



Environmental Resilience at Selected Ecotourism Destinations in Telangana State

Sr.Prof.DR.D.Chennappa¹
Sarpatwar Sreyesh²

Abstract: Ecotourism has emerged as a sustainable approach to tourism development that seeks to balance environmental conservation, economic growth and social well-being. As environmental challenges such as biodiversity loss, habitat degradation, climate change and increasing tourism pressure continue to threaten natural ecosystems, the concept of environmental resilience has gained considerable importance in sustainable tourism research. Telangana State, endowed with diverse ecological resources including tiger reserves, wildlife sanctuaries, forests, waterfalls and hill ecosystems, possesses significant potential for ecotourism development. However, ensuring that tourism growth contributes to environmental sustainability while minimizing ecological degradation remains a major challenge. Against this background, the present study examines the role of ecotourism in enhancing environmental resilience across selected ecotourism destinations in Telangana State.

The study aims to evaluate the contribution of ecotourism to environmental resilience by analysing key dimensions such as biodiversity conservation, environmental awareness, sustainable resource management, community participation, government initiatives and responsible tourist behaviour. A descriptive and analytical research design was adopted to achieve the study objectives. Primary data were collected from 384 tourists visiting selected ecotourism destinations in Telangana using a structured questionnaire based on a five-point Likert scale. Secondary data were obtained from government reports, tourism publications, academic journals, books and official documents. The collected data were analysed using SPSS, employing descriptive statistics, reliability analysis (Cronbach's Alpha), normality testing, correlation analysis, multiple regression analysis and hypothesis testing. The findings indicate that ecotourism has a significant positive influence on environmental resilience. Biodiversity conservation emerged as the strongest predictor of environmental resilience, followed by sustainable resource management, environmental awareness, community participation and government initiatives. The study also reveals that responsible ecotourism practices contribute to habitat conservation, environmental education, improved visitor behaviour and enhanced participation of local

¹ Senior Professor, Department of Commerce, Osmania University, Hyderabad, Telangana State. durgachenna@gmail.com, M: 9440360149.

² Research Scholar, Department Of Commerce, Osmania University, Hyderabad, Telangana State. Sreyesh3@gmail.com , Sarpatwarsreyesh@osmania.ac.in M:9640647482.

communities in conservation activities. However, challenges such as inadequate tourism infrastructure, improper waste management, increasing visitor pressure and limited stakeholder coordination continue to affect the sustainability of ecotourism destinations. The study concludes that ecotourism can serve as an effective instrument for strengthening environmental resilience when supported by integrated planning, community participation, effective governance and sustainable resource management.

Keywords: Ecotourism; Environmental Resilience; Biodiversity Conservation; Sustainable Tourism; Telangana State.

Introduction: Tourism is one of the fastest-growing sectors globally and has become a significant driver of economic growth, employment generation, regional development and cultural exchange. In recent decades, growing environmental concerns have shifted attention from mass tourism towards sustainable forms of tourism that prioritize ecological conservation and responsible resource management. Ecotourism has emerged as one of the most effective approaches for balancing tourism development with environmental protection while simultaneously improving the livelihoods of local communities. Ecotourism is defined as responsible travel to natural areas that conserves the environment, supports biodiversity, respects local cultures and contributes to the socio-economic development of host communities. Unlike conventional tourism, ecotourism emphasizes environmental education, conservation practices, community participation and sustainable utilization of natural resources. As climate change, biodiversity loss, habitat degradation and resource depletion continue to threaten ecosystems worldwide, ecotourism has become an important tool for strengthening environmental resilience.

Environmental resilience refers to the ability of ecosystems to absorb disturbances, recover from environmental stress, adapt to changing conditions and maintain ecological functions without significant degradation. In the context of tourism, environmental resilience involves protecting biodiversity, conserving forests and wildlife habitats, maintaining ecosystem services, reducing pollution, promoting sustainable resource use and encouraging environmentally responsible behaviour among tourists and local communities.

Telangana State possesses rich ecological diversity, including dense forests, tiger reserves, wildlife sanctuaries, rivers, waterfalls, wetlands and hill ecosystems. Destinations such as Kawal Tiger Reserve, Amrabad Tiger Reserve, Ananthagiri Hills, Bhogatha Waterfall and Pakhal Wildlife Sanctuary provide significant opportunities for ecotourism development. These destinations not only attract domestic and international tourists but also contribute to biodiversity conservation, environmental awareness and rural livelihoods.

The Government of Telangana has undertaken several initiatives to promote sustainable tourism by improving ecotourism infrastructure, encouraging community-based tourism, conserving wildlife habitats and strengthening environmental management practices. Despite these efforts, ecotourism destinations continue to

face challenges such as increasing tourist pressure, waste generation, habitat disturbance, inadequate infrastructure and limited participation of local communities in tourism planning and management.

Against this background, the present study seeks to examine the role of ecotourism in enhancing environmental resilience across selected ecotourism destinations in Telangana State. The study evaluates tourists' perceptions of environmental conservation, biodiversity protection, sustainable tourism practices, community participation and policy interventions. The findings are expected to contribute to the formulation of integrated strategies that support both tourism development and long-term environmental sustainability.

Profile of Selected Ecotourism Destinations:

Kawal Tiger Reserve: It's located in the Adilabad, Nirmal and Mancherial districts of Telangana, is one of the state's most important protected forest ecosystems. It serves as a crucial ecological corridor connecting the forests of central India with the Eastern Ghats. Dominated by tropical dry deciduous forests, bamboo groves and grasslands, the reserve provides suitable habitat for a wide range of wildlife species.

The reserve supports several important species, including the Bengal tiger, leopard, sloth bear, Indian gaur, wild dog, sambar deer, spotted deer, nilgai, wild boar and numerous resident and migratory bird species. It plays a significant role in biodiversity conservation, watershed protection, carbon sequestration and climate regulation.

Major ecotourism activities include:

- Jungle safari
- Wildlife photography
- Environmental education programmes
- Bird watching
- Nature interpretation

Despite its ecological significance, the reserve faces challenges such as forest fires, illegal grazing, habitat fragmentation, human–wildlife conflict and increasing tourism pressure.

Amrabad Tiger Reserve: It's situated in the Nallamalla Forests of southern Telangana, is one of the largest tiger reserves in India. The reserve is characterized by rugged hills, deep valleys, dense forests and perennial streams, making it an ecologically rich landscape with exceptional biodiversity.

The reserve provides habitat for Bengal tigers, leopards, sloth bears, Indian wolves, chital, sambar, four-horned antelope, reptiles and numerous endemic plant species. It is also home to the Chenchu tribal community, whose traditional ecological knowledge contributes significantly to forest conservation and sustainable resource management.

Major ecotourism attractions include:

- Tiger safari
- Forest trekking
- Eco-trails
- Scenic viewpoints
- Nature camps
- Wildlife interpretation centres

Amrabad Tiger Reserve contributes significantly to biodiversity conservation, watershed management, climate resilience and environmental awareness. However, issues such as forest fires, poaching threats, tourism pressure and climate variability require continuous conservation efforts.

Eturnagaram Wildlife Sanctuary: It's located in Mulugu district along the banks of the Godavari River, is one of the oldest wildlife sanctuaries in Telangana. The sanctuary is renowned for its extensive dry deciduous forests, teak plantations, bamboo vegetation and diverse wildlife habitats.

The sanctuary supports species such as leopard, sloth bear, wild dog, gaur, sambar, spotted deer, nilgai, wild boar, langur and numerous bird and reptile species. The Godavari River and its tributaries enhance the sanctuary's ecological importance by sustaining aquatic ecosystems and supporting local biodiversity.

Major ecotourism activities include:

- Wildlife observation
- Nature trails
- Bird watching
- Photography
- River-based sightseeing
- Environmental-education programmes

The sanctuary plays an important role in conserving biodiversity, maintaining ecological balance and protecting riverine ecosystems. Major environmental concerns include forest fires, illegal extraction of forest resources, habitat degradation, invasive plant species and unmanaged tourist activities.

Shivaram Wildlife Sanctuary: It's situated along the Godavari River in Peddapalli district, is well known for its freshwater crocodile conservation programme. The sanctuary comprises riverine forests, grasslands, wetlands and dry deciduous vegetation, creating suitable habitats for diverse flora and fauna.

The sanctuary supports marsh crocodiles (mugger crocodiles), leopards, sloth bears, wild boars, spotted deer, monkeys, reptiles and a variety of resident and migratory birds. The Godavari River serves as a vital freshwater ecosystem supporting aquatic biodiversity and ecological stability.

Major ecotourism attractions include:

- Crocodile viewing
- Bird watching
- Nature walks
- Wildlife photography
- River ecosystem interpretation
- Environmental-awareness programmes

Shivaram Wildlife Sanctuary contributes significantly to freshwater biodiversity conservation, wetland protection and environmental education. However, pollution, fluctuating river water levels, habitat disturbance, illegal fishing and increasing visitor pressure pose challenges to effective conservation.

Kinnerasani Wildlife Sanctuary: It's located in Bhadrachalam district, is one of Telangana's important forest ecosystems surrounding the Kinnerasani Reservoir. The sanctuary consists of tropical dry deciduous forests, bamboo vegetation, rolling hills and freshwater ecosystems that support rich biodiversity.

The sanctuary provides habitat for gaur, leopard, sloth bear, chital, sambar, wild boar, Indian giant squirrel, reptiles and numerous species of birds. The Kinnerasani Reservoir enhances the ecological value of the sanctuary by supporting aquatic life and providing water resources for surrounding wildlife.

Major ecotourism activities include:

- Wildlife safari
- Bird watching
- Boating
- Nature trails
- Photography
- Environmental interpretation

The sanctuary contributes to biodiversity conservation, watershed protection, groundwater recharge and climate regulation. Nevertheless, environmental challenges such as habitat degradation, invasive species, forest fires, plastic waste and unregulated tourism require effective conservation planning and sustainable ecotourism management.

Importance of Ecotourism for Environmental Resilience: Ecotourism contributes to environmental resilience through several mechanisms:

- **Biodiversity Conservation:** Revenue from ecotourism can support habitat restoration, wildlife monitoring and protected area management.
- **Environmental Awareness:** Guided tours and interpretation programmes help visitors understand the importance of conservation and responsible behaviour.
- **Community Participation:** Involving local communities in tourism provides alternative livelihoods and encourages stewardship of natural resources.
- **Sustainable Resource Management:** Ecotourism promotes the responsible use of forests, water resources and biodiversity while minimizing environmental degradation.
- **Climate Change Adaptation:** Healthy ecosystems maintained through conservation are generally better able to withstand and recover from climate-related disturbances.
- **Support for Local Livelihoods:** Ecotourism creates employment opportunities in guiding, hospitality, handicrafts, transport and related services, linking conservation with economic development.

Literature Review:

Honey (2008) defined ecotourism as responsible travel to natural areas that conserves the environment, improves the well-being of local communities and provides educational experiences for tourists. The study emphasized that ecotourism should minimize environmental impacts while generating economic benefits for local residents. Honey's work remains one of the most influential foundations for ecotourism research.

Buckley (2009) argued that ecotourism contributes to biodiversity conservation through sustainable destination management, environmental education and responsible visitor behaviour. According to Buckley, successful ecotourism depends on balancing conservation objectives with tourism development.

Folke (2006) introduced the concept of resilience within social-ecological systems, explaining that resilient ecosystems possess the capacity to absorb disturbances while maintaining their essential ecological functions. This perspective has become fundamental in understanding environmental resilience in tourism destinations.

Walker et al. (2004) further explained that resilience is closely associated with adaptability and transformability, enabling ecosystems and communities to respond effectively to environmental change. Their study highlighted the importance of adaptive management in ensuring long-term sustainability.

Fennell (2020) observed that ecotourism has evolved into an integrated conservation strategy that combines environmental protection, community participation, environmental education and sustainable economic development. The author emphasized that environmental resilience should be considered a key outcome of sustainable ecotourism management.

Lew et al. (2020) examined tourism resilience following the COVID-19 pandemic and concluded that tourism destinations must strengthen adaptive governance, community engagement and environmental sustainability to improve resilience against future environmental and social shocks.

de Grosbois and Fennell (2022) investigated sustainability practices adopted by leading ecolodges worldwide. Their findings revealed that waste management, renewable energy utilization, biodiversity conservation and stakeholder participation significantly enhance environmental sustainability and destination resilience.

Pandya (2023) studied women's participation in ecotourism around Corbett Tiger Reserve and found that involving local communities, particularly women, improves conservation outcomes while generating sustainable livelihood opportunities.

Samal and Dash (2023) examined the relationship between ecotourism, biodiversity conservation and local livelihoods. Their study concluded that sustainable ecotourism strengthens ecological conservation while improving socio-economic development through community participation and responsible resource management.

In another study, **Samal and Dash (2024)** investigated stakeholder engagement in the Chilika Wetland ecosystem. They found that collaboration among local communities, government agencies, conservation organizations and tourism operators significantly enhances environmental resilience and sustainable destination management.

Using SWOT-QSPM analysis, **Samal and Dash (2025)** identified environmental governance, ecological restoration and sustainable planning as critical strategies for improving resilience in ecotourism destinations.

Their study recommended integrated planning approaches that balance conservation priorities with tourism development.

Clark et al. (2025) demonstrated that investments in tourism and conservation can substantially improve community resilience and adaptive capacity, particularly when local stakeholders actively participate in environmental management and decision-making.

In the Telangana context, **Lakshmi et al. (2024)** explored the potential of ecotourism for sustainable tourism development in the state. Their study identified destinations such as Amrabad Tiger Reserve, Kawal Tiger Reserve, Bhogatha Waterfalls, Pakhal Lake and Lakhnawaram Lake as having significant ecotourism potential. However, the authors also noted challenges including inadequate infrastructure, poor waste management, limited community participation and insufficient environmental awareness, which hinder long-term environmental resilience.

Research Gap: The review reveals that previous studies in Telangana state mainly explores tourism potential and destination development rather than evaluating ecological resilience, adaptive capacity, environmental governance, waste management, biodiversity conservation and stakeholder involvement simultaneously. Moreover, there is a lack of comparative empirical studies across selected ecotourism destinations in the state. Therefore, the present study addresses this gap by assessing environmental resilience at selected ecotourism destinations in Telangana using multiple environmental and management indicators to generate evidence-based recommendations for sustainable destination planning and conservation.

Research Questions: Based on above research gap following research questions are framed for the present study:

1. To examine the relationship between ecotourism and environmental resilience in the selected ecotourism destinations of Telangana State?
2. what extent do biodiversity conservation, community participation, government initiatives, environmental awareness and sustainable resource management influence environmental resilience in the selected ecotourism destinations of Telangana State?

Research Objectives: Based on above research questions following research objectives are framed:

1. To examine the relationship between ecotourism and environmental resilience in the selected ecotourism destinations of Telangana State.
2. To assess the influence of biodiversity conservation, government initiatives, community participation, environmental awareness and sustainable resource management on environmental resilience in the selected ecotourism destinations of Telangana State.

Research Hypothesis: Based on above research objectives following research objectives are framed:

1. **H₀₁:** Ecotourism has no significant relationship with environmental resilience.
2. **H₀₂:** Biodiversity conservation, environmental awareness, community participation, sustainable resource management and government initiatives do not significantly influence environmental resilience.

Research Methodology:

Research Design: The present study adopted a descriptive and analytical research design to examine the relationship between ecotourism and environmental resilience in selected ecotourism destinations of Telangana State. The study followed a mixed research approach, enabling the systematic collection, measurement and analysis of numerical data for hypothesis testing.

Nature of the Study: The study is empirical and cross-sectional in nature. It is empirical because it is based on primary data collected directly from tourists visiting selected ecotourism destinations. It is cross-sectional as the data were collected from respondents at a single point in time rather than over multiple periods.

Study Area: The research was conducted in five major ecotourism destinations in Telangana State, selected based on their ecological significance, tourism potential, biodiversity richness and visitor inflow. These destinations represent different ecological landscapes and conservation environments within the state. The selected study locations include:

- Kawal Wildlife Sanctuary
- Amrabad Wildlife Sanctuary
- Shivaram Wildlife Sanctuary
- Kinnerasani Wildlife Sanctuary
- Eturnagaram Wildlife Sanctuary

These destinations were chosen because they represent forests, wildlife habitats, waterfalls, wetlands and hill ecosystems, thereby providing a comprehensive understanding of ecotourism and environmental resilience across diverse ecological settings.

Sources of Data: The study utilized both primary and secondary sources of data.

- **Primary Data:** Primary data were collected from tourists visiting the selected ecotourism destinations through a structured questionnaire. The questionnaire was designed to capture respondents' perceptions regarding ecotourism practices, biodiversity conservation, environmental awareness, sustainable resource management, community participation, government initiatives and environmental resilience.
- **Secondary Data:** Secondary data were collected from various authentic sources including Research articles published in peer-reviewed journals, Government reports, Telangana Tourism

publications, Telangana Forest Department reports, Books on ecotourism and sustainable tourism, Conference proceedings, Official tourism statistics, Environmental reports and National and international policy documents.

Population of the Study: The target population comprised domestic and international tourists visiting the selected ecotourism destinations in Telangana State during the study period. Since it was not feasible to include every tourist in the population, a representative sample was selected.

Sampling Technique: A convenience sampling technique, a non-probability sampling method, was employed to select respondents. Tourists who were willing to participate and available during the survey period were included in the study. This technique was considered appropriate because the tourist population is dynamic, geographically dispersed and difficult to identify in advance.

Sample Size: The sample size was determined using Cochran's (1977) formula for an unknown or large population. Accordingly, the required sample size was rounded to **384 respondents**, which was considered adequate for conducting statistical analysis and hypothesis testing.

Data Analysis: The collected data were coded, entered, cleaned and analysed using the Statistical Package for the Social Sciences (SPSS). The following statistical techniques were employed:

- Frequency
- Percentage
- Mean
- Standard Deviation

These statistics were used to describe the demographic characteristics of respondents and summarize responses to study variables.

Reliability Analysis: Cronbach's Alpha was used to assess the internal consistency of the questionnaire and the normality of the data distribution was examined using: Kolmogorov–Smirnov Test & Shapiro–Wilk Test.

Scope of the Study: The study focuses on assessing the contribution of ecotourism to environmental resilience in selected ecotourism destinations of Telangana State. It evaluates tourists' perceptions regarding biodiversity conservation, environmental awareness, sustainable resource management, community participation, government initiatives and responsible tourist behaviour. The findings are expected to provide valuable insights for policymakers, tourism administrators, environmental managers and researchers in promoting sustainable ecotourism development and strengthening environmental resilience across ecologically sensitive destinations in Telangana.

Data Analysis:

The demographic profile indicates that male respondents accounted for 60.4% of the sample, while female respondents represented 39.6%. The majority of respondents belonged to the 18–30 years age group with

40.6%, followed by the 31–45 years age group with 36.7%, indicating that ecotourism destinations in Telangana are particularly popular among young and middle-aged tourists. With respect to educational qualification, 46.4% of the respondents were graduates, 34.9% were postgraduates and 18.7% belonged to other educational categories, suggesting that the respondents were generally well educated. Regarding occupation, 32.8% of the respondents were private employees, followed by 23.7% students, 17.7% government employees, 15.1% business professionals and 10.7% belonging to other occupations. This indicates that ecotourism attracts visitors from diverse occupational backgrounds, particularly salaried employees and students. The analysis of monthly income reveals that 37.8% of the respondents earned between ₹25,001 and ₹50,000, 25.3% earned below ₹25,000, 21.9% earned between ₹50,001 and ₹75,000 and 15.1% earned above ₹75,000. This suggests that ecotourism

Table 1: Demographic Details of Tourist's

Variable	Category	Frequency	Variable	Category	Frequency
Gender	Male	232	Occupation	Government Employee	68
	Female	152		Private Employee	126
Age	18–30	156		Business	58
	31–45	141		Student	91
	46–60	64		Others	41
	Above 60	23	Monthly Income (₹)	Below 25,000	97
Education	Graduate	178		25,001–50,000	145
	Postgraduate	134		50,001–75,000	84
	Others	72		Above 75,000	58
Frequency of Visit	First Visit	186	Purpose of Visit	Nature & Wildlife	154
	Second Visit	103		Recreation & Leisure	109
	More than Two Visits	95		Adventure Activities	56
	Others	9		Photography	35
Marital Status	Married	218		Educational/Research	30
	Unmarried	157		Total	384

Source: Primary Data Analysis

destinations in Telangana are visited predominantly by middle-income tourists. In terms of marital status, 56.8% of the respondents were married, while 40.9% were unmarried and 2.3% belonged to other categories. The results further indicate that 48.4% of the respondents were first-time visitors, 26.8% had visited for the second time and 24.8% had visited more than twice, demonstrating that the selected destinations continue to attract both new and repeat visitors. Regarding the purpose of visit, 40.1% of the respondents visited for nature and wildlife experiences, 28.4% for recreation and leisure, 14.6% for adventure activities, 9.1% for photography and 7.8% for educational or research purposes. These findings indicate that the natural environment and wildlife remain the primary motivations for tourists visiting ecotourism destinations in Telangana.

Descriptive Analysis: Table 2, presents the descriptive statistics of the major variables examined in the study. The results indicate that respondents generally expressed positive perceptions regarding ecotourism practices

and environmental resilience across the selected ecotourism destinations in Telangana State, as reflected by mean scores above 3.80 on a five-point Likert scale. Among the independent variables, **Biodiversity Conservation** recorded the highest mean score ($M = 4.24$, $SD = 0.58$), indicating that respondents strongly agreed that biodiversity conservation measures are effectively implemented in the selected ecotourism destinations. The relatively low standard deviation suggests a high level of agreement among respondents regarding the importance and effectiveness of biodiversity conservation initiatives.

Table 2: Descriptive Analysis of select Variables

SL. No	Variable	Mean	SD
1	Biodiversity Conservation	4.24	0.58
2	Environmental Awareness	4.17	0.61
3	Community Participation	3.92	0.74
4	Sustainable Resource Management	4.08	0.63
5	Government Initiatives	3.85	0.78
6	Environmental Resilience	4.15	0.57

Sources: Primary Data Analysis

Environmental Awareness obtained the second-highest mean score ($M = 4.17$, $SD = 0.61$), demonstrating that tourists perceived environmental education, awareness campaigns and responsible tourism practices to be well promoted across the destinations. The moderate standard deviation indicates that respondents' opinions were fairly consistent.

The dependent variable, **Environmental Resilience**, recorded a high mean score ($M = 4.15$, $SD = 0.57$), suggesting that respondents believed the selected ecotourism destinations possess a strong capacity to withstand environmental disturbances while maintaining ecological balance. The relatively small standard deviation further indicates substantial agreement among the respondents regarding the environmental resilience of these destinations.

Sustainable Resource Management also received a favourable evaluation with a mean score of 4.08 ($SD = 0.63$). This finding implies that respondents acknowledged the effective management and sustainable utilization of natural resources, including forests, water resources, wildlife habitats and waste management systems. The moderate variation in responses indicates generally consistent perceptions among participants.

Community Participation recorded a mean score of 3.92 ($SD = 0.74$), reflecting respondents' agreement that local communities actively participate in ecotourism planning, conservation activities and tourism-related decision-making. However, compared with the other variables, the relatively higher standard deviation suggests greater variation in respondents' perceptions, indicating that the level of community participation may differ across the selected destinations.

Among all the variables, **Government Initiatives** received the lowest mean score ($M = 3.85$, $SD = 0.78$), although it still falls within the agreement category. This result suggests that respondents perceived government efforts, such as policy implementation, infrastructure development, environmental regulations and conservation support, to be satisfactory but comparatively less effective than other dimensions. The highest

standard deviation among all variables indicates greater diversity in respondents' opinions regarding government interventions.

Overall, the descriptive statistics reveal that all study variables recorded mean values above 3.80, indicating positive perceptions of biodiversity conservation, environmental awareness, community participation, sustainable resource management, government initiatives and environmental resilience. The standard deviation values, ranging from 0.57 to 0.78, indicate moderate variability in responses, suggesting a reasonable level of consistency among respondents. These findings provide preliminary evidence that the selected ecotourism destinations demonstrate favourable environmental management practices, thereby establishing a strong foundation for further inferential analyses examining the relationships between these variables.

Reliability Analysis: Table 3, presents the results of the reliability analysis conducted using Cronbach's alpha to assess the internal consistency of the constructs included in the study.

Table 3: Reliability Analysis of select Variables

SL. No	Variable	Cronbach's Alpha
1	Biodiversity Conservation	0.842
2	Environmental Awareness	0.864
3	Community Participation	0.818
4	Sustainable Resource Management	0.836
5	Government Initiatives	0.807
6	Environmental Resilience	0.879
7	Overall Scale	0.912

Source: Primary Data Analysis

Overall, the Cronbach's alpha values ranging from **0.807 to 0.879** for the individual constructs and **0.912** for the overall scale demonstrate that all variables possess good to excellent internal consistency. These findings confirm that the questionnaire is a reliable instrument for assessing biodiversity conservation, environmental awareness, community participation, sustainable resource management, government initiatives and environmental resilience among tourists visiting the selected ecotourism destinations in Telangana State.

Normality Test: Since both p-values are greater than 0.05, the data are assumed to be normally distributed. Therefore, parametric tests were considered appropriate.

Table 4: Normality Test

Test	p-value
Kolmogorov–Smirnov	0.086
Shapiro–Wilk	0.071

Source: Primary Data Analysis

Correlation between Ecotourism Dimensions and Environmental Resilience: Table 5 presents the Pearson correlation analysis between the dimensions of ecotourism and environmental resilience. The results indicate that all independent variables have a positive and statistically significant relationship with environmental

resilience ($p < 0.001$), suggesting that improvements in ecotourism practices are associated with greater environmental resilience in the selected ecotourism destinations. Among the variables, Biodiversity Conservation exhibited

Table 5: Correlation Analysis between study Variables

SL. No	Variable	Environmental Resilience (r)	p-value
1	Biodiversity Conservation	0.728	<0.001
2	Environmental Awareness	0.691	<0.001
3	Community Participation	0.645	<0.001
4	Sustainable Resource Management	0.703	<0.001
5	Government Initiatives	0.612	<0.001

Source: Primary Data Analysis

the strongest positive correlation with environmental resilience ($r = 0.728$), followed by Sustainable Resource Management ($r = 0.703$), Environmental Awareness ($r = 0.691$), Community Participation ($r = 0.645$) and Government Initiatives ($r = 0.612$). The correlation coefficients indicate moderate to strong positive relationships, with biodiversity conservation showing the greatest association with environmental resilience. Since all p-values are less than 0.001, the relationships are statistically significant. Therefore, the null hypothesis stating that there is no significant relationship between ecotourism dimensions and environmental resilience is rejected and the alternative hypothesis is accepted. Overall, the findings suggest that strengthening biodiversity conservation, environmental awareness, community participation, sustainable resource management and government initiatives can contribute significantly to enhancing environmental resilience in the selected ecotourism destinations of Telangana State.

Multiple Regression Analysis: Table 6, presents the results of the multiple regression analysis examining the influence of biodiversity conservation, environmental awareness, community participation, sustainable resource management and government initiatives on environmental resilience. The regression model was found to be statistically significant ($F = 183.56$, $p < 0.001$), indicating that the independent variables collectively have a significant effect on environmental resilience.

Table 6: Impact of Select Variables On Environmental Resilience

SL. No	Variable	Beta	t-value	p-value
1	Biodiversity Conservation	0.341	8.42	<0.001
2	Environmental Awareness	0.276	6.88	<0.001
3	Community Participation	0.193	4.95	<0.001
4	Sustainable Resource Management	0.291	7.26	<0.001
5	Government Initiatives	0.148	3.72	<0.001

Model Summary: $R = 0.842$, $R^2 = 0.709$, Adj. $R^2 = 0.704$, $F = 183.56$, $p < 0.001$; Source: Primary data Analysis

The model demonstrated a strong explanatory power with $R = 0.842$, while the R^2 value of 0.709 indicates that 70.9% of the variation in environmental resilience is explained by the five predictor variables. The Adjusted R^2 of 0.704 further confirms the robustness and good fit of the regression model.

Among the predictors, Biodiversity Conservation had the strongest positive influence on environmental resilience ($\beta = 0.341$, $t = 8.42$, $p < 0.001$), followed by Sustainable Resource Management ($\beta = 0.291$, $t = 7.26$, $p < 0.001$) and Environmental Awareness ($\beta = 0.276$, $t = 6.88$, $p < 0.001$). Community Participation ($\beta = 0.193$, $t = 4.95$, $p < 0.001$) and Government Initiatives ($\beta = 0.148$, $t = 3.72$, $p < 0.001$) also had significant positive effects, although their contributions were comparatively lower.

Overall, all five variables significantly and positively influence environmental resilience ($p < 0.001$). Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted, confirming that ecotourism dimensions play a significant role in enhancing environmental resilience in the selected ecotourism destinations of Telangana State.

Hypothesis Testing:

- H_{01} : Ecotourism has no significant relationship with environmental resilience. Result: Rejected ($p < 0.001$)
- H_{02} : Biodiversity conservation, environmental awareness, community participation, sustainable resource management and government initiatives do not significantly influence environmental resilience. Result: Rejected ($p < 0.001$)

Findings: Major findings of the study are as follows:

1. The descriptive analysis revealed that respondents had positive perceptions of all the study variables, with mean scores ranging from 3.85 to 4.24, indicating a high level of agreement regarding ecotourism practices and environmental resilience in the selected ecotourism destinations of Telangana State.
2. Biodiversity Conservation recorded the highest mean score ($M = 4.24$, $SD = 0.58$), indicating that respondents perceived biodiversity conservation as the most effectively implemented ecotourism dimension.
3. Government Initiatives recorded the lowest mean score ($M = 3.85$, $SD = 0.78$), suggesting scope for strengthening government support and policy implementation in ecotourism development.
4. The reliability analysis confirmed that all constructs possessed good to excellent internal consistency, with Cronbach's alpha values ranging from 0.807 to 0.879, while the overall questionnaire achieved an excellent reliability coefficient ($\alpha = 0.912$).
5. Pearson correlation analysis revealed that all ecotourism dimensions were positively and significantly associated with environmental resilience ($p < 0.001$).
6. Among the independent variables, Biodiversity Conservation exhibited the strongest positive correlation with environmental resilience ($r = 0.728$), followed by Sustainable Resource Management ($r = 0.703$), Environmental Awareness ($r = 0.691$), Community Participation ($r = 0.645$) and Government Initiatives ($r = 0.612$).

7. Multiple regression analysis indicated that the proposed model was statistically significant ($F = 183.56$, $p < 0.001$) and explained 70.9% of the variance in environmental resilience ($R^2 = 0.709$), demonstrating a strong model fit.
8. Biodiversity Conservation emerged as the strongest predictor of environmental resilience ($\beta = 0.341$, $p < 0.001$), followed by Sustainable Resource Management ($\beta = 0.291$), Environmental Awareness ($\beta = 0.276$), Community Participation ($\beta = 0.193$) and Government Initiatives ($\beta = 0.148$).
9. All five ecotourism dimensions had positive and statistically significant effects on environmental resilience ($p < 0.001$), confirming that improvements in these factors contribute to enhanced environmental resilience.
10. Based on the correlation and regression results, the null hypotheses were rejected and the alternative hypotheses were accepted, confirming that ecotourism dimensions significantly influence environmental resilience in the selected ecotourism destinations of Telangana State.

Conclusion: The present study examined the influence of ecotourism dimensions on environmental resilience in selected ecotourism destinations of Telangana State. The study focused on five key dimensions of ecotourism, namely biodiversity conservation, environmental awareness, community participation, sustainable resource management and government initiatives, to determine their contribution to environmental resilience. The findings indicate that ecotourism plays a significant role in promoting environmental sustainability and strengthening the resilience of natural ecosystems. The descriptive analysis showed that respondents had positive perceptions of all the study variables, with biodiversity conservation receiving the highest mean score, followed by environmental awareness, environmental resilience, sustainable resource management, community participation and government initiatives. These findings suggest that respondents recognize the importance of conservation practices and sustainable tourism in preserving ecological resources. The reliability analysis further confirmed that all constructs possessed good to excellent internal consistency, indicating that the research instrument was reliable for measuring the study variables. The correlation analysis revealed that all five ecotourism dimensions had positive and statistically significant relationships with environmental resilience. Biodiversity conservation exhibited the strongest association, followed by sustainable resource management, environmental awareness, community participation and government initiatives. These findings indicate that strengthening ecotourism practices contributes to improving the resilience of ecosystems and supports long-term environmental sustainability. The multiple regression analysis demonstrated that the proposed model was statistically significant and explained 70.9% of the variation in environmental resilience. Among the predictors, biodiversity conservation emerged as the strongest determinant, followed by sustainable resource management, environmental awareness, community participation and government initiatives. The results confirm that each of these dimensions makes a significant positive contribution to environmental resilience, emphasizing the need for an integrated approach to ecotourism management. Overall, the study concludes that environmental resilience in ecotourism destinations is influenced by the combined efforts of conservation practices, sustainable resource management,

environmental awareness, active community participation and supportive government policies. The rejection of the null hypotheses confirms that these ecotourism dimensions significantly enhance environmental resilience in the selected destinations of Telangana State.

Managerial Implications: Following are the managerial implication suggested based on the findings and conclusion of the study:

1. **Strengthen Biodiversity Conservation:** Destination managers should prioritize habitat protection, wildlife conservation and ecosystem restoration, as biodiversity conservation was found to have the strongest influence on environmental resilience.
2. **Promote Sustainable Resource Management:** Authorities should implement efficient waste management, water conservation, renewable energy use and sustainable resource utilization to reduce environmental degradation and improve ecosystem resilience.
3. **Enhance Environmental Awareness:** Tourism departments should organize environmental education programmes, awareness campaigns and interpretation activities to encourage responsible behaviour among tourists and local communities.
4. **Encourage Community Participation:** Local communities should be actively involved in ecotourism planning, conservation activities and decision-making. Capacity-building and livelihood opportunities can improve community support for sustainable tourism.
5. **Strengthen Government Support:** Government agencies should improve policy implementation, conservation funding, infrastructure development and interdepartmental coordination to enhance the effectiveness of ecotourism management.
6. **Develop Sustainable Ecotourism Policies:** Policymakers should formulate and enforce destination-specific policies that balance tourism development with biodiversity conservation and environmental protection.
7. **Regular Environmental Monitoring:** Destination managers should establish continuous monitoring and evaluation systems to assess environmental conditions and ensure the effectiveness of conservation initiatives.
8. **Promote Stakeholder Collaboration:** Strong collaboration among government agencies, local communities, tourism operators, NGOs and researchers is essential for achieving long-term environmental resilience and sustainable ecotourism development.
9. **Improve Visitor Management:** Managers should regulate tourist activities through carrying capacity assessments, designated nature trails and eco-friendly visitor facilities to minimize environmental impacts.

10. **Adopt an Integrated Management Approach:** Ecotourism destinations should integrate biodiversity conservation, sustainable resource management, environmental awareness, community participation and government support into a comprehensive management strategy for long-term sustainability.

References:

1. Baral, N. (2014). Evaluation and resilience of ecotourism in the Annapurna Conservation Area, Nepal. *Environmental Conservation*, 41(1), 84–92. <https://doi.org/10.1017/S0376892913000326>
2. Buckley, R. (2009). *Ecotourism: Principles and practices*. CABI. (backup.pondiuni.edu.in)
3. Buckley, R. (2021). Pandemic travel restrictions provide a test of net ecological effects of ecotourism and new research opportunities. *Journal of Travel Research*, 60(7), 1612–1614. <https://doi.org/10.1177/0047287520947812> (Sage Journals)
4. Ceballos-Lascuráin, H. (1996). *Tourism, ecotourism and protected areas*. IUCN.
5. Clark, C., Nyaupane, G. P., & Xiao, X. (2025). Building community resilience and adaptive capacity through investments in tourism and conservation. *Journal of Travel Research*, 65(2). <https://doi.org/10.1177/00472875241304482>
6. Das, M., & Chatterjee, B. (2015). Ecotourism: A panacea or a predicament? *Tourism Management Perspectives*, 14, 3–16. <https://doi.org/10.1016/j.tmp.2015.01.002>
7. de Grosbois, D., & Fennell, D. A. (2022). Sustainability and ecotourism principles adoption by leading ecolodges: Learning from best practices. *Tourism Recreation Research*, 47(5–6), 635–650. <https://doi.org/10.1080/02508281.2021.1875170>
8. Fennell, D. A. (2020). *Ecotourism* (5th ed.). Routledge.
9. Folke, C. (2006). Resilience: The emergence of a perspective for social–ecological systems analyses. *Global Environmental Change*, 16(3), 253–267. <https://doi.org/10.1016/j.gloenvcha.2006.04.002>
10. Gunderson, L. H., & Holling, C. S. (Eds.). (2002). *Panarchy: Understanding transformations in human and natural systems*. Island Press.
11. Honey, M. (2008). *Ecotourism and sustainable development: Who owns paradise?* (2nd ed.). Island Press. (Island Press)
12. Lakshmi, V. V., Srivalli, B., Srinivas, T., & Ugandhar, T. (2024). Exploring eco-tourism perspectives for sustainable tourism in Telangana. *SSRG International Journal of Humanities and Social Science*, 11(3), 8–13. <https://doi.org/10.14445/23942703/IJHSS-V11I3P102>
13. Lew, A. A., Cheer, J. M., Haywood, M., Brouder, P., & Salazar, N. B. (2020). Visions of travel and tourism after the global COVID-19 transformation of 2020. *Tourism Geographies*, 22(3), 455–466. <https://doi.org/10.1080/14616688.2020.1770326>
14. Pandya, R. (2023). An intersectional approach to neoliberal environmentalism: Women's engagement with ecotourism at Corbett Tiger Reserve, India. *Environment and Planning E: Nature and Space*, 6(1). <https://doi.org/10.1177/25148486221082469>

15. Samal, R., & Dash, M. (2023). Ecotourism, biodiversity conservation and livelihoods: Understanding the convergence and divergence. *International Journal of Geoheritage and Parks*, 11(1), 1–20. <https://doi.org/10.1016/j.ijgeop.2022.11.001>
16. Samal, R., & Dash, M. (2024). Stakeholder engagement in advancing sustainable ecotourism: An exploratory case study of Chilika Wetland. *Discover Sustainability*, 5, Article 50. <https://doi.org/10.1007/s43621-024-00233-2>
17. Samal, R., & Dash, M. (2025). From strengths to strategies: Mapping the sustainable path for ecotourism in Chilika Wetland through SWOT–QSPM analysis. *Journal for Nature Conservation*, 84, 126817. <https://doi.org/10.1016/j.jnc.2024.126817>
18. United Nations Environment Programme. (2021). *Making tourism more sustainable: A guide for policy makers*. UNEP.
19. United Nations World Tourism Organization. (2018). *Tourism and the Sustainable Development Goals: Journey to 2030*. UNWTO.
20. Walker, B., Holling, C. S., Carpenter, S. R., & Kinzig, A. (2004). Resilience, adaptability and transformability in social–ecological systems. *Ecology and Society*, 9(2), 5. <https://doi.org/10.5751/ES-00650-090205>
21. Weaver, D. (2008). *Ecotourism* (2nd ed.). John Wiley & Sons.

