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# Cartagena Protocol

## Objectives

1. To protect biodiversity from harmful effects of LMO's

↳ Living Modified Organism

= Genetically Modified Organisms (= GMO's)

produced using Genetic Engineering Biotech.

## History

- ✓ Added to the CBD in 2000
- ✓ In force from 2003

## Strategy

- ✓ To control international movement of LMO's

## Tools

### Advanced Informed Consent

- ✓ To get all the data about LMO
- ✓ Make decision accordingly

### International Clearing House

- ✓ Multilateral System and Web Portal for

### Precautionary Principle

- ✓ Right to deny or cancel
- ✓ Right to quarantine or destroy

Biosafety

information

Biosafety

clearance

# Nagoya-Kuala Lumpur (KL) Supplementary Protocol

a part of  
Cartagena Protocol

Added  
in 2010  
(Nagoya Summit)

Effective  
from  
2018

Deals with

(1) corrective  
action  
(country of  
origin in  
case of  
any threat  
to biodiversity)

(2) compensation  
(from country of  
origin → when  
there is a  
damage)

# India's Biodiversity Action Plan, NBTs and 6<sup>th</sup> National Report

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## India's Biodiversity Action Plan

The CBD requires two mandatory tasks as per Article 6 and Article 26:

1. creating a National Biodiversity Action Plan (NBAP) or similar documents, and Art 6

- Art 26 2. submitting National Reports. Six reports have been submitted by member countries to date.

India created its initial biodiversity strategy in 1999, which was revised and updated into the National Biodiversity Action Plan (NBAP) in 2008.

This aimed to align the biodiversity agenda with the National Environmental Policy of 2006.

The NBAP was further updated in 2014 to incorporate the Aichi Strategic Plan for Biodiversity from 2011-2020. It is now known as NBSAP – National Biodiversity Strategic Action Plan. It has 12 main targets given below.

## India's 12 National Biodiversity Targets under NBSAP

- **NBT 1:** Increase public awareness about biodiversity and its sustainable conservation by 2020.
- **NBT 2:** Include biodiversity values in planning and poverty reduction strategies by 2020.
- **NBT 3:** Develop and implement strategies to protect natural habitats by 2020.
- **NBT 4:** Manage invasive alien species and their impact by 2020.
- **NBT 5:** Adopt sustainable practices in agriculture, forestry, and fisheries by 2020.
- **NBT 6:** Conserve significant ecosystems, covering over 20% of India's area by 2020.

- NBT 7: Preserve genetic diversity of plants, animals, and valuable species by 2020.
- NBT 8: Identify and safeguard ecosystem services for well-being by 2020.
- NBT 9: Implement the Nagoya Protocol on genetic resources by 2015.
- NBT 10: Establish an updated biodiversity action plan across governance levels by 2020.
- NBT 11: Strengthen protection of traditional biodiversity knowledge by 2020.
- NBT 12: Increase resources for the 2011-2020 Biodiversity Strategic Plan by 2020.







## India's 6<sup>th</sup> National Report

The CBD requires two mandatory tasks as per Article 6 and Article 26:

3. creating a National Biodiversity Action Plan (NBAP) or similar documents, and

Art  
26

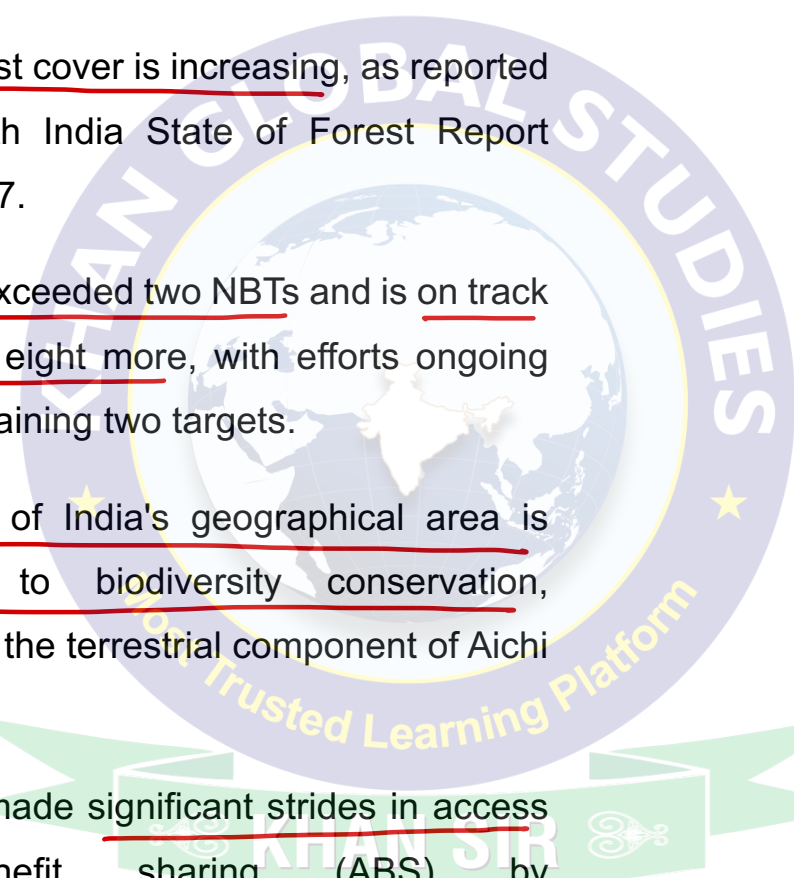
4. submitting National Reports. Six reports have been submitted by member countries to date.



India submitted its Sixth National Report (NR 6) to the CBD on December 29, 2018.

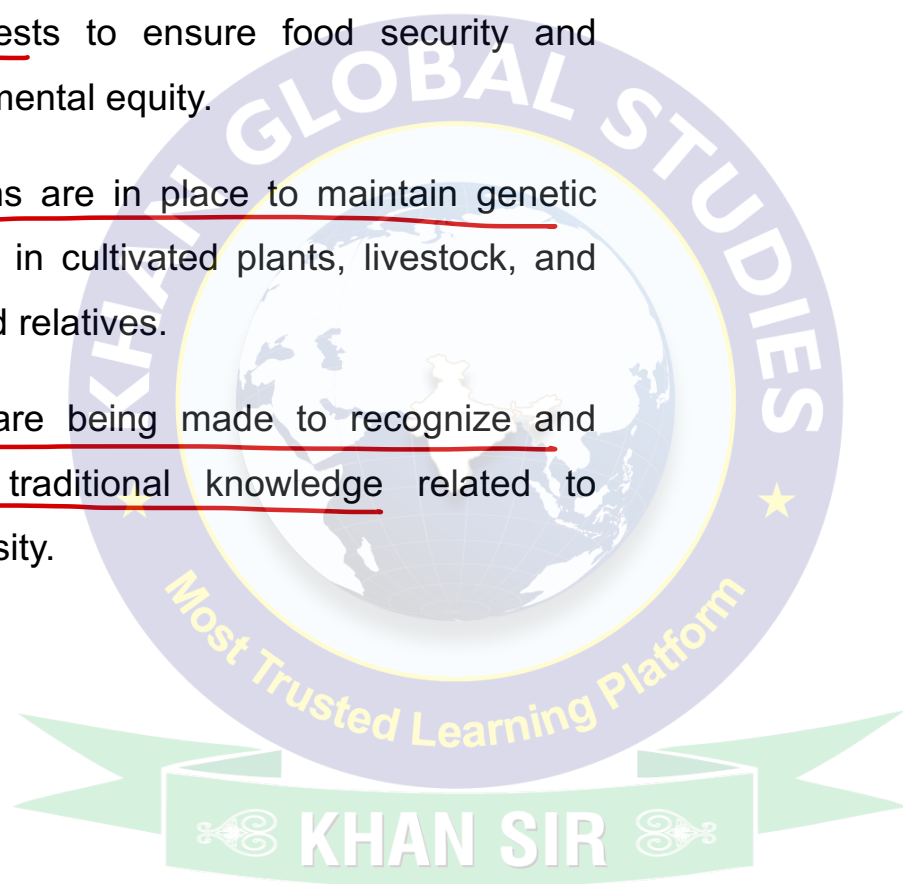
This makes India one of the first countries to do so, particularly among biodiversity-rich nations. The NR6 showcases India's progress in meeting its 12 National Biodiversity Targets (NBTs).

**Key report findings include:**

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- ✓ 1. India's forest cover is increasing, as reported by the 15th India State of Forest Report (ISFR) 2017.
  - ✓ 2. India has exceeded two NBTs and is on track to achieve eight more, with efforts ongoing for the remaining two targets.
  - ✓ 3. Over 20% of India's geographical area is dedicated to biodiversity conservation, surpassing the terrestrial component of Aichi target 11.
  - ✓ 4. India has made significant strides in access and benefit sharing (ABS) by operationalizing the Nagoya Protocol on ABS, issuing around 75% of internationally recognized certificates of compliance (IRCC) since 2015.
  - ✓ 5. The population of lions, elephants, and one-horned Indian rhinos has increased, with

rhinos recovering from near-extinction in the early 20th century.

- ✓ 6. Only 0.08% of recorded species in India are critically endangered, compared to 0.3% globally.
- ✓ 7. Sustainable management measures have been implemented in agriculture, fisheries, and forests to ensure food security and environmental equity.
- ✓ 8. Programs are in place to maintain genetic diversity in cultivated plants, livestock, and their wild relatives.
- ✓ 9. Efforts are being made to recognize and protect traditional knowledge related to biodiversity.



# Biodiversity Rich Areas of India - Biogeographic zones of India, Biosphere Reserves

## India as a megadiverse country

- India, one of the 17 mega-diverse countries, is rich in biodiversity and traditional knowledge.

account for  
~50% of all  
endemic species

- Although <sup>INDIA</sup> ~~it~~ covers just 2.4% of the world's land, it accounts for 7-8% of all known species.

- India has a robust institutional, legal, and policy framework dedicated to conserving biodiversity.
- The 17 Megadiverse nations hold a majority of Earth's species, including many endemic species.
- These countries are typically found in tropical or subtropical regions.
- Key criteria include having over 5,000 endemic plant species and proximity to marine ecosystems.



# Biogeographic Zones of India

India's diverse terrain and unique topographical features create a variety of land and aquatic ecosystems, resulting in rich biodiversity. A study identified 10 Biogeographic Zones (BZs) based on the country's distinct features from north to south and east to west.

Over 1,00,690 species of fauna and over 47,800 species of flora have been documented in the 10 BZs of the country.

This study also recognizes three subordinate levels within BZs:

1. Biotic Province - a secondary unit within a zone, separated by barriers or environmental changes, e.g., Northwest and West Himalaya.
2. Land Region - a tertiary unit within a province, indicating different landforms, e.g., Aravalli Mountains and Malwa Plateau in Gujarat-Rajwara Province.
3. Biome - an ecological unit like a swamp or temperate forest in each zone.

1. BZ (10)  
↓  
2. BP  
↓  
3. LR  
↓  
4. Biome

Figure below displays the distribution of the 10 BZs across India.



## 1. Trans-Himalayan Region:

1. High altitude, cold, and arid mountain areas.



2. Sparse alpine steppe vegetation with several endemic species.
3. Habitat for large populations of wild sheep and goat, Snow Leopard, and migratory Black-necked Crane.

## 2. Himalayan Zone:

1. Includes some of the world's highest peaks.
2. Rich in habitats and species.
3. Home to endangered species like Bharal, Ibex, Markhor, Himalayan Tahr, and Takin.

## 3. Indian Desert Zone:

1. Includes the Thar and Kutch deserts.
2. Supports endangered species like Wolf, Caracal, Desert Cat, Houbara Bustard, and Great Indian Bustard.

## 4. Semi-Arid Region:

1. Transition zone between desert and dense forests of Western Ghats.
2. Climatically semi-arid with artificial and natural lakes.
3. Home to endangered species like Lion, Caracal, Jackal, and Wolf.



## 5. Western Ghats:

1. One of the major tropical evergreen forest regions and biodiversity hotspots.
2. Home to most vertebrate species found in peninsular India.
3. Endemic species like Nilgiri Langur, Lion Tailed Macaque, Grizzled Giant Squirrel, and Malabar Civet. , Nilgiri Tiger

## 6. Deccan Plateau:

1. India's largest biogeographic region.
2. Semi-arid region with diverse wildlife species.
3. Home to species like Chital, Sambar, Nilgai, Chousingha, and Elephant.

## 7. Gangetic Plain:

1. Topographically homogenous region.
2. Characteristic fauna includes Rhino, Elephant, Buffalo, Swamp Deer, Hog-Deer, and Hispid Hare.
3. 10.8% of India's total geographical area.

## 8. North East Region:

1. Transition zone between Indian, Indo-Malayan, and Indo-Chinese biogeographical regions.
2. Biodiversity hotspot (Eastern Himalaya).
3. Many species are restricted to the region or localized areas like the Khasi Hills.

Pitcher plant  
Snake Biodiversity  
Khasi Pine

## 9. Coastal Region:

1. 2.5% of India's total geographical area.
2. Diverse coastal habitats including sandy beaches, mangroves, mud flats, coral reefs, and marine angiosperm pastures.
3. 5,423 km long coastline from Gujarat to Sunderbans.

## 10. Andaman and Nicobar Islands:

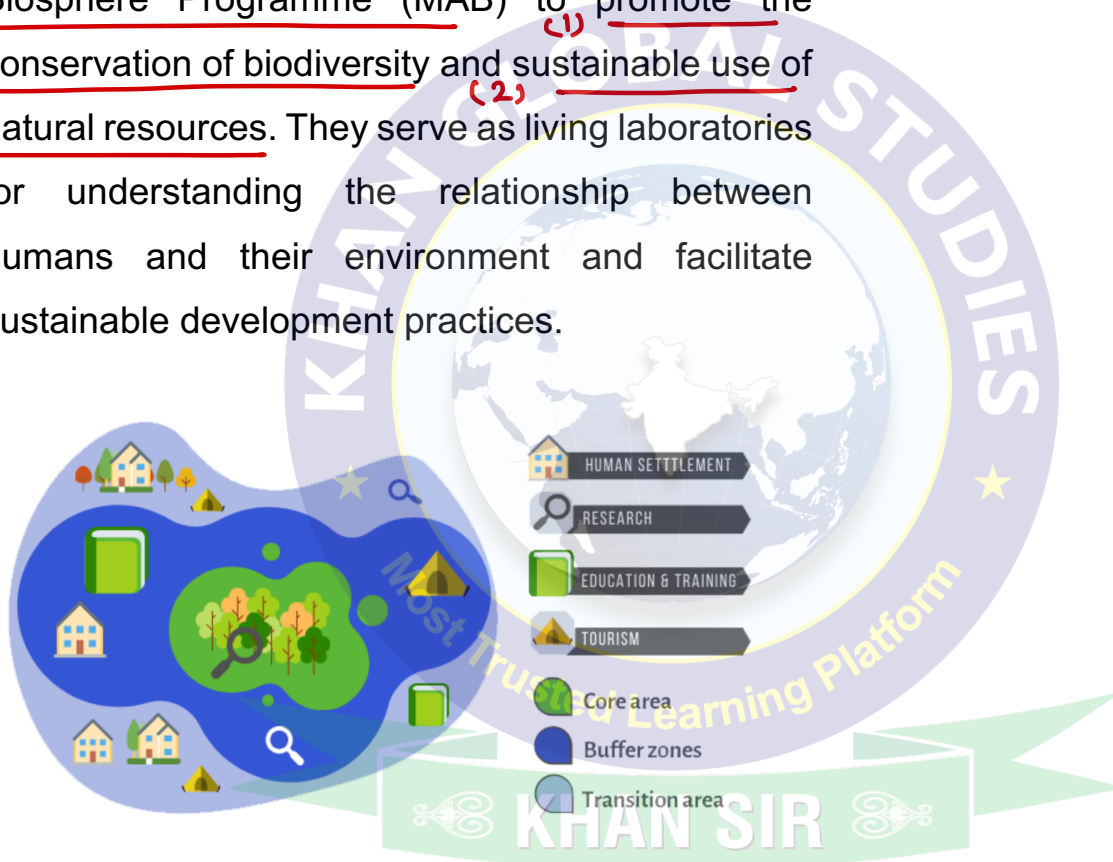
1. One of the three tropical moist evergreen forest zones in India.
2. High endemism and centers of unique flora and fauna.
3. Endemic island biodiversity, including Narcondam hornbill and South Andaman krait.

# Biosphere Reserve

Launched in 1971, UNESCO's Man and the Biosphere Programme (MAB) aims to improve relationships between people and their environments through scientific research.

- • Biosphere Reserves are protected areas established under UNESCO's Man and the Biosphere Programme (MAB) to promote the conservation of biodiversity and sustainable use of natural resources. They serve as living laboratories for understanding the relationship between humans and their environment and facilitate sustainable development practices.

← In India,  
Central Govt.  
(18 BR)



Biosphere Reserves have three connected zones:

1. Core area: Strictly protected ecosystem for conserving landscapes, ecosystems, species, and genetic variation.

2. Buffer zone: Surrounds core area, allows ecologically sound activities that support research, monitoring, training, and education.

3. Transition area: Allows the most activity, promoting sustainable economic and human development.

These areas are similar to IUCN Category V Protected areas.

✓  
There are 18 Biosphere Reserves in India.

✓  
Twelve of the eighteen biosphere reserves are a part of the World Network of Biosphere Reserves, based on the UNESCO Man and the Biosphere (MAB) Programme list.

#### 1. Nilgiri Biosphere Reserve (1986)

- Location: Karnataka, Tamil Nadu, and Kerala
- Ecosystem: Western Ghats
- Key species: Nilgiri tahr, tiger, lion-tailed macaque
- Area: 5,520 sq. km

#### 2. Nanda Devi Biosphere Reserve (1988)

- Location: Uttarakhand

- Ecosystem: Western Himalayas
- Key species: Snow leopard, Himalayan black bear
- Area: 5,860 sq. km

### 3. Gulf of Mannar (1989)

- Location: Tamil Nadu
- Ecosystem: Coasts
- Key species: Dugong
- Area: 10,500 sq. km

### 4. Nokrek (1988)

- Location: Meghalaya
- Ecosystem: Eastern hills
- Key species: Red panda
- Area: 820 sq. km

### 5. Sundarbans (1989)

- Location: West Bengal
- Ecosystem: Gangetic Delta
- Key species: Royal Bengal tiger
- Area: 9,630 sq. km

### 6. Manas (1989)

- Location: Assam
- Ecosystem: Eastern Hills
- Key species: Asiatic elephant, tiger, Assam roofed turtle, hispid hare, golden langur, pygmy hog
- Area: 2,837 sq. km

#### 7. Simlipal (1994)

- Location: Odisha
- Ecosystem: Deccan Peninsula
- Key species: Gaur, royal Bengal tiger, Asian elephant
- Area: 4,374 sq. km

#### 8. Dihang-Dibang (1998)

- Location: Arunachal Pradesh
- Ecosystem: Eastern Himalaya
- Key species: Mishmi takin, musk deer
- Area: 5,112 sq. km

#### 9. Pachmarhi Biosphere Reserve (1999)

- Location: Madhya Pradesh
- Ecosystem: Semi-Arid

- Key species: Giant squirrel, flying squirrel
- Area: 4,981.72 sq. km

10. Achanakmar-Amarkantak Biosphere Reserve (2005)

- Location: Madhya Pradesh, Chhattisgarh
- Ecosystem: Maikala Hills
- Key species: Four-horned antelope, Indian wild dog, sarus crane, white-rumped vulture, sacred grove bush frog
- Area: 3,835 sq. km

11. Great Rann of Kutch (2008)

- Location: Gujarat
- Ecosystem: Desert
- Key species: Indian wild ass
- Area: 12,454 sq. km

12. Cold Desert (2009)

- Location: Himachal Pradesh
- Ecosystem: Western Himalayas
- Key species: Snow leopard



- Area: 7,770 sq. km
13. Khangchendzonga National Park  
(2000)
- Location: Sikkim
  - Ecosystem: East Himalayas
  - Key species: Snow leopard, red panda
  - Area: 2,620 sq. km
14. Agasthyamalai Biosphere Reserve  
(2001)
- Location: Kerala, Tamil Nadu
  - Ecosystem: Western Ghats
  - Key species: Nilgiri tahr, Asian elephant
  - Area: 3,500.08 sq. km
15. Great Nicobar Biosphere Reserve  
(1989)
- Location: Andaman and Nicobar Islands
  - Ecosystem: Islands
  - Key species: Saltwater crocodile
  - Area: 885 sq. km

16. Dibru-Saikhowa (1997)
- Location: Assam
  - Ecosystem: Eastern Hills
  - Key species: White-winged wood duck, water buffalo, black-breasted parrotbill, tiger, capped langur
  - Area: 765 sq. km
17. Seshachalam Hills (2010)
- Location: Andhra Pradesh
  - Ecosystem: Eastern Hills
  - Key species: Slender loris
  - Area: 4,755.997 sq. km
18. Panna (2011)
- Location: Madhya Pradesh
  - Ecosystem: Moist deciduous forest
  - Key species: Bengal tiger, Chinkara, Nilgai, Sambhar sambar deer, and Sloth bear
  - Area: 2,998.98 sq. km

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based on the UNESCO Man and the Biosphere (MAB) Programme list.

1. Nilgiri Biosphere Reserve
2. Gulf of Mannar Biosphere Reserve
3. Sundarbans Biosphere Reserve
4. Nanda Devi Biosphere Reserve
5. Nokrek Biosphere Reserve
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11. Khangchendzonga National Park
12. Panna Biosphere Reserve

