

# EXPLORING THE POTENTIAL OF ECOTOURISM DEVELOPMENT IN WILDLIFE SANCTUARIES ACROSS DIVERSE REGIONS IN INDIA.

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## **Abstract:**

The purpose of this research paper is to analyze the potential for ecotourism development in wildlife sanctuaries across India. With India's focus on balancing conservation and economic development, ecotourism offers a sustainable solution that promotes ecological preservation while providing socio-economic benefits. This study examines the current distribution of wildlife sanctuaries in different regions of India and their potential for ecotourism, to identify strategies to foster responsible and inclusive growth. The significance of exploiting tourism opportunities within wildlife sanctuaries is explored by examining various aspects of ecotourism in India. However, there are challenges such as habitat degradation, wildlife disturbance, and infrastructure development that must be addressed to ensure successful ecotourism development in India. This paper provides recommendations to overcome these challenges and create conditions necessary for sustainable tourism development based on natural resources in wildlife sanctuary areas throughout India.

**Keywords:** Ecotourism, Protected Areas, National Park, Wildlife Sanctuaries, Conservation Areas, Community Areas, Marine Protected Areas etc.

## **Literature Review and Research Gap:**

Distinguished scholars from around the world have conducted numerous empirical and theoretical works on ecotourism across various academic domains. Among these studies, several have explored the multifaceted aspects of developing ecotourism in wildlife sanctuaries. Experts such as Buckley (2004) and Ghimire and Pimbert (1997) have highlighted the ecological and socio-economic advantages of ecotourism, including its ability to provide economic benefits to local communities while also funding conservation efforts. Fennell (2003) and Honey (2008) have further investigated the intricate interplay between ecotourism, biodiversity preservation, and community advancement. Inclusive and participatory approaches, as emphasized by Eagles et al. (2002) and Higham and Lück (2007), are essential to the success of ecotourism initiatives. Meanwhile, research articles from Redford (1992), Holden (2010), Ziffer (1989), Bansal & Kumar (2011), (Isaacs, 2000), Lee & Jan (2019), Juvan & Dolnicar (2014), Tao & Wall (2009),

and others have covered a range of topics, including the dynamics of wildlife sanctuaries, sustainable development, environmental protection, and the growth of ecotourism. These scientific studies provide valuable insights into the economic effects of ecotourism and wildlife sanctuaries. Although much research on ecotourism in India has been conducted, they have primarily focused on specific sanctuaries or regions, leaving a dearth of comprehensive assessments of India's overall potential for ecotourism across diverse geographical locations. The present study seeks to bridge these gaps by conducting a comprehensive evaluation of ecotourism potential in wildlife sanctuaries throughout India's varied regions, and by proposing holistic solutions for sustainable ecotourism development.

### **Significance of Research:**

Worldwide, wildlife sanctuaries are a major source of ecotourism. Wildlife sanctuaries and the areas around them may benefit socioeconomically from ecotourism in terms of job creation, income generation, poverty reduction, marginalized population integration into mainstream economic activities, and environmental preservation. In these areas, ecotourism has the potential to be an engine of growth and development if given the right legislative framework and infrastructure support.

### **Objectives:**

Considering the positive aspects of ecotourism development in wildlife sanctuaries in India, the objectives of this research are to:

- 1) Examine the spatial distribution of wildlife sanctuaries across various regions of India.
- 2) Examine the State-wise variations in the distribution of wildlife sanctuaries in India.
- 3) Provide a comprehensive overview of India's rich biodiversity in wildlife sanctuaries in India.
- 4) Examine ecotourism prospects in wildlife sanctuaries across the nation.
- 5) Examine the potential of ecotourism in these sanctuaries and suggest policy recommendations for promoting sustainable ecotourism while addressing the challenges faced in its development.

### **Research Methodology:**

The main objective of this research study is primarily exploratory and descriptive. Many wildlife sanctuaries have been established within India's geopolitical borders, spread over multiple States and Union territories. It is important to investigate these sites to ascertain the potential for the expansion of ecotourism activities inside and around these locations. Data regarding the many wildlife sanctuaries spread throughout various regions of India has been collected from both published and unpublished literary works. Many academic publications and public and private web portals have been used as the main source of information for this research work. Dehradun-based Wildlife Institute of India served as one of the major data sources for this research article.

## An Overview of Protected Areas in India

Protected areas are geographical regions that are protected from human settlement or resource exploitation and have little to no human activity. There are different categories of protected areas, and the level of protection varies based on the legislation each nation has passed to establish them or the guidelines provided by the international organisations involved. Protected Areas in India have been divided into many categories which are as follows:

- National Parks
- Wild Life Sanctuaries
- Community Reserves
- Conservation Reserves
- Marine Protected Area

*Community Reserves and Conservation Reserves have been established in India from 2006 onwards.*

**Table 1.1 Protected Areas of India (As of December 2021)**

Type of Protected Area	Numbers	Covered Area (in KM <sup>2</sup> )	Share in Geographical Area of India
National Parks	106	44,372.42	1.35
Wildlife Sanctuaries	564	1,22,509.33	3.73
Conservation Reserves	99	4,726.24	0.14
Community Reserves	218	1,445.71	0.04
<b>Protected Areas (PAs)</b>	<b>987</b>	<b>1,73,053.69</b>	<b>5.26</b>

*Source: National Wildlife Database, Wildlife Institute of India (Protected Areas of India, n.d.)*

Table 1.1 reveals that India has an impressive number of nature reserves. Specifically, there are 106 National Parks, 564 Wildlife Sanctuaries, 99 Conservation Reserves, and 218 Community Reserves. Of these, Wildlife Sanctuaries occupy a vast area of 1,22,509.33 km<sup>2</sup>, which constitutes 3.73% of India's total geographical area. Meanwhile, National Parks, Conservation Reserves, and Community Reserves cover 44,372.42 km<sup>2</sup>, 4,726.24 km<sup>2</sup>, and 1,445.71 km<sup>2</sup>, respectively, amounting to 1.35%, 0.14%, and 0.04% of India's total geographical area.

**Geographical Area of India = 32,87,263 km<sup>2</sup>**

### The Forest Cover of India (FSI, 2021)

**Forest + Tree Cover Area = (7,13,789 + 95,748 = 8,09,537 km<sup>2</sup>)**

**Forest + Tree Cover Percentage = (21.71% + 2.91% = 24.62%)** of the geographical area of India

*Source: National Wildlife Database, Wildlife Institute of India (Protected Areas of India, n.d.)*

### Wildlife Sanctuaries in India

In India, wildlife sanctuaries are defined and governed by the Wildlife Protection Act of 1972.

*"A wildlife sanctuary is an area of land declared by the government under the Wildlife Protection Act of 1972, to protect, propagate, or develop wildlife or its environment."*

The purpose of these sanctuaries is to protect wildlife, preserve their habitats, and control human activity to prevent undue disruption to the environment. To guarantee the preservation and safeguarding of species and their ecosystems, certain activities are limited or forbidden for both tourists and locals. However, some approved activities have also been allowed with regulated interactions with the tourists and locals ensuring they cause the least amount of environmental disruption. These restrictions are in place to make sure that the conservation objectives of the wildlife sanctuary are fulfilled, but the locals who live in close vicinity to wildlife sanctuaries are entitled to certain rights and access to specific activities for their livelihood and sustenance.

The State Government in India has the primary jurisdiction to designate any land as a wildlife sanctuary, following the Wildlife Protection Act of 1972. However, the process involves both State and Central Governments. The first step in the process is for the State Government to designate a region as a wildlife sanctuary. The State Board for Wildlife, which is headed by the Chief Minister of the concerned state and consists of environmentalists, government representatives, and wildlife experts, then reviews and approves the proposal. The proposal is then sent to the National Board for Wildlife (NBWL) for final approval. The NBWL, evaluates the proposal's ecological relevance, potential consequences, and alignment with national conservation policies. The Central Government's Ministry of Environment, Forests, and Climate Change (MoEFCC) grants final approval for the declaration of wildlife sanctuary, after receiving the NBWL approval. After that, the official announcement of the wildlife sanctuary is made through a publication in the state's official gazette. The operation and administration of the sanctuary, including conservation efforts, habitat restoration, and control over human activity inside its borders, fall under the purview of the concerned State Forest Department.

The expansion of protected areas and wildlife sanctuaries has been shown in below table 1.2.

**Table 1.2 Expansion of Wildlife Sanctuaries and Protected Areas in India**

Year	No. of Wild Life Sanctuaries	Area Under Wild Life Sanctuaries (km <sup>2</sup> )	No. of Protected Areas	Total Area under Protected Areas (km <sup>2</sup> )	% Share of Wildlife Sanctuaries in Total Protected Area
2000	485	108862.5	574	146665.60	0.742
2006	503	111229.48	604	149664.78	0.743
2007	507	111529.04	617	150073.74	0.743
2008	510	113123.35	659	153845.93	0.735
2009	512	113395.36	661	154117.94	0.736
2010	516	113842.87	670	155529.77	0.732
2011	518	113998.75	677	156104.66	0.730
2012	526	114933.44	693	157467.50	0.730

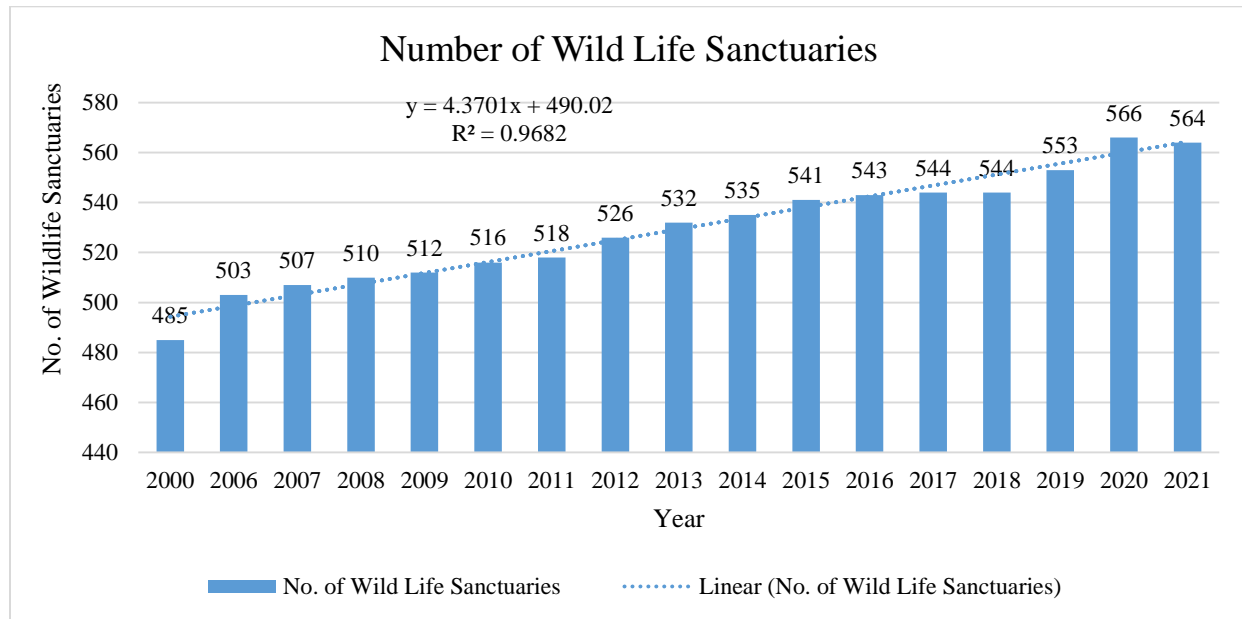
<b>2013</b>	532	117123.63	<b>717</b>	159887.31	0.733
<b>2014</b>	535	118290.66	<b>745</b>	161081.62	0.734
<b>2015</b>	541	118866.44	<b>759</b>	161974.90	0.734
<b>2016</b>	543	118917.71	<b>763</b>	162043.70	0.734
<b>2017</b>	544	118931.8	<b>769</b>	162092.49	0.734
<b>2018</b>	544	118931.8	<b>771</b>	162099.47	0.734
<b>2019</b>	553	119756.97	<b>903</b>	165012.59	0.726
<b>2020</b>	566	1,22,420.00	<b>981</b>	171921.00	0.712
<b>2021</b>	564	1,22,509.33	<b>987</b>	173053.69	0.708

Source: (<http://knowindia.gov.in/>)

Based on the data, it is evident that the areas under protection of wildlife sanctuaries and protected areas have steadily increased since 2000. India's progress in establishing wildlife sanctuaries over the past twenty years is admirable and noteworthy, as both the quantity and size of these sanctuaries have consistently grown.

The data from 2000 to 2021 reveals a progressive trend in the creation of sanctuaries, starting from 485 in 2000 and steadily increasing to 564 in 2021. This growth is indicative of the nation's commitment to biodiversity conservation and habitat protection.

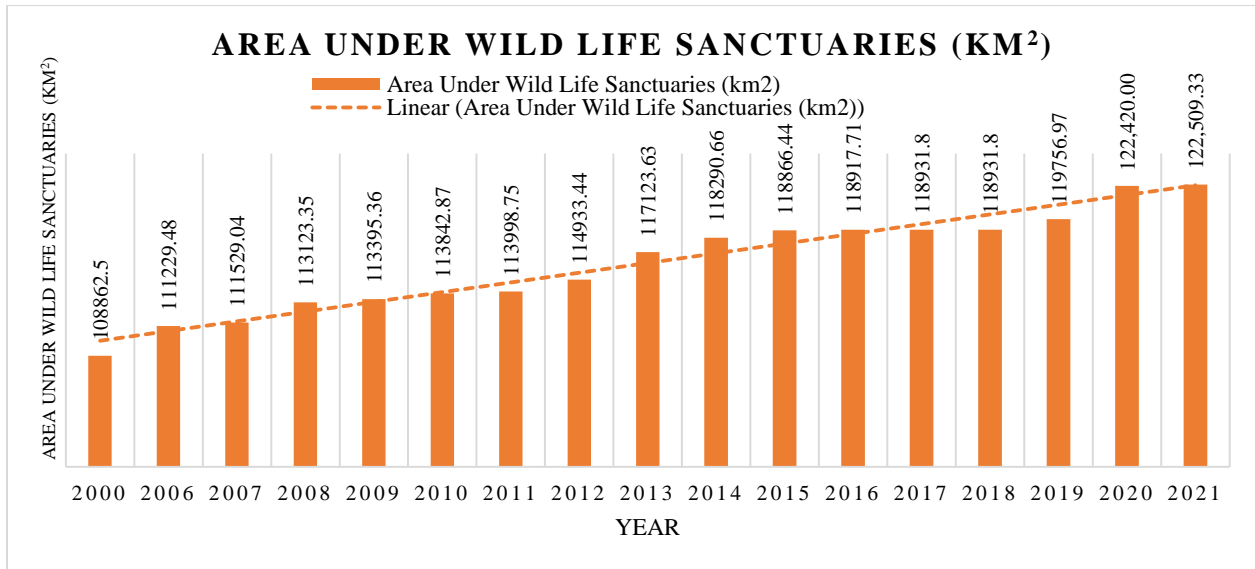
Fig:1.1 Growth in the number of Wildlife Sanctuaries in India since 2000.



Source: Computed by the Researcher (<http://knowindia.gov.in/>)

The area covered by sanctuaries and the territory assigned to them has steadily increased, indicating a proactive approach to resolving environmental problems and promoting environmentally friendly practices in the field of wildlife conservation.

Fig:1.2 Growth in Area under Wildlife Sanctuaries in India since 2000.



Source: Computed by the Researcher (<http://knowindia.gov.in/>)

This remarkable increase indicates India's dedication to safeguarding its distinctive wildlife legacy and offering refuge to a diverse range of flora and fauna.

**Distribution of Wildlife Sanctuaries in India:**

The data on wildlife sanctuaries in various Indian states and Union Territories reveals substantial variation in both the number of sanctuaries and the occupied areas, which is shown below-mentioned Table 1.4.

Table 1.3(a) Distribution of Wildlife Sanctuaries in Different States of India

State of India	State Area (km <sup>2</sup> )	No. of WLS	Area (km <sup>2</sup> )	% of State Area
Andhra Pradesh	160229	13	6771.40	4.23
Arunachal Pradesh	83743	13	7614.56	9.09
Assam	78438	17	1728.95	2.20
Bihar	94163	12	2851.67	3.03
Chhattisgarh	135191	11	3760.28	2.78
Goa	3702	6	647.91	17.50
Gujarat	196022	23	16618.42	8.48
Haryana	44212	7	118.21	0.27
Himachal Pradesh	55673	28	6115.97	10.99
Jharkhand	79714	11	1955.82	2.45
Karnataka	191791	38	8216.69	4.28
Kerala	38863	18	2156.21	5.55
Madhya Pradesh	308245	24	7046.19	2.29

Maharashtra	307713	49	7861.70	2.55
Manipur	22327	7	708.14	3.17
Meghalaya	22429	4	94.11	0.42
Mizoram	21081	9	1359.75	6.45
Nagaland	16579	4	43.91	0.26
Odisha	155707	19	7094.65	4.56
Punjab	50362	13	326.6	0.65
Rajasthan	342239	25	5592.38	1.63
Sikkim	7096	7	399.10	5.62
Tamil Nadu	130058	33	7096.54	5.46
Telangana	114840	9	5672.70	4.94
Tripura	10486	4	603.64	5.76
Uttar Pradesh	240928	26	5822.20	2.42
Uttarakhand	53483	7	2690.12	5.03
West Bengal	88752	16	1440.18	1.62

*Source: National Wildlife Database, Wildlife Institute of India (Protected Areas of India, n.d.)*

It is clear from the above figure and table that Andaman-Nicobar Island has the highest number of Wildlife sanctuaries (96), followed by Maharashtra (48), Karnataka (35), Tamil Nadu (30), Himachal Pradesh (28), Uttar Pradesh (26) and Rajasthan. These wildlife sanctuaries have a huge diversity of flora and fauna that can be explored to promote ecotourism in these regions.

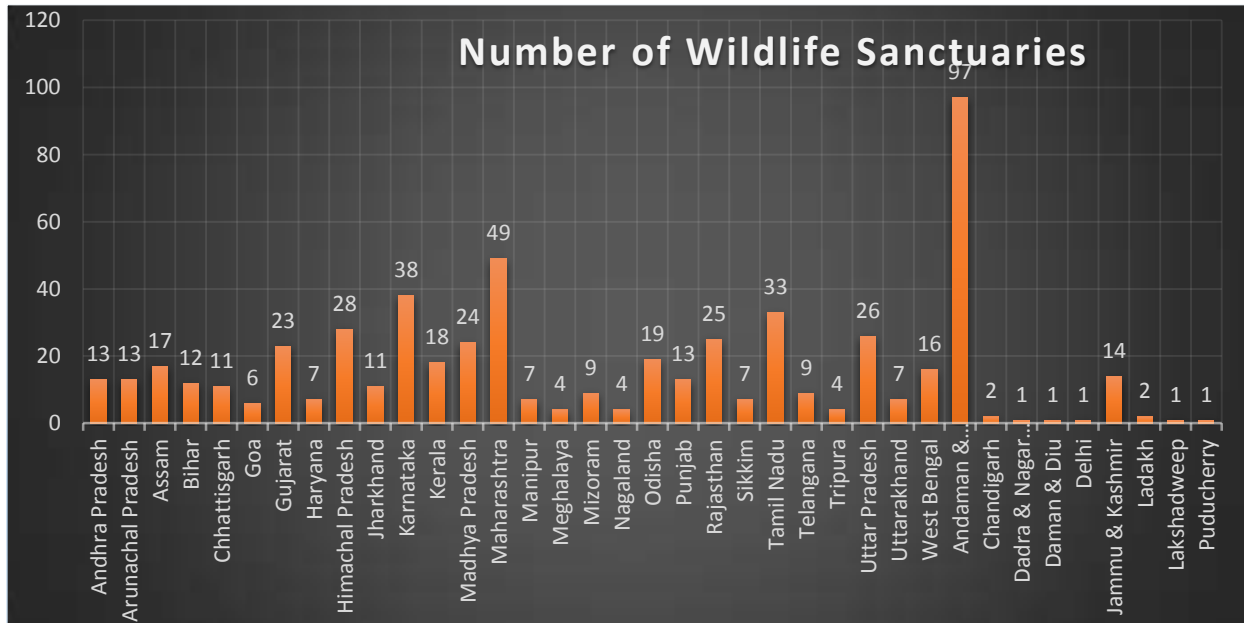
**Table 1.3(b) Distribution of Wildlife Sanctuaries in Different Union Territories of India**

Union Territories	State Area (km <sup>2</sup> )	No. of WLS	Area (km <sup>2</sup> )	% of State Area
Andaman & Nicobar	8249	97	395.6	4.80
Chandigarh	114	2	26.01	22.82
Dadra & Nagar Haveli	491	1	92.17	18.77
Daman & Diu	112	1	2.19	1.96
Delhi	1483	1	19.61	1.32
Jammu & Kashmir	163090	14	1815.04	1.11
Ladakh	59146	2	9000.00	15.22
Lakshadweep	32	1	0.01	0.03
Puducherry	480	1	3.90	0.81
<b>Total (UT)</b>	<b>233197</b>	<b>120</b>	<b>11354.56</b>	<b>4.87</b>
<b>Total (States)</b>	<b>3054066</b>	<b>453</b>	<b>112408.00</b>	<b>3.68</b>
<b>Grand Total (State+UT)</b>	<b>3287263</b>	<b>573</b>	<b>123762.56</b>	<b>3.76</b>

*Source: National Wildlife Database, Wildlife Institute of India (Protected Areas of India, n.d.)*

There are 573 existing wildlife sanctuaries in India covering an area of 123,762.56 km<sup>2</sup>, which is 3.76% of the geographical area of the country (National Wildlife Database Centre). Another 218 sanctuaries are proposed in the Protected Area Network Report covering an area of 16,829 km<sup>2</sup>.

**Fig 1.3 State-wise Number of Wildlife Sanctuaries in India**



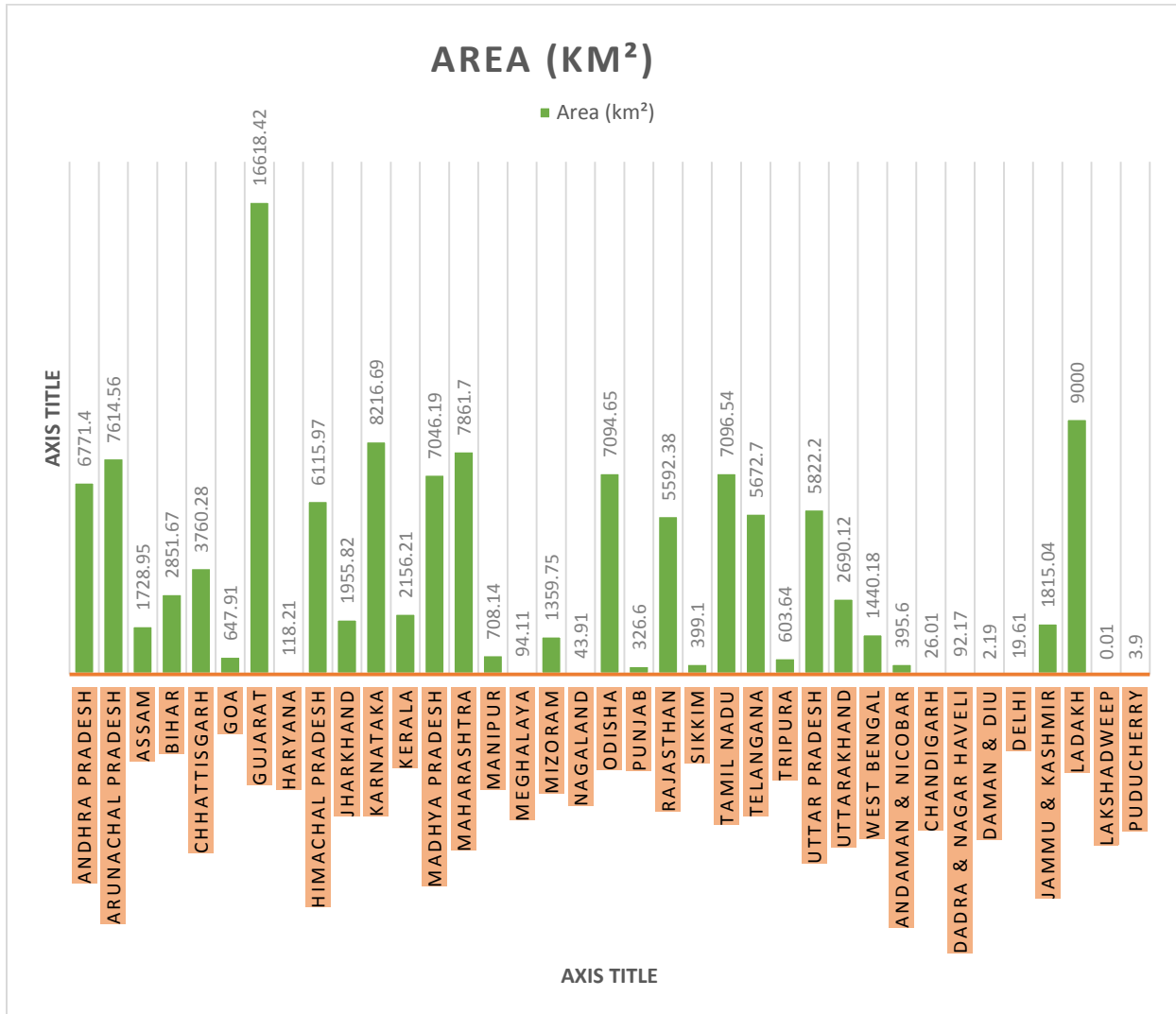
**Source:** Prepared by the Author using the *National Wildlife Database*

### State-wise Area Occupied (KM<sup>2</sup>) under Wildlife Sanctuaries

If we look at the statewide area occupied under the wildlife sanctuaries there is a huge variation among the states. Gujarat (16618.42 KM<sup>2</sup>), Maharashtra (14638.48KM<sup>2</sup>), Ladakh (9000.00 KM<sup>2</sup>), Karnataka ( 7923.22 KM<sup>2</sup>), Arunachal Pradesh (7614.55 KM<sup>2</sup>), Odisha (7094.65 KM<sup>2</sup>), Andhra Pradesh (6771.39 KM<sup>2</sup>), Tamil Nadu (6240.56 KM<sup>2</sup>), Himachal Pradesh (6115.97KM<sup>2</sup>) and Uttar Pradesh (5829.20 KM<sup>2</sup>) are the top 10 states with the maximum area occupied under wildlife sanctuaries.



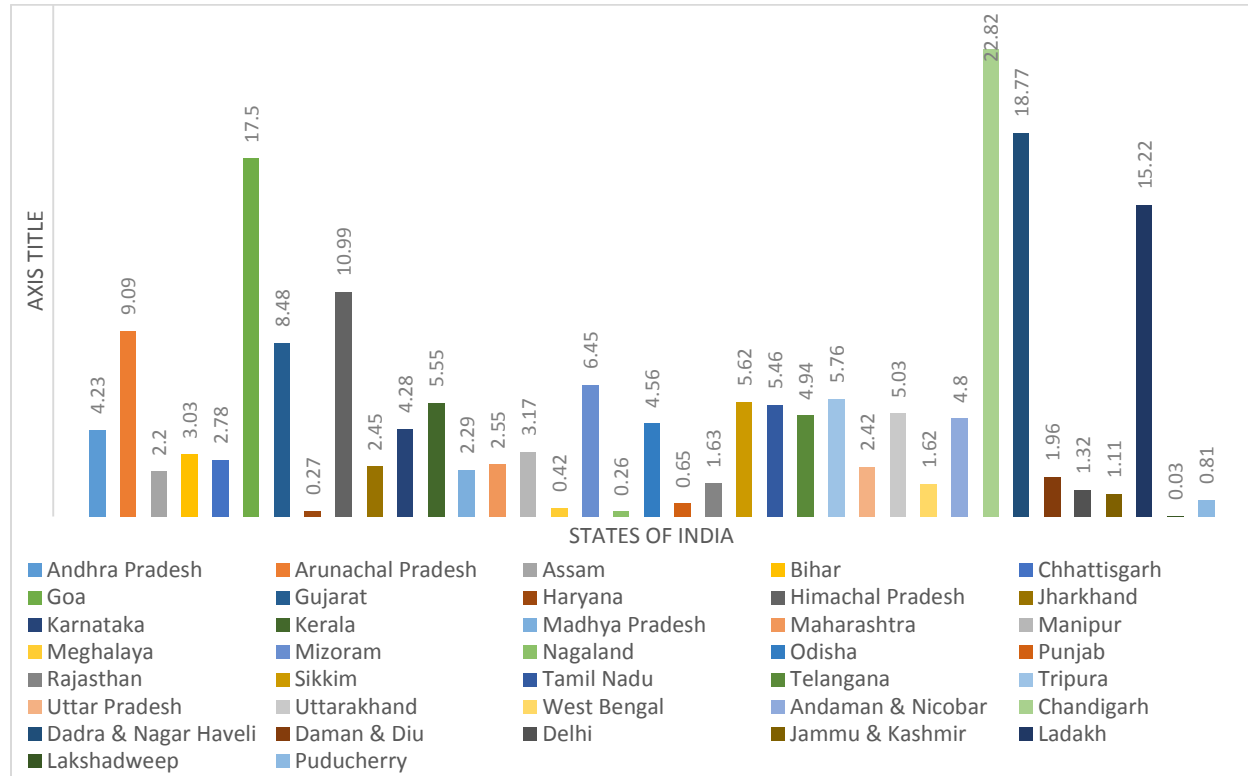
Fig 1.4 Statewise Area of Wildlife Sanctuaries in India



Source: Prepared by the Author using the *National Wildlife Database*

Figure 1.4 shows the area occupied by various states under wildlife sanctuaries. The huge variation in the distribution of wildlife sanctuaries is evident from this chart.

**Fig 1.5 Statewise % of State Area Wildlife Sanctuaries in India**



**Source:** Prepared by the Author using the *National Wildlife Database*

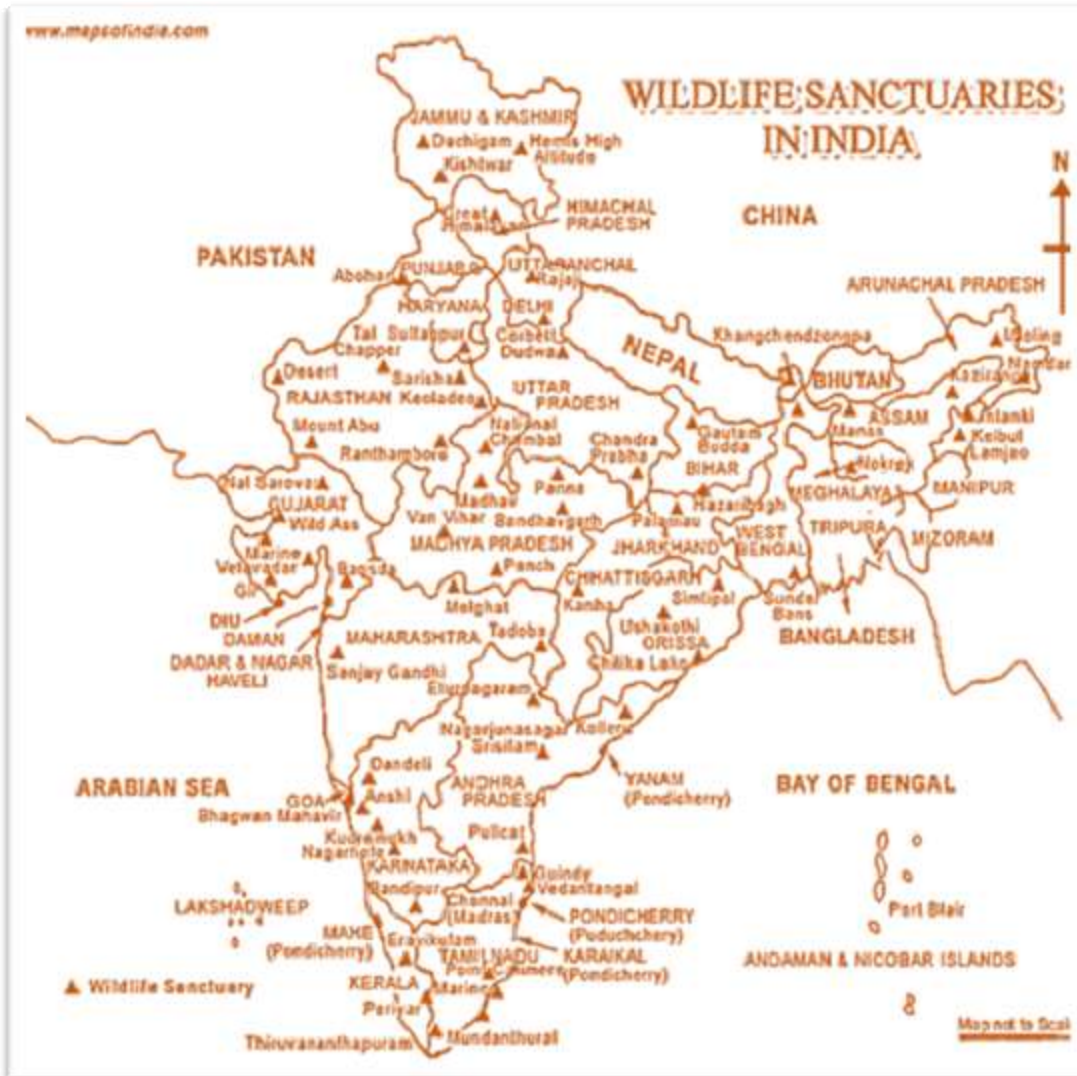
Almost every region of the country has a huge variety of flora and fauna associated with it. From the Cold desert of Ladakh, the Sand Desert of Rajasthan, the Green Mountains of Himachal Pradesh and Uttarakhand, the Rainy Hills of Arunachal Pradesh, Assam, Meghalaya to the plateau of Andhra Pradesh, Chattisgarh and Telangana, Coastal Areas of Kerala and Islands of Andaman and Nicobar almost all kinds of the geographical and climatic phenomenon are present in India. Naturally India very rich country in terms of the availability of scenic beauty, flora and fauna.

**Exploring the Ecotourism Potential in India's Diverse Wildlife Sanctuaries**

India's wildlife sanctuaries provide a promising landscape for ecotourism, which prioritizes the sustainable exploration of natural environments. The data above reveal the immense potential for ecotourism development, driven by the sanctuaries' vast geographical, climatic, and biodiversity diversity. Integrating ecotourism within the sanctuaries not only protects the environment but also fosters sustainable development through local community involvement. By engaging local communities in ecotourism activities, such as guided nature walks, wildlife safaris, and eco-friendly accommodations, these communities become active stakeholders in conservation efforts. The economic benefits derived from ecotourism, including job creation and revenue generation, offer incentives for communities to participate in conservation initiatives. These sanctuaries not only offer a visual treat to ecotourists but also play a critical role in conservation efforts. By

promoting responsible and sustainable tourism practices, the sanctuaries can significantly contribute to habitat preservation, wildlife conservation, and local community development.

**Fig 1.6 Map of Most Significant Wildlife Sanctuaries Distributed Across the Country**



**Credit:** Compare Infobase Pvt Ltd, MapsofIndia.com (Not to Scale)

The above map presents the geographical location of various wildlife sanctuaries spread across India. The comprehensive map highlights the geographical, climatic, and ecological diversity found within these sanctuaries, showcasing the immense potential for ecotourism development in India. The unique landscapes, ranging from the Sundarbans' mangrove delta to the cold alpine terrains of the Himalayas, create a kaleidoscope of experiences for nature enthusiasts.

### **Geographical, Climatic, and Ecological Biodiversity in Major Wildlife Sanctuaries in India**

The Table-1.4(a)(b)(c) reveals that India's wildlife sanctuaries are a marvel of geographical diversity, featuring a wide range of landscapes from the mangroves of Sundarbans in West

Bengal to the alpine terrains of Himachal Pradesh's Great Himalayan National Park. Each sanctuary has unique topographies such as plateaus, hills, deserts, wetlands, and coastal regions, providing a dynamic canvas for ecotourists to explore.

**Table 1.4(a) Geographical, Climatic, and Ecological Biodiversity in Wildlife Sanctuaries of Himalayan Range in India.**

Wildlife Sanctuary	State	Geographic Conditions	Climatic Conditions	Land Structure	Notable Flora	Notable Fauna
Dibang Wildlife Sanctuary	Arunachal Pradesh	Eastern Himalayas	Temperate, Alpine	Mountain	Rhododendron, Juniper, Silverfir	Mishmi Takin, Red Panda, Asiatic Black Bear
Eaglenest Wildlife Sanctuary	Arunachal Pradesh	Eastern Himalayas	Subtropical, Monsoonal	Mountain	Rhododendron, Bamboo, Ferns	Red Panda, Bengal Tiger, Indian Leopard
Mouling National Park	Arunachal Pradesh	Eastern Himalayas	Subtropical, Monsoonal	Mountain	Hollock, Chestnut	Takin, Red Panda, Himalayan Monal
Buxa Tiger Reserve	West Bengal	Eastern Himalayas	Tropical, Monsoonal	Hilly, Evergreen Forests	Sal Trees, Bamboo	Bengal Tiger, Asian Elephant, Red Panda
Sirohi National Park	Manipur	Eastern Himalayas	Subtropical, Monsoonal	Hilly, Deciduous Forests	Oak, Rhododendron, Bamboo	Hoolock Gibbon, Clouded Leopard, Wild Boar
Khangchendzonga National Park	Sikkim	Eastern Himalayas	Alpine, Cold	Mountain	Rhododendron, Oak, Birch	Snow Leopard, Red Panda, Himalayan Tahr
Nokrek National Park	Meghalaya	Garo Hills	Temperate, Alpine	Mountain	Rhododendron, Bamboo, Alder	Red Panda, Asian Elephant, Hoolock Gibbon
Phawngpui National Park	Mizoram	Lushai Hills	Temperate, Alpine	Mountain	Rhododendron, Bamboo, Oak	Red Panda, Serow, Himalayan Black Bear
Nagaland Wildlife Sanctuary	Nagaland	Naga Hills	Temperate, Subtropical	Hilly, Deciduous Forests	Alder, Bamboo, Chestnut	Hoolock Gibbon, Indian Elephant, Blyth's Tragopan
Kalesar National Park	Haryana	Shivalik Hills	Tropical, Monsoonal	Hilly, Dense Forests	Sal Trees, Khair	Indian Leopard, Sambar Deer, Barking Deer
Great Himalayan National Park	Himachal Pradesh	Western Himalayas	Alpine, Cold	Mountain	Deodar, Oak, Rhododendron	Snow Leopard, Himalayan Tahr, Western Tragopan
Tirthan Wildlife Sanctuary	Himachal Pradesh	Western Himalayas	Temperate, Alpine	Mountain	Deodar, Oak, Rhododendron	Himalayan Tahr, Himalayan Monal, Western Tragopan

Dachigam National Park	Jammu and Kashmir	Western Himalayas	Subalpine, Cold	Mountain	Walnut, Pear	Hangul Deer, Himalayan Black Bear, Red Fox
Dachigam National Park	Jammu and Kashmir	Western Himalayas	Subalpine, Cold	Mountain	Walnut, Pear, Oak	Hangul Deer, Himalayan Black Bear, Red Fox
Jim Corbett National Park	Uttarakhand	Terai And Bhabar Region	Subtropical, Humid	Plain, Hilly	Sal Trees, Bamboo, Eucalyptus	Bengal Tiger, Asian Elephant, Indian Rhinoceros
Govind Pashu Vihar Wildlife Sanctuary	Uttarakhand	Western Himalayas	Alpine, Cold	Mountain	Rhododendron Birch, Juniper	Snow Leopard, Himalayan Tahr, Western Tragopan
Mandla Plant Fossils National Park	Madhya Pradesh	Narmada River Basin	Tropical, Dry	Plateau, Riverine	Teak, Sal, Bamboo	Indian Leopard, Sloth Bear, Indian Giant Squirrel

Source: Compiled by the researcher using data obtained from authentic sources.

**Table 1.4(b) Geographical, Climatic, and Ecological Biodiversity in Wildlife Sanctuaries of Eastern and Western Ghats of India**

Wildlife Sanctuary	State	Geographic Conditions	Climatic Conditions	Land Structure	Notable Flora	Notable Fauna
Kuldiha Wildlife Sanctuary	Odisha	Eastern Ghats	Tropical, Monsoonal	Hilly, Dense Forests	Sal, Bamboo	Bengal Tiger, Indian Elephant, Chausingha (Four-Horned Antelope)
Panchmarhi Biosphere Reserve	Madhya Pradesh	Satpura Range	Tropical, Monsoonal	Plateau, Forested	Bamboo, Sal, Teak	Indian Giant Squirrel, Indian Leopard, Malabar Pied Hornbill
Satkosia Tiger Reserve	Odisha	Eastern Ghats	Tropical, Monsoonal	Riverine, Deciduous Forests	Sal, Teak, Bamboo	Bengal Tiger, Indian Elephant, Mugger Crocodile
Simlipal National Park	Odisha	Eastern Ghats	Tropical, Monsoonal	Hilly, Dense Forests	Sal Trees, Bamboo	Bengal Tiger, Indian Elephant, Indian Bison
Srisaillam Wildlife Sanctuary	Andhra Pradesh/ Telangana	Eastern Ghats	Tropical, Monsoonal	Plateau, Riverine	Terminalia, Bamboo, Teak	Bengal Tiger, Indian Leopard, Indian Wild Dog
Bhitarkanika National Park	Odisha	Coastal Wetlands	Tropical, Monsoonal	Deltaic, Marshy	Sundari Trees, Mangroves	Saltwater Crocodile, Indian Python, King Cobra

Chandoli National Park	Maharashtra	Western Ghats	Tropical, Monsoonal	Hilly, Evergreen Forests	Teak, Sandalwood, Bamboo	Bengal Tiger, Indian Leopard, Indian Bison
Porbandar Bird Sanctuary	Gujarat	Kathiawar Peninsula	Tropical, Semi-Arid	Coastal, Wetlands	Mangroves, Casuarina, Acacia	Flamingos, Pelicans, Spoonbills
Gir Forest National Park	Gujarat	Western Ghats	Tropical, Dry	Hilly, Deciduous Forests	Dhak Trees, Flame Of The Forest	Asiatic Lion, Indian Leopard, Sloth Bear
Kalakad Wildlife Sanctuary	Tamil Nadu	Western Ghats	Tropical, Monsoonal	Hilly, Evergreen Forests	Rosewood, Sandalwood, Teak	Lion-Tailed Macaque, Nilgiri Tahr, Indian Elephant
Mudumalai National Park	Tamil Nadu	Western Ghats	Tropical, Monsoonal	Nilgiri Hills, Deciduous Forests	Sandalwood, Teak	Bengal Tiger, Indian Elephant, Indian Leopard
Indira Gandhi Wildlife Sanctuary	Tamil Nadu	Western Ghats Ndian Gaur	Tropical, Monsoonal	Hilly, Evergreen Forests	Sandalwood, Teak	Indian Elephant, Indian Gaur
Bandipur National Park	Karnataka	Western Ghats	Tropical, Monsoonal	Deccan Plateau, Forested	Sandalwood, Teak	Indian Elephant, Bengal Tiger, Dhole (Wild Dog)
Bandipur National Park	Karnataka	Western Ghats	Tropical, Monsoonal	Deccan Plateau, Forested	Sandalwood, Teak	Indian Elephant, Bengal Tiger, Dhole (Wild Dog)
Kudremukh National Park	Karnataka	Western Ghats	Tropical, Monsoonal	Hilly, Evergreen Forests	Shola Trees, Rhododendron, Eucalyptus	Lion-tailed macaque, Malabar Giant Squirrel,
Nagarhole National Park	Karnataka	Western Ghats	Tropical, Monsoonal	Hilly, Dense Forests	Rosewood, Sandalwood	Indian Elephant, Bengal Tiger, Indian Bison
Chinnar Wildlife Sanctuary	Kerala	Western Ghats	Tropical, Monsoonal	Hilly, Grasslands	Albizia Procera, Acacia Leucophloea	Grizzled Giant Squirrel, Indian Elephant, Star Tortoise
Eravikulam National Park	Kerala	Western Ghats	Tropical, Monsoonal	Hilly, Grasslands	Neelakurinji (Strobilanthes)	Nilgiri Tahr, Indian Elephant, Bengal Tiger
Periyar National Park	Kerala	Western Ghats	Tropical, Monsoonal	Hilly, Evergreen Forests	Teak, Sandalwood, Rosewood	Indian Elephant, Bengal Tiger, Nilgiri Langur

Silent Valley National Park	Kerala	Western Ghats	Tropical, Monsoonal	Hilly, Evergreen Forests	Rosewood, Teak	Lion-Tailed Macaque, Nilgiri Langur, Malabar Pied Hornbill
Agasthyamalai Biosphere Reserve	Kerala/ Tamil Nadu	Western Ghats	Tropical, Monsoonal	Hilly, Evergreen Forests	Orchids, Bamboo, Ficus	Indian Elephant, Nilgiri Langur Bengal Tiger,

Source: Compiled by the researcher using data obtained from authentic sources.

**Table 1.4(c) Geographical, Climatic, and Ecological Biodiversity in Wildlife Sanctuaries of Tropical Monsoonal and Wet Regions of India**

Wildlife Sanctuary	State	Geographic Conditions	Climatic Conditions	Land Structure	Notable Flora	Notable Fauna
Dibru-Saikhowa National Park	Assam	Brahmaputra River Floodplains	Tropical, Monsoonal	Riverine, Wetlands	Dillenia, Syzygium Cumini	White-Winged Wood Duck, Hoolock Gibbon, Gangetic Dolphin
Pabitora Wildlife Sanctuary	Assam	Brahmaputra River Floodplains	Tropical, Monsoonal	Riverine, Grasslands	Shorea Robusta, Elephant Grass, Water Hyacinth	Indian One-Horned Rhinoceros, Wild Buffalo, Wild Boar
Kaziranga National Park	Assam	Brahmaputra River Plains	Tropical, Monsoonal	Grasslands, Wetlands	Elephant Grass, Assam Roof Turt	Indian Rhinoceros, Bengal Tiger, Wild Water Buffalo
Sundarbans National Park	West Bengal	Mangrove Delta	Tropical, Wet	Deltaic, Marshy	Sundari Trees, Mangroves	Bengal Tiger, Saltwater Crocodile, Indian Python
Saddle Peak National Park	Andaman and Nicobar	Andaman Islands	Tropical, Monsoonal	Coastal, Hilly	Orchids, Ferns	Andaman Wild Pig, Nicobar Pigeon, Andaman Day Gecko
Mahatma Gandhi Marine Nationalpark	Andaman And Nicobar Ritchie's Archipelago,	Bay of Bengal,	Tropical, Monsoonal	Coastal, Coral Reefs	Thalassia, Acropora Green	Green Sea Turtle, Leatherback Turtle, Clownfish
Nalanda Wildlife Sanctuary	Bihar	Nalanda District	Tropical, Monsoonal	Riverine, Deciduous Forests	Shorea Robusta, Lagerstroemia Speciosa	Indian Elephant, Indian Leopard, Bengal Tiger
Kanger Ghati National Park	Chhattisgarh	Bastar Plateau	Tropical, Monsoonal	Plateau, Dense Forests	Sal, Teak, Bamboo	Bengal Tiger, Indian Leopard, Wild Buffalo
Sultanpur National Park	Haryana	Gangetic Plains	Tropical, Monsoonal	Wetlands	Dhak, Kadam, Acacia	Indian Peafowl, Black Francolin,

						Blue Bull
Satpura Tiger Reserve	Madhya Pradesh	Satpura Range	Tropical, Monsoonal	Plateau, Hilly Terrain	Teak, Bamboo	Bengal Tiger, Indian Leopard, Indian Giant Squirrel
Kanha National Park	Madhya Pradesh	Maikal Range	Tropical, Monsoonal	Plateau, Dense Forests	Sal Trees, Bamboo	Bengal Tiger, Indian Wild Dog, Barasingha Deer
Shoolpaneshwar Wildlife Sanctuary	Gujarat	Satpura Range	Tropical, Monsoonal	Plateau, Teak Forests	Teak, Bamboo, Axlewood	Indian Leopard, Sloth Bear, Ndiian Giant Squirrel
Bori Wildlife Sanctuary	Madhya Pradesh	Hoshangabad District	Tropical, Dry	Plateau, Teak Forests	Teak, Bamboo	Indian Leopard, Sloth Bear, Indian Giant Squirrel

Source: Compiled by the researcher using data obtained from authentic sources.

**Table 1.4(d) Geographical, Climatic, and Ecological Biodiversity in Wildlife Sanctuaries of Tropical Dry and Arid Regions of India**

Wildlife Sanctuary	State	Geographic Conditions	Climatic Conditions	Land Structure	Notable Flora	Notable Fauna
Pench National Park	Madhya Pradesh	Satpura Range	Tropical, Dry	Pench River Basin, Teak Forests	Teak, Mahua	Bengal Tiger, Indian Leopard, Indian Bison
Panna National Park	Madhya Pradesh	Vindhya Range	Tropical, Dry	Plateau, Riverine	Teak, Sal, Bamboo	Bengal Tiger, Indian Leopard, Chital (Spotted Deer)
Ranthambore National Park	Rajasthan	Aravalli Range	Semi-Arid, Hot	Rocky, Dry	Dhok Trees, Banyan Trees, Anoge	Endula Bengal Tiger, Indian Leopard, Indian Wild Boar
Sambhar Wildlife Sanctuary	Rajasthan	Aravalli Range	Semi-Arid, Hot	Salt Pan, Wetlands	Prosopis, Acacia, Babul	Indian Wild Ass, Blackbuck, Flamingos
Sariska Tiger Reserve	Rajasthan	Aravalli Range	Semi-Arid, Hot	Rocky, Dry	Dhok Trees, Flame Of The Forest	Bengal Tiger, Indian Leopard, Sambar Deer
Sariska Tiger Reserve	Rajasthan	Aravalli Range	Semi-Arid, Hot	Rocky, Dry	Dhok Trees, Flame Of The Forest	Bengal Tiger, Indian Leopard, Sambar Deer
Keoladeo National Park	Rajasthan	Semi-Arid Region	Tropical, Dry	Wetlands, Lakes	Kadam Trees, Babul Trees, Acacia	Siberian Crane, Sarus Crane, Indian Python



Tal Chhapar Sanctuary	Rajasthan	Thar Desert	Tropical, Dry	Desert, Grassland	Prosopis, Acacia, Neem	Blackbuck, Indian Fox, Indian Hare
Kutch Desert Wildlife Sanctuary	Gujarat	Rann of Kutch	Tropical, Dry	Desert, Salt Marshes	Khijado, Prosopis, Capparis	Indian Wild Ass, Chinkara, Desert Fox
Tadoba Andhari Tiger Reserve	Maharashtra	Chandrapur District	Tropical, Dry	Plateau, Teak Forests	Bamboo, Teak	Bengal Tiger, Indian Leopard, Sloth Bear
Little Rann Of Kutch Wildlife Sanctuary	Gujarat	Rann of Kutch	Tropical, Semi-Arid	Desert, Salt Marshes	---	Indian Wild Ass, Desert Fox, Indian Hedgehog, Houbara Bustard, Lesser Flamingo, Indian Gazelle

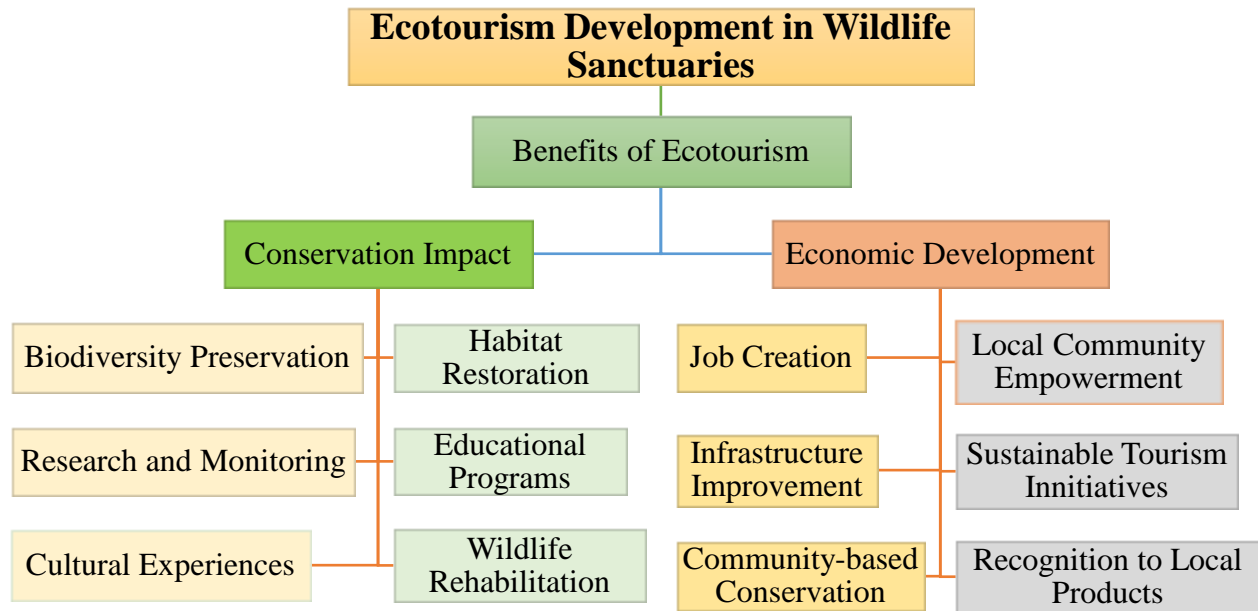
Source: Compiled by the researcher using data obtained from authentic sources.

The sanctuaries boast a diverse range of climatic conditions, from the tropical and monsoonal climate of the Western Ghats to the arid landscapes of Rajasthan's Ranthambore National Park. This climatic variability provides visitors with a chance to experience different ecosystems, each with its own set of flora and fauna adapted to specific environmental conditions. These wildlife sanctuaries have an unparalleled richness in flora and fauna, creating an enticing prospect for eco-tourism. The sanctuaries are home to an array of diverse plant species, including iconic trees like teak, sal, and sandalwood, along with a multitude of flowering plants, orchids, and grasses. The fauna is equally captivating, featuring majestic Bengal tigers, Asiatic lions, Indian elephants, and an array of unique species like the Nilgiri tahr, red panda, and Indian rhinoceros.

### Challenges and Opportunities

However, there are also challenges such as habitat degradation, wildlife disturbance, and infrastructure development that need to be addressed. A well-managed ecotourism strategy, informed by conservation principles, can harness economic benefits for local communities while ensuring the long-term preservation of these natural treasures. India's wildlife sanctuaries present an unparalleled opportunity for ecotourism development, offering a kaleidoscope of landscapes, climates, and biodiversity. By embracing responsible tourism practices, these sanctuaries can not only showcase the natural wonders of the country but also play a pivotal role in the conservation of its diverse ecosystems as well as the economic development of the nation. Policymakers can create a blueprint for ecotourism that ensures the preservation of biodiversity, fosters community empowerment, and generates economic benefits for all by adopting a holistic approach that involves stakeholders at various levels.

The Positive Effects of Ecotourism Development in Wildlife Sanctuaries have been demonstrated through the following Fig. 1.7



Source: Prepared by the Researcher

### Suggestions and Recommendations

Government cooperation at all levels—Central, state, and local—is necessary to fully realize the potential of ecotourism growth in India's wildlife sanctuaries. The following suggestions and recommendations aim to create a sustainable and inclusive ecotourism framework:

#### Strategic Actions:

- Create a dedicated task force or central organization responsible for supervising and organizing national ecotourism programs. This organization should be entitled to formulate norms and guidelines and disseminate best practices across the states.
- States should take an active role in the development of ecotourism by customizing their plans to highlight the special qualities of their wildlife reserves. It is important to take into account local ecosystems, cultural peculiarities, and conservation concerns for ecotourism development.

#### Comprehensive Rules and Regulations:

- Establish and implement clear, comprehensive and all-encompassing guidelines and policies that oversee ecotourism activities. The regulations need to incorporate protocols concerning the handling of trash, interactions with wildlife, conduct of visitors, and the establishment of infrastructure in sanctuaries.

- Encourage responsible tourism practices by introducing a certification program for eco-friendly lodging and tour companies to promote ethical tourism practices.

### **Community Involvement:**

- Involve local communities in decision-making processes and benefit-sharing mechanisms. Ensure that the economic benefits of ecotourism reach residents, encouraging their active participation in conservation efforts.
- Implement community-based tourism initiatives, such as homestays and guided tours led by local experts, to provide visitors with an authentic and immersive experience.

### **Educational Programs:**

- Develop educational programs to increase public understanding of the significance of wildlife protection among both visitors and residents. Workshops, guided tours, and interpretation centres can improve knowledge of ecosystems and encourage eco-friendly travel.

### **Infrastructure Development:**

- Develop eco-friendly infrastructure, including walking trails, viewing platforms, and nature interpretation centres, to minimize the environmental impact of tourism.
- Ensure that any development projects are in harmony with the natural surroundings and adhere to sustainable construction practices.

### **Pocket-Friendly Initiatives:**

- Introduce discounted entry fees for local residents and students to make ecotourism more accessible and encourage a sense of ownership and pride among the local population.
- Promote eco-friendly practices among tourists, such as waste reduction, water conservation, and the use of sustainable transportation options.

### **Technology Integration:**

- Implement online reservation systems and digital platforms to streamline the booking process and minimize the impact of large tourist numbers at once.
- Use technology for real-time monitoring of wildlife activities, ensuring the safety of both animals and visitors.

### **Research and Monitoring:**

- Allocate funds for ongoing research and monitoring programs to assess the impact of ecotourism on wildlife and habitats. This information can guide adaptive management strategies.
- Engage local universities and research institutions to conduct studies on the ecological and socio-economic impacts of ecotourism.

### Stakeholder Consultations:

- Conduct regular consultations with stakeholders, including environmentalists, local communities, and tourism industry representatives, to address concerns, gather feedback, and refine ecotourism policies.

### 10. Promotion and Marketing:

- Launch targeted marketing campaigns to promote ecotourism in wildlife sanctuaries globally. Emphasize the unique selling points of each sanctuary, such as rare species, diverse landscapes, and cultural richness.

By implementing these suggestions and fostering collaboration among different levels of government and local stakeholders, India can unlock the full potential of ecotourism in its wildlife sanctuaries, ensuring a harmonious balance between conservation, community development, and visitor experience.

### Conclusion:

The analysis highlights the immense potential for ecotourism in India, which can benefit not only tourists but also local residents. When developed and promoted correctly, ecotourism can create job opportunities for nearby communities, reduce conflicts between conservation authorities and locals, and encourage active participation in conservation efforts. The data on wildlife sanctuaries across states emphasizes the need for region-specific strategies to protect and preserve diverse ecosystems. Ecotourism presents a promising avenue for sustainable development and environmental conservation, with local involvement being crucial to its success. Educational programs that target tourists and communities can raise awareness and promote responsible tourism practices. Strategic planning and zoning within sanctuaries are essential to minimize conflicts and reduce environmental impact, focusing on waste management and eco-friendly infrastructure. Collaborative efforts at national and regional levels are vital, including sharing best practices and monitoring impacts. Integrating ecotourism with wildlife sanctuaries can drive sustainable development, preserve culture, and protect the environment. Through community involvement, education, strategic planning, and collaboration, ecotourism can drive positive change by aligning economic growth with the well-being of local communities and the environment.

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