# BIODIVERSITY

**Definition**

Biodiversity is defined as "the variety and variability among all groups of living organisms and the ecosystem in which they occur"

**Significance / Importance of Biodiversity**

It is very important for human life, as we depend on plants, microorganisms, food, medicine, air, water, productive land, agriculture and industrial products.

**Classification of Biodiversity**

➢ **Genetic diversity –** It is the diversity within species Ex: rice varieties, Teak wood varieties (Indian teak, Burma teak, Malaysian teak etc.,

➢ **Species diversity** – Sum of varieties of all the living organisms at the species level Ex: Plant species(Apple, Mango, Grapes), Animal species(Lion, Tiger, Deer, Elephant, Cow, etc.,)

➢ **Ecosystem diversity -** Diversity at the ecological or habitat level is known as Ecosystem diversity. Ex: River ecosystem

**Levels/Classification of Biodiversity:**

**1) Genetic diversity** → Diversity within the species is genetic diversity.(ex) teak wood varieties, Indian, Burma, malasian

**2) Species diversity**→ diversity between different species. (ex) plant species = apple,

mango, grapes, animal species = lion, tiger, elephant etc.

**3) Community/Ecosystem diversity** → Diversity at the ecological or habitat level is ecosystem diversity. Ex. River ecosystem.
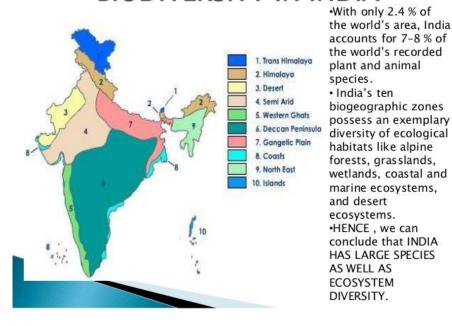


## Biodiversity of India

❖ Total land area of India - **143 million.ha**

❖ India occupies **2.47%** of the World's geographical area and has only **1%** of the forest

❖ India has **16.1%** of world human population and **15.1%** of cattle population

❖ Forest cover in India-**23.57%**

# BIODIVERSITY IN INDIA



1. Trans Himalaya
2. Himalaya
3. Desert
4. Semi Arid
5. Western Ghats
6. Deccan Peninsula
7. Gangetic Plain
8. Coasts
9. North East
10. Islands

• With only 2.4 % of the world's area, India accounts for 7–8 % of the world's recorded plant and animal species.
• India's ten biogeographic zones possess an exemplary diversity of ecological habitats like alpine forests, grasslands, wetlands, coastal and marine ecosystems, and desert ecosystems.
• HENCE , we can conclude that INDIA HAS LARGE SPECIES AS WELL AS ECOSYSTEM DIVERSITY.

## Value of Biodiversity (8 Marks)

➢ Biosphere is a life supporting system to the human beings. It is the combination of different organisms.

➢ Biodiversity is must for the stability and proper function of the biosphere.

➢ Various uses of biodiversity are classified as follows

1. **Consumptive use value**
   ➢ These are direct use values where the biodiversity products are harvested and consumed directly. Ex: **Food, Drug, Fuel**, etc.,
   ➢ **Food** – The large number of wild plants are consumed by human beings as food – nearly 80 – 90 % of our food crops have been domesticated only from the tropical wild plants. Ex: **Ceropegia Bulbosa** (Central India and Western Ghats)
   ➢ **Drugs** – Around 70 % of modern medicines are derived from plant and plant extract – 20,000 plant species are believed to be used medicinally, **unani, ayurveda and sidha**.
   Ex: Life saving drugs like **Quinine** (Malerial), **Reserpine** (Hypertension), and
   **Pencillin** (Antibiotic)
   ➢ **Fuel** – Fossil fuels like **coal, petroleum and natural gas** are also the products of fossilized biodiversity.

2. **Productive use value**
   ➤ Biodiversity product may be derived from the **animals and plants**.

| Animal Product | Animal |
|---|---|
| Silk | Silk - worm |
| Wool | Sheep |
| Musk | Musk Deer |
| Tusk | Elephant |
| Leather | All animals |
| Food | Fish and animals |

| Plant Product | Industry |
|---|---|
| Wood | Paper and pulp industry, Plywood industry |
| Cotton | Textile industry |
| Fruits and Vegetables | Food industry |
| Leather | Leather industry |

3. **Social value**
   ➤ It refers to the manner in which the bio-resources are used to the **society.**
   ➤ These values are associated with the social life, religion and spiritual aspects of the people. Ex:

| Holy Plants | Tulsi, Peepal, Lotus, Bael, etc |
|---|---|
| Holy Animals | Cow, Snake, Bull, Peacock, Rat |

4. **Ethical value**
   ➤ It involves ethical issues like "**all life must be preserved**".
   ➤ Our rich Heritage teachers us to worship plants, animals, rivers and mountains.
   ➤ It means that a species may or may not be used, but it's extinct in natural gives as pleasure. Ex:

| Holy River | Ganga, Cauvery, Krishna,Bramaputhira, Narmatha, etc., |
|---|---|
| Holy Trees | Vembu, Vengai, Tulsi etc., |

5. **Aesthetic value**
   ➤ The **beautiful** nature of plant and animals insist us to protect the biodiversity.
   ➤ The most important aesthetic value of biodiversity is **Eco-tourism**.

6. **Option values**
   ➤ They are the potentials of biodiversity that are presently unknown and need to be known.
   ➤ It suggests that any species may be proved to be a valuable species after some day.

Ex: 1. **Medicinal plant and Herbs** play a very important role in our Indian

Economical growth

2. The growing biotechnology field is searching a species for causing the diseases of **Cancer and AIDS.**