1. Biosphere - Environment

Sustaining Life, Celebrating Nature - India's Biosphere Reserves. Biosphere Reserves are UNESCO-recognised, nationally governed areas using a three-zone (Core, Buffer, Transition) model to conserve biodiversity and promote sustainable livelihoods for local communities. India's 18 reserves (13 on the WNBR list) are managed by the MoEFCC, integrating community-centric approaches with national conservation programmes.

International Day for Biosphere Reserves

Annual Celebration - This day is observed every year on November 3 to raise awareness of the importance of Biosphere Reserves.

Biosphere Reserves (BRs)

Definition and Purpose

Core Concept - Biosphere Reserves (BRs) are specially designated areas created to achieve a balance between two primary goals -

1. Conserving biodiversity (including plants, animals, and microorganisms).
2. Promoting sustainable livelihoods for the local communities that live within or near these areas.

Primary Function - They serve as **"l**earning places for sustainable development."

Key Roles - They provide a dedicated space for -

1. Scientific research into ecosystems.
2. Education and training on sustainability.
3. Demonstrating and achieving conflict-free coexistence between people and their natural ecosystems.

Scope

Ecosystem Coverage - BRs are comprehensive and can be established in -

1. Terrestrial ecosystems (e.g., forests, mountains, deserts).
2. Marine ecosystems (e.g., seas, coral reefs).
3. Coastal ecosystems (where land and sea meet).

Model for Reconciliation - They act as practical, working models for reconciling biodiversity conservation with the sustainable use of natural resources.

Objectives of Biosphere Reserves

In-situ Conservation - To provide on-site protection for biodiversity in its totality. This covers all levels of biological organization - genes, species, and entire ecosystems.

Research & Monitoring - To enhance the scientific understanding of ecological processes. To study the complex, dynamic interactions between humans and nature.

Integrated Development - To improve the quality of life for indigenous and local communities. This is achieved by promoting development that is socially, culturally, and ecologically sustainable.

Governance and The Three-Zone Model

National Designation - Biosphere Reserves are designated by national governments. They remain entirely under the sovereign jurisdiction of the country in which they are located.

International Recognition - They are internationally recognised by UNESCO (United Nations Educational, Scientific and Cultural Organization). This recognition is granted under the Man and the Biosphere (MAB) Programme.

Functional Structure (The Three-Zone Model)

Each reserve is required to have three distinct zones to manage different activities -

1. Core Zone -

1. This is the strictly protected innermost area.
2. It provides a secure habitat for flora and fauna.
3. Its main purpose is to protect the whole ecosystem, including water, soil, air, and all living organisms (biota).
4. Human activities are minimal and strictly controlled.

2. Buffer Zone -

1. This zone surrounds or adjoins the core zone.
2. It is an area where people live and work in harmony with nature.
3. Activities compatible with conservation are permitted (e.g., research, education, eco-tourism).
4. It functions as a laboratory for scientists to study nature.
5. It also serves as a location for training and education.

3. Transition Zone -

1. This is the outermost zone of the reserve.
2. It is the primary area where communities practice socio-culturally and ecologically sustainable human activities, such as sustainable agriculture, forestry, and local enterprises.

UNESCO's Man and the Biosphere (MAB) Programme

Inception - Launched by UNESCO in 1971.
Core Mission - To promote a harmonious relationship between humans and the environment.
Approach - It integrates natural and social sciences to address complex socio-ecological issues.
Primary Goals - To enhance ecological resilience and improve human welfare simultaneously.

Key Objectives of the MAB Programme

Impact Assessment - To assess the impacts of human activities and natural events, particularly climate change, on the biosphere.
Interaction Studies - To study the critical ecosystem-society interactions, especially in the context of biodiversity loss and the erosion of cultural heritage.
Sustainable Environments - To ensure livable environments for human populations, even in the face of rapid urbanization and high energy consumption.
Knowledge Sharing - To promote knowledge exchange, environmental education, and capacity building across all member nations.

World Network of Biosphere Reserves (WNBR)

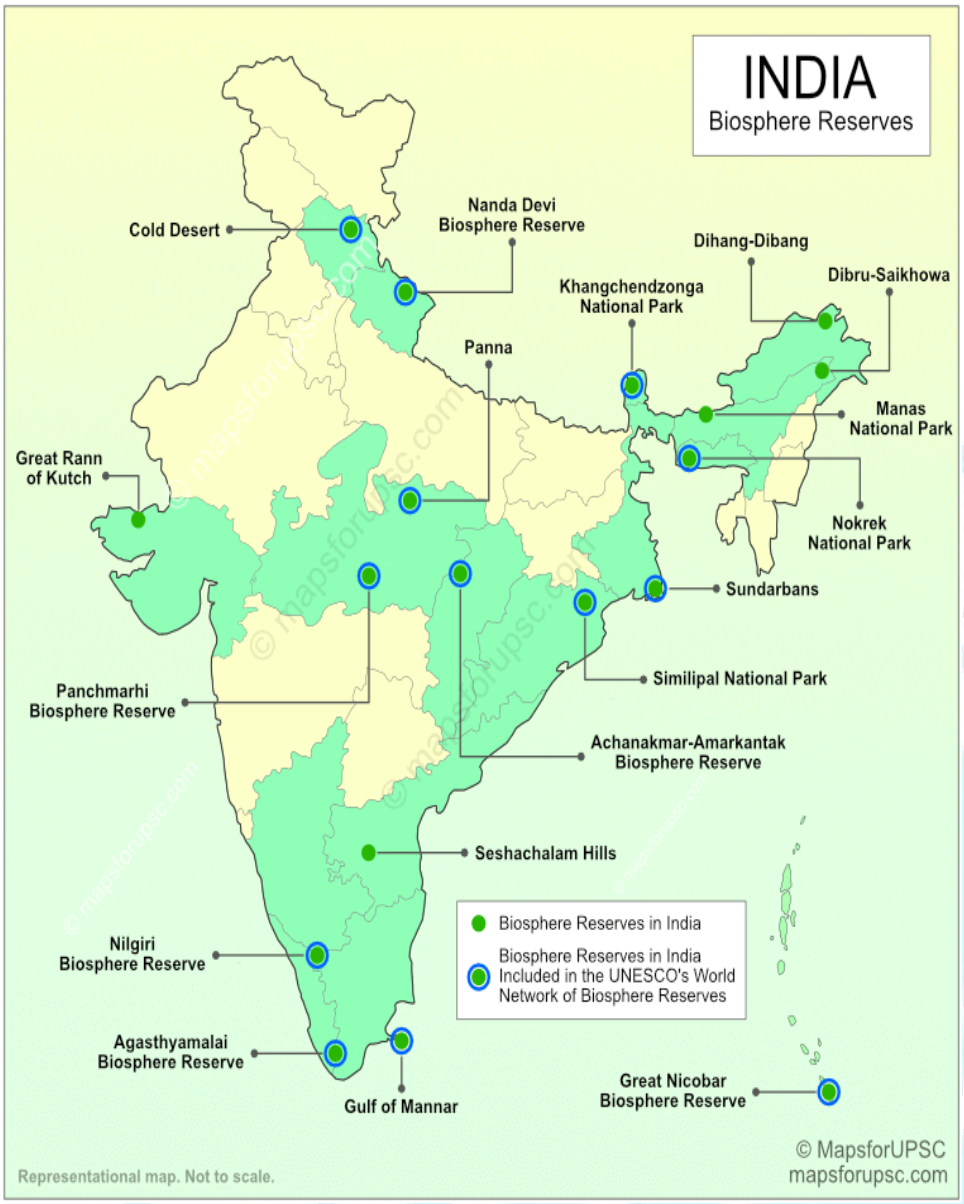
Composition (as of 2025) - The network includes 738 sites located in 134 countries around the world.
Function -

1. It serves as a dynamic network of excellence.
2. It fosters international cooperation between sites.
3. It encourages the sharing of best practices and innovative solutions.
4. It aims to enhance sustainable management across the globe.

Governance - The WNBR operates under UNESCO's International Coordinating Council (MAB-ICC). This council is composed of 34 Member States, which includes India.

Biosphere Reserves in India

National Inventory - India has a total of 18 designated Biosphere Reserves. These reserves collectively cover approximately 91,425 square kilometers.
UNESCO-Recognised Reserves - Of the 18 reserves, 13 are officially included in the World Network of Biosphere Reserves (WNBR).
Latest Addition (2025) - The Cold Desert Biosphere Reserve is the most recent site from India to be added to the WNBR.
Administering Agency - The programme is managed by the Ministry of Environment, Forest and Climate Change (MoEFCC). This is done specifically through the Ministry's Biosphere Reserve Division.
Implementation Framework - The program is implemented under the Centrally Sponsored Scheme for Biodiversity Conservation. This scheme is a sub-part of the larger Conservation of Natural Resources and Ecosystems (CNRE) programme.
Funding Model (Central - State Share) -
60 - 40 for most states.
90 - 10 for the Northeastern and Himalayan states, providing higher central assistance due to their unique ecological and geographical status.



Global Recognition (as of October 2025) - According to the FAO Global Forest Resources Assessment 2025, India ranks - 9th globally in total forest area. 3rd globally in annual forest gain. Several Indian BRs, such as Nilgiri, Gulf of Mannar, Sundarbans, and Nokrek, are specifically recognized by UNESCO for their excellence in integrating human-nature coexistence.

Key Features of India's Biosphere Reserve Programme

Community-Centric Approach

People-First Focus - The programme centers on the people living in and around the biosphere zones.

Sustainable Practices - It actively promotes the development of -

1. Eco-friendly livelihoods.
2. Sustainable eco-tourism.
3. Community-based resource management.

Livelihood Focus

Reducing Ecosystem Pressure - A primary goal is to provide alternative income sources to local communities to reduce their direct dependence on forest products and other natural resources.

Local Participation - The program implements eco-development activities that are specifically designed to encourage and ensure active local participation in conservation efforts.

Integration with National Programmes

India's BR programme is designed to work in synergy with other major national environmental initiatives

1. **Project Tiger (1973) -** Focuses on the conservation of tigers and their habitats, many of which (like Sundarbans and Simlipal) are part of BRs.
2. **Project Elephant (1992) -** Aims to mitigate human-elephant conflict and protect elephant corridors and habitats, which often overlap with BRs.
3. **Green India Mission (2014) -** A climate change initiative focused on the restoration and enhancement of forest landscapes.
4. **National Biodiversity Action Plan (NBAP) -** This plan implements the provisions of the Biodiversity Act, 2002, which governs the regulation and sustainable use of biological resources.
5. **Integrated Development of Wildlife Habitats (IDWH) -** A central scheme that provides financial and technical support to states for managing protected areas.
6. **Eco-Sensitive Zones (ESZs) -** These zones act as "shock absorbers" or buffers around protected areas (like National Parks and Wildlife Sanctuaries, which are often Core Zones of BRs) to protect them from the negative impacts of unsustainable development.

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