



Making India a Biodiversity Champion

This editorial is based on [“India can become a biodiversity champion”](#) which was published in the Hindu on 23/02/2023. It discusses the steps taken to conserve biodiversity and steps that can be taken to further increase the conservation efforts.

For Prelims: United Nations Biodiversity Conference, Deforestation, Agriculture, Urbanization, Poverty, National Mission for a Green India, Amrit Dharohar scheme, MISHTI, mangrove, PM-STIAC, National Mission on Biodiversity and Human Wellbeing

For Mains: Conservation, Environmental Pollution & Degradation, Important International Institutions, Government Policies & Interventions

Biodiversity, which **encompasses the total quantity and variety of life on our planet**, is crucial for the future of Earth. The [United Nations Biodiversity Conference in Montreal, Canada \(2022\)](#) emphasized the significance of this biological wealth.

In the same conference, **188 country representatives adopted an agreement** to “halt and reverse” biodiversity loss by conserving 30% of the world’s land and 30% of the world’s oceans by 2030, known as the 30×30 pledge.

India currently **hosts 17% of the planet’s human population and 17% of the global area in biodiversity hotspots**, placing it at the helm to guide the planet in becoming biodiversity champions. To **achieve the 30% goal**, India needs to have Biodiversity Friendly Management.

What are the Challenges related to Biodiversity Conservation?

- **Habitat Loss and Fragmentation:**
 - Human activities such as [deforestation](#), **agriculture**, [urbanization](#), and **infrastructure development** are leading to the loss and fragmentation of natural habitats, making it difficult for many species to survive and reproduce.
- **Climate Change:**
 - **Rising temperatures, changing rainfall patterns, and extreme weather events** are affecting ecosystems and altering the distribution and behaviour of many species.
- **Invasive Species:**
 - Non-native species introduced by humans can compete with and displace native species, disrupt ecosystem functioning, and spread diseases.
- **Overexploitation:**
 - **Unsustainable use of natural resources such as overfishing, hunting**, and harvesting of timber and other forest products can lead to the decline or extinction of species.
- **Pollution:**

- Contamination of air, water, and soil with chemicals and waste products can harm wildlife and their habitats.
- **For example:** pollutants such as **sulfur can lead to excess levels of acid in lakes and streams**, and damage trees and forest soils; **atmospheric nitrogen can reduce the biodiversity of plant communities** and harm fish and other aquatic life; ozone damages tree leaves and negatively affects scenic vistas in protected natural areas.
- **Lack of Awareness and Appreciation:**
 - Many people are **not aware of the importance of biodiversity** and the role it plays in supporting human well-being, leading to insufficient public support and funding for conservation efforts.
- **Poverty and Inequality:**
 - **Poverty** can drive people to rely on natural resources for their livelihoods, leading to overexploitation and habitat destruction. Lack of access to education and economic opportunities can also contribute to biodiversity loss.

What are the Related Initiatives?

- **Green Growth Priority in Budget 2023:**
 - The Union Budget 2023 mentioned **“Green Growth” as one of the seven priorities or Saptarishis.**
 - These **green growth efforts will help in reducing carbon intensity of the economy** and provide for large-scale green job opportunities.
- **National Mission for a Green India:**
 - It **aims to increase forest cover on degraded lands** and protect existing forested lands.
- **Green Credit Programme:**
 - It has the **objective to “incentivize environmentally sustainable and responsive actions** by companies, individuals and local bodies”.
- **MISHTI Initiative:**
 - The **Mangrove Initiative for Shoreline Habitats & Tangible Incomes (MISHTI)** is particularly significant **because of the extraordinary importance of mangroves** and coastal ecosystems in mitigating climate change.
- **PM-PRANAM:**
 - To sustain our agriculture, **PM-PRANAM** is important for reducing inputs of synthetic fertilizers and pesticides.
- **Amrit Dharohar scheme:**
 - The **Amrit Dharohar scheme** is expected to “encourage optimal use of wetlands, and enhance biodiversity, carbon stock, eco-tourism opportunities and income generation for local communities”.

What should be the Way Forward?

- **Science-based Monitoring Programme:**
 - A science-based and inclusive monitoring programme is critical not only for the success of the biodiversity conservation related steps taken but also for documentation and distillation of lessons learnt for replication, nationally as well as globally.
 - Some examples of science-based monitoring programs for biodiversity conservation include: **The Global Biodiversity Information Facility (GBIF)**, **The Living Planet Index**, **The National Biodiversity Network (NBN)**, etc.
- **Effectively using Modern Concepts of Sustainability of Ecosystems:**
 - New missions and programmes should **effectively use modern concepts of sustainability and valuation of ecosystems** that consider ecological, cultural, and sociological aspects of biological wealth.
 - Multiple sustainable **bio economy** can be achieved by defining clear boundaries for the system, prioritizing the benefits for those who provide the resources, and creating value through service-based funds rather than focusing solely on the flow of goods.

- **Conserving Water:**
 - The **future of our wetland ecosystems will depend on how we are able to sustain ecological flows through reduction in water use** in key sectors such as agriculture by encouraging changes to less-water intensive crops such as millets as well as investments in water recycling in urban areas using a combination of grey and blue-green infrastructure.
- **Focusing on Ecological Restoration:**
 - As far as the [Green India Mission](#) is concerned, **implementation should focus on ecological restoration rather than tree plantation** and choose sites where it can contribute to ecological connectivity in landscapes fragmented by linear infrastructure.
 - Furthermore, **choice of species and density should be informed by available knowledge** and evidence on resilience under emerging climate change and synergies and trade-offs with respect to hydrologic services.
- **Carefully Selecting Site for Mangrove Initiative:**
 - **Site selection should also be carefully considered for the [mangrove initiative](#)** with a greater emphasis on diversity of mangrove species with retention of the integrity of coastal mud-flats and salt pans themselves, as they too are important for biodiversity.
- **Involving Local Community:**
 - Each of these **efforts regarding biodiversity conservation must be inclusive of local and nomadic communities** where these initiatives will be implemented.
 - **Traditional knowledge and practices of these communities should be integrated** into the implementation plans.
 - Each of these programmes has the potential to greatly improve the state of biodiversity if their implementation is based on the latest scientific and ecological knowledge.
- **Significant Educational and Research Funding:**
 - For India's biological wealth to be critically appraised and brought to the public's attention, **each program should include significant educational and research funding.**
 - There is already an agreement among the [Prime Minister's Science, Technology, and Innovation Advisory Council \(PM-STIAC\)](#) and the government is expected to launch the [National Mission on Biodiversity and Human Wellbeing](#) on an immediate basis.
 - This mission seeks to harness the power of interdisciplinary knowledge — **for greening India and its economy**, to restore and enrich the natural capital for the well-being of the people, and to position India as a global leader in applied biodiversity science.

Drishti Mains Question

What steps can India take to become a global champion in biodiversity conservation and sustainable utilization of resources, and discuss the challenges need to be overcome to achieve this goal?

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q1. Which of the following can be threats to the biodiversity of a geographical area? (2012)

1. Global warming
2. Fragmentation of habitat
3. Invasion of alien species
4. Promotion of vegetarianism

Select the correct answer using the codes given below:

- (a)** 1, 2 and 3 only
- (b)** 2 and 3 only
- (c)** 1 and 4 only

(d) 1, 2, 3 and 4

Ans: (a)

Exp:

- According to United Nations Earth Summit (1992), Biodiversity is defined as 'the variability among living organisms from all sources, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part, this includes diversity within species, between species and of ecosystems'.
- Threat to Biodiversity
 - Fragmentation, degradation and loss of habitat, **hence, 2 is correct.**
 - Shrinking genetic diversity,
 - Invasive alien species, hence, 3 is correct.
 - Declining forest resource base,
 - Climate change and desertification, hence, 1 is correct.
 - Over exploitation of resources,
 - Impact of development projects,
 - Impact of pollution. Therefore, option (a) is the correct answer

Q2. Biodiversity forms the basis for human existence in the following ways: (2011)

1. Soil formation
2. Prevention of soil erosion
3. Recycling of waste
4. Pollination of crops

Select the correct answer using the codes given below:

(a) 1, 2 and 3 only

(b) 2, 3 and 4 only

(c) 1 and 4 only

(d) 1, 2, 3 and 4

Ans: (d)

Exp:

- Human life is inextricably linked to ecological services that directly or indirectly benefit humans in different ways. Soil formation, waste disposal, air and water purification, solar energy absorption, nutrient cycling and food production all depend on biodiversity. **Hence, 1 is correct.**
- Microorganisms act on waste and degrading substance to recycle them and purify the environment. Hence, 3 is correct.
- The pollination (an ecosystem service) by bees and other organisms help in food production. **Hence, 4 is correct.**
- The faunal life is known to increase as well as to prevent the soil erosion, while the plants and trees reduce the rate of erosion by protecting the soil from impact of rain, binding the soil, etc. Thus, in general, biodiversity is known to prevent the soil erosion. **Hence, 2 is correct.**
- In many environments, high diversity may help biological communities to withstand environmental stress better and to recover more quickly than those with fewer species. **Therefore, option (d) is the correct answer.**

Q3. Consider the following regions: (2009)

1. Eastern Himalayas
2. Eastern Mediterranean region
3. North-western Australia

Which of the above is/are Biodiversity Hotspot(s)?

- (a) 1 only
(b) 1 and 2 only
(c) 2 and 3 only
(d) 1, 2 and 3

Ans: (b)

Exp:

- To qualify as a biodiversity hotspot, an area must meet two strict criteria:
- Contain at least 1,500 species of vascular plants found nowhere else on Earth (known as “endemic” species).
- Have lost at least 70% of its primary native vegetation. The Eastern Himalayas extend from eastern Nepal across northeastern India, Bhutan, Tibet Autonomous Region to Yunnan in China and northern Myanmar. It is widely considered a biodiversity hotspot that contains exceptional freshwater biodiversity and ecosystems that are of vital importance to local and regional livelihoods. **Hence, 1 is correct.**
- The Eastern Mediterranean Region (Eastern Turkey) is known as the Mediterranean Basin biodiversity hotspot and is identified as one of the world’s 36 biodiversity hotspots, earth’s most biologically rich yet threatened areas. Hence, 2 is correct.
- North Western Australia is not a biodiversity hotspot. South Western Australia is a biodiversity hotspot. Hence, 3 is not correct. **Therefore, option (b) is the correct answer.**

Mains

Q. How does biodiversity vary in India? How is the Biological Diversity Act,2002 helpful in the conservation of flora and fauna? **(2018)**

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