

Biosphere Reserves play a crucial role in promoting the coexistence of human activities and the protection of natural ecosystems. They serve as examples of how conservation and sustainable development can work together to ensure the well-being of both the environment and local communities.

Biosphere Reserves are designated areas recognized by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) as part of the Man and the Biosphere (MAB) program. These reserves are intended to promote the conservation of biodiversity and the sustainable use of natural resources. Biosphere Reserves are unique because they aim to reconcile the conservation of ecosystems and species with the well-being of local communities through responsible and sustainable development.

Distribution of the Biosphere Reserves across the World are as follows:

- 85 sites in 31 countries in Africa
- 33 sites in 12 countries in the Arab States
- 157 sites in 24 countries in Asia and the Pacific
- 302 sites in 38 countries in Europe and North America
- 130 sites in 21 countries in Latin America and the Caribbean.

Features and components of Biosphere Reserves

- **Core Area:** This is the innermost and most strictly protected zone within a Biosphere Reserve. It is designated to conserve critical ecosystems, species, and habitats. Human activity in the core area is limited to non-destructive research and monitoring.
- **Buffer Zone:** The buffer zone surrounds the core area and acts as a transitional zone between strict conservation and human activity. Here, activities are regulated to minimize negative impacts on the core area.
- **Transition Area:** The transition area is the outermost zone of a Biosphere Reserve. It is where sustainable development practices are encouraged, and local communities are often involved in activities that promote both conservation and development.
- **Conservation Objectives:** Biosphere Reserves have specific conservation objectives, such as protecting endangered species, preserving ecosystems, or maintaining biodiversity.
- **Scientific Research:** Research and monitoring are important components of Biosphere Reserves. They provide valuable information for conservation efforts and sustainable development practices.
- **Local Communities:** Engaging and involving local communities in the management and decision-making processes is a key aspect of Biosphere Reserves. This helps ensure

that the needs and aspirations of the people living in or around the reserve are considered.

- **Cultural and Educational Activities:** Biosphere Reserves often support cultural and educational initiatives to raise awareness about the importance of conservation and sustainable development.
- **UNESCO Designation:** To become a Biosphere Reserve, an area must meet certain criteria and undergo a formal designation process by UNESCO. This designation indicates that the area is globally recognized for its efforts to balance conservation and development.
- **Global Network:** There is a global network of Biosphere Reserves, and the program encourages collaboration and sharing of best practices among these sites.
- **Sustainable Development:** A central goal of Biosphere Reserves is to demonstrate and promote models of sustainable development that can be replicated in other regions.

Zones of Biosphere

Biosphere reserves have three unified zones that aim to fulfill three harmonizing and mutually reinforcing functions:

- **The core area:** It involves an entirely secured and protected ecosystem that contributes to the preservation of landscapes, ecosystems, species and genetic variation.
- **The buffer zone:** It encompasses or adjoins the core areas. It is utilized for activities compatible with sound ecological practices that can fortify scientific research, monitoring, training, and education.
- **The transition area:** It is the part of the reserve where the greatest activity is permitted to promote economic and human development that is sustainable.

List of Biosphere Reserves in India

Name of Biosphere Reserve	Year of Notification	Location (States)
Nilgiri	1986	Part of Wayanad, Nagarhole, Bandipur and Madumalai, Nilambur, Silent Valley, and Siruvani hills (Tamil Nadu, Kerala and Karnataka).

Nanda Devi	1988	Part of Chamoli, Pithoragarh, and Bageshwar districts (Uttarakhand).
Nokrek	1988	Part of Garo Hills (Meghalaya).
Great Nicobar	1989	Southernmost islands of Andaman And Nicobar (A&N Islands).
Gulf of Mannar	1989	The Indian part of the Gulf of Mannar between India and Sri Lanka (Tamil Nadu).
Manas	1989	Part of Kokrajhar, Bongaigaon, Barpeta, Nalbari, Kamrup, and Darang districts (Assam).
Sunderbans	1989	Part of the delta of Ganges and Brahmaputra river system (West Bengal).
Simlipal	1994	Part of the Mayurbhanj district (Orissa).
Dibru-Saikhowa	1997	Part of Dibrugarh and Tinsukia Districts (Assam).
Dehang-Dibang	1998	Part of Siang and Dibang Valley in Arunachal Pradesh.
Pachmarhi	1999	Parts of Betul, Hoshangabad, and Chindwara districts of Madhya Pradesh.

Khangchendzonga	2000	Parts of Khangchendzonga hills and Sikkim.
Agasthyamalai	2001	Neyyar, Peppara, and Shendurney Wildlife Sanctuaries and their adjoining areas in Kerala.
Achanakamar – Amarkantak	2005	Covers parts of Anupur and Dindori districts of M.P. and parts of Bilaspur districts of Chhattishgarh State.
Kachchh	2008	Part of Kachchh, Rajkot, Surendra Nagar, and Patan Civil Districts of Gujarat State.
Cold Desert	2009	Pin Valley National Park and surroundings; Chandratal and Sarchu & Kibber Wildlife Sanctuary in Himachal Pradesh.
Seshachalam Hills	2010	Seshachalam Hill Ranges covering parts of Chittoor and Kadapa districts of Andhra Pradesh.
Panna	2011	Part of Panna and Chhattarpur districts in Madhya Pradesh.

List of UNESCO Protected Biosphere Reserves

India has several Biosphere Reserves designated by UNESCO. Biosphere Reserves are areas of terrestrial and coastal ecosystems that promote the conservation of biodiversity while also facilitating sustainable development. These reserves are often seen as living laboratories for understanding and managing the complexities of ecosystems. As of my last knowledge update in September 2021, here are the Biosphere Reserves in India:

Year	Name	State
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2000	Nilgiri Biosphere Reserve	Tamil Nadu
2001	Gulf of Mannar Biosphere Reserve	Tamil Nadu
2001	Sundarbans Biosphere Reserve	West Bengal
2004	Nanda Devi Biosphere Reserve	Uttarakhand
2009	Pachmarhi Biosphere Reserve	Madhya Pradesh
2009	Nokrek Biosphere Reserve	Meghalaya
2009	Simlipal Biosphere Reserve	Odisha
2012	Achanakmar-Amarkantak Biosphere Reserve	Chhattisgarh
2013	Great Nicobar Biosphere Reserve	Great Nicobar
2016	Agasthyamala Biosphere Reserve	Kerala and Tamil Nadu
2018	Kanchenjunga Biosphere Reserve	Part of North and West Sikkim districts
2020	Panna Biosphere Reserve	Madhya Pradesh