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PERCEPTIONS OF TOURISM IMPACTS AND COMMUNITY RESILIENCE TO NATURAL DISASTERS IN TANGUARHAOR, SUNAMGANJ

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Abstract: Tourism contributes to economic growth and social development. It also poses challenges to disaster-prone regions. The tourism sector in Bangladesh, particularly Sylhet region, is rapidly growing. This study examines residents' perceptions of tourism's impact and its relationship with community resilience in Tanguar Haor, Sunamganj and explores how does tourism influence on economic opportunities, social cohesion, and environmental sustainability while assessing the community's ability to adapt to natural disasters. In this study, a mixed-method approach was used, incorporating surveys and interviews with 360 residents from Tahirpur and Dharmapasha upazilas (an administrative unit). The data collected from the survey was systematically encoded, processed, and analyzed using SPSS version 25.0 to ensure accuracy and reliability. The study indicate that tourism positively impacts the local economy by generating employment and improving infrastructure, yet it also exacerbates economic inequality. While tourism promotes cultural activities and environmental awareness, residents expressed concerns about cultural erosion, social issues, and ecological degradation. Statistical analysis revealed a strong correlation between tourism's environmental impact and community attachment ($r = 0.975$, $p < 0.01$), suggesting that positive environmental perceptions enhance community ties. Additionally, economic benefits from tourism were significantly linked to adaptive response ($r = 0.755$, $p < 0.05$), indicating that tourism-driven economic stability improves disaster preparedness. However, economic gains were also associated with heightened environmental fragility ($r = 0.749$). The study highlights the need for sustainable tourism policies that integrate disaster risk reduction strategies, ensuring a balance between economic benefits and community resilience for long-term sustainability in vulnerable regions.

Keywords: perception, tourism impact, community resilience, natural disaster, community attachment, disaster prevention, adaptive response

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INTRODUCTION

Tourism is defined as the practice of individuals journeying to and residing in locations beyond their habitual surroundings for recreational, professional, or alternative motives (Tribe, 2009). The phenomenon of tourism is a highly complex one. Due to its nature, it carries significant ramifications in various domains such as social, political, cultural, and economic activities (Gössling et al., 2013). It can offer vital financial support, facilitating recovery in communities after calamities. Sustainable tourism practices may improve local economies while promoting resilience (Zapanti & Constantina, 2024). It generates substantial foreign exchange earnings for many nations while promoting growth through job creation and business creation. Infrastructure improvements, the conservation of the environment and cultural heritage, and the reduction of poverty and inequality are all made possible by this industry (Best & González, 2021a).

Nowadays, it is acknowledged that tourism is a significant global economic activity. It needs economic, social, cultural, and environmental involvement. The tourism support more than 70 million people directly (Bott, 2023; Lickorish & Jenkins, 2007). The World Travel and Tourism Council Annual Updates state that travel and tourism directly boosted the world economy in 2012 by creating 101 million jobs and contributing US$ 2.1 trillion (Parveen, 2013; Rahman et al., 2010). About 5% of the global gross domestic product (GDP) is generated by tourism, making it the fourth largest economic sector after food, chemicals, and fuels (Aramberri, 2009). It undoubtedly stands as one of the most significant social and economic phenomena in contemporary society. According to Bofulin et al. (2016) tourism in developed countries has evolved significantly over time. Tourism in these nations was initially limited to the wealthy. Touring became more affordable for the middle class as transportation improved, especially with railways in the 19th century. (Jenkins, 1980; Yfantidou & Matarazzo, 2017). This led to the development of tourist destinations such as seaside resorts, national parks, and historic landmarks, which catered to the growing demand for leisure travel.Tourism is seen as one of the key pillars of economic development for numerous developing countries, especially those that are least developed (Parveen, 2013).

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Gössling (2000), finds in his study that for many poor nations, especially small island governments, tourism is a major source of income. Sadler & Archer (1975) concluded that just a small minority of developing nations rely primarily on tourism. It gives people the chance to earn foreign currency and build a source of income. Furthermore, developing economies are currently requiring better infrastructure due to the rise of tourism. The global tourism sector is highly vulnerable to environmental hazards and has faced significant impacts from recent crises and disasters (Aliperti et al., 2019). Many tourist destinations rely on natural features such as beaches, mountains, forests, and biodiversity, which attract visitors but are often prone to natural disasters (Hall & Gössling, 2006). Due to its exposure to natural and man-made risks, the tourism industry has suffered extensive damage over the past decades, emphasizing the need for resilience (Pforr & Hosie, 2008). Building resilience involves addressing gradual and abrupt changes through stability, response, and adaptation (Prayag, 2018). Socio-ecological resilience is vital for sustainable tourism development, particularly in resource-dependent areas prone to natural disasters (Cohen, 1978; Ruiz-Ballesteros, 2011). Incorporating resilience into tourism planning enhances sustainability and ensures better disaster management (Gössling, 2000). By embedding disaster management principles into destination strategies, tourism areas can better withstand and recover from natural calamities (Filimonau & De Coteau, 2020).

The literature extensively documents the impacts of tourism, with studies by Alcoriza & Policarpio (2023), Best & González (2021), Liu et al. (1987), Prentice (1993), Cecil et al. (2010) and Tsai et al. (2016) highlighting positive effects such as increased business activities, higher income, and contributions to local culture. However, less attention has been given to benefits like increased opportunities for selling local agricultural products and enhancing the area's image, which residents of disaster-prone regions greatly value. These benefits play a significant role in accelerating recovery efforts (Zhang et al., 2024). In a study Clark et al. (2024) applied human ecology theory to examine community resilience and adaptive capacity in nature-based tourism destinations, highlighting the importance of sustainable practices and community engagement in mitigating environmental hazards. Similarly, research on tourism community responses to the COVID-19 pandemic introduced the Tourism Community Resilience Model, emphasizing the need for diversified economic activities and robust health infrastructures to withstand global crises (Praptika et al., 2024). However, community perceptions are not static, and these perceptions may change over time (Halim et al., 2022), depending on the individual location, societal standards, rules and traditions (Stoffelen & Ioannides, 2022). For that reason, community perception is always a key issue in tourism development due to the dynamism in the relationship between tourism and community people. Bangladesh, a developing nation, is rich in scenic beauty, featuring rivers, beaches, hills, forests, waterfalls, historical sites, and tea gardens. These attractions draw numerous local and foreign visitors annually (Roy & Roy, 2015). The tourism sector contributes 3% of the country's GDP, supporting approximately 1.3 million jobs, both directly and indirectly. Despite its potential, Bangladesh has yet to fully capitalize on its tourism opportunities. The nation is home to several unique attractions, including the Sundarbans, Cox's Bazar, the Royal Bengal Tiger, the Rangamati highlands, and the Sylhet tea gardens (Alauddin et al., 2014). However, the underdeveloped tourism industry limits its growth and revenue potential (Parveen, 2013).

Tourism in Sylhet is growing faster in Bangladesh. It is known for its tea plantations, tropical forests, unique tribal populations, natural water falls, and lakes with crystal-clear water surrounded by lush hills, haors, etc. TanguarHaor is a large wetlands habitat in Tahirpur, Sunamganj District, Bangladesh, and one of the most important in South Asia. It is known worldwide for its position, size, biodiversity, flora and fauna, heart of migrating birds, and economic importance as one of the most beautiful bodies of water (Muneem & Avi., 2017). The Meghalaya mountains in the distance, the glistening springs and rivers, the innumerable birds, and the spectacular splendor of the Koroch-Hijol forest are some of the reasons TanguarHaor is such a popular tourist destination. The area’s tourism-driven economy employs about 50,000 people overall (Sultana, 2016). Bangladesh's tourism sector faces numerous challenges, including inadequate communication and transportation infrastructure, poorly planned lodging, dining, and entertainment optionsthat serve a variety of tourist types (Rahman et al., 2010). But the people live in this area often experience different natural calamities including flash floods, cyclone and tidal Surge, heavy Rainfall, river erosion, thunderstorms as a regular basis (Khan et al., 2021).

This poses enormous threat to the vulnerable community of this region. For reducing the risk of disaster, the resident developed many disasters prevention measure and adaptive response to mitigate the disaster risk to the community (Ara & Islam, 2019; Ranjan & Abenayake, 2014). A recent study focuses on local community perceptions of tourism impacts in Sylhet, Bangladesh, highlighting positive views towards future tourism development (Halim et al., 2022). Another study emphasizes on community-based adaptation initiatives and strategies (Mahmud, 2023). However, these studies did not specifically address community resilience to natural disasters. Tourism in disaster-prone areas presents unique challenges, particularly in regions like TaguarHaor (Rahaman et al., 2016), where frequent flooding and natural disasters threaten tourism-dependent economies. While many studies have examined community perceptions of tourism impacts and responses to natural disasters, gaps remain in understanding the interplay between tourism and community resilience in such vulnerable areas.

This study aims to critically assess residents' perceptions of tourism's economic, socio-cultural, and environmental impacts in Tanguar Haor, Sunamganj, Bangladesh. It seeks to analyze how these perceptions influence community resilience and adaptive capacities in the face of natural disasters. The main objectives of this research are a) to explore residents' perceptions of tourism's social, economic, and environmental impacts and b) to understand the relationships between tourism perceptions and community resilience. By providing insights into these dynamics, the research aims to inform sustainable tourism planning and resilience strategies to address contemporary weather and climate challenges effectively.

2. Study Area

TanguarHaor, located in northeastern Bangladesh, is a Ramsar-designated wetland of national and international significance (Ara & Islam, 2019). Spanning approximately 9,727 hectares, it lies within the Surma-Kushiyara river

basins and is geographically positioned between 25.1615° N and 91.0778° E (Figure 1). Declared an Ecologically Critical Area in 1999 due to overexploitation (Ara & Islam, 2019; Raihan & Hossain, 2021).

Administratively, TanguarHaor is divided between Dharmapasha and Tahirpur sub-districts. Two-thirds of the area lies in Dharmapasha, while Tahirpur hosts one-third, including most tourist attractions, which draw higher population densities (Sultana et al., 2022). The socio-demographic profile of TanguarHaor reflects significant challenges. Approximately 60,000 people across 10,000 households depend on the wetland for their livelihoods (Sultana et al., 2022). Residents engage in agriculture, fishing, and secondary activities like duck farming and bamboo trading, demonstrating their dependence on the wetland's resources. Ecologically, TanguarHaor supports 141 fish species, rare wetland trees like *Barringtonia acutangula*, and hosts 200 bird species annually (Alam, 2012).

Residents of TanguarHaor are afflicted by three categories of inundation during the rainy season.Addressing these challenges is critical to ensuring the long-term resilience of this ecologically and economically significant region.

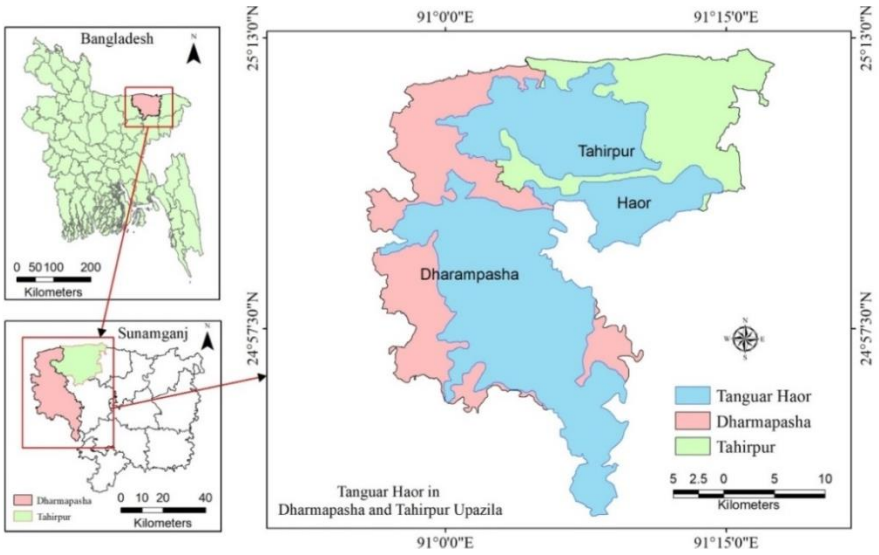

Figure1. Location of TanguarHaor

METHODOLOGY

1. Data collection

Primary data were used to conduct the study. Some secondary data were also used for better analysis and interpretation of the study and also for the preparation of the questionnaire. Individual respondent surveys, in-person field trips, interviews, and observation were used to gather the primary data.

2. Questionnaire

A semi-structured questionnaire was designed to collect data from respondents in the Haor region. The questionnaire was organized into three sections (Figure 2). Part 1 focused on the socioeconomic profile of respondents. Part 2 examined perceptions of tourism impacts. Part 3 addressed community disaster resilience, categorized into four dimensions: environmental fragility, community attachment, disaster prevention awareness, and adaptive response. The questionnaire primarily featured closed-ended questions with predefined response options. A five-point Likert scale, with 1 denoting "strongly disagree" and 5 denoting "strongly agree," was used to gauge perceptions of the effects of tourism and community resilience.

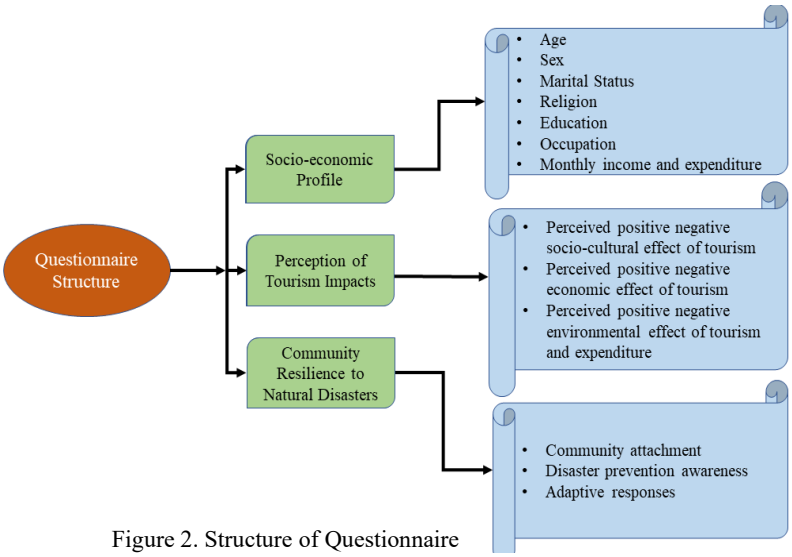

Figure 2. Structure of Questionnaire

3. Sample size calculation

In order to determine the sample size from a population, Yamane (1967) proposed an additional simplified formula. The formula is: $n = N/(1 + Ne^2)$

Where N = Known population size; e = margin of error

For this study, a 95% confidence interval was used to describe a 5% margin of error. After removing incomplete questionnaires, a total of 360 questionnaires were used to collect data from the respondents. The questionnaires were then divided equally to collect data from the two upazilas of TanguarHaor.

4. Selection of Respondents

The respondent was selected from the selected village and the age of the respondent was above 18. Both men and women participate in questionnaire survey and the people who were working in tourism sector was preferred. 180 of respondents from each village (Tahirpur and Dharmapasha) were selected randomly.

5. Secondary Data

Secondary data was needed in this study to identify the research gap, selection of affected community, formulation of questionnaire, methodology and study area map creation etc. Secondary data was gathered from Wikipedia, newspapers, and other publications.

6. Analyzing and Processing Data

The IBM Corporation's Statistical Package for the Social Sciences (SPSS) software, version 25, Word, and Microsoft Excel were used to process and analyze the gathered data independently. The text, tables, and graphs all included the data that had been analyzed. To understand the respondents' opinion towards the socioeconomic status, perception of tourism impact and community resilience different analytical processes, normal frequency (n) and percentage (%) distribution and mean and standard deviation are calculated. To discover if different perceptions exist regarding tourism impact and community resilience among the upazila, t-test was conducted. To explore the relationship between perceptions of tourism impact and community resilience, a correlation was conducted using SPSS.

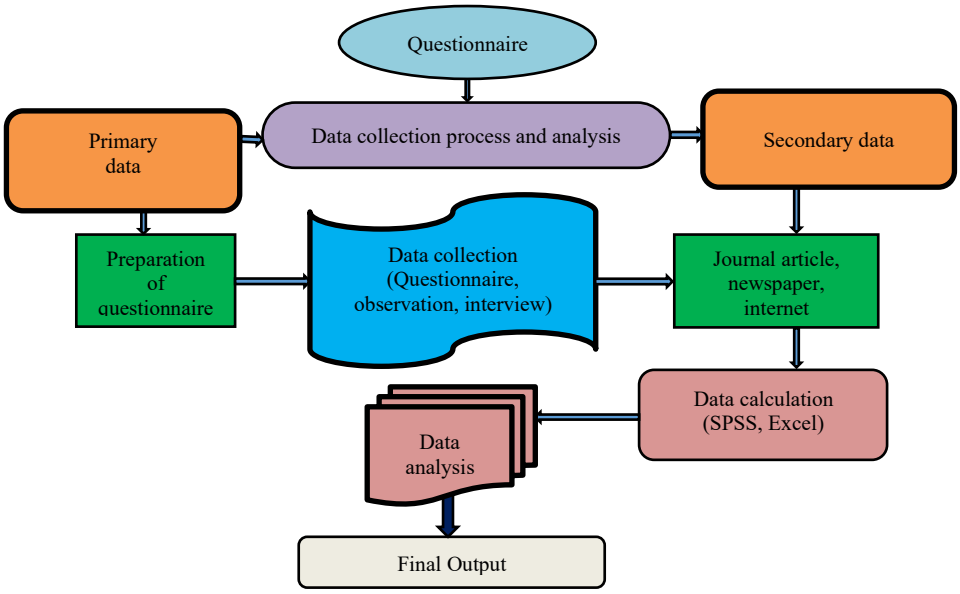

Figure 3. Flow chart of the study

The flowchart (Figure 3) summarizes the overall process of the study. The research was started with problem identification and according to problems study area was selected. After that the sample size was determined and according to the sample size the questionnaire was made with the help of secondary information. Again, the obtained data was calculated via different means and then the data was analyzed and then the final output is presented in this paper.

RESULTS

1. Participants' demographic characteristics

A total of 360 respondents participated in the survey, with 41.1% in the 28–37 age group, and a significant decline in representation for the 38+ age group. In terms of gender, 72.2% were male and 27.8% were female (Figure 4). Regarding income, 33.6% earned between BDT 7,000-9,000, and only 1.1% earned BDT 13,000-15,000, which is significantly below the national average of BDT 26,000. Many respondents live in poverty, with annual flooding exacerbating their challenges. The largest occupational group was housewives (18.1%), followed by day laborers (12.5%), farmers (11.9%), boatmen (11.7%), and fishermen (11.1%). Smaller groups included small business owners (8.1%), tourist guides (7.5%), and singers (4.7%). Approximately 33.1% of the population is involved in tourism-related activities, primarily as boatmen, tourist guides, or in small businesses. A notable portion (7.2%) is unemployed.

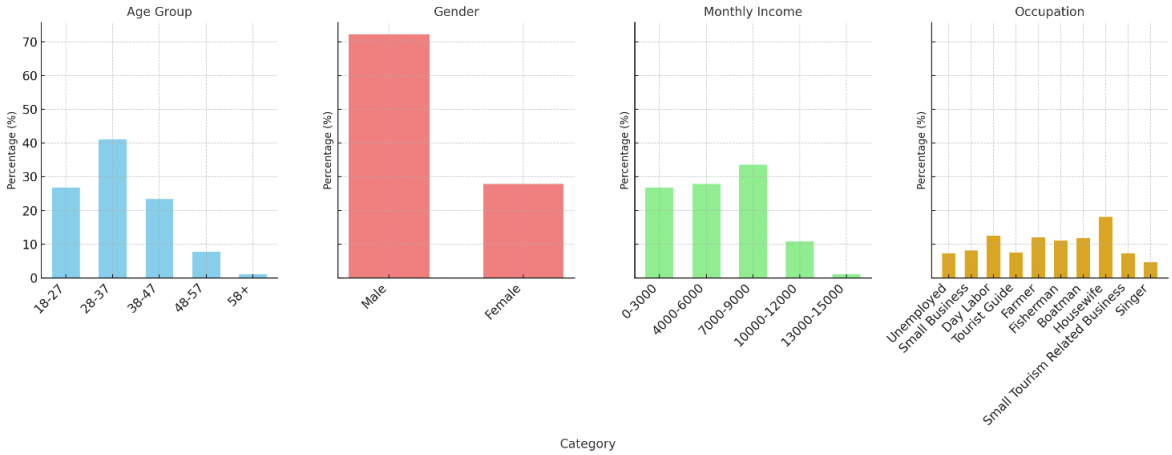

Figure 4. Demographic and Economic Distribution of Respondents

2. Perception of Tourism Impact in TahirpurUpazila

Approximately forty years ago, tourism scholars began to focus on economic, social, and environmental issues (Islam, 2015).Tourism has a wide and varied social influence that is linked with other tourism-related effects. The economy and tourism are interconnected; tourism has been the primary driver of regional development and stimulates startups.

Table 1. Residents Perception of Tourism Impact in TahirpurUpazila (Source: Field Survey, 2024)

Items	Strongly agreed		%		Strongly disagreed	Mean	SD
Perceived Socio-cultural impact of Tourism							
1. It ensure the development of cultural activities	7.8	47.8	26.1	13.3	5.0	3.40	.984
2. It increase the quality of life of the local people	23.9	62.2	10.0	2.8	1.1	4.05	.742
3. Local image and popularity promote	28.3	54.4	12.8	2.8	1.7	4.05	.821
4. It negatively affect the attitude and behaviors of local people	11.7	55.6	20.0	9.4	3.3	3.63	.928
5. It cause the cultural value to disappear	8.6	56.3	17.4	8.0	9.7	3.63	.940
6. Cause social problem such as crime, Prostitution, drugs and vandalism	10.6	50.0	25.6	10.0	3.8	3.53	.950
7. Tourist flow annoy residents and cause stress	16.1	40.0	23.3	10.6	10.0	3.42	1.176
Perceived Economic impact of Tourism							
1. It create new job opportunity for local people	3.9	69.4	20.0	3.3	3.3	3.67	.754
2. It improve the overall quality of life of the resident	31.7	42.2	20.0	3.3	2.8	3.97	.951
3. Investment, Development and Public Construction will improve	15.0	57.8	20.0	5.0	2.2	3.78	.841
4. It increase the consumption of local product and service	14.4	50.6	29.4	4.4	1.1	3.73	.804
5. Due to tourism amenities, different type of product and services are better available	12.2	53.3	25.0	7.2	2.2	3.66	.866
6. Torism support the education and vocational; training	8.3	47.2	28.3	13.9	2.2	3.46	.911
7. It create economic inequalities among local people	30.0	32.2	19.4	11.7	6.7	3.67	1.20
Perceived Environmental impact of Tourism							
1. Tourism support the protection and development of the natural environment and historical structure	9.4	57.8	25.6	4.4	2.8	3.67	.819
2. It improves in Env. quality for future generation	33.3	47.2	15.0	2.8	1.7	4.08	.862
3. Increase environmental awareness	20.0	48.9	22.8	7.2	1.1	3.79	.882
4. Tourism cause pollution of Env. components	13.9	44.4	25.0	13.3	3.3	3.52	1.00
5. The increase number of tourists result disturbance and destruction of flora fauna	12.2	39.4	26.1	15.0	7.2	3.34	1.10
6. Create problem such as crowding, noise, traffic congestion	9.4	30.0	23.3	22.2	15.0	2.97	1.228

5=Strongly agree, 4=Agree, 3=Neutral, 2=Disagree,1=Strongly Disagree

Residents perceived both positive and negative impacts. Most agreed that tourism increased the local quality of life (62.2%) with a high mean score of 4.05 (see table 1). Other positive aspects included the development of cultural activities and the promotion of local image, with mean scores above 3.4. However, negative impacts were also noted. The highest percentage (58.3%) of respondents felt that tourism led to the disappearance of cultural values, due to cultural mixing. Additionally, 55.6% believed tourism negatively affected local attitudes and behaviors, and 50% cited social problems like crime and vandalism. Tourism was viewed positively in terms of economic development. A significant 69.4% agreed that tourism created new job opportunities. The highest mean score for economic impact (3.97) was associated with improvements in the overall quality of life due to better healthcare, public spaces, and recreational opportunities.

However, economic inequalities were noted, with 30% of respondents strongly agreeing that tourism exacerbated disparities. Standard deviations for some items, such as economic inequalities (1.20), indicated a higher variation in responses. Tourism's environmental effects were mixed. While 33.3% (Figure 5) felt tourism improved environmental quality for future generations, concerns were also raised about pollution, the disturbance of flora and fauna, and traffic

congestion. Respondents also agreed that tourism increased environmental awareness (48.9%). However, the negative environmental impacts, such as pollution and crowding, had a high variability in responses.

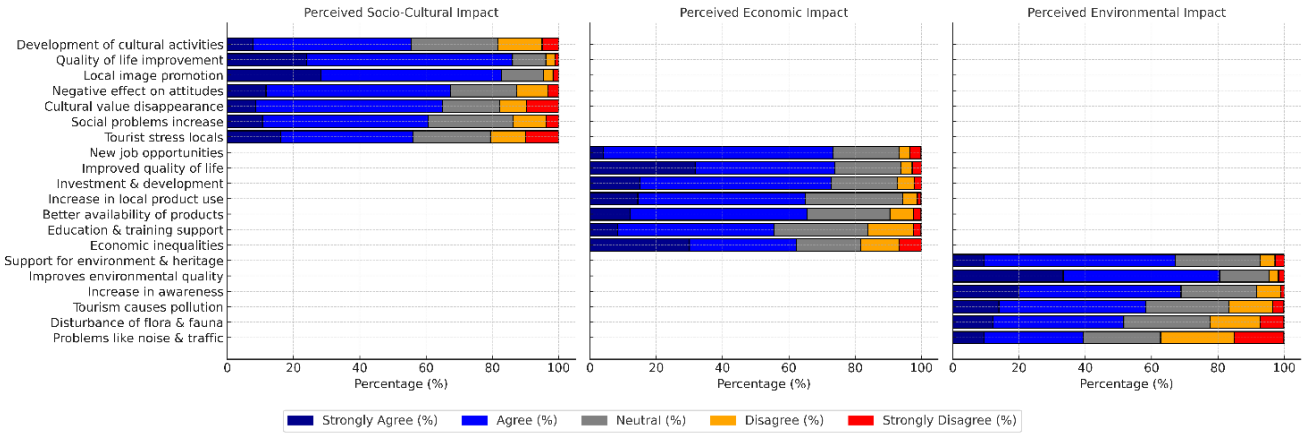

Figure 5. Perceptions of the socio-cultural, economic, and environmental impacts of tourismin TahirpurUpazila

3. Perception of Tourism Impact in DharmapashaUpazila

Dharmapasha is another Upazila of Sunamganj district. Tahirpur and Dharmapasha are adjacent upazila that's why data was collected from those two upazila to compare the Tourism perception among residents.

Table 2 presents the residents' perceptions of tourism's socio-cultural, economic, and environmental impacts in DharmapashaUpazila. Respondents generally perceived tourism positively, with the highest mean score of 4.01 for the improvement of local residents' quality of life, suggesting significant agreement.

However, there were concerns about negative effects, such as tourism's impact on local attitudes and behaviors (mean score 3.62) and the potential disappearance of cultural values (mean score 3.86). Despite the positive impacts on cultural and local image promotion, a sizable portion of respondents expressed concerns about tourism-induced social issues like crime, prostitution, and stress from tourist flow, though these perceptions were somewhat neutral.

The economic benefits of tourism were more strongly acknowledged. A majority (64.4%) (Figure 6) of respondents agreed that tourism created new job opportunities (mean score 3.83). Tourism was also seen as improving the overall quality of life (mean score 4.06), with the lowest variability in responses. Investment, public construction, and consumption of local products were all perceived positively, with mean scores above 3.7. However, economic inequalities were a concern for 31.1% of respondents, showing a moderate impact on income distribution (mean score 3.74).

Table 2. Residents Perception of Tourism Impact in DharmapashaUpazila (Source: Field Survey, 2024)

Items	Strongly agreed		%		Strongly disagreed	Mean	SD
Perceived Socio-cultural impact of Tourism							
1. It ensure the development of cultural activities	10.0	45.6	28.9	11.7	3.9	3.46	0.959
2. It increase the quality of life of the local people	23.9	61.7	8.3	3.9	2.2	4.01	0.825
3. Local image and popularity promote	28.9	51.7	13.3	2.8	3.3	4.00	0.915
4. It negatively affect the attitude and behaviors of local people	13.3	48.3	27.8	8.3	2.2	3.62	0.894
5. It cause the cultural value to disappear	10	57.8	21.7	6.7	3.9	3.86	3.21
6. Cause social problem such as crime, Prostitution, drugs and vandalism	13.9	43.3	24.4	12.2	6.1	3.47	1.070
7.Tourist flow annoy residents and cause stress	16.1	35.6	17.2	15.6	15.6	3.21	1.320
Perceived Economic impact of Tourism							
1. It create new job opportunity for local people	13.9	64.4	16.1	2.2	3.3	3.83	0.815
2. It improve the overall quality of life of the resident	30.0	50.0	16.7	2.8	0.6	4.06	0.792
3. Investment, Development and Public Construction will improve	21.7	56.7	18.9	1.7	1.1	3.96	0.758
4. It increase the consumption of local product and service	20.6	48.9	25.0	3.9	1.7	3.83	0.858
5. Due to tourism amenities, different type of product and services are better available	15.6	50.0	22.8	8.9	2.3	3.93	3.215
6. Torism support the education and vocational; training	15.0	45.0	23.3	12.2	4.4	3.54	1.032
7. It create economic inequalities among local people	31.1	33.9	20.6	7.2	7.2	3.74	1.182
Perceived Environmental impact of Tourism							
1. Tourism support the protection and development of the natural environment and historical structure	10.0	56.9	19.4	8.5	5.2	3.75	.783
2. It improves in Env. quality for future generation	27.8	51.1	16.7	2.8	1.7	4.01	.842
3. Increase environmental awareness	25.0	52.2	18.9	2.8	1.1	3.97	.808
4. Tourism cause pollution of Env. components	17.8	47.8	24.4	8.9	1.1	3.72	0.897
5. The increase number of tourists result I disturbance and destruction of flora fauna	11.1	42.8	22.8	17.8	5.6	3.36	1.072
6. Create problem such as crowding, noise, traffic congestion	8.3	32.2	21.7	23.3	14.4	2.97	1.214

5=Strongly agree, 4=Agree, 3=Neutral,2=Disagree,1=Strongly Disagree

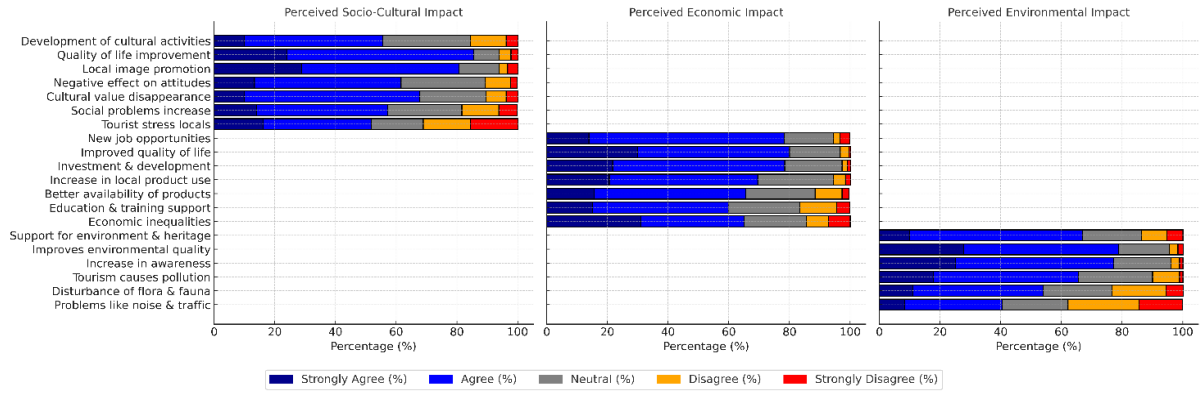

Figure 6. Perceptions of the socio-cultural, economic, and environmental impacts of tourism in DharmapashaUpazila

On the environmental front, positive perceptions included tourism's support for the protection of natural and historical structures (mean score 3.75) and its role in improving environmental quality for future generations (mean score 4.01). Despite these benefits, respondents were concerned about pollution (mean score 3.72) and the potential damage to local flora and fauna (mean score 3.36). Overall, while Dharmapasha residents recognized both the positive and negative impacts of tourism, the overall perception was largely balanced, with stronger agreement on its positive economic and quality of life improvements, alongside concerns about socio-cultural and environmental challenges.

4. Comparison of perception of the residents towards tourism impact between two upazila of Tanguarhaor

As mentioned above, data was collected from two upazilas, namely Tahirpur and Dharmapasha to compare their tourism perceptions between the residents of those two upazilas. Residents of those TanguarHaorupazilas' perceptions of the social, economic, and environmental effects of tourism were compared using an independent sample t test.

The comparison of mean perception scores of tourisms impacts between Tahirpur and Dharmapasha Upazilas reveals that Tahirpur had a mean score of 3.651 (SD = 0.27083), while Dharmapasha scored slightly higher at 3.715 (SD = 0.29874). The Levene's test for equality of variance produced an F value of 0.551 with a significance level of 0.462 (Table 3), indicating no significant difference in variability between the two upazilas.

Table 3. Independent sample test (tourism impacts) (Source: Field Survey, 2024)

				Levene's Test for Equality of Variance		t test for equality of means			95% Confidence Interval of the Difference	
Upazila	N	Mean	SD	F	sig	t	df	Sig. (2-tailed)	Lower	upper
Tahirpur	180	3.6510	.27083	.551	.462	-.710	38	.482	-.24653	.1185
Dharmapsha	180	3.7150	.29874							

5. Community resilience to natural disaster

The concept of resilience is becoming significant in national and international initiatives aimed at enhancing individual and community abilities to prepare for and respond to disasters.

Table 4. Environmental Fragility (Source: Field Survey, 2024)

Items	Strongly agree	%			Strongly Disagree	Mean	Std.
1. This community's land use rate has increased due to tourism development.	33.7	48.9	16.4	2.8	0.3	4.09	0.781
2. The community is situated in a unique topography	30.3	58.6	8.3	2.2	0.6	4.16	0.708
3. The community is located in a disaster-prone area.	27.2	56.4	13.1	2.5	0.8	4.06	0.758
4. The community has a large number of vulnerable group (child less than 6 years, women, older than 60 years)	28.6	57.2	10.3	2.5	1.4	4.20	2.194

5=Strongly agree.4=Agree.3=Nutral,2=Disagree,1=Strongly Disagree

5.1. Environmental Fragility

Fragility denotes that minor hit result in significant harm. Here the environmental fragility indicator of community resilience consists of four items to assessed the environmental fragility of TanguarHaor. Community resilience to disasters is strongly influenced by environmental fragility, as shown by statistics in Table 4, which examines resilience indicators in Tanguar.The community reported a significant increase in land use due to tourism, with 33.7% strongly agreeing and 48.9% agreeing, resulting in a mean score of 4.09 and a standard deviation of 0.781, indicating relatively low variability. The item "community situated in a unique topography" received a mean score of 4.16, with 58.6% agreeing, as residents perceive their low-lying location makes them prone to annual flooding.

5.2. Community attachment

Community attachment in TanguarHaor reflects strong ties and positive attitudes, with 58.3% of respondents highly valuing their community and a mean satisfaction score of 4.10. A majority (56.7%) showed willingness to engage in

disaster prevention activities, with a mean score of 3.90, emphasizing collective well-being. For disaster preparedness, 78.6% agreed to participate in community exercises, achieving a mean score of 3.97, though 16.4% were neutral, suggesting weaker ties for some. In disaster response, 56.7% were willing to assist vulnerable individuals, with a mean score of 3.84, indicating moderate agreement but varying levels of engagement.

6. Relationships between perception of tourism impact and community resilience

The impact of tourism is defined by three dimensions: economic, sociocultural, and environmental, comprising a total of 20 items. Community resilience has four dimensions: environmental fragility, community attachment, disaster prevention awareness, and adaptive responses, total 24 items. The average score of elements was computed to represent each dimension. Correlation analyses were employed to examine the links between perceptions of tourism impact and the aspects of community catastrophe resilience. The correlation analysis in TanguarHaor reveals a positive relationship between tourism impacts and community resilience (Table 5). Stronger environmental impacts from tourism significantly correlate with higher community attachment ($r = 0.975^{**}$, $p < 0.01$), as positive perceptions of environmental improvements foster emotional ties. Disaster prevention awareness shows a positive correlation with sociocultural ($r = 0.777^{*}$, $p = 0.05$) and economic impacts ($r = 0.814^{*}$, $p = 0.05$), where perceived benefits like cultural enhancement and economic opportunities align with increased disaster preparedness. Economic impacts also positively correlate with adaptive responses ($r = 0.755$, $p < 0.05$), reflecting tourism's role in enhancing adaptability. However, stronger economic impacts are linked to higher environmental fragility, indicating vulnerability. Additionally, positive perceptions of tourism's environmental impacts correlate with greater environmental resilience ($r = 0.649$), underscoring the need to mitigate negative impacts to strengthen overall resilience.

Table 5. Relationships between perception of tourism impact and community resilience

Community Resilience	**Perceived Tourism Impacts**		
	Socio Cultural	Economic	Environmental
Environmental Fragility	.495	.749	.649
Community Attachment	.608	.180	.975**
Disaster Prevention Awareness	.777*	.814*	.486
Adaptive Response	.744	.755*	.485

* Correlation is significant at the 0.05 level (2-tailed)**; significant at the 0.01 level (2-tailed)

DISCUSSION

Extreme climatic events pose significant challenges for residents of scenic tourism areas. Tourism perceptions and community resilience in TanguarHaor, is examined in this study. Residents recognize tourism's pros and cons. They mention economic and social benefits include increased local agricultural product sales, new jobs, and regional awareness and popularity. The area's commercial potential has increased due to tourism demand for hotels, restaurants, food, handicrafts, and other local products. Residents also like having more access to rare amenities, products, and services.Beyond socio-cultural and economic benefits, communities see improved environmental quality, environmental awareness, and natural resource protection. Despite its positive impacts, respondents also identified several negative effects of tourism, including social issues, resident discomfort, economic inequalities, environmental pollution, and the destruction of flora and fauna. These challenges impede sustainable tourism development in the region. However, residents generally place less emphasis on these negative impacts, likely due to the high levels of instability and insecurity caused by natural disasters. Their strong desire to restore their pre-disaster livelihoods (Nuntaboot et al., 2020)and long-term adaptation to recurring crises may make them less sensitive to the comparatively minor adverse effects of tourism development.

TanguarHaor, prone to floods and natural disasters, often exceeds the community's coping capacity, requiring external aid, especially for vulnerable groups. These calamities impact tourism, resources, and livelihoods, but tourism can support recovery. Disaster-stricken areas attract tourists, underscoring the need to assess tourism's environmental impacts and disasters' effects on local populations. Community resilience involves measures like property relocation, environmental monitoring, and emergency training. With similar economic and cultural contexts, Tahirpur and Dharmapasha Upazilas showed no significant differences in tourism impact perceptions.

The study highlights pre-disaster training, emergency systems, and medical plans as crucial. Tourism's positive environmental impacts, such as improved transport and awareness, boost resilience, while disasters heighten environmental vulnerability. Strong resilience in high-risk tourism areas requires an integrated approach.

Beyond addressing individual dimensions of tourism impact—environmental, sociocultural, and economic—it is essential to incorporate tourism into broader community development efforts (Ap, 1992). The case study aligns with the findings of Pelling (2012), Sugiura et al. (2021) and Sarker & Sujauddin (2020) on disaster preparation and risk reduction. Respondents acknowledge the value of external assistance, including from government agencies, but emphasize the importance of self-help and mutual community support. Similarly, Bornilla et al. (2023) observed in the Philippines that communities transitioned from reliance on assistance to self-management.

The capability for self-help is critical in minimizing damage during the initial moments of a disaster.Full recovery often requires external support and extended timeframes. However, when coordinated with external aid, self-help capabilities act as a stabilizing force, facilitating effective recovery. Cultivating independent relief capabilities is thus a long-term priority for communities (Ahmed et al., 2016). Active participation in disaster risk reduction (DRR) activities significantly reduces disaster losses, as communities become first responders (Bali, 2022). Promoting disaster prevention awareness is a key component of building long-term community resilience, equipping communities with the knowledge

required to respond effectively during disasters. Communities should engage in mutual aid during disasters, focusing on supporting vulnerable groups. Local governments must implement disaster prevention measures and collaborate with communities to enhance resilience. Investments in infrastructure, such as evacuation facilities and prevention projects, are essential, along with capacity-building efforts like training and youth employment initiatives. Emphasizing cultural preservation and environmental sustainability can further strengthen resilience in disaster-prone areas.

CONCLUSION

This study examines perceptions of tourism and disasters in TanguarHaor, a disaster-prone region. Despite its vulnerability, residents show strong community attachment and satisfaction. Self-help, disaster prevention, and adaptive capacity are vital for effective disaster response. Tourism contributes to employment, local demand, and infrastructure, supporting socio-cultural, economic, and environmental stability. Promoting these benefits while minimizing economic inequality, social issues, and environmental degradation can enhance well-being and sustainable tourism.

Strengthening community participation in disaster prevention and promoting eco-friendly tourism improve resilience and environmental awareness. Leveraging tourism's economic benefits for job creation and investment, along with agricultural adaptation and job diversification, reduces disaster impacts and boosts preparedness.

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REFERENCES

Ahmed, T., Moroto, H., Sakamoto, M., & Matsuyama, A. (2016). Exploring Implementation Gaps between Policy and Practice for Disaster Management in Bangladesh. *Journal of Integrated Disaster Risk Management*, *6*(2), 79–101. https://doi.org/10.5595/idrim.2016.0181

Alam, R. (2012). *Flood Risks Management in the Haor Region: A study of Local knowledge and Institutional Interventions*.

Alauddin, M., Shah, M. G., & Ullah, H. (2014). *Tourism in Bangladesh: A Prospects Analysis*.

Alcoriza, G. B., & Policarpio, J. E. A. (2023). Post-disaster Tourism: Building Resilient and Sustainable Communities. In J. Kumar, G. E. Bayram, & A. Sharma (Eds.), *Resilient and Sustainable Destinations After Disaster*, 97–107. Emerald Publishing Limited. https://doi.org/10.1108/978-1-80382-021-720231008

Aliperti, G., Sandholz, S., Hagenlocher, M., Rizzi, F., Frey, M., & Garschagen, M. (2019). Tourism, Crisis, Disaster: An Interdisciplinary Approach. *Annals of Tourism Research*, *79*, 102808. https://doi.org/10.1016/j.annals.2019.102808

Ap, J. (1992). Residents' perceptions on tourism impacts. *Annals of Tourism Research*, *19*(4), 665–690. https://doi.org/10.1016/0160-7383(92)90060-3

Ara, E., & Islam, S. Md. Z. (2019). Role of Stakeholders in Preserving Biodiversity in Bangladesh: A study on Tanguar Haor. *International journal of management*, *10*(2). https://doi.org/10.34218/IJM.10.2.2019/003

Aramberri, J. (2009). The future of tourism and globalization: Some critical remarks. *Futures*, *41*(6), 367–376. https://doi.org/10.1016/j.futures.2008.11.015

Bali, R. (2022). Importance of Community Awareness and Preparedness in Disaster Risk Reduction. *Research Review International Journal of Multidisciplinary*, *7*(10), 40–57. https://doi.org/10.31305/rrijm.2022.v07.i10.005

Best, M. N., & González, J. H. (2021). Community Resilience in the Face of Natural Disaster: Puerto Rico's Adventure Tourism Industry. In A. Lewis-Cameron, L. A. Jordan, & S. Roberts (Eds.), *Managing Crises in Tourism* (pp. 135–154). Springer International Publishing. https://doi.org/10.1007/978-3-030-80238-7_7

Bofulin, M., Raspor, A., Stranjančević, A., Bulatovic, I., & Lacmanovic, D. (2016). *Small Destinations in Large Tourism Market: The Analysis of Western Balkan Countries and The Chinese Outbound Tourism*.

Bornilla, B. D. C., Ang, R. Y. B., Angeles, J. Ak. F., Fabia, J. L. P., & Kurata, Y. B. (2023). Determining Factors influencing Disaster Consciousness in the Philippines: A Multiple Regression Approach. *Proceedings of the International Conference on Industrial Engineering and Operations Management*. 4th African International Conference on Industrial Engineering and Operations Management, Lusaka, Zambia. https://doi.org/10.46254/AF04.20230179

Bott, E. (2023). Global tourism. In C. Karner & D. Hofäcker (Eds.), *Research Handbook on the Sociology of Globalization* (pp. 108–116). Edward Elgar Publishing. https://doi.org/10.4337/9781839101571.00019

Cecil, A., Fu, Y. Y., Wang, S., & Avgoustis, S. (2010). Cultural tourism and quality of life: Results of a longitudinal study. *European Journal of Tourism Research*, *3*(1), 54–66. https://doi.org/10.54055/ejtr.v3i1.45

Clark, C., Nyaupane, G. P., & Xiao, X. (2024). Building Community Resilience and Adaptive Capacity Through Investments in Tourism and Conservation. *Journal of Travel Research*, 00472875241304482. https://doi.org/10.1177/00472875241304482

Cohen, E. (1978). The impact of tourism on the physical environment. *Annals of Tourism Research*, *5*(2), 215–237. https://doi.org/10.1016/0160-7383(78)90221-9

Filimonau, V., & De Coteau, D. (2020). Tourism resilience in the context of integrated destination and disaster management (DM^2). *International Journal of Tourism Research*, *22*(2), 202–222. https://doi.org/10.1002/jtr.2329

Gössling, S. (2000). Sustainable Tourism Development in Developing Countries: Some Aspects of Energy Use. *Journal of Sustainable Tourism*, *8*(5), 410–425. https://doi.org/10.1080/09669580008667376

Gössling, S., Scott, D., & Hall, C. M. (2013). Challenges of tourism in a low-carbon economy. *WIREs Climate Change*, *4*(6), 525–538. https://doi.org/10.1002/wcc.243

Halim, Md. A., Mawa, Mst. J., Deb, S. K., & Nafi, H. Md. (2022). Local Community Perception About Tourism Impact and Community Support for Future Tourism Development: A Study on Sylhet, Bangladesh.*GeoJournal of Tourism and Geosites*, *44*(4), 1260–1270. https://doi.org/10.30892/gtg.44410-942

Hall, M. C., & Gössling, S. (2006). *Tourism and Global Environmental Change: Ecological, Economic, Social and Political Interrelationships* (1st ed.). Routledge. https://doi.org/10.4324/9780203011911

Islam, M. (2015). Study on Factors Influencing Tourism: Way Forward for Sustainable Tourism in Bangladesh. *Journal of Tourism, Hospitality and Sports*, *6*.

Jenkins, C. L. (1980). Tourism policies in developing countries: A critique. *International Journal of Tourism Management*, *1*(1), 22–29. https://doi.org/10.1016/0143-2516(80)90018-3

Khan, Md. S., Apu, M. R., Begum, S., & Billah, M. M. (2021). Sectoral Impacts of Flash Flood in Tanguar Haor in Sunamganj of Bangladesh. *Asian Journal of Geographical Research*, 55–64. https://doi.org/10.9734/ajgr/2021/v4i230131

Lickorish, L. J., & Jenkins, C. L. (2007). *Introduction to Tourism*. Routledge.

Liu, J. C., Sheldon, P. J., & Var, T. (1987). Resident perception of the environmental impacts of tourism. *Annals of Tourism Research*, *14*(1), 17–37. https://doi.org/10.1016/0160-7383(87)90045-4

Mahmud, S. (2023). Multi-level sustainability from the perspectives of a developing economy: A case study on climate resilient communities of Bangladesh. In M. Starik, G. Rands, J. Deason, & P. Kanashiro (Eds.), *Handbook of Multi-Level Climate Actions* (pp. 202–214). Edward Elgar Publishing. https://doi.org/10.4337/9781802202458.00021

Nuntaboot, K., Boonsawasdgulchai, P., Bubpa, N., & Benner, M. T. (2020). Investigating the experience of local community networks of disaster self-management: A qualitative study in Thailand. *Indian Journal of Public Health*, *64*(4), 381–385. https://doi.org/10. 4103/ijph.IJPH_92_20

Parveen, D. J. A. (2013). *Current Status of Tourism Industry in Bangladesh: An Empirical Evaluation*. *1*(1).

Pelling, M. (2012). *Natural Disaster and Development in a Globalizing World*. Taylor and Francis.

Pforr, C., & Hosie, P. J. (2008). Crisis Management in Tourism. *Journal of Travel & Tourism Marketing*, *23*(2–4), 249–264. https://doi.org/10.1300/J073v23n02_19

Praptika, I. P. G. E., Yusuf, M., & Heslinga, J. H. (2024). How can communities better prepare for future disasters? Learning from the tourism community resilience model from Bali, Indonesia. *Journal of Tourism Futures*, *10*(3), 504–523. https://doi.org/10.1108/JTF-04-2023-0092

Prayag, G. (2018). Symbiotic relationship or not? Understanding resilience and crisis management in tourism. *Tourism Management Perspectives*, *25*, 133–135. https://doi.org/10.1016/j.tmp.2017.11.012

Prentice, R. (1993). Community-driven tourism planning and residents' preferences. *Tourism Management*, *14*(3), 218–227. https://doi.org/10.1016/0261-5177(93)90023-E

Rahaman, M., Sajib, K. I., & Alam, I. (2016). Impacts of Climate Change on the Livelihoods of The People in Tanguar Haor, Bangladesh. *Journal of Water Resource Engineering and Management*, *3*, 1–9.

Rahman, M., Hossain, S. M., Miti, S., & Kalam, A. (2010). An Overview of Present Status and Future Prospects of the Tourism Sector in Bangladesh. *Journal of Bangladesh Institute of Planners*, *3*, 65–75.

Raihan, F., & Hossain, M. M. (2021). Livelihood vulnerability assessments and adaptation strategies to climate change: A case study in Tanguar haor, Sylhet. *Journal of Water and Climate Change*, *12*(7), 3448–3463. https://doi.org/10.2166/wcc.2021.047

Ranjan, E. S., & Abenayake, C. C. (2014). A Study on Community's Perception on Disaster Resilience Concept. *Procedia Economics and Finance*, *18*, 88–94. https://doi.org/10.1016/S2212-5671(14)00917-4

Roy, S. C., & Roy, M. (2015). Tourism in Bangladesh: Present Status and Future Prospects. *The International Journal of Management Science and Business Administration*, *1*(8), 53–61. https://doi.org/10.18775/ijmsba.1849-5664-5419.2014.18.1006

Ruiz-Ballesteros, E. (2011). Social-ecological resilience and community-based tourism: An approach from Agua Blanca, Ecuador. *Tourism Management*, *32*(3), 655–666. https://doi.org/10.1016/j.tourman.2010.05.021

Sadler, P. G., & Archer, B. H. (1975). The economic impact of tourism in developing countries. *Annals of Tourism Research*, *3*(1), 15–32. https://doi.org/10.1016/0160-7383(75)90015-8

Sarker, M. H., & Sujauddin, K. M. (2020). Bangladesh's Flooding: Coping Strategies of Flood Affected People of Nageshwari Upazila. *American International Journal of Social Science Research*, *5*(3), 36–40. https://doi.org/10.46281/aijssr.v5i3.749

Stoffelen, A., & Ioannides, D. (Eds.). (2022). *Handbook of Tourism Impacts: Social and Environmental Perspectives*. Edward Elgar Publishing. https://doi.org/10.4337/9781800377684

Sugiura, M., Ishibashi, R., Abe, T., Nouchi, R., Honda, A., Sato, S., Muramoto, T., & Imamura, F. (2021). Self-help and mutual assistance in the aftermath of a tsunami: How individual factors contribute to resolving difficulties. *PLOS ONE*, *16*(10), e0258325. https://doi.org/10.1371/journal.pone.0258325

Sultana, Mst. A., Pandit, D., Barman, S. K., Tikadar, K. K., Tasnim, N., Fagun, I. A., Hussain, Md. A., & Kunda, M. (2022). A review of fish diversity, decline drivers, and management of the Tanguar Haor ecosystem: A globally recognized Ramsar site in Bangladesh. *Heliyon*, *8*(11), e11875. https://doi.org/10.1016/j.heliyon.2022.e11875

Sultana, S. (2016). *Economic Contribution of Tourism Industry in Bangladesh*.

Tribe, J. (2009). *Philosophical Issues in Tourism*. Channel View Publications.

Tsai, C. H., Wu, T. (Emily), Wall, G., & Linliu, S. C. (2016). Perceptions of tourism impacts and community resilience to natural disasters. *Tourism Geographies*, *18*(2), 152–173. https://doi.org/10.1080/14616688.2016.1149875

Yfantidou, G., & Matarazzo, M. (2017). The Future of Sustainable Tourism in Developing Countries. *Sustainable Development*, *25*(6), 459–466. https://doi.org/10.1002/sd.1655

Zapanti, T. G., & Constantina, S. (2024). Thriving in the Anthropocene: Building Community Resilience to Combat Climate Change. *Proceedings of The World Conference on Climate Change and Global Warming*, *1*(1), 29–43. https://doi.org/10.33422/ccgconf.v1i1.338

Zhang, F., Lv, Y., & Sarker, M. N. I. (2024). Resilience and recovery: A systematic review of tourism governance strategies in disaster-affected regions. *International Journal of Disaster Risk Reduction*, *103*, 104350. https://doi.org/10.1016/j.ijdrr.2024.104350

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