this Act.

The Act to provide for the protection and improvement of environment and for matters connected therewith; to take appropriate steps for the protection and improvement of human environment; AND WHEREAS it is considered necessary further to implement the decisions aforesaid in so far as they relate to the protection and improvement of environment and the prevention of hazards to human beings, other living creatures, plants and property;

Although there were several existing laws that dealt directly or indirectly with environmental issues, it was necessary to have a general legislation for environmental protection because the existing laws focused on very specific types of pollution, or specific categories of hazardous substances or were indirectly related to the environment through laws that control land use, protect our National Parks and Sanctuaries and our wildlife. However there was no overarching legislation and certain areas of environmental hazards were not covered. There were also gaps in areas that were potential environmental hazards and there were several inadequate linkages in handling matters of industrial and environmental safety. This was essentially related to the multiplicity of regulatory agencies. Thus

there was a need for an authority which could assume the lead role for studying, planning and implementing long term requirements of environmental safety and give directions to, as well as coordinate a system of speedy and adequate response to emergency situations threatening the environment.

This Act for the first time conferred enforcement agencies with necessary punitive powers to restrict any activity that can harm the environment.

3. **Forest Conservation Act of 1980:** To appreciate the importance of the Forest Conservation Act of 1980, which was amended in 1988, it is essential to understand its historical background. The Indian Forest Act of 1927 consolidated all the previous laws regarding forests that were passed before the 1920's. The Act gave the Government and Forest Department the power to create **Reserved Forests**, and the right to use Reserved Forests for Government use alone. It also created **Protected Forests**, in which the use of resources by local people was controlled. Some forests were also to be controlled by a village community, and these were called **Village Forests**.

The Act remained in force till the 1980s when it was realized that protecting forests for timber production alone was not acceptable. The other values of protecting the services that forests provide and its valuable assets such as biodiversity began to overshadow the importance of their revenue earnings from timber. Thus a new Act was essential. This led to the Forest Conservation Act of 1980 and its amendment in 1988.

The Forest Conservation Act of 1980 was enacted to control deforestation which was massive between 1952 and 1988. It ensured that forestlands could not be de-reserved without prior approval of the Central Government. This was created as States had begun to de-reserve the Reserved Forests for non-forest use. States had regularized encroachments and resettled 'Project Affected People' from development projects such as dams in these de-reserved areas. The need for a new legislation became urgent. The Act made it possible to retain a greater control over the frightening level of deforestation in the country and specified penalties for offenders.

4. **THE WATER (PREVENTION AND CONTROL OF POLLUTION) ACT:** The Government has formulated this Act in **1974** to be able to prevent pollution of water by industrial, agricultural and household wastewater that can contaminate our water sources. The main objectives of the Water Act are to provide for prevention, control and abatement of water pollution and the maintenance or restoration of the wholesomeness of water. It is designed to assess pollution levels and punish polluters. The Central Government and State Governments have set up **Pollution Control Boards** that monitor water pollution.
5. **THE AIR (PREVENTION AND CONTROL OF POLLUTION) ACT:** The Government passed this Act in **1981** to clean up our air by controlling pollution. Sources of air pollution such as industry, vehicles, power plants, etc. are not permitted to release particulate matter, lead, carbon monoxide, sulfur dioxide, nitrogen oxide, volatile organic compounds (VOCs) or other toxic substances beyond a prescribed level. The main objectives of the Act are as follows:
 - I. To provide for the Prevention, Control and abatement of air pollution.
 - II. To provide for the establishment of Central and State Boards with a view to implement the Act.
 - III. To confer on the Boards the powers to implement the provisions of the Act and assign to the Boards functions relating to pollution.

INTERNATIONAL CONFERENCES, ENVIRONMENTAL ISSUES AND PROTOCOLS:

United Nation Conference on the Human Environment -1972:

- The first United Nations Conference on the Human Environment (UNCHE) was held in Stockholm, Sweden from June 5 to June 16, 1972.
- This was the first United Nations conference on the environment as well as the first major international gathering focused on human activities in relationship to the environment, and it laid the foundation for environmental action at an international level.
- The conference acknowledged that the goal of reducing human impact on the environment would require extensive international cooperation, as many of the problems affecting the environment are global in nature.
- Following this conference, the United Nations Environmental Programme (UNEP) was launched in order to encourage United Nations agencies to integrate environmental measures into their programs.
- One of the greatest achievements of the UNCHE was the creation of the United Nations Environment Programme (UNEP), based in Nairobi, Kenya.
- The mission of UNEP is "to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations." UNEP is the voice for the environment within the United Nations system and works toward this mission by:
 - Encouraging international participation and cooperation in addressing environmental issues and environmental policy
 - Monitoring the status of the global environment and interpreting environmental data collected
 - Creating environmental awareness in governments, society, and the private sector
 - Coordinating UN activities pertaining to the environment
 - Developing regional programs for sustainability
 - Helping environmental authorities, especially those in developing countries, form and implement policy
 - Helping to develop international environmental law

Major Global Environmental Issues are:

1. Ozone hole
2. Climate change
 - a. Global warming
 - b. Desertification
 - c. Conservation of Biodiversity

Ozone Hole:

- Ozone is a compound (O₃) which is a derivative of environment oxygen. The ozone layer is mainly found in the lower portion of the stratosphere from approximately 20 to 30 kilometers (12 to 19 mi) above Earth, though the thickness varies seasonally and geographically.
- This ozone layer absorbs the ultraviolet radiation which is emitting from the Solar system. Factors responsible for Ozone hole Depletion are the manmade compounds called Chlorofluorocarbons (CFC).
- The ozone layer can be depleted by free radical catalysts, including nitric oxide (NO), nitrous oxide (N₂O), hydroxyl (OH), atomic chlorine (Cl), and atomic bromine (Br).
- While there are natural sources for all of these species, the concentrations of chlorine and bromine have increased markedly in recent years due to the release of large quantities of man-

made organohalogen compounds, especially chlorofluorocarbons (CFCs) and bromofluorocarbons.

- Chlorofluorocarbons are used in different kind of Aerosols & Coolant in the radiators.

Effects of Ozone hole on Human:

- Exposure to Ultraviolet rays causes Skin Cancer
- Excess Vitamin D
- Skin burns on animals occurs
- Cataract

Global efforts for the depletion of Ozone hole:

Montreal Protocol -1987: The Montreal Protocol on Substances that Deplete the Ozone Layer (a protocol to the **Vienna Convention** for the Protection of the Ozone Layer) is an international treaty designed to protect the ozone layer by phasing out the production of numerous substances believed to be responsible for ozone depletion.

Climate Change

Global Warming: A general increase in temperature of the atmosphere of the earth due to human activities is called global warming. The most important summit to prevent this was **Earth Summit** Conference held at Rio de Janeiro on 1992. After 20 years in 2012 the Rio+20 summit was also organized in Rio de Janeiro.

Earth Summit:

This Summit leads to the formation of 3 very important conventions:

- I. UNFCC - The United Nations Framework Convention on Climate Change
- II. UNCBD/CBD - The United Nations Convention on Biological Diversity
- III. UNCCD - The United Nations Convention to Combat Desertification

I. UNFCC- United Nations Framework Convention on Climate Change

- UNFCC is mainly deals with concept of the climate change
- This convention is mainly based on 2 major principles
 - CBDI -Common But Differentiated Responsibility
 - Equity

The different Conference of UNFCC is COP- Conference of Parties. The first COP-1 is held at Berlin in 1995 which led to the signing of UNFCC document by all member nations. The COP-3 occurred in 1997 at Kyoto in Japan which led to the creation of **Kyoto protocol**.

Kyoto Protocol divides the countries into 2 groups:

- I. Annexe 1 Countries: This Contains 37 Industrialized Nations of the world. These countries have the Historical Responsibility. Target given by the Kyoto protocol in 1990 to Annexe 1 countries have to bring down the Carbon dioxide level by 5.2% by the year 2012.
- II. Non-Annexe 1 countries

In 2001 COP-7 was held at Marrakesh in Morocco. Marrakesh Accord is the very important steps for Kyoto protocol. It also provided different mechanism for develop & developed countries. This mechanism is known as flexible mechanism.

Flexible Mechanism includes:

1. Emissions trading: Carbon Credit or CER (Certified Emissions Reduction) under Offset trading
2. Clean Development Mechanism (CDM)
3. Joint Implementation (JI)

COP-15 which occurred in the year 2010 at a place called Copenhagen in Denmark. This lead to creation 3 new concepts:

1. Green Climate Fund (GCF)
2. Adaptation Framework
3. Technology Mechanism