Biosphere Reserves in India

Celebrating the International Day for Biosphere Reserves

PIB Analysis

- The International Day for Biosphere Reserves is observed annually on 3 November, proclaimed by UNESCO.
- India has 18 notified Biosphere Reserves, of which 13 are recognised by UNESCO.
- They protect biodiversity while promoting sustainable development and community livelihoods.

Balancing Biodiversity Conservation with Sustainable Development

- Biodiversity refers to the variety of living organisms across terrestrial, marine and aquatic ecosystems.
- The Convention on Biological Diversity (CBD) recognises three levels:
    1. **Genetic Diversity**: Variations within a species, such as rice varieties.
    2. **Species Diversity**: Variety of species, including tigers, elephants and orchids.
    3. **Ecosystem Diversity**: Different habitats such as forests, wetlands and coral reefs.
- Biosphere reserves protect natural habitats, maintain ecological balance and promote sustainable resource utilisation.
- They support food security, water availability, climate resilience and community livelihoods.
- India accounts for 7–8% of recorded global species, despite occupying only 2.4% of Earth's land area.

Biosphere Reserves: Understanding the Concept

- Biosphere reserves are areas identified by national governments for biodiversity conservation and sustainable development.
- UNESCO launched the Man and the Biosphere (MAB) Programme in 1971.
- They function as living laboratories for scientific research and sustainable development.
- They promote harmony between local communities and their natural environment.

Biosphere Reserves Vs. Other Protected Areas

- National Parks and Wildlife Sanctuaries primarily protect wildlife and their habitats under India's wildlife protection laws.
- Biosphere reserves adopt a broader approach by integrating ecosystem conservation

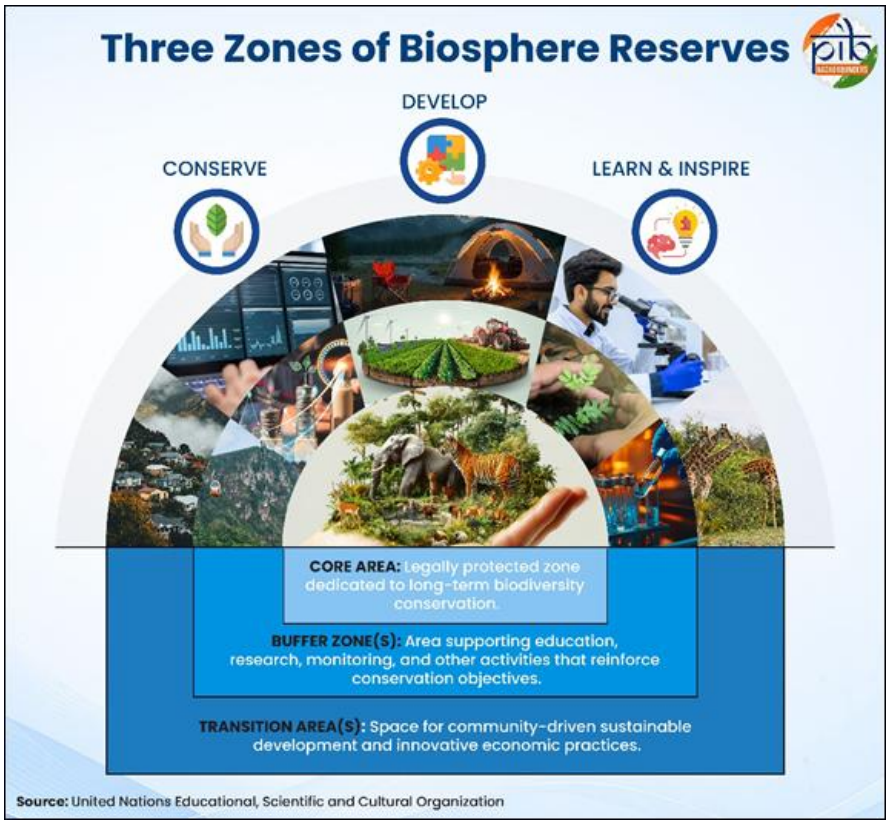
with surrounding communities and sustainable livelihoods.

Functions of Biosphere Reserves

1. **Conservation**: Protect biodiversity, genetic resources, ecosystems and associated cultural diversity.
2. **Sustainable Economic Development**: Promote economic activities respecting ecological limits and local cultural values.
3. **Scientific Support**: Encourage research, environmental monitoring, education, training and knowledge exchange.

The Three Interconnected Zones

1. **Core Area**: Provides the highest protection to biodiversity and ecosystems. Human activities are strictly restricted, except compatible research and monitoring.
2. **Buffer Zone**: Surrounds or adjoins the core zone. Permits scientific research, environmental education and regulated ecotourism.
3. **Transition Area**: Supports settlements and sustainable livelihoods through responsible agriculture, forestry and ecotourism.



Global Average Distribution:

- Core Zone – 18%.
- Buffer Zone – 30%.
- Transition Zone – 52%.

Did you know?

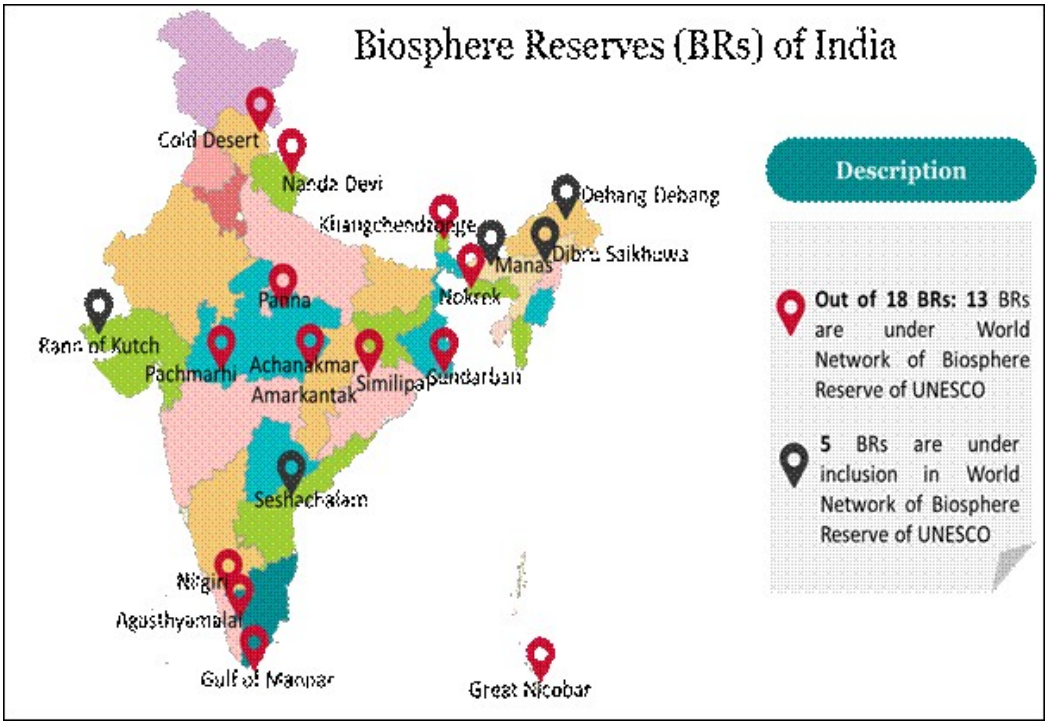
• UNESCO's World Network of Biosphere Reserves comprises 797 reserves across 145 countries.
• Around 300 million people directly benefit from these reserves.
• They cover 5% of Earth's terrestrial surface but sustain over 60% of global terrestrial vertebrate species richness.
• Around 40% may face more extreme climate events by 2050.

India's Biosphere Reserves

India's Biosphere Reserve Network

- India has 18 notified Biosphere Reserves, of which 13 are included in UNESCO's World Network of Biosphere Reserves (WNBR).
- India has the highest number of internationally recognised Biosphere Reserves in South Asia.

No.	Biosphere Reserve	Year	UNESCO Inclusion
1	Nilgiri	1986	2000
2	Nanda Devi	1988	2004
3	Nokrek	1988	2009
4	Gulf of Mannar	1989	2001
5	Sundarbans	1989	2001
6	Manas	1989	—
7	Great Nicobar	1989	2013
8	Similipal	1994	2009
9	Dibru-Saikhowa	1997	—
10	Dehang-Dibang	1998	—
11	Pachmarhi	1999	2009
12	Khangchendzonga	2000	2018
13	Agasthyamalai	2001	2016
14	Achanakmar-Amarkantak	2005	2012
15	Great Rann of Kutch	2008	—
16	Cold Desert	2009	2025
17	Seshachalam	2010	—
18	Panna	2011	2020



Government Initiatives for Conservation

- MoEFCC administers the Biodiversity Conservation Scheme under the umbrella scheme Conservation of Natural Resources and Ecosystems.
- It provides financial assistance to States for conservation activities under approved management plans.
- Funding pattern:
  - **Other States**: 60:40 (Centre:State).
  - **North-Eastern and Himalayan States**: 90:10 (Centre:State).
- Since 2022–23, five-year Integrated Management Plans have been piloted in:
  1. Nanda Devi – Uttarakhand.
  2. Pachmarhi – Madhya Pradesh.
  3. Dehang-Dibang – Arunachal Pradesh.
  4. Agasthyamalai – Kerala and Tamil Nadu.
- Priorities include habitat restoration, biodiversity monitoring, scientific research and sustainable livelihoods.

A Glimpse into India's Biosphere Reserves

1. **Nilgiri Biosphere Reserve**

- Located in the Western Ghats across Tamil Nadu, Kerala and Karnataka.
- Supports endangered lion-tailed macaques and Nilgiri tahrs, besides elephants, tigers and over 550 bird species.

2. **Cold Desert Biosphere Reserve**

- Located in Himachal Pradesh, covering 7,770 sq. km at elevations of 3,300–6,600 metres.
- Supports snow leopards, Himalayan ibex and blue sheep.

- Local livelihoods include pastoralism, yak and goat herding and farming.

3. **Gulf of Mannar Biosphere Reserve**

- Located along Tamil Nadu's southeastern coast, covering approximately 1.05 million hectares.
- Includes coral reefs, seagrass beds and mangroves.
- Supports 4,223 plant and animal species and around 25 lakh people.

Success Story: People at the Heart of Conservation

- Indigenous communities in the Nilgiri Biosphere Reserve convert invasive Lantana vines into elephant sculptures, furniture and handicrafts.
- In 2021, 125 life-sized Lantana elephants were displayed in London.
- The initiative generates livelihoods while raising awareness about invasive species.

Did You Know? – Lantana camara
• This invasive shrub covers approximately 3 lakh sq. km of Indian forests. • It suppresses native vegetation, reduces biodiversity and alters natural fire patterns. • Despite eradication efforts since 1916, controlling it remains challenging.

Way Forward

- Strengthen scientific research, habitat restoration and biodiversity monitoring.
- Promote community-led conservation and sustainable livelihoods.
- Integrate traditional knowledge with modern monitoring technologies.
- Strengthen cooperation among governments, researchers and local communities.
- Biosphere reserves can reconcile biodiversity conservation with sustainable development and human well-being.

Reference

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