

Environment Class 09

6th March, 2024 at 9:00 AM

INSTITUTIONS CREATED UNDER THE WPA 1972 (09:10 AM) (Imp)

- **1. National Board for Wildlife and State Wildlife Board:**
- NBWL serves as an apex body for reviewing all wildlife-related matters and approving projects in and around parks and sanctuaries.
- The board is advisory in nature and is chaired by the Prime Minister.
- **2. Central Zoo Authority:**
- It provides recognition to zoos and is also tasked with their regulation.
- The Union Environment Minister chairs it.
- **3. Wildlife Crime Control Bureau:**
- It collects intelligence related to organised wildlife crime and assists state governments.
- **4. National Tiger Conservation Authority:**
- The Govt. of India launched 'Project Tiger' in 1973 to promote the conservation of tigers.
- It has been converted into a statutory authority by an amendment to WPA in 2006.
- Under WPA, the area can be declared as a tiger reserve.
- The tiger reserve consists of a core area called 'Critical Tiger Habitat' and a buffer area around the core.
- Currently, there are 54 tiger reserves.
- **Schedules under the act:**
- The original act has six schedules which have been rationalized into four schedules in an amendment in 2022.
- **Schedule I: Animals with the highest level of Protection.**
- **Schedule II: Lesser Level of Protection**
- **Schedule III: Contains a List of Plants which cannot be cultivated without prior permission from the competent authority.**
- **Schedule IV: Specimens listed in the appendices under CITES.**
- The power to declare animals as vermin rests with the union government.
- It can declare an animal vermin in an area for a specified period.
- In 2022 Amendment was also in controversy by allowing the use of elephants for religious or any other purposes under specific regulations.

BIOSPHERE RESERVE (09:44 AM)

- Biosphere reserves are called learning places for sustainable development.
- They are places that provide solutions to many environmental challenges to reconcile the conservation of biodiversity along with its sustainable use by human beings.
- The BR are nominated by the National Government and remain under their sovereign jurisdiction.
- UNESCO can designate some of these reserves, as part of the UNESCO-MAB program.
- The biosphere reserve will have three main zones.
- **Core Area:** A strictly prohibited zone that contributes to the conservation of ecosystems.
- **Buffer Zones:** They surround the core area and are used for activities compatible with sound ecological practices.
- **Transition Area:** This is where communities foster in a sustainable economic way.

National Parks and Wildlife Sanctuaries can be declared by both Union and State govt.
Tiger reserve can be declared by State govt.
Biosphere reserve can be declared by Union govt. only.

BIOLOGICAL DIVERSITY ACT 2002 (09:56 AM)

- It was passed by parliament to fulfil India's obligation towards the **Convention on Biological Diversity**.
- **It has the following features:**
- **Conservation, Sustainable Use and Benefit Sharing.**
- The act restricts activities such as the transfer of Indian genetic material outside the country.
- **This act creates a three-tier structure:**
- **National Biodiversity Authority (NBA)** (At National level)
- **State Biodiversity Boards (SBB)** (At State level)
- **Biodiversity Management Committees (BMC)** (At local level)
- Any **foreign individual or entity** needs the approval of the **NBA**, to obtain biological resources and associated knowledge for commercial utilisation.
- An **Indian company** has to do the same but from the **State Biodiversity Board**.
- BMC ^{maintain} register a 'People Biodiversity Register' which records local biodiversity and traditional knowledge. **benefit sharing mechanism will be established.**
- Any entity first needs to obtain consent from BMC based on agreeable terms. ↩
- **Biodiversity heritage sites:** (feature of WPA 1972)
- Under this act, the **state government** can declare an area as a Biodiversity Heritage Site.
- These are **unique and ecologically fragile ecosystems** with one or more following characteristics.
- The richness of wildlife species
- High endemism
- Presence of rare and threatened species → **Keystone species.**
- **Species of evolutionary significance**
- **Wild ancestors of domesticated species.**
- Having significant cultural and aesthetic values.
- **The act was amended in 2023 following major features:**
- **It exempted Ayush Practitioners.** **from paying access and benefit sharing fees.**
- The act has decriminalized all offences but the penalty has been increased from 1 lakh to 50 lakh.

TAXONOMIC CLASSIFICATION (10:40 AM)

- Taxonomic classification is the hierarchical system used to organize and categorize living organisms based on shared characteristics and evolutionary relationships.
- It consists of seven levels: **Kingdom, Phylum, Class, Order, Family, Genus, and Species.**
- This system helps scientists classify and understand the diversity of life on Earth.
- **The taxonomic classification of Homo sapiens is as follows:**
- Kingdom: Animalia
- Phylum: Chordata
- Class: Mammalia
- Order: Primates
- Family: Hominidae
- Genus: Homo
- Species: Homo sapiens

Light comes from sun are majorly in three frequencies Infrared, Visible and UV ray.
 Earth absorbs heat in the form of both Visible and Infrared but in night Earth loose it in the form of Infrared which got trapped by GHGs.
 Glass do not pass infrared ray from them that is why they absorb heat in day in the form of Visible ray and do not let pass infrared ray in the night from them.

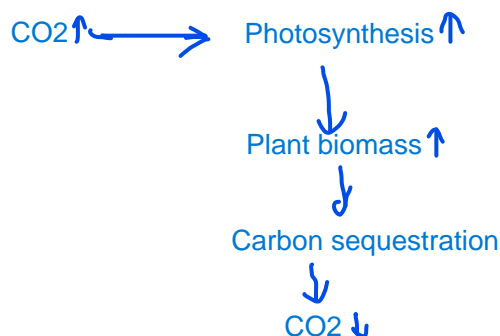
GLOBAL WARMING AND CLIMATE CHANGE (11:08 AM)

- **Mechanisms of Global Warming:**
- **Greenhouse effect:** The earth's temperature depends upon the balance between energy entering and leaving the planet's system.
- Sunlight comprises mainly **UV (~10%), visible light (~43%), and infrared (~47%)**.
- However, the **maximum intensity** occurs around visible light. That is why, most of the species have adapted to see in visible light.
- When sunlight reaches the Earth's surface, it can either be reflected into space or absorbed by the Earth.
- **The reflectivity of the earth's surface is called Albedo.**
- The average albedo of the earth is about **30 percent**.
- However, snow can have as high as 90 percent albedo.
- As the earth absorbs solar energy, it warms up and being a warm body it emits radiation primarily in the infrared part of the spectrum called **long-wave radiation**.
- Greenhouse gases in the atmosphere absorb some of this outgoing radiation and re-radiate it in all directions including towards the earth's surface.
- This phenomenon is called as **greenhouse effect** which is essential for maintaining a temperature suitable for life without it earth can become much colder during the night very fast.
- Any imbalances, even if small in energy coming in and going out will lead to a new thermal equilibrium at different temperatures.
- The recent buildup of greenhouse gases in the atmosphere is contributing to this heat imbalance causing an average rise in temperature called global warming.
- **Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other aspects of the earth's climate system.**
- Apart from greenhouse gases, even **changing the albedo** of the earth's surface **can contribute to climate change**.
- **Climate Feedback:**
- These are natural processes that respond to global warming by off-setting (**Negative Feedback**) or further increasing the changes (**Positive Feedback**).
- **Ice-albedo feedback** is an example of a positive feedback mechanism.
- **Water Vapour Feedback:** Water vapour has high global warming potential and Global warming leads to more water vapour. (**positive feedback**)

The topic for the next class: Factors behind Climate Change (Anthropogenic and Natural)

Example of negative feedback -

1. CO₂ / Carbon Fertilization -



Example of +ve feedback -

2. Ice-Albedo feedback -

