

Assessment of Environmental Impacts of Tourism in Jhargram District, West Bengal

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Abstract

Tourism has multifaceted effects, including the social, cultural, economic, political, environmental, and several other dimensions of society. The environmental effect has been a prominent concern, since the swift expansion of tourism has presented both possibilities and difficulties for the industry and society. This study evaluates the environmental effects of tourism in Jhargram District, West Bengal. The results indicate that tourism significantly contributes to enhancing environmental consciousness, forest conservation, biodiversity preservation, and park upkeep. Concurrently, respondents recognized plastic waste, wildlife disruption, strain on forest resources, soil erosion, and water contamination as significant environmental issues linked to tourism. The One-Sample t-test established that both the positive and negative environmental effects of tourism are statistically significant ($p < 0.001$). Although tourism aids environmental protection and sustainable development, effective environmental management, waste reduction, and responsible tourist practices are crucial to mitigating ecological degradation and ensuring long-term sustainability in Jhargram District.

Keywords: Environment, Sustainable Tourism, Ecotourism, Biodiversity, Pollution

I. INTRODUCTION

As one of the most dynamic and rapidly expanding industries globally, tourism is having a major impact on economies and ecosystems on a global scale. Its power to influence a region's future growth is enormous. From combating climate change and gender inequality to eradicating poverty, the United Nations has set 17 Sustainable Development Goals (SDGs) that tourism may readily help achieve. With the right approach, it has the potential to become an influential catalyst for good change in the area. When it comes to developing nations like India, tourism is king. It boosts GDP, brings in a tonne of money, and generates a tonne of jobs. With a lot of room to grow and branch out, it has become one of the most dynamic service industries in the country. The expansion of India's tourist industry, however, is not without its risks.

Travel attracts people from all over the world, who then embark on exciting adventures, learn about other cultures, and immerse themselves in their values and customs. Both well-known and lesser-known locations draw visitors, who in turn help the tourism sector and the environment thrive. It helps with community welfare, natural resource conservation, and the preservation of socio-cultural legacy. Sustainable environments are characterised by verdant landscapes, abundant wildlife, picturesque coastlines, expansive deserts, preserved historical artefacts, and emphasised social and cultural values. These aspects showcase the welcoming hospitality of local communities towards tourists and enhance the attraction for travellers. Environmental sustainability and the expansion of the tourist industry go hand in hand. This highlights the need of working together to improve tourism while protecting the environment, so that the sector and the communities it supports may enjoy long-term prosperity.

Sustainable tourism requires both immediate and far-term responses to the environmental problems caused by the industry's meteoric rise, particularly in the modern era. Among these many problems are the following: species loss, desertification, pollution, waste, land degradation, and the unchecked and unsustainable use of natural resources. Weak environmental practices in pollution and waste management, as well as health and safety precautions that are inadequate, and regulations that are not effectively implemented all contribute to making these problems worse. Natural resources, including energy, food, and picturesque landscapes, have been irretrievably depleted and endangered due to the absence of participation and engagement of local people and communities. Disruptions to local ecosystems and the lives of local residents aren't the only things that might happen as a result of tourism-related pollution; occasionally, the damage is permanent.

There are two ways to look at the effects of tourism on the environment: positively and negatively. Depletion of natural resources, land degradation, pollution, and so on are some of the bad consequences, whereas direct monetary contribution, increased awareness, and increased government revenues are some of the beneficial consequences. Ecotourism, the newest fad in the tourist business, is all about balancing the preservation of natural areas with the preservation of the people cultures that call these places home. Ecotourism, in contrast to

conventional tourism, has two primary goals: first, it actively encourages eco-friendly travel practices and strives to guarantee that tourists do not harm native species or ecosystems by littering or bringing in harmful substances. Promoting "sustainable" tourism is an additional goal of ecotourism. Ecotourism is incompatible with destructive tourism or tourism that causes local traditions and values to perish.

II. REVIEW OF LITERATURE

Chatterjee, Sayani & Sarkar, Abhisek. (2024). To what extent does political turbulence impact the prosperity of tourist-related enterprises, the quantity of tourists flocking to West Bengal, and the total income produced by the tourism sector? That was the driving force behind our research. Political risk and economic growth are examined in this study to determine their nonlinear impact on tourist revenue. Unobserved component model approach identification has made fresh secondary data available, however it only provides a high-level overview of the issue. As a result, we spoke with academics, regional tourist board members, and hotel managers who are all considered authorities in the industry. Experts analysed the prospects, challenges, and potential shifts confronting West Bengal's tourism industry in the wake of five years of political unrest in the region. The findings corroborate those of other research showing that, at least temporarily, political unrest decreases tourism. Still, many long-term discoveries have resulted from the expert interviews with major provincial cities. Political instability is good for cities that don't have crisis zones and have strong tourism businesses. Locations popular with tourists from countries and regions including China, Europe, and the US are suffering the most. Most of the less developed tourism infrastructure cities in eastern West Bengal were mostly untouched by the political unrest.

Malladeb, Vikramaditya et al., (2023) Agrotourism, a component of the green economy's expansion as a site for tourist attraction, may offer farm owners a more stable income while also diversifying their company's operations. Many small farms now rely on this as a survival mechanism. This is because agrotourism provides a separate source of income and can occur even when crops aren't in season. An uptick in traffic can be a godsend for economically distressed rural towns. The acronym "agro" can mean either "agriculture" or "agronomy," the two main branches of the agricultural sciences. The agricultural raw materials generated in the geographically separate territory of Jungalmahal are the origins of the food processing business in West Bengal, India. Food grains, oil seeds, horticulture, and fisheries are all part of this category. The word "agrotourism" is a type of vacation that includes visits to farms, rural areas, and agricultural goods. According to studies, cities that welcome agrotourism operations get a boon from all the tourists.

Deb, Santus et al., (2023) Carbon dioxide (CO₂) emissions at popular tourist spots were examined in this study, along with the effects of commerce, consumption spending, power use, and population. The study employs the generalised method of moments (GMM) and Quantile Regression methodologies using a panel dataset consisting of 32 nations across several continents from 2001 to 2020. Carbon dioxide emissions rise as a result of variables including GDP per capita, power consumption, and population expansion, and the results imply that tourism (arrivals and earnings) might mitigate environmental damage. Increasing trade openness can lower CO₂ emissions, and adjusting for end use confirms this. The study hints that more international integration, responsible consumerism, and sustainable tourist practices might help reduce CO₂ emissions. To reduce carbon emissions while promoting sustainable economic growth, popular tourist spots should build eco-friendly infrastructure, adopt eco-friendly consumer habits, and build sustainable urban areas to house a growing population.

Raha, Shrinwantu et al., (2021) This research set out to identify the Ecotourism Potential Zones (ETPZs) in West Bengal by employing a weighted linear algorithm in conjunction with three sustainable tourism criteria. Additionally, sixteen factors were included in the study. This inquiry concerns three aspects: the physical, the social, and the accessibility of scenic beauty and infrastructures. There are a total of nine criteria that contribute to the availability of scenic beauty and infrastructures (ASI), five aspects that fall under the social (S) category, and two characteristics that are physical (P). Using the Dominant and Distinctive Function (DDF) concept, we classified ecotourism potentiality maps as high, moderate, or low. This was the first of four stages in our analysis. To acquire the ecotourism potentiality zone, the procedure starts by creating a basic hierarchical structure, then moves on to construct pair-wise comparison matrices, and finally uses a weighted linear algorithm technique. The percentage of land classified as high-potential ecotourism is around 61.65%, moderate-potential is around 17.86%, and low-potential is about 20.48%. Given the international scope of this study, it makes use of an outstanding theoretical framework that is applicable worldwide.

Thullah, Alpha & Jalloh, Samuel. (2021) Numerous social and economic advantages have accrued to host towns or areas as a result of the tourism business. Tourism development has been linked to an increasing number of negative repercussions, notwithstanding the sector's achievements. The present research surveyed previous works that discussed the monetary, social, and ecological effects of tourism. Host regions' economies have benefited from tourism in many ways, including an expansion of the tax base, the creation of large numbers of jobs, and the promotion of small and medium-sized businesses. Commodity price increases, high living costs, and host community service tenure instability are some of the negative results that have resulted from it, despite the great economic gains it has provided. Infrastructural development, cultural exchanges, and other beneficial

socio-cultural consequences have emerged from tourism development. On the other hand, immigration has caused a range of social and cultural issues, such as increased crime, host community animosity, and disputes. When it comes to environmental issues, tourism has produced quite disheartening results. Among these, you can find issues with trash management, ecological disruptions, and carbon emissions. The kind and amount of tourism, as well as the degree to which visitors are concerned about environmental issues, determine the severity of the aforementioned environmental concerns. Tourism development projects should prioritise social and environmental aspects if they want to reap the full benefits of tourism. Sustainable tourist development also relies heavily on host communities' participation in the planning process.

Roy, Misha. (2020) Coastal tourism has contributed to the economy's growth since it is always a hit with visitors. Coastal areas are especially at risk of deterioration because of the imbalance between natural environmental processes and tourism activity. Sustainable ecotourism practices are the only way forward. Educating the public about the detrimental impacts of unchecked mass tourism on the region should be the first and primary goal of sustainability efforts. This research delves at the ecological impacts of unexpected visitor activities in Digha, a well-known coastal town in West Bengal, India. The SWOT analysis is used to look at the different effects of tourism. Findings from this study evaluate the effects of mass tourism on Digha and provide ecotourism strategies that won't harm the city.

Nejati, Mehran et al., (2014) Researchers, administrators, and service providers in the tourism sector can gain invaluable insights into residents' perceptions of sustainable tourism and how it is impacted by their perceptions of the environmental impacts of tourism. This knowledge is crucial for any tourism development, as local engagement is key. This study aims to fill a gap in our understanding of the significance of sustainable tourism and the effects of tourism on the local ecosystem in the Malaysian islands of Perhentian and Redang. The study found that scenery, air quality, and water quality were the three environmental consequences of tourism about which people were most worried. Locals' views on the significance of sustainable tourism were found to be most affected by the environmental impacts of tourism on landscape and air quality, out of six main impacts. This was determined by examining the causal relationship between these two variables.

III. RESEARCH METHODOLOGY

Research Design

The study adopted a descriptive and analytical research design.

Sources of Data

The research utilized both primary and secondary data. Primary data were collected using a structured questionnaire, while secondary data were obtained from books, research journals, government publications, tourism publications, and official documents.

Sampling Technique

Convenience and purposive sampling techniques were employed to select respondents associated with tourism activities.

Sample Size

A total of 185 valid respondents were included in the study.

Data Analysis

IBM SPSS Statistics was used to code and analyse the data that we obtained. To assess how people felt about the effects on the environment, we utilised ranking, standard deviation, and mean. The total positive and negative environmental effect ratings were examined for statistical significance using a One-Sample t-test.

IV. DATA ANALYSIS AND INTERPRETATION

Table 1: Gender of the respondents

Particulars	Frequency	Percentage
Male	98	53.0
Female	87	47.0
Total	185	100.0

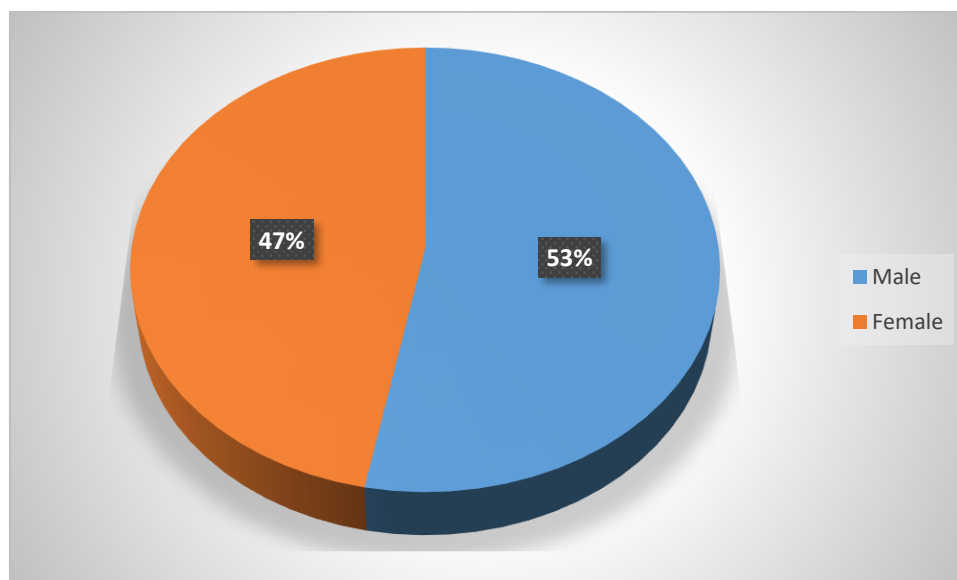


Figure 1: Gender of the respondents

Among them, 87 respondents (47.0%) were female and 98 were male (53.0%), as shown in Table 1.

Table 2: Age of the Respondents

Particulars	Frequency	Percentage
Below 25	28	15.1
25–35	52	28.1
36–45	48	25.9
46–55	34	18.4
Above 55	23	12.5
Total	185	100.0

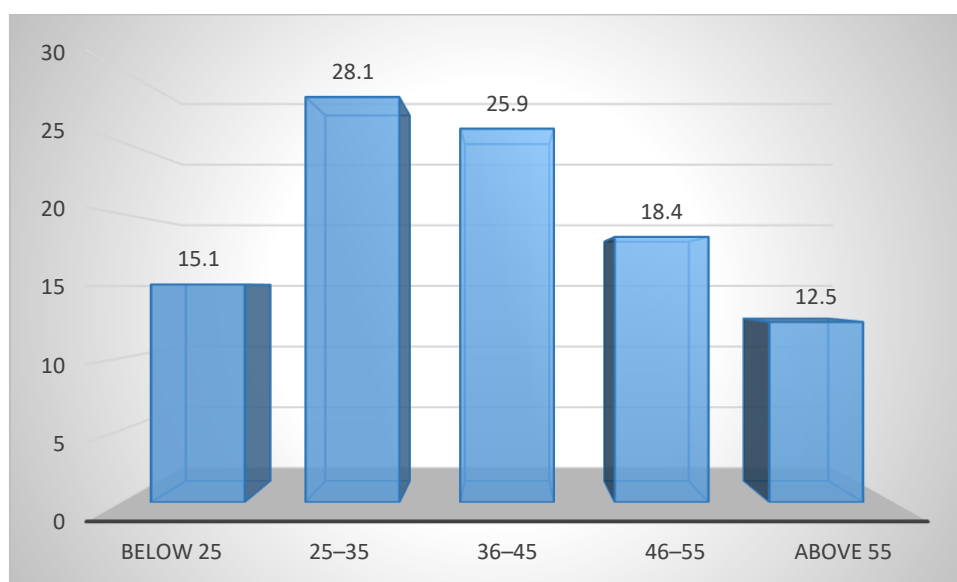


Figure 2: Age of the Respondents

Table 2 illustrates the age distribution of the 185 respondents. The largest percentage of respondents was in the 25–35 years age group, including 52 individuals (28.1%), followed by the 36–45 years group with 48 individuals (25.9%). The 46–55 age group included 34 respondents (18.4%), and 28 respondents (15.1%) were under 25 years old. The least represented group consisted of respondents over 55 years, totalling 23 individuals (12.5%).

Table 3: Positive Environmental Impacts of Tourism

Statement	Mean	SD	Rank
Tourism encourages forest conservation	4.18	0.73	II
Tourism promotes environmental awareness	4.24	0.69	I
Ecotourism protects biodiversity	4.11	0.77	III
Tourism supports cleanliness campaigns	4.03	0.82	V
Tourism improves park maintenance	4.08	0.80	IV
Tourism encourages tree plantation	3.96	0.84	VI

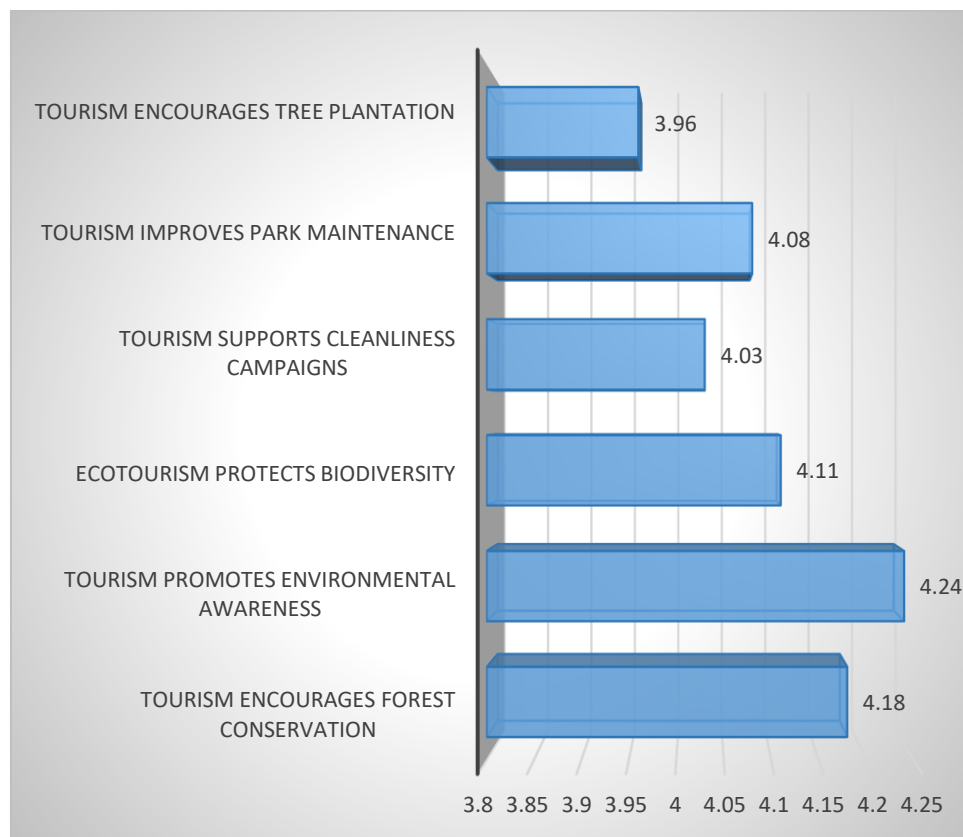


Figure 3: Positive Environmental Impacts of Tourism

Table 3 illustrates the respondents' views about the beneficial environmental effects of tourism in Jhargram District. The results suggest that "Tourism promotes environmental awareness" obtained the highest mean score (Mean = 4.24, SD = 0.69), achieving Rank I, signifying a robust agreement that tourism elevates public consciousness about environmental conservation and sustainable practices. The assertion "Tourism promotes forest conservation" received a mean score of 4.18 (SD = 0.73), indicating respondents' conviction that tourism aids in the preservation of forest resources. Ecotourism preserves biodiversity" achieved a third rank (Mean = 4.11, SD = 0.77), underscoring the perceived contribution of ecotourism to the achievement of flora and animals. Likewise, "Tourism enhances park maintenance" (Mean = 4.08, SD = 0.80; Rank IV) and "Tourism bolsters cleanliness initiatives" (Mean = 4.03, SD = 0.82; Rank V) demonstrate that tourism favourably affects the maintenance and cleanliness of tourist sites. Despite "Tourism encourages tree plantation" obtaining the lowest mean score (Mean = 3.96, SD = 0.84; Rank VI), respondents nonetheless indicated their concurrence with its environmental advantages.

Table 4: Negative Environmental Impacts

Statement	Mean	SD	Rank
Plastic waste has increased	4.36	0.66	I
Wildlife is disturbed by tourist activities	4.27	0.71	II
Forest resources are under pressure	4.21	0.75	III
Soil erosion near tourist sites	4.09	0.82	IV
Water pollution has increased	3.98	0.81	V
Noise pollution affects biodiversity	3.87	0.89	VI
Deforestation due to infrastructure	3.82	0.86	VII

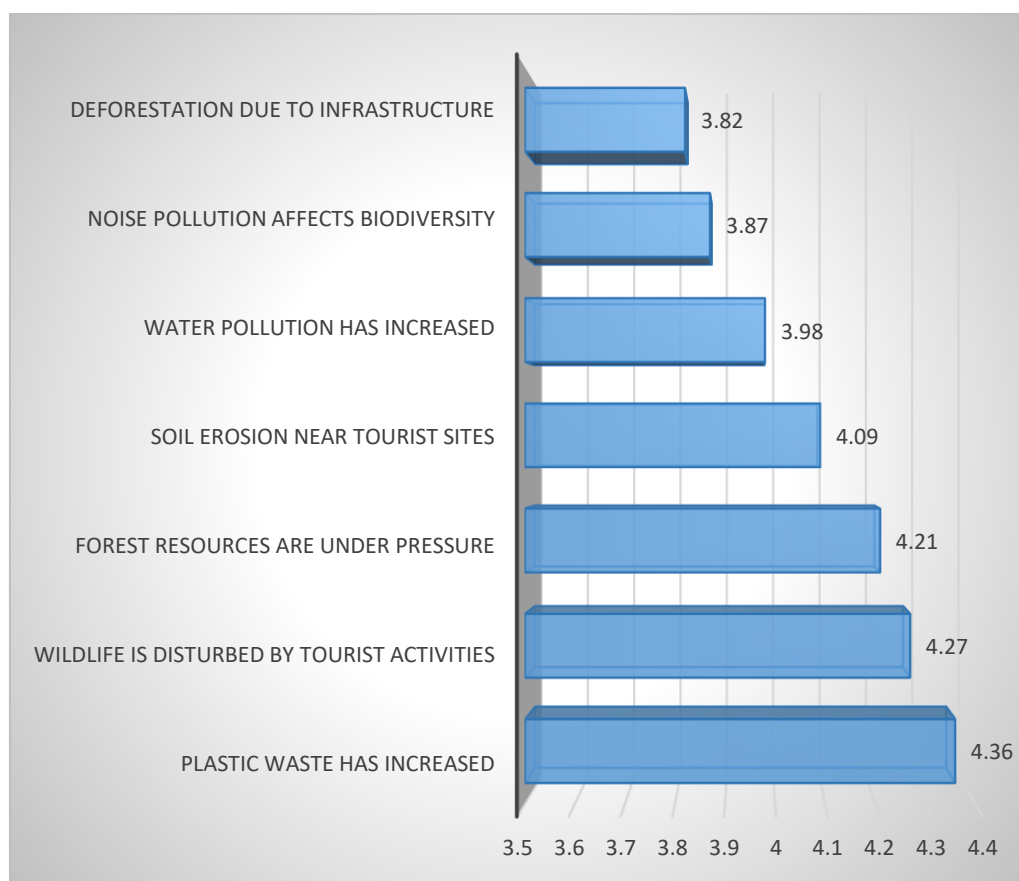


Figure 4: Negative Environmental Impacts

Table 4 illustrates the respondents' opinions regarding the adverse environmental effects of tourism in Jhargram District. The assertion "Plastic waste has increased" earned the highest mean score (Mean = 4.36, SD = 0.66), earning Rank I, which signifies robust consensus that plastic pollution has emerged as the preeminent environmental issue linked to tourism. The subsequent statements were "Wildlife is disturbed by tourist activities" (Mean = 4.27, SD = 0.71; Rank II) and "Forest resources are under pressure" (Mean = 4.21, SD = 0.75; Rank III), indicating respondents' apprehension over the detrimental impacts of tourism on natural habitats and forest ecosystems. Soil erosion around tourist attractions" was placed fourth with a mean score of 4.09 (SD = 0.82), indicating that heightened visitor activity adds to land degradation. Likewise, "Water pollution has increased" (Mean = 3.98, SD = 0.81; Rank V) and "Noise pollution affects biodiversity" (Mean = 3.87, SD = 0.89; Rank VI) reflect modest consensus on the environmental issues arising from tourism activities. The assertion "Deforestation due to infrastructure" had the lowest mean score (Mean = 3.82, SD = 0.86; Rank VII), however respondents concurred that tourism-related infrastructure development adds to forest degradation.

Table 5: One-Sample t-test

Variable	Mean	t-value	p-value
Positive Environmental Impact	4.10	21.47	0.000
Negative Environmental Impact	4.09	20.93	0.000

Table 5 indicates that the positive environmental impact of tourism achieved a mean score of 4.10, accompanied by a t-value of 21.47 and a p-value of 0.000, signifying a statistically significant favorable view among respondents. Correspondingly, the negative environmental impact received a mean score of 4.09, a t-value of 20.93, and a p-value of 0.000, indicating a statistically significant view of the detrimental environmental consequences of tourism.

V. CONCLUSION

Tourism in Jhargram District, West Bengal, has both beneficial and bad effects on the environment. Tourism, according to the results, raises people's consciousness about environmental issues, encourages the preservation of forests, safeguards biodiversity, and improves the upkeep of popular tourist spots. But new big environmental problems have evolved, such as excessive plastic waste, wildlife disturbance, stress on forest

resources, soil erosion, water contamination, and infrastructure expansion for tourist attractions. Therefore, ethical tourist practices should be promoted, community involvement should be encouraged, effective waste management should be implemented, and protection of natural resources should be prioritised in order to achieve sustainable tourism development. The long-term ecological sustainability of Jhargram District may be ensured by taking these steps, which will assist maximise the environmental advantages of tourism while minimising its bad consequences.

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