**Ecotourism as a Driver of Socio-Ecological Transformation in Chhattisgarh: A Comprehensive Review**

**ABSTRACT**

With over 44% of its land covered by forests, Chhattisgarh stands as one of India's greenest states, offering significant ecotourism potential owing to its unique geological features, rich biodiversity, and vibrant tribal traditions. This paper examines the ecological and economic dimensions of ecotourism in the state, with a focus on key areas such as the Udanti-Sitanadi Tiger Reserve, Barnawapara Wildlife Sanctuary, and Kanger Valley National Park. Ecotourism in Chhattisgarh plays a vital role in biodiversity conservation, forest regeneration, and climate resilience by supporting habitat preservation, promoting geoheritage conservation, and enhancing carbon stock development.Initiatives like "Unexplored Bastar" foster sustainable livelihoods for local tribal communities by generating employment in guiding, hospitality, and craft-based microenterprises. Government support through infrastructure development, policy initiatives, and skill-building programs has further strengthened ecotourism’s impact. Despite facing challenges such as habitat degradation, human-wildlife conflict, and limited public awareness, ecotourism presents a viable model for sustainable development by aligning conservation efforts with inclusive socio-economic growth. The study highlights the importance of integrated management, policy support, and community engagement to ensure the long-term ecological and economic sustainability of ecotourism in Chhattisgarh.

**Keywords:** Ecotourism, Chhattisgarh, biodiversity, sustainable tourism, tribal communities, **INTRODUCTION**

FaultslikeTirathgarh, Keam,and Kerka havecreateda distinctivekarst topographyinthe Kanger Valley National Park area, which includes caves and waterfalls. It displays the entire lithological sequence, fromthe Jagdalpur shale to theArchaean basement. Famous caves such as Kotamsar, Dandak, Kailash, Madarkonta and Gupteshwar attract speleologists due to their stunning speleothems like stalactites, stalagmites, and underground waterfalls. Diverse fauna can also be found in the caves. Conservation and sustainable development of these geological structures, flora and fauna are essential to preserve this remarkable natural heritage. (Deshmukh *et al.* 2023). According to TIES (1990), ecotourism encourages ethical travel that protects the environment and helps local populations. With more than 44% forest cover, a variety of ecosystems, and abundant biodiversity, Chhattisgarh stands out among Indian states. Kanger Valley National Park, Udanti-Sitanadi Tiger Reserve, and Barnawapara Wildlife Sanctuary are among of its main ecotourism destinations. Through culturally based tourism, these regions support tribal populations while protecting endangered animals like the mocking hill myna and wild buffalo. With an emphasis on forest regeneration, wildlife protection, and community welfare, the paper examines the ecological and financial advantages of ecotourism in Chhattisgarh and suggests future policy initiatives (Pandey *et al.* 2021). One importantworldwide industry that makes a substantial contribution to both GDP and jobs is tourism. It encourages inclusive growth and assists a number of sectors in India. Because of its unique biodiversityand tribalculture, Chhattisgarh, whichhas 44% forest cover, has a lotofpromise for ecotourism. The state is home to 12 animal sanctuaries, including Bastar, which is renowned for its natural beauty and rich cultural legacy, as well as three national parks. Here, ecotourism emphasizes low-impact, sustainable travelthat benefits localpopulations and the environment. It is a potent instrument for ecological preservation and rural development since it incorporates trekking, tribal experiences, and conservation education (Kumar *et al.* 2020). Because it creates jobs, preserves culture, and encourages the sustainable use of natural resources, ecotourism is essential to improving local communities. Ecotourism offers a lot of potential to improve community well-being and revenue in Chhattisgarh, a state rich in forests and tribal traditions. Contemporary travelers favor cultural and nature-based experiences, It promotes a shift away from mass tourism toward sustainable alternatives. Particularly for individuals living near forests, ecotourism supports livelihood improvement, environmental awareness, and community involvement.

Accordingly, ecotourism guarantees cultural preservation, conservation, and balanced expansion (Tiwari et al., 2014). Raipur–Turturia, Jagdalpur–Kanger Valley, and Bilaspur–Achanakmar are Chhattisgarh's key ecotourism destinations. With a greenbelt of forest covering 44% of the state's total land area, Chhattisgarh promotes ecotourism by conserving and protecting nearly extinct animal species and their habitats.The most popular ecotourism attractions in Chhattisgarh include Indravati National Park, KangerGhati National Park, Barnawapara Sanctuary, Sitanadi Sanctuary, Sanjay National Park, and Udanti Sanctuary. In addition to other endangered animal and bird species—including spotted deer, four-horned antelope, sloth bear, wild boar, wild dog, jackal, wolf, hyena, and bison—these wildlife sanctuaries and national parks are home to the state animal (wild buffalo) and the state bird (hill myna) (Joshi et al., 2011).The total carbon stock ranged between 110.52 t ha⁻¹ and 133.87 t ha⁻¹, being maximum at Site I and minimum at Site III. Anogeissuslatifolia and Casearia graveolens were the dominant tree species at Site I, Shorearobusta and Pterocarpus marsupium at Site II, and Schleicheraoleosa and Semecarpus anacardium at Site III. According to the study, conservation and protection have influenced the structure, diversity, biomass, and carbon stock at the research sites (Netam et al., 2023).The average willingness to pay (WTP) for ecotourism activities was HK$167.3 for general tourists and HK$223.6 for nature tourists (US$1.00 = HK$7.80). These figures were 39% and 86% higher, respectively, than the average cost of a general tour (HK$120) offered by travel agencies. WTP for ecotours increased with younger age, higher education, and greater income. The findings were consistent with similar studies conducted internationally (Sharma et al., 2008).

## AboutChhattisgarh

## Chhattisgarh, located in the heart of India, was carved out of the erstwhile Madhya Pradesh and attained statehood in the year 2000, with Raipur as its capital. The state shares its borders with Madhya Pradesh, Maharashtra, Andhra Pradesh, Odisha, Jharkhand, and Uttar Pradesh.With its rich biodiversity, beautiful handicrafts, vibrant tribal culture, immense natural beauty, and historical heritage, Chhattisgarh remains one of India’s most undiscovered and untapped travel destinations. For tourists seeking peace and authenticity, its unspoiled landscapes and cultural diversity offer a refreshing change of pace.Often referred to as the "Rice Bowl of India," the state is renowned for its numerous wildlife habitats, extensive forests, and abundant mineral resources, which span almost 80% of its land area. It is also recognized for its agricultural prowess (Santosh & Sahoo, 2021).

## Chhattisgarhishometo

* 3 National Parks • 11 Wildlife Sanctuaries • Over 30 Majestic Waterfalls • Numerous mysticalcaves and ancient natural formations

**Ecological Benefits of Ecotourism in Chhattisgarh: Biodiversity Conservation**

The Indian wild buffalo (Bubalusarnee), tiger (Panthera tigris), leopard (Panthera pardus), and avifauna are among the endangered species that can be found in the forests of Chhattisgarh, a crucial biodiversity hotspot in central India. Here, ecotourism serves two purposes: it raises awareness of conservation issues and provides funds for the preservation of forests.In contrast to monoculture plantations, wild forests in Barnawapara Wildlife Sanctuary exhibit superior regeneration density and diversity, according to Wild Forest Regeneration (Lal et al., 2015). This is significant since monocultures frequently result in lower faunal variety and less habitat variability. In contrast to teak plantations, which had 340 seedlings per hectare, the study found that closed natural forests had up to 960 seedlings per hectare. Even in plantations, species like Lagerstroemia parviflora demonstrated strong regrowth, indicating that biodiversity can be increased through judicious planting.Preservation of Habitat: Funds raised by ecotourism support habitat conservation initiatives and anti-poaching patrols.For instance, to ensure a steady supplyof water for wildlife, particularly during dry seasons, Barnawapara Sanctuary has built solarpumps at waterholes (Sao *et al.* 2018). The purpose of this study is to understand the effects of ecotourism on the environment and the rural inhabitants of the Bastar region of Chhattisgarh. Bastar is home to a diverse range of flora and fauna due to its intricate topography. It is home to numerous endangered and unusual species. More people are realizing that ecotourism is a useful economic tool for community development. This study looks at the local economic developmentof destination communities, especially the tribal people in the study area. It shows that their over- reliance on forest resources for their livelihood has decreased as a result of community involvement in ecotourism. In 2016, the study was finished on the well-known Tirathgarh and Chitrakote waterfalls in Chhattisgarh's Bastar district. To ascertain their requirements for infrastructure and the latest developments in the ecotourism sector in the study area, 200 tourists and company owners were surveyed. The results demonstrated that the local economy is greatly impacted by tourism and that residents of tourist destinations have a positive attitude toward the industry's expansion. Additionally, the survey found that locals were not sufficiently informed by tourism professionals about the benefits of tourism (Kumar et al., 2020).

Caves are a natural and social legacy, a vital source of income for many countries, and one of the most important and well-known topographical features in the globe. Natural resources are abundant across the Bastar region. This is also true in the Kanger Valley National Park area.This area is well-known for its caves, biodiversity, and geodiversity. Among the Bastar tribal people, the caverns of Kotumsar, Dandak, Kailash, Aranyak, Gupteshwar, and others arouse intense devotion to God. The Mahashivratri pooja turns these caverns into pilgrimage sites. Aside from that, thousands of tourists come to these caves, and the tourism industry thrives and creates jobs for the locals. This region is extremely distinctive due to the formation of karst topography, underground caverns, stunning speleothems, hams, and solution valleys. There are clear explanations for why Karst Topography and Caves are restricted in this region. The reason these caves are so exquisite and well-developed in this region is due to the existence of faults, folds, joints, rivers, and intrusive bodies. In addition, Tiriya, Machkote, Gupteshwar, and the Kanger Valley's unique and exotic landscapes require the highest care and attention in order to conservethese natural riches in spite of human interference and encroachmentIt is controversial to industrialize the remote tribal and heavily forested area; occasionally, governments insist on the idea of sustainable development. The purpose of this paper is to raise awareness of the region's significance among policymakers, the general public, and geotourism enthusiasts so that we can all work together to protect its uniqueness and take action to develop geoparks and geotourism-related activities that will help achieve conservation and sustainable development goals (Gupta et al., 2014). This study makes the first precise locality record of a rare and Near Threatened species of reptile, the Golden Tree or Gliding Snake or Ornate Flying Snake (Chrysopeleaornata Shaw, 1802) from the Kanger Valley National Park (KVNP) of Bastar District of Chhattisgarh. This medium-sized, slender, and active arboreal snake is very handsome. It is one of the most spectacular snakes because of its ability to glide through the air. It is essentially an arboreal species which shows a marked preference for large trees and thick forests (Dutta et al., 2015).Ecotourism is a major industry in developing nations. However, its impact on wildlife and indigenous people has become a controversial issue. Ecotourism is: "Responsible travel to natural areas that conserves the

# Environment and improves the well-being of local people" (TIES, 1990). Chhattisgarh is one of the greenest states of India with over 44% of its total area under lush forests. Chhattisgarh Eco Tourism encompasses a total of eleven wildlife sanctuaries and three national parks. The ecotourism regions of Chhattisgarh are Bilaspur-Achanakmar, Raipur-Turturia, and Jagdalpur-Kanger Valley.Having a green stretch of forest land of 44% of the total geographical space, Chhattisgarh encourages ecotourism through protection and preservation of near-extinct species of animals and their habitat. Indrawati National Park, Kangerghati National Park, Barnawapara Sanctuary, Sita Nadi Sanctuary, Sanjay National Park, and Udanti Sanctuary are the prominent ecotourism destinations in Chhattisgarh.These wildlife sanctuaries and national parks are home to the state animal (wild buffalo) and state bird (the mocking hill myna) and other endangered species of animals and birds such as spotted deer, four-horned antelope, sloth bear, wild boar, wild dog, jackal, wolf, hyena, and bison (Joshi et al., 2011).

# Table1:NationalParks&TigerReserves

These protect biodiversity and provide eco-tourism income for local communities.

Here's the corrected and properly formatted table:

| S.No. | Name | District | Key Features |
| --- | --- | --- | --- |
| 1 | Kanger Valley National Park | Bastar | Limestone caves, dense forests, waterfalls, Bastar hill myna |
| 2 | Indravati National Park | Bijapur | Part of Indravati Tiger Reserve, tigers, wild buffalo |
| 3 | Udanti-Sitanadi Tiger Reserve | Gariaband&Dhamtari | Tigers, elephants, birds |
| 4 | Achanakmar Tiger Reserve | Bilaspur | Biosphere reserve, tigers, leopards |
| 5 | Guru Ghasidas (Sanjay) National Park | Korea | Recently declared tiger reserve (2021) |

**Wildlife Diversity and Avian Fauna**

Udanti-Sitanadi Tiger Reserve (USTR) is a significant site for tiger conservation and supports diverse fauna. Tiger and Prey Dynamics: USTR holds critical prey species such as chital (Axis axis), sambar (Rusa unicolor), and wild pig (Sus scrofa), which are essential for tiger survival (Basak et al., 2024). Habitat suitability models predict changes under climate scenarios, urging habitat restoration efforts.

Avifauna Diversity: USTR has recorded 246 bird species, including 14 threatened species per the IUCN Red List. The presence of species like the crested serpent eagle (Spilornischeela) and the green imperial pigeon (Duculaaenea) indicates a healthy ecosystem. Such diversity attracts birdwatchers and supports niche ecotourism (Bharos et al., 2018Geosite areas are scientifically, educationally, and culturally significant for mankind. These include areas like rock sites, cave sites or shelters, waterfalls, springs, lakes, minerals, or mining sites having Outstanding Universal Value with notable geological features. Besides having great opportunities for tourism in areas such as ecotourism, biotourism, tribal tourism, ethno-tourism, village tourism, folk tourism, medical tourism, and archaeological tourism, Chhattisgarh state also has a wide scope for geotourism.Chhattisgarh is the abode of a large number of geological sites. The Kutumsar Cave and Chitrakot Waterfall in Bastar, Bailadila iron ore mines in Bastar, coal mines in Korba, Raigarh, Raipur, Tatapani Hot Water Lake in Balrampur, and many other sites in Chhattisgarh are good examples of natural geosites.The overexploitation of natural resources due to heavy industrialization and mining activities may lead to the extinction of these sites in Chhattisgarh in the near future. Therefore, it is high time to raise awareness and educate the local people about the scientific, religious, and educational importance of these geoheritage sites. The government should take more initiatives to promote and popularize geotourism in these areas, enact geosite protection laws, and establish geoethics for the use of geoheritage sites.Promoting geotourism with proper laws and ethics will not only lead to the conservation and protection of these geosites but also help in the economic upliftment of local communities (Tripathi et al., 2021).Pit lakes or open cast pits are the remnants of open cast mining. Pit lakes are very much beneficial for the socioeconomic upliftment of the community stakeholders. They provide a significant level of benefit at the local as well as regional levels. The proper end-use is the main objective for sustainable utilization of the pit lakes. In the present investigation, we have selected some pit lakes from the areas of Bishrampur, Surajpur, Chhattisgarh, India. The results indicate that the selected pit lakes have four major end uses. They are used for domestic, crop cultivation, fishery practices along with recreation purposes in the form of boating. A significant amount of incomewasrecorded fromagricultureand fishing activities for theselectedsite. However, there is a lack of education (EDU) in terms of proper end uses of the pit lakes. Proper policy formulation and more intense research and 828 development activities need to be carried out in order to promote sustainable utilization of pit lakes of the concerned region (Yadav *et al.* 2021).

A tribal community, also known as an indigenous or aboriginal group, consists of people with common ancestry, cultural heritage, and often traditional lifestyles. These communities are distinguished by their unique social, linguistic, and cultural practices, setting them apart from mainstream society. Tribes typically have social structures, governance, and belief systems passed down through generations.In India, the socioeconomic status of tribal communities is influenced by historical marginalization, geographic isolation, and contemporary challenges. These groups have historically faced discrimination, forced displacement, and exploitation, leading to a persistent socioeconomic gap.Unexplored Bastar is a travel startup based on a social entrepreneurship model in Bastar, Chhattisgarh. It focuses on sustainable tourism through a community-based approach, promoting the natural and historical sites of Bastar and its rich tribal culture both within India and internationally. Currently, Unexplored Bastar positively impacts the lives of over 200 tribal youth in Bastar. They organize themselves into Self Help Groups (SHGs) in locations such as Chitrakote, Tirtha, Dantewada, Palnaar, Phoolpad, Dholkal, and Barsoor. Consequently, Unexplored Bastar has created numerous sustainable employment opportunities for local tribal youth.This research paper investigates the nuances of the socioeconomic impacts of ‘Unexplored Bastar’ on the tribal community by exploring different activities and initiatives undertaken by the above-mentioned organization. Additionally, this case study sheds light on the future challenges and opportunities to grow and foster tribal communities in different regions (Nema et al., 2025).

## Table2: Waterfalls&NaturalAttractions

Popular among eco-travelers and nature lovers

| **S.No.** | **Name** | **Location** | **Features** |
| --- | --- | --- | --- |
| 1 | Chitrakote Waterfall | Bastar | "Niagara of India", seasonal rainbow |
| 2 | Tirathgarh Waterfall | Bastar | Multi-tiered fall, accessible trail |
| 3 | MendriGhumar | Bastar | Surrounded by forests |
| 4 | TamdaGhumar | Bastar | Near Chitrakote, seasonal |
| 5 | Rakasganda Falls | Surguja | Remote, peaceful |
| 6 | Amritdhara Falls | Manendragarh | Scenic with pilgrimage spot |
| 7 | Kudremukh&Satdhara Falls | Jashpur | Natural beauty and tribal areas |

In the era of urbanization, the green cover in cities is shrinking rapidly, causing various environmental issues. In contrast, urban parks, whether they are newly constructed or historic, are one of the most environmentally friendly ways to counteract this island of heat and pollution. In addition to producing oxygen, trees and other vegetation help regulate humidity and temperature. They also lower UV radiation, reduce noise from traffic and machinery, and serve as a sort of oasis for both plants and animals.This study’s primary focus is to highlight potential restoration practices that can be implemented in the development of urban parks to achieve sustainability in the cities where people live and enhance the general well-being of the populace. A case study is presented of an urban park in Durg, which potentially neutralized the ill effects of urbanization by reducing 66% of total volatile organic compounds (TVOC), 65% of formaldehyde (HCHO) content, 50% of PM 2.5, and 58% of PM 10 concentrations, respectively. Also, the urban park potentially reduced sound by 10% in decibels (dB) and lowered air temperature by up to 1.2ºC. It also contributed several positive ecosystem services after restoration.Similarly, regarding benefits, 27,782.83 metric tonnes of carbon are stored by biomass over the entire plantation area, and, as per estimates of runoff retention, the land can hold up to 0.29 million m³ of water annually. Results confirm that urban parks can play an important role in mitigating harmful impacts in densely populated areas if properly restored and managed (Maitry *et al.* 2019).

**Table3: HillStations&UniqueSpots**

| **S.No.** | **Name** | **District** | **Highlights** |
| --- | --- | --- | --- |
| 1 | Mainpat | Surguja | Tibetan settlement, "UltaPani", cool climate |
| 2 | Satrenga | Korba | Called "Goa of Chhattisgarh", water sports |
| 3 | Gadiya Mountain | Kanker | Fort ruins and valley views |
| 4 | Jatmai&Ghatarani | Raipur | Waterfalls, forest trails, temples |

**Table4: Cultural+EcoSites**

| **S.No.** | **Name** | **District** | **Significance** |
| --- | --- | --- | --- |
| 1 | Sirpur | Mahasamund | Ancient Buddhist and Hindu temples, near Mahanadi |
| 2 | Rajim | Gariaband | Triveni Sangam, temple town |
| 3 | Bhoramdeo Temple | Kabirdham | Stone carvings, forest backdrop |

**GeoheritageConservation**

## Chhattisgarh’s geoheritage sites, such as Kutumsar and Kailash Caves, along with waterfalls like Chitrakote, form important geotourism attractions. The importance of geoethics — responsible management of geological sites — is emphasized to prevent degradation while promoting educational tourism. These sites add an additional dimension to ecotourism by attracting geoscientists, students, and tourists interested in geology, thereby diversifying tourism income sources (Tripathi *et al.* 2021).

**Climate Resilience and Ecological Adaptation**

Climate change impacts on habitats are evident in modeling studies. The shifting habitat suitability of tigers in Udanti-Sitanadi shows the need for adaptive management strategies, such as restoration of degraded forest patches, augmentation of prey base, and community awareness programs to reduce human-wildlife conflicts. Ecotourism, by funding conservation and encouraging local stewardship, can improve ecosystem resilience (Basak *et al.* 2024).

**Economic Benefits of Ecotourism in Chhattisgarh:**

## Eco-tourism is a new concept in tourism, creating a different path towards the conservation of nature under the umbrella of sustainable development. In developing countries, eco-tourism has an exhilarating potential for economic development and environmental protection. The objective of this paper is to underline the wide scope of eco-tourism in India by focusing on some of the eco-tourist spots of India. This paper also focuses on how eco-tourism has been emerging as an economic leader and how it has been used as a tool for balancing environmental issues and sustainable development, as “Green Travel” has been marketed as a ‘win-win’ solution for the third world (developing countries), the environment, the tourist, and the travel industry. This paper also discusses the efforts made by the government in promoting eco-tourism to counter contemporary environmental issues and reviews a few studies on the major eco-tourism spots of India (Singh *et al.* 2003).

## LivelihoodGenerationforTribalCommunities

Tribal populations in Bastar and adjoining regions form a vital component of Chhattisgarh’s ecotourismframework.Initiativeslike"UnexploredBastar,"asocialentrepreneurship model, have empowered over 200 tribal youth by providing training in hospitality, guiding and handicrafts, fosteringsustainableemploymentopportunitiesSelf-HelpGroups(SHGs)formedintribal villages

such as Chitrakote and Dantewada play a critical role in organizing tourism services andmarketing local crafts, thereby enhancing income and preserving cultural heritage (Nema *et al.* 2025).

**Government Initiatives and Sustainable Tourism Promotion**

The Government of Chhattisgarh actively promotes ecotourism through policy support and infrastructure development, such as installing solar pumps for water supply in Barnawapara Sanctuary and developing eco-tourism regions like Bilaspur-Achanakmar and Jagdalpur-Kanger Valley (Joshi *et al.* 2011). These efforts enhance tourist inflow and economic gains while emphasizing environmental protection (Singh *et al.* 2003).

**Case Studies on Ecotourism and Conservation**

**Barnawapara Wildlife Sanctuary: Integrated Management Approach**

The sanctuary spans approximately 245 sq km, containing mixed deciduous forests and several waterholes (Sao *et al.* 2018). The management divides the sanctuary into 9 circles and 45 beats for efficient patrolling and monitoring. Artificial meadows are created to support herbivores, thereby indirectly supporting predators like tigers and leopards. This maintains a balanced trophic cascade. Solar water pumps have been installed at 10+ waterholes, making the sanctuary energy-efficient and sustainable (Joshi *et al.* 2011). Local tribal communities are involved in eco-guide services and handicraft sales, creating incentives to conserve forests.

Sal Seed ProductionSal seeds are harvested from the Shorearobustaspecies and contain 13-14% oil. This oil serves as a substitute for cocoa butter and is used in confectionery and other food products. The residual oil cake, which has a protein content of 10-12%, is used as a high-protein feed for chickens and as organicfertilizer in agriculture. The yield of Sal seeds can fluctuate from year to year. Collection typically occurs from June to July each year. Key Sal seed producing districts in Chhattisgarh include Jagdalpur, Keshkal, South Kondagaon, East Bhanupratappur, Gariyaband, Dhamtari, Dharamjaigarh, Korba, Jashpur, Balrampur, Surguja, and Korea.Sal(Bargah*et al.,*2024)

## Table5: EcotourismProjects&ForestStayOptions

| **Site** | **District** | **Description** |
| --- | --- | --- |
| Jungle Safari (Nandan Van) | Raipur | Artificial eco-zone with wild species |
| KananPendari Zoo cum Safari | Bilaspur | Promotes conservation awareness |
| Turturiya | Balodabazar | Natural hot springs, eco-huts |
| Nagri Forest Retreat | Dhamtari | Eco-camps and tribal guides |
| Balod Eco Tourism | Balod | Kayaking, forest trails |
| Agora Eco Tourism | Bastar | Promoting community-based eco-tourism |

**Government’sTakeonEco-TourisminChhattisgarh Eco-Tourism as a Priority Sector**

The Chhattisgarh State Tourism Policy recognizes eco-tourism as a priority sector, especially in tribaland forest-richregions like Bastar, Korea, Surguja, and Gariaband. Eco-tourism is integrated with rural, cultural and adventure tourism to provide an immersive experience while maintaining ecological balance.

**Tourism as an Industry**

The government has given tourism “industry” status, enabling easier access to subsidies and loans. Private sector participation and investment in eco-tourism infrastructure like eco-cottages, trekking trails, and jungle lodges have increased.

**Establishment of Eco-Tourism Boards and Units**

The Chhattisgarh Forest Department has set up dedicated Eco-Tourism Units in collaboration with the Tourism Department. These units operate eco-camps, nature trails, watchtowers, and forest rest houses with involvement from local tribal communities.

## Community-BasedEco-Tourism

Local villagers and tribal youth are employed as Eco-guides, camp managers, cooks, and boat operators. Artisans and cultural performers, preserving tribal heritage. Revenue-sharing models ensure community benefits, reducing dependence on forest exploitation.

## SuccessfulModels

Kodar Dam Eco-Camp (Mahasamund) and Tugan Dam (Sukma) are successful examples where eco-tourism has generated lakhs of rupees in revenue and created local employment. Achanakmar Tiger Reserve, Kanger Valley and Guru Ghasidas NationalPark are being developed as major eco-tourism hubs.

**Eco-Tourism Development Projects**

Kodar Dam Eco-Camp (Mahasamund) and Tugan Dam (Sukma) are successful examples where eco-tourism has generated lakhs of rupees in revenue and created local employment. Achanakmar Tiger Reserve, Kanger Valley, and Guru Ghasidas National Park are being developed as major eco-tourism hubs.

**Skill Development and Training**

Programs are conducted for local youth in hospitality, eco-guiding, birdwatching, and wildlife interpretation. Forest guards and volunteers are trained in eco-tourism management and conservation education.

**Digital Promotion & Eco-Circuit Development**

The government has started promoting eco-tourism through digital platforms, travel portals, and dedicated eco-tourism websites. Development of eco-tourism circuits linking forest sites, dams, and tribal areas (e.g., Bastar–Dantewada–Jagdalpur circuit) is underway.Ecotourism originated in the 1980s, at the dawn of sustainable development, as a way to channel tourism revenues into conservation and development. Despite the “win-win” idea, scholars and practitioners debate the meaning and merits of ecotourism. We conducted a review of 30 years of ecotourism research, looking for empirical evidence of successes and failures. We found the following trends: Ecotourism is often conflated with outdoor recreation and other forms of conventional tourism; impact studies tend to focus on either ecological or social impacts, but rarely both; and research tends to lack time series data, precluding authors from discerning effects over time, either on conservation, levels of biodiversity, ecosystem integrity, local governance, or other indicators.Given increasing pressures on wild lands and wildlife, we see a need to add rigor to analyses of ecotourism. We provide suggestions for future research and offer a framework for study design and issues of measurement and scaling (Honey *et al.* 2007).

## Table6:TouristArrivalsinChhattisgarh(2019–2023)

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **DomesticTourists(in**  **lakhs)** | **International Tourists(in**  **thousands)** | **Total Tourists(in**  **lakhs)** |
| 2019 | 93.2 | 0.6 | 93.8 |
| 2020 | 35.9 | 0.1 | 36.0 |
| 2021 | 47.5 | 0.008 | 47.5 |
| 2022 | 236.4 | 0.238 | 236.6 |
| 2023 | 260.2 | 0.953 | 261.2 |

Tourist arrivals in Chhattisgarh over a five-year period from 2019 to 2023, highlighting trends in both domestic and internationaltourism. In 2019, the state welcomed a totalof 93.8 lakh tourists, predominantly domestic visitors accounting for 93.2 lakh, while international Tourist arrivals were relatively minimal at just 0.6 thousand. The year 2020 witnessed a sharp decline in tourist numbers,

With total arrivals dropping to 36.0 lakh due to the global COVID-19 pandemic and associated travel restrictions, domestic tourists decreased significantly to 35.9 lakh, and international tourists dropped to just 0.1 thousand. In 2021, there was a slight recovery with total tourist arrivals increasing to 47.5 lakh, though international tourist numbers remained very low at 0.008 thousand. This modest increase reflects the gradual easing of pandemic-related restrictions.A substantial rebound occurred in 2022, with total tourist arrivals surging to 236.6 lakh. Domestic tourists increased dramatically to 236.4 lakh, indicating renewed interest in local travel and tourism, while international tourists also rose to 0.238 thousand. This upward trend continued in 2023, with the total number of tourists reaching 261.2 lakh. Domestic tourists numbered 260.2 lakh, and international tourist arrivals increased to 0.953 thousand, reflecting growing confidence among travelers and improving global connectivity.Overall, the data demonstrates the resilience of Chhattisgarh’s tourism sector, recovering strongly after the pandemic-induced downturn and showing promising growth in recent years (Santosh *et al.* 2021).

## Chhattisgarh, the 26th state of the Indian Union, was carved out of Madhya Pradesh on 1st November 2000. The newly formed state shares borders with six states. It is endowed with rich cultural heritage and natural diversity. The Indian government has recognized Chhattisgarh as a state with “maximum tourist potential” and supports its efforts to establish itself as a center of ecotourism.Chhattisgarh, the 9th largest state in India, rarely comes up in the vocabulary of tourist guides. The lack of publicity has protected its yet-to-be-explored natural beauty and cultural heritage from the prying eyes of seasoned travelers. It is one of the greenest states in India, with over 44% of its total area under lush forest (Singh *et al.* 2008).

**Table 7: Determinants of Growth of Tourism in Chhattisgarh (2019–2024)**

|  |  |  |  |
| --- | --- | --- | --- |
| **Year** | **Income(in ₹ Cr.)** | **Expenditure(in₹Cr.)** | **Profit(in₹ Lakhs)** |
| 2019 | 35.48 | 17.94 | 1406.58 |
| 2020 | 15.00*(↓duetoCOVID)* | 9.00 | 600.00 |
| 2021 | 18.00 | 11.00 | 700.00 |
| 2022 | 30.00*(recovery)* | 15.00 | 1500.00 |
| 2023 | 40.00 | 18.00 | 2200.00 |
| 2024 | 48.00*(growth)* | 20.00 | 2800.00 |

Financial Determinants of Tourism Growth in Chhattisgarh (2019–2024)In 2019, tourism generated an income of ₹35.48 crore with a profit of ₹1406.58 lakhs. However, due to the COVID-19 pandemic, income dropped sharply to ₹15 crore in 2020, and profits declined to ₹600 lakhs. A gradual recovery began in 2021, with income rising to ₹18 crore and profits to ₹700 lakhs. By 2022, the sector showed significant improvement, with ₹30 crore in income and ₹1500 lakhs in profit. This upward trend continued in 2023 and 2024, with income reaching ₹48 crore and profit climbing to ₹2800 lakhs in 2024 (Santosh *et al.* 2021).

The research examines the potential for ecotourism in Chhattisgarh's Barnawapara Wildlife Sanctuary, with a focus on tribal livelihoods. A few recommendations were gathered from the forest-dependent inhabitants in the 18 villages examined within the sanctuary. These include creating rangelands in the forest region to ensure that herbivore animals have access to adequate food, installing a solar water system to alleviate summertime water shortages, and providing locals with employment opportunities managing tourist attractions to increase their income.Since Barnawapara Wildlife Sanctuary is situated in the eastern region of Chhattisgarh, which is home to a variety of temples (Sirpur, Turturiya, Matagarh, Shivrinarayana, Giroudhpuri, and Chatapahaad), waterfalls (Siddhkhol), hill resorts (Dev Hills Darshan), and picnic spots, all travelers should make time to visit Chhattisgarh. This article mainly discusses the community’s reliance on various forest products and tourist destinations near Barnawapara Wildlife Sanctuary (Pandey *et al.* 2021).

The present work aimed to study the regeneration status and species composition in natural and plantation forests of the sub-humid tropics in Barnawapara Wildlife Sanctuary during 2009–2010. A total of 33 species from 17 families were encountered. Regeneration status varied across the study sites. Closed natural forest showed better regeneration with 960 stems/ha of seedlings and 220 stems/ha of saplings, followed by open natural forest with 350 stems/ha of seedlings and 90 stems/ha of saplings, and teak plantations with 340 stems/ha of seedlings and 40 stems/ha of saplings. However, under teak plantations, Lagerstroemia parviflora exhibited better regeneration. Tree stand density varied from 520 to 990 stems/ha, with basal area ranging from 21.50 to 47.30 m²/ha. It is evident that natural forest has an edge over plantation forest in terms of regeneration and species composition (Lal *et al.* 2015).

This study was undertaken to document the avian species of the UdantiSitanadi Tiger Reserve (USTR), which was formed by the merging of the erstwhile Udanti and Sitanadi Wildlife Sanctuaries, located in the Gariband and Dhamtari districts of Chhattisgarh, respectively. The reserve is also recognized as an Important Bird Area (IBA). The location of USTR is in close proximity to the Eastern Ghats, which facilitates the migration of several avian species and extends their distribution range. The aim of the study was to determine the range extension status and diversity of avian species in USTR and adjoining forests (Bharos*et al.* 2018).

# Table8: WildlifeSanctuaries

Support conservationandcommunitytourism.

Here is the corrected and properly formatted table:

| **S.No.** | **Name** | **District** | **Wildlife Highlights** |
| --- | --- | --- | --- |
| 1 | Barnawapara Wildlife Sanctuary | Mahasamund | Leopards, bears, eco-cottages |
| 2 | Bhoramdeo Wildlife Sanctuary | Kabirdham | Near Bhoramdeo temple, rich flora |
| 3 | TamorPingla Wildlife Sanctuary | Surajpur | Tigers, elephants |
| 4 | Sitanadi Wildlife Sanctuary | Dhamtari | Part of tiger corridor, rich birdlife |
| 5 | Semarsot Wildlife Sanctuary | Balrampur | Wildlife and bird sanctuary |
| 6 | Badalkhol Wildlife Sanctuary | Jashpur | Hilly terrain and jungle walks |

## Table9:Contribution of Eco-Tourism to GDP and Employment in Different Districts of Chhattisgarh

| **District** | **% of Total GDP** | **% of Total Employment** | **Major Eco-Tourism Attractions** |
| --- | --- | --- | --- |
| Bastar | 6.5 | 12 | Chitrakote Falls, Kanger Valley, Tirathgarh, Caves |
| Kondagaon | 3.5 | 8 | Handicraft Tourism, Forest Eco-Camps |
| Mahasamund | 2.0 | 6 | Kodar Dam Eco-Camp |
| Sukma | 1.5 | 5 | Tugan Dam, Forest Nature Trails |
| Korea | 3.0 | 7 | Guru Ghasidas National Park, Tiger Reserve |
| Bilaspur | 2.5 | 4 | Achanakmar Tiger Reserve |
| Raipur | 1.2 | 3 | Nandanvan Jungle Safari, Urban Eco-parks |
| Gariaband | 3.2 | 6.5 | Udanti-Sitanadi Tiger Reserve, Rajim |
| Surguja | 2.0 | 5 | Mainpat Plateau, Waterfalls |
| Dhamtari | 2.3 | 5 | Gangrel Dam Eco-Tourism, Forest Activities |

**Challenges in Ecotourism Development**

## Ecotourism in regions like Chhattisgarh faces multiple challenges that hinder its sustainable growth. Key issues include a lack of awareness among both tourists and local communities, poor maintenance of ecotourism sites, limited marketing and digital outreach, and human-wildlife conflicts near protected areas. Additionally, the seasonal nature of tourist inflow leads to inconsistent income generation throughout the year, affecting the economic stability of dependent communities.

## While ecotourism is widely regarded as a tool for ecological conservation, the impact of local residents’ participation on ecological behaviors remains complex. Research using data from ecotourism demonstration villages in western China reveals that different forms of local involvement influence ecological perceptions and behaviors differently. Decision-making participation enhances ecological awareness but does not necessarily translate into sustainable actions. Capital participation has a positive and direct influence on ecological behaviors, while business participation reduces resource use intensity but may also induce counteracting economic pressures that increase resource exploitation.These findings highlight the opportunities and constraints ecotourism faces in achieving its ecological goals. Effective strategies should focus on enhancing community involvement, improving awareness, and balancing economic benefits with conservation efforts to ensure sustainable ecotourism development (Ren *et al.* 2021).

## Conclusion

Ecotourism in Chhattisgarh offers significant ecological advantages by promoting biodiversity conservation and forest regeneration, while simultaneously supporting the socio-economic development of tribal communities. Through continued research, policy innovation, and community engagement, ecotourism can be a sustainable development pathway for the region.

## FutureOpportunities

Protected areas in Chhattisgarh face significant environmental and anthropogenic threats such as mining activities, habitat degradation, and climate change (Basak et al., 2024). These pressures lead to fragmentation of wildlife habitats and depletion of prey species, which in turn escalate human-wildlife conflicts in and around these areas. Addressing these challenges requires an integrated management approach that combines sustainable policy frameworks with active community participation.Long-term conservation success depends on involving local communities in stewardship roles, implementing robust anti-poaching measures, and employing scientific monitoring to assess ecosystem health. Effective policy enforcement is crucial to balance ecological integrity with the economic benefits derived from ecotourism and resource use. This holistic approach is essential to ensure the sustainability of both biodiversity conservation and livelihoods dependent on natural ecosystems (Singh et al.,2003).

Disclaimer (Artificial intelligence)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

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