

The Impact of Environmental Crisis on Sustainable Tourism Development: A Study on Kuakata

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Abstract: *Tourism has become a fashionable leisure activity throughout the world. It generates revenue for the destination countries and creates more employment avenues for the community. Tourism is a growing industry in Bangladesh. The country is blessed with thousands of tourist spots. Cox's Bazar is the longest sea beach in the world. Kuakata Sea Beach has ranked second in terms of length. The beach is situated in the southern part of Bangladesh. The virgin beach is beset with many attractive sites. The research aims to determine the impact of the environmental crisis on sustainable tourism development in Kuakata. Data were collected in two ways to reach the research goal. First, literature was reviewed to identify issues related to environmental crises and sustainable tourism development; thus, ten (10) cases were identified in this connection. Second, interviews were conducted using a closed-ended questionnaire to identify the environmental crisis affecting sustainable tourism development at Kuakata. This survey shows that Kuakata is beset with various problems (natural hazards and man-made disasters) such as coastal erosion, water pollution, floods, tide surges, excessive rain, earthquakes and deforestation, insufficient tourism infrastructure and superstructure, waste and sewage disposal, tourist inflow beyond the carrying capacity, lack of awareness about conservation and development of tourism facilities, absence of a proper monitoring system of tourism assets, absence of policy supports engaging the local community in tourism activities, lack of planning for mitigation of environmental crises, poor management by tourism authorities, etc. After that, a Prioritization Matrix (PM) has been prepared to show the significance and extent of their impacts on the Kuakata seashore. To mitigate the environmental crisis, some SMART (Specific, Measurable, Attainable, Realistic, and Time-Bound) objectives are set based on the findings of the prioritization matrix. Lastly, a short and long-term action plan has been created to take the necessary steps for sustainable tourism development in Kuakata.*

Keywords: Environment, Disasters, Sustainability, Development, Tourism, and Kuakata.

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1. Introduction

An environmental crisis combines uncertain and vulnerable problems such as climate change, pollution, natural destruction, technological issues, and toxic waste in any destination (Centre, 2005). Unexpected and disrupted natural calamities hamper tourism activities in the destination areas. Various natural hazards such as floods, tidal surges, acid rains, earthquakes, deforestation, tsunamis, river erosions, etc., occur in the coastal area. All these hazards create risk and become a crisis in tourist destinations (Dr. Mamunur, 2018). The environmental problems negatively affect the environment, economy, and culture of tourist destinations, especially in the coastal area. (Mansfeld, 1999). Kuakata is famous for its panoramic sea beach and natural beauty, as well as its heavenly natural resources. The sandy beach is long, around 30 kilometers, and 6 kilometers wide. Tourists can see both sunrise and sunset from the beachside in a serene environment. The spot is blessed with natural, cultural, and spatial resources. Tourists have all kinds of facilities near the beach. There are many attractive places like Fatra Forest, Jhau Forest, Gangamoti, Labor Char, Lal Kakrar Char, Kuakata National Park, Rakhiyan Palli, Large Kua, Sutki Polli, and Fish market located near the beach. Tourists can spend the whole day traveling to these attractive places (M. Rahman, 2015). But despite the considerable potential and natural beauty, the authorities do not take the necessary steps to flourish tourism on this beach. The beach is not yet well known to domestic and international tourists. Many researchers such as Ahmed & Anzum (2021), Alam *et al.* (2018), Kalam & Hossein (2018), Mola *et al.* (2012), Mozumder *et al.* (2018), and Nations & Programme (2005), Mohammed *et al.* (2012), Roy & Hoque (2015), Rahman (2018), and Rashid & Taskin (2018) have analyzed the area of issues and challenges of tourism development in Kuakata. However, there is little research conducted to determine the impact of the environmental crisis on the development of sustainable tourism in Kuakata. So, this study aims to identify the association between ecological problems and sustainable tourism development in Kuakata. The research has further prescribed an action plan and recommendations based on the Prioritization Matrix (PM).

2. Literature Review

Coastal tourism is the fastest-growing tourism all over the world. It is estimated that around 20% of the earth's surface is coastline, and more than 70% of the best cities are in the coastline area. These coastal zones benefit these cities (Ocean Info Pack, 2009). The coastal area has many natural resources such as beaches, fish, red crab, and mangrove forests. These environmental assets attract thousands of domestic and foreign tourists to enjoy "Beach Holiday" tourism (Newsome *et al.*, 2006). But the coastal area is the frailest natural district in the world. Natural hazards occur annually in this area (Weaver & Oppermann, 2000). Cox's Bazar and Kuakata are the two coastal districts in Bangladesh. Cox's Bazar, situated

in Bangladesh, is the largest sea beach in the world. Kuakata is the second-largest sea beach (coastal district) after Cox's Bazar in Bangladesh. The two beaches significantly contribute to Bangladesh's tourism economy (Hassan, 2000). Proper facility development at the beach areas will help to attract more tourists and earn more foreign currencies. It will contribute to the growth of the national economy. However, there are many limitations and drawbacks to sustainable tourism development in Kuakata (WTO, 2002).

The concept of sustainable tourism development represents "a compromise," in a nutshell (Overton & Scheyvens, 1999). It means raising awareness about environmental conservation and preserving natural resources. Both conservation and preservation will minimize the negative impacts of tourism on the destinations. Sustainable tourism is also defined as a development in which consumers use renewable natural resources without debasing them (Wced, 1987). Overall, this type of development is concerned with protecting environmental assets and helping generate profit in the host destinations. To ensure sustainable tourism development, the authorities (Such as Bangladesh Parjatan Corporation, Bangladesh Tourism Board, Travel agencies and Tour Operators, and Hotel Organizations) must focus on developing all the relevant tourism-related elements. Generally, the tourism industry largely depends on different environmental features such as seas, beaches, mountains, lakes, rivers, forests, etc. (Suanez, 1999). The success of sustainable tourism development in any tourism destination largely depends on this environmental element and some development-related policies and factors.

Kuakata is situated between 21°48' and 22°05' north latitude and between 90°05' and 90°20' east longitude. Different types of environmental calamities happen across the coastal area every year. Local communities, tourists, and service providers constantly face risks in the beach area. Although Kuakata is one of the best tourist spots in Bangladesh, with a giant sea beach, the district has not flourished compared with other destinations. Infrastructural and super-structural development did not take place to meet the demand of tourists (Ahmed & Anzum, 2021). Investors are reluctant to invest in Kuakata due to known and unknown reasons. One known cause is the environmental calamities that why they do not want to invest there.

The environmental crisis has become a major hindrance to sustainable tourism development. The ecological hazards deplete the stratosphere's ozone, increase global warming, cause tidal surges, destroy tropical forests, create acid rain, cause floods, and result in coastal erosion. Coastal erosion is treated as the main problem with beach tourism. The environment is polluted by solid waste disposal in the beach area (David Ngoc *et al.*, 2016). As the Kuakata seashore abounds with different types of fish, the unhygienic processing of fish pollutes the surrounding environment. Dried fish (Sutki fish) processing

by the host communities is more environmentally harmful. These activities near the beach pollute the nearby air and thus degrade the environment and affect the tourists' movements there. Manufactured hazards like the unplanned infrastructural development of hotels, motels, restaurants, tea stalls, and fishing and fish fry depots have directly or indirectly affected the beach area's environment (Forest *et al.*, n.d.). All these create negative impacts on sustainable tourism development at Kuakata Sea Beach. Poor tourist management is another limitation of the beach. As thousands of tourists travel to the beach in a day, the area becomes more congested. The overflow of tourists has more negative impacts on the environment, culture society, etc. The carrying capacity of the beach has been severely affected by a constant flow of tourists. So the influx of tourists has become a burden for developing sustainable tourism at Kuakata Beach.

Bangladesh has been a country with natural disasters for a long time. All the catastrophes impacted different areas, such as populations, roads, bridges, fisheries, livestock, households, and educational and religious institutions. The Kuakata district was also affected by many severe natural calamities such as Sidr, Aila, and Mohaseen in 2007, 2009, and 2013. The tremendous "Sidr" took away around 94 lives in Kuakata beach areas. In addition, 96 people had become disabled, 1678 were wounded, and around 3247 families were affected on that black night in 2007 in the beach area. The dangerous tropical storm "Aila, 2009" killed around five people, disabled six, and wounded 145 people (Alam *et al.*, 2018). Five thousand seven hundred fifty families have suffered from food and clean water problems for a long time. The powerful "Mohaseen" created another massacre in 2013, when around 500 families became homeless. The paper (Alam *et al.*, 2018) shows that around 910.94 hectares of land by Sidr, 973.69 hectares of land by Aila, 20 hectares of land by a heavy storm, and five hectares of land by Mohaseen are fully affected in the Kuakata district. The tropical storm has impacted sustainable tourism development in the Beach area over the last ten years.

There are so many natural resources on the Kuakata seashore. But the destination has no sufficient structural, social, political, or economic development. Gradually, water is getting more polluted, making tourists more affected by problems like stomach flu, skin rash, respiratory infections, etc. An integrated master plan is needed to develop sustainable tourism at Kuakata Sea Beach. An initiative was taken to develop Kuakata as a tourist-friendly town after a long survey in 2014 (Emran *et al.*, 2023). However, the project didn't come to light due to its complexity. Recently a master plan has been drafted and completed by the Bangladesh Tourism Board for developing the tourism industry in Bangladesh.

The eagerly awaited tourism master plan has been completed by the Bangladesh Tourism Board (BTB), to attract 5.57 million foreign visitors annually by 2041 and encourage the

creation of 21.94 million employment in the sector. To create ten tourism clusters, the recently developed strategy has asked for \$1.08 billion in funding from the public and private sectors. According to the Bangladesh Tourism Board, five of these initiatives are currently undergoing a feasibility evaluation. The government also intends to set aside \$105.5 million to improve infrastructure facilities including energy, roads, and security.

The long-term goal will help build sustainable tourism in Kuakata (Rashid & Taskin, 2018). Lastly, sustainable tourism is a crucial resource development and management issue. There is no alternative to continuously developing sustainable tourism that will contribute to the world's tourism economy (Park, 2002). Therefore, environmental crisis management is a prerequisite for developing sustainable tourism on Kuakata Beach. It has been observed from the above literature reviews that many researchers have conducted studies on the effect of environmental crises and sustainable tourism development in different tourist spots in Bangladesh. A few researchers such as Dgenv European Commission, (2004), Huang *et al.*, (2007), and the World Bank, (2006) have also focused on the impacts of the man-made disaster on tourism development at Kuakata Sea Beach. But still, no research has been directly conducted on the impacts of environmental crises on sustainable tourism development in Kuakata. In this study, the author has analyzed the impacts of natural disasters on sustainable tourism development on the beach.

3. Theoretical Framework

Many factors may affect the environment and, thus, the sustainability of tourism destinations. These include deforestation, land pollution, air pollution, natural calamities, erosion, disasters, ecological imbalance, loss of wildlife, and loss of habitats. All these create crises and affect human lives. Gradually, all kinds of disasters, calamities, and degradations are happening in and around Kuakata, creating barriers to developing tourism there. The factors (research questions) such as coastal erosion, water pollution, floods, tide surges and excessive rain, earthquakes and deforestation, insufficient tourism infrastructure and superstructure, waste, and sewage disposal, tourists' inflow beyond the carrying capacity, lack of awareness about conservation and development of tourism facilities, absence of a proper monitoring system for tourism assets, absence of policy supports engaging the local community in tourism activities. The lack of proper planning and poor management by tourism authorities has been identified and discussed in the paper. This paper also signifies the research objectives and clarifies the impact of the environmental crisis on sustainable tourism development in Kuakata. Initially, the study identified the problems affecting the environment in Kuakata. It analyzed those in light of the sustainability of tourism at Kuakata Sea Beach. The study displays aspects of how the environmental crisis negatively impacts sustainable tourism development, as well as the

factors that impact the sustainability of tourism at Kuakata Sea Beach. It is assumed that these elements are negatively related to the sustainability of Kuakata Sea Beach.

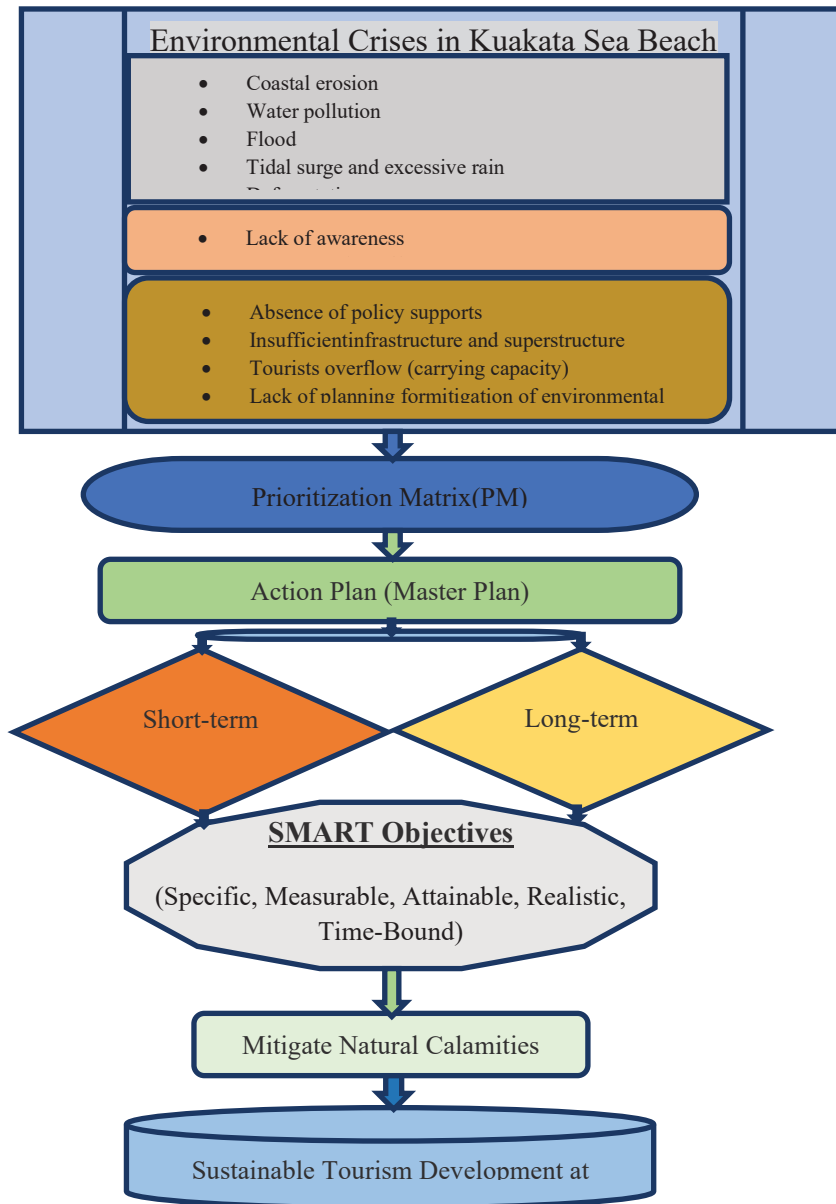


Figure 1: Theoretical Framework of the Study.

Tourism Facilities at Kuakata Sea Beach

A. Attractions and Entertainment Facilities in Kuakata Beach: Kuakata is the most serene beach with natural beauty. The place is considered one of the rarest places in the world. From that point, anyone can enjoy the sunrise as well as the sunset. The Kuakata Beach Carnival is one of the best celebrations of Rakhine's traditional events. The Rakhine are ethnic people in Bangladesh. They are the earliest inhabitants of Kuakata. They came to this area around 300 years ago. It adds new exoticness to the local life of this region. To promote this beautiful land to the world, the Bangladesh Tourism Board has organized a three-day carnival on the beach in Kuakata. Different migrant birds from northern cold areas during winter and chains of coconut plants, the sandy, smooth beach, and the "Blue Bay" create an impressive and eye-catching feast for the tourists in Kuakata. Tourism activities, including boats playing in the Bay of Bengal with vibrant sails, fishing, surfing waves, towering cliffs, beach biking, and enjoying the sunrise and sunset from the same place, will touch every visitor's heart (Al-Masud, 2015). Green trees surround the Kuakata beach with wooden gardens such as the Foyej Miar Coconut Garden, Lembur Chor, Jhauban, Gangamotir Reserve Forest, etc. There is no quicksand on the beach. All tourists can easily take a bath, swim, run, pick up cockles from the beach, etc. There are also many other tourist attractions, like Kuakata Buddhist Temple, Kuakata Eco Park, Rakhaine Polly, Fatrar Chor, etc. Visitors can travel to and from these places easily by walking on foot, by boat, by autorickshaw, motorbike, bicycle, horseback riding, etc. Horseback riding is a popular tourist activity on Kuakata's seashore. The best eye-catching look on Kuakata Beach is now red crab. The beach was noise-free during the lockdown. Then, the beach's environment and nature have flourished with colorful beauty. Sea creepers have grown more and more. The increasing number of red crab artworks has astonished tourists. The beautiful silver oysters are seen everywhere. The sight of red crabs roaming is gorgeous for tourists (Green page, 2022). Tourists visit here to refresh their minds, be free from stress from their daily work, and enjoy the natural beauty in a calm and quiet environment. All the tourism products, services, and activities are authentic here.

B. Transportation: Transportation creates connectivity. There are several ways to come to Kuakata from the capital city (Dhaka) or other places in Bangladesh. The riverway is the most convenient mode of transportation to visit Kuakata. Tourists can visit more quickly by launch and steamer. It takes about 10–12 hours to reach Kuakata from Dhaka safely. Foreign tourists visit Kuakata frequently by bus or boat (Mitra *et al.*, 2013). Foreign tourists who desire to travel to Kuakata should move from Dhaka. Then, they can choose various transportation modes (by road, air, and water) to visit Kuakata. The fares for buses and motor vessels to and from this area are cheap. There was a time when people needed to use five ferries to visit Kuakata. Another challenge of visiting Kuakata was crossing the Padma

River. Tourists needed to spend four ferry rides that added to a nearly 14-hour journey. But now tourists can travel by Padma Bridge within a short time from the country's southwestern districts to the capital. The Padma Bridge has boosted the country's tourism sector to a great extent by making travel easier by reducing time and distance (Sohrab, 2022). According to the local service providers, the number of tourists has increased seven times since opening the Padma Bridge. But once the bridge is inaugurated on 25th June 2022, it will take a total of just five or six hours to reach the destination from Dhaka

C. Accommodation: The tourism facilities in Kuakata have been deplorable for the last five years. But gradually, many quality hotels, motels, and restaurants have been built up in the beach area. About 32 hotels and 25 restaurants have been established at Kuakata. Tourists can stay at the tourist holiday home, R & H Rest House, LGED Rest House, etc. There are some hotels and guest houses, such as Sikder Resort and Villas, Kuakata Guest House, Swapnorajjo Park and Hotel, Holiday Inn Kuakata, Sagor Kanna Resort, Hotel Graver Inn International, Hotel Radiation, Hotel Nilanjana Kuakata, Cinderella Resort, etc. Ten (10) hotels with international standards and three high-quality restaurants have already been established in Kuakata. The local community operates the majority of restaurants. Many private companies and public sectors build standard hotels and motels to draw local and foreign tourists. Domestic and international tourists pay different rates (Paul and Hoque, 2004). There are fried foods available at the restaurants that sea fish prepare, and tourists can enjoy them cheaply. The price range of an ideal hotel is given below:

| Parjatan Holiday Homes (Public) | | | | Sikder Resort and Villas (Private) | | | |
|---------------------------------|------------------------|-------------|-------------|------------------------------------|--------------|-------------|------------|
| Room | Bed Type | Rate (US D) | Rate (BDT) | Room | Bed Type | Rate (USD) | Rate (BDT) |
| Economy Deluxe | 2 Single Bed | \$30.00 | Tk.3292.50 | Economy Deluxe | 1 Couple Bed | \$115.26 | Tk.12,650 |
| Delux Twin | 2 Single Bed | \$30.00 | Tk.3292.50 | Delux Twin | 2 Couple Bed | \$149.84 | Tk.16,445 |
| Deluxe AC Two Bed | 1 Double, 1 Single Bed | \$50.00 | Tk.5487.50 | Deluxe AC Two Bed | 2 Couple Bed | \$184.42 | Tk.20,240 |
| Delux Room Ac | 2 Double Bed | \$60.00 | Tk. 6585.00 | Delux Room Ac | 3 Couple Bed | \$576.31 | Tk.63,250 |

Table 1: Fares of different room categories between a public and a private hotel.

(Source:Parjatanbd.com & Sikderresort.com)

D. Food and Restaurants: Tourists must travel for long hours to reach Kuakata. They become exhausted because of their long travels. They want to stay at a comfortable hotel and consume delicious food near the beach. There are different categories of hotels, motels, and food houses in and around the beach area (Lous, F. *et al*, 2024). Though all foods are not healthy, their nutrition and service are worth it in terms of price. Tourists can enjoy crab and fish fried near the beach. A barbecue (BBQ) party is a joint event at Lebur Char in Kuakata (travelbd, 2021). Tourists can enjoy the event in this Char. However, hotels and restaurants have excellent dining facilities at Kuakata Sea Beach. Tourists who visit here like to eat food from outside restaurants. All the roadside restaurants provide service until late at night. Most restaurants sell rice, fish curry, fried fish, meat, and vegetables. Some of the restaurants are Sea Palace, Chinese Restaurant, Mollika Restaurant, Zafran Restaurant Barishal, Tawa, HandiKarai, etc. However, guests who "stay in the expensive hotel" can enjoy delicious and healthy food items (Trip Advisor, 2021). The delightful seafood items are cooked and served on the beach. Fresh ocean catches include large-scale Archerfish, Indian salmon, hilsha, coral, prawn, crabs, lobsters, etc. Tourists can enjoy all kinds of local food as they wish. Thus, guests can create a memorable experience by eating and enjoying other tourist facilities.

E. Sports Facilities: Tourists can enjoy many types of tourism activities on Kuakata Beach. Water and beach sports are renowned for their therapeutic benefits. Whether swimming in the sea, surfing the waves, kayaking at the sea, or exploring the ocean's depths, something is thrilling and soothing about being in or on the water. If different types of sports are appropriately planned, tourists will be attracted. They will be willing to pay for the sports facilities. As such, the local authority can arrange different types of water sports, such as surfing, rafting, boating, beach biking, horse riding, beach driving, tennis, badminton, beach volleyball, and golfing. Indoor sports can also be arranged and enjoyed in the sports academy in Kuakata.

F. Visitor's Numbers and Contributions to the Economy: The Travel and tourism industry greatly contributes to Bangladesh's economy. Having \$25,000,000 in revenue from tourism in 1995, the industry contributed around 0.066 percent of the country's GDP. The country has become ever more reliant on tourism over the last 26 years. Sales from tourism reached \$391.00 million billion before the COVID-19 widespread struck or 0.11 percent of the country's GDP. However, in 2020, the epidemic caused a significant decrease in tourism revenue. Bangladesh recorded a 44 percent decline, with a total of \$217.90 million billion remaining from the \$391.00 million billion reported in 2019 (Arif and Islam, 2016). The following table shows the number of tourists arrivals and income from them:

| Year | Number of tourists | Receipts (million) | % of GNP |
|------|--------------------|--------------------|----------|
| 2021 | 135,000 | 273.00 m \$ | 0.066 % |
| 2020 | 182,000 | 217.90 m \$ | 0.058 % |
| 2019 | 323,000 | 391.00 m \$ | 0.11 % |
| 2018 | 267,000 | 357.00 m \$ | 0.11 % |
| 2017 | 237,000 | 348.00 m \$ | 0.12 % |
| 2016 | 182,000 | 214.30 m \$ | 0.081 % |
| 2015 | 126,000 | 150.30 m \$ | 0.077 % |
| 2014 | 134,000 | 154.00 m \$ | 0.089 % |
| 2013 | 104,000 | 131.00 m \$ | 0.087 % |
| 2012 | 160,000 | 105.00 m \$ | 0.079 % |

Table 2: Ten years foreign tourists arrival and GNP growth rate. Source: World Data, (2022)

Kuakata is our country's serene and panoramic sea beach. Thousands of domestic tourists travel to Kuakata frequently to see the sunrise and sunset on the calm, quiet sea beach. Every year, many tourists come from countries such as Denmark, India, Nepal, Bhutan, China, etc (Rahman, 2015). Motaleb Hossain, secretary of the Kuakata Hotel-Motel Owners Association, said that an average of about 4,000 to 5,000 tourists visit Kuakata each day but their numbers multiply by three to four times during winter, the peak holiday season.

The peak season of Kuakata Sea Beach starts from December to March. The left 8 (April-November) month are considered the off-peak season for Kuakata Beach. As 5,000 tourists visit each day in the off-peak seasons, about (5,000 x 30) 150,000 visit in one month. Then it can be estimated that approximately (150,000 x 8) 12, 000,00 lac tourists travel within 8 months. The tourist number is increased four times during the peak seasons. So there are around (20,000 x 30) = 6,00,000 lac tourists travel in every month of the peak seasons. Approximately 24,00,000 lac tourists travel during the peak seasons. Lastly, it can be estimated that around 36,00,000 tourists travel every year (Kuakata Hotel-Motel Owners Association).

G. Environmental crises at Kuakata Sea Beach: There may be long-term and short-term environmental crises in Kuakata. Some problems have emerged due to people's (tourists, host communities, and other stakeholders) careless activities. The common issues are air pollution, water contamination, and the mixing of toxic materials with soils. Natural crises include floods, river erosion, excessive rain, etc. The most severe natural calamity on Kuakata Sea Beach is "river erosion." The natural disaster (river erosion) causes excellent loss to the community and damages the coast's natural beauty. It also hampers tourism activities and businesses (Ahmed *et al.*, 2013). The waves and tidal surges cause coastal erosion. The shoreline is shifting inland as a result. Then, continual physical and chemical erosion causes movement and loss of soil and rock from the beach surface (Rieke *et al.*,

2007). The beach is quickly eroding from the east after the last year in July. It has caused thousands of trees to disappear into the sea. It is causing severe panic among local communities, tourists, business owners, investors, etc. Around 1 kilometer has vanished by the tidal surge hitting the shore during monsoons (Jewel, 2022)". Many attractive sites, such as Coconut Garden, Jhinuk Market, Jhaw-ban, and Cluster Village, are under threat of erosion (Rahaman *et al.*, 2013). As such, the root zone is being washed out gradually because of the decline. The flood embankment has been shifted two times due to the tidal waves during the last ten (10) years. Thus, erosion has become the main barrier to developing infrastructural activities on the Kuakata seashore.

Climate change is a severe threat to beach tourism in Kuakata. It negatively affects the sustainability of tourism in two senses: Firstly, climate change will result in a rise in water levels, which will have consequences for sea beaches. Secondly, tourism contributes to climate change in coastal destinations (Kuakata). As such, many crises will emerge in the tourism industry. These include rising sea levels, increased tidal surges and storms, etc. All are major barriers to sustainable tourism development at Kuakata Sea Beach (World Tourism Organization, 2013). Sewage and littering are also significant reasons for water pollution. Plastic throwing at the beach area also pollutes Kuakata Sea Beach. According to a report by the Marine Journalists Network, the serene tourist spot is under threat of plastic throwing by uncontrolled tourism. There are 50,000 to 60,000 tourists who travel to Kuakata during the peak season without any effective management. Around 90% of tourists throw plastic on the beach day after day. According to statistics, at least 200 motorcycles carrying tourists ride to Kuakata daily, killing at least 6,000 crabs by crushing them under their wheels (The Financial Express, 2022). The gathering of excessive tourists and vehicles also pollutes the air with carbon dioxide. They have negative impacts on the carrying capacity of the beach.

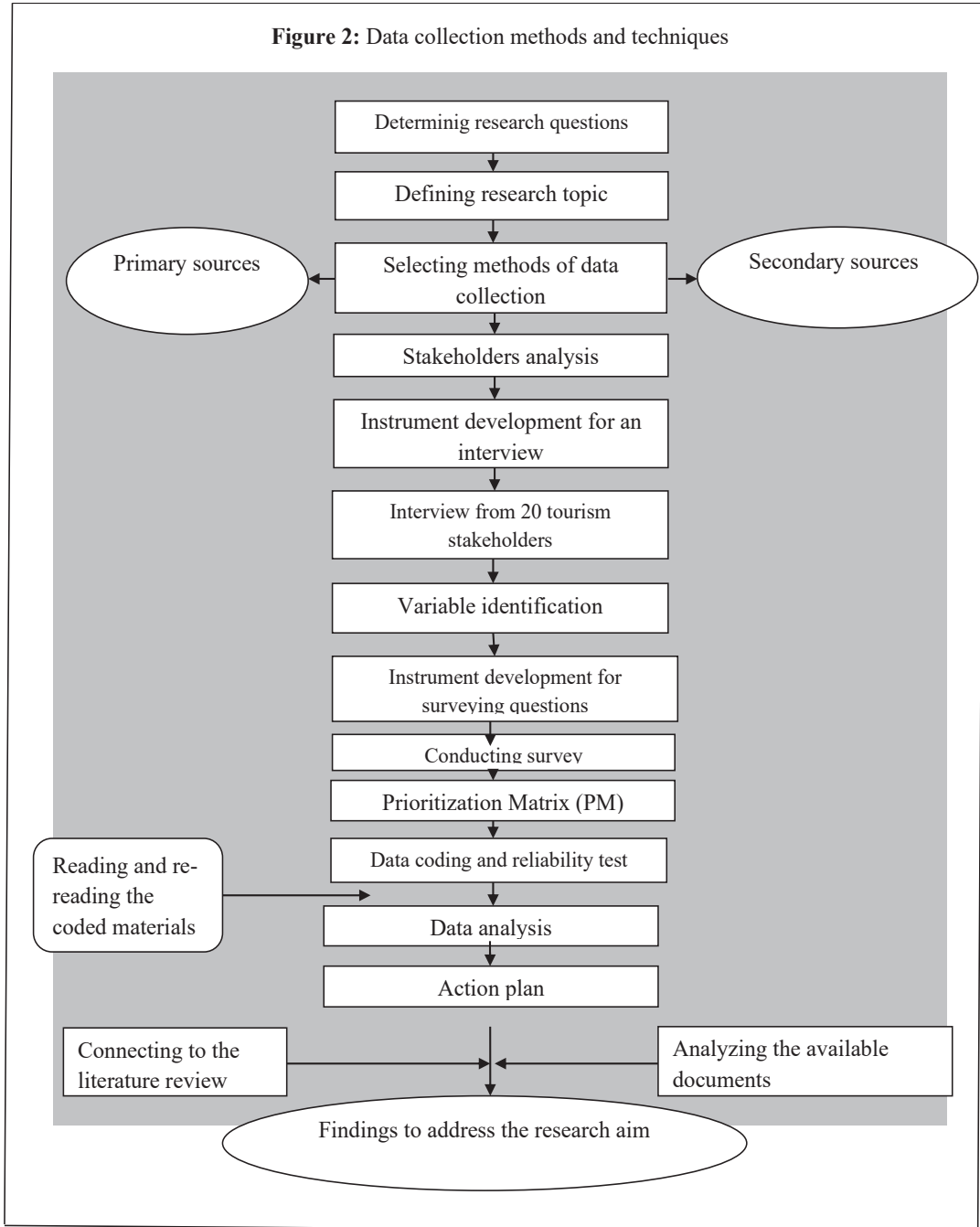
H. Government Investments: Investment is the prerequisite for the development of the tourism and hospitality industry. It has been seen in the above discussion that a strategy has already been taken to fund \$ 1.08 billion from the public and private sectors. The government has decided to invest a large amount of money in the overall development of the tourism industry in Bangladesh (Sohrab Hossain, 2016). Recently the "Water Development Board" (WDB) in Kalapara, through Md Abul Khayer, executive engineer, has announced that it is going to carry out a major project named "Kuakata Sea Beach Protection and Development" that will imitate the Kerala model from India. The project will include establishing a "green sea wall" and "geo-tube" structures along the beach and in the sea. The "geo-tube" is a sand-filled plastic tube that is placed approximately 15 to 20 meters beneath the sea surface to shield the shore from tidal surges, while the "green sea wall" is a

unique dyke built with earth-filled sacks that can support the growth of grass. The project will be financed at Tk 200 crore.

Data Collection Methods and Techniques

The study is descriptive in nature. As such, it accommodates both qualitative and quantitative data. Both primary and secondary sources are used to prepare the paper. Primary sources are the main area to collect data. The study uses two methods (an interview and a survey) to collect data from the primary sources. A consultation has been conducted with ten (10) tourism stakeholders (tourists, hoteliers, travel agents, tourism experts, host communities, etc.) through the mail and over the phone to understand the impact of the environmental crisis on sustainable tourism development in Kuakata. Ten (10) issues (related to the environmental situation that hampers sustainable tourism development in Kuakata) have been identified from the conversation. Each problem in the prioritization matrix is dissimilar regarding its consequences and impacts. The research has further done an extensive literature review to get insights into the effects of the environmental crisis on sustainable tourism development. The following figure shows the process of data collection methods and techniques:

Figure 2: Data collection methods and techniques



A cross-sectional descriptive analysis has been conducted to prepare the Prioritization Matrix (PM). Convenient judgmental sampling has been applied to collect data. The survey was conducted with one hundred (100) respondents, covering diverse tourism stakeholders. The below table shows the details of the respondents:

| Category | No. of Respondents |
|---|--------------------|
| Local government (e.g., President of Hotel, Motel Association, Municipal Chairman, etc.) | 05 |
| Local community (e.g., Businessmen, and Residents, etc.) | 35 |
| Tour guides (e.g., Guide Association Leaders, and Members, etc.) | 10 |
| Tourists (e.g., Students, Businessmen, Public and Private Employees, etc.) | 40 |
| Environmentalist (e.g., Joint Secretary of Bangladesh Environment Movement) | 01 |
| Tourism professionals (e.g., Professors, and Industry Experts etc.) | 05 |
| Bangladesh Tourism Board (e.g., Chief Executive Officers, Directors of Admin and Finance, etc.) | 02 |
| Bangladesh Parjatan Corporation (BPC) (e.g., Chairman, and Executive Members, etc.) | 02 |
| Total | 100 |

Table 3: Number of sample respondents.

A closed-ended questionnaire has been prepared, including ten common questions (Tribe *et al.*, 2000) for each issue. Respondents must count 1-3 (1=low, 2=medium, 3=high) for every question. To add the data collected from the survey and complete the prioritization matrix (PM), descriptive statistics and frequency distribution have been used in the paper (Amin, 2018). To give clear ideas to mitigate environmental crises, some SMART (Specific, Measurable, Attainable, Realistic, and Time-Bound) objectives have been chosen based on the findings of the prioritization matrix. Lastly, a short- and long-term action plan has been made to give clear ideas and to take necessary steps to develop sustainable tourism and reduce environmental hazards.

Identification of Issues: The following ten (10) issues have been identified through interviews and situation analysis on the Kuakata Sea Beach:

1. Coastal erosion, water pollution, floods, tidal surges, and excessive rain.
2. Earthquake and deforestation.
3. Insufficient tourism infrastructure and superstructure.
4. Waste and sewage disposal.
5. Tourists inflow beyond the carrying capacity.
6. Lack of awareness about the conservation and development of tourism facilities.

7. Absence of a proper monitoring system for tourism assets.
8. The absence of policy supports engaging the local community in tourism activities.
9. Lack of planning for the mitigation of environmental crises.
10. Poor management by tourism authorities.

Prioritization Matrix: The Prioritization Matrix (PM) is organized based on the collected data from the respondents. Mean scores are used to prepare the matrix and assemble the collected data. Lastly, the ten (10) issues have been classified based on the score:

| Answer | Low | Medium | High | Issues | | | | | | | | | |
|---|-----|--------|------|---|-------------------------------|--|---------------------------|--|--|--|---|--|--|
| | | | | i. | ii. | iii. | iv. | v. | vi. | vii. | viii. | ix. | x. |
| Score | 1 | 2 | 3 | Coastal erosion, water pollution, flood, and excessive rain, etc. | Earthquake and deforestation. | Insufficient tourism infrastructure and superstructure | Waste and sewage disposal | Tourists inflow beyond the carrying capacity | Lack of awareness about the conservation and development of tourist facilities | Absence of a proper monitoring system for tourism assets | The absence of policy supports engaging the local community in tourism activities | Lack of planning for the mitigation of environmental crises. | Poor management by tourism authorities |
| Is it easy to alleviate the issue? | | | | 2.55 | 1.05 | 1.95 | 2.90 | 1.50 | 2.50 | 2.50 | 2.00 | 2.50 | 2.00 |
| Will mitigation of the issue ensure more benefits for the coastal destination? | | | | 2.95 | 2.05 | 2.35 | 2.50 | 1.55 | 2.00 | 2.55 | 3.00 | 2.35 | 1.95 |
| Is a solution required urgently? | | | | 2.95 | 2.50 | 2.80 | 2.95 | 2.00 | 2.75 | 2.00 | 2.95 | 2.90 | 2.05 |
| Is there a needed tool to act against the issue? | | | | 1.5 | 1.95 | 2.00 | 2.30 | 1.55 | 1.85 | 1.95 | 1.15 | 1.50 | 1.19 |
| Is there trained staff to deal with the issue? | | | | 1.10 | 1.50 | 2.15 | 2.15 | 2.05 | 2.07 | 1.15 | 2.00 | 1.95 | 1.00 |
| Will there be sustainable infrastructure and superstructure that can be developed | | | | 2.90 | 2.30 | 2.50 | 2.00 | 1.15 | 1.65 | 2.00 | 2.85 | 2.10 | 2.30 |

| | | | | | | | | | | |
|---|------------------------------|-------------------------------|-------------------------------|-------------------------------|----------------------------|-------------------------------|-------------------------------|-------------------------------|------------------------------|-------------------------------|
| if the issue is removed? | | | | | | | | | | |
| Will the destination image be improved if the issue is removed? | 2.00 | 2.00 | 1.50 | 2.50 | 1.00 | 2.55 | 1.00 | 2.90 | 2.95 | 2.50 |
| Is it easy to recognize the probable impacts of the issue? | 2.25 | 2.99 | 2.50 | 2.99 | 2.20 | 2.00 | 2.00 | 2.99 | 1.15 | 2.85 |
| Priority: (20 to 18): 1st priority, (17 to 15): 2nd priority, (14- 12): 3rd priority | 18.2 (1st) | 16.34 (2ⁿd) | 17.75 (2nd) | 20.29 (1st) | 13 (3rd) | 17.37 (2nd) | 15.15 (2nd) | 19.84 (1st) | 17.4 (2nd) | 15.84 (2nd) |

Table 4: Findings of the Prioritization Matrix (PM). (Adapted From Amin, Mohammad Ruhual (2018), "Sustainable Tourism Development in Sundarbans, Bangladesh (A World Heritage Site): Issues and Actions," Journal of Business Studies, P. 42.)

Findings: The prioritization matrix shows that the three (3) issues are the main barriers to developing sustainable tourism in Kuakata. The score of the first three (3) issues are; coastal erosion, water pollution, floods, tidal surges, and excessive rain. (18.2); waste and sewage disposal (20.29); and the absence of policy support engaging the local community in tourism activities (19.84). Secondly, six issues are prioritized as the second-most vital barriers to developing sustainable tourism. These include earthquakes and deforestation (16.34), insufficient tourism infrastructure and superstructure (17.75), lack of awareness about the conservation and development of tourism facilities (17.37), absence of a proper monitoring system for tourism assets (15.15), lack of planning for the mitigation of environmental crises (17.40), and poor management by tourism authorities (15.84). Lastly, the issue of tourist inflow beyond the carrying capacity (13) is prioritized as the third significant barrier to developing sustainable tourism at Kuakata Sea Beach.

Discussion

Objectives: The SMART goals have been documented to achieve long-term sustainability by reducing the environmental crisis in Kuakata. The hierarchy of objectives is set in the table based on the priorities and categories. The following table presents the objectives that have been identified for the present study:

| Priority | Objectives |
|--|--|
| 1st priority; (20 to 18) | <ul style="list-style-type: none"> Collecting funds from government and private organizations for the past two years. Making a master plan for mitigating coastal erosion. |

| | |
|--|--|
| | <ul style="list-style-type: none"> • Building groins or jetties, breakwaters, beach nourishment, vegetation or seawalls, etc. • Buying or exporting developed technology to mitigate coastal erosion. |
| 2nd priority; (17 to 15) | <ul style="list-style-type: none"> • Making awareness among tourists and the host communities about climate change over the past two years. • Taking necessary steps to reduce water, air, and land pollution. • Developing sustainable superstructures and infrastructure to confront environmental crises. • Creating a monitoring team to monitor resources before and after the environmental crisis. • Creating a crisis management team for facing challenges before, during, and after the environmental crisis on Kuakata Beach. • Forming executive bodies among the tourism stakeholders who will take charge of destination management. |
| 3rd Priority;(14 to 12) | <ul style="list-style-type: none"> • Taking the necessary steps to reduce overtourism and overconsumption. • Managing carrying capacity (environmental, social, economic, and cultural). |

Table 5: SMART objectives of the long-term destination management plan for developing sustainable tourism by reducing the environmental crisis in Kuakata. (Adapted From Amin, Mohammad Ruhual (2018), "Sustainable Tourism Development in Sundarbans, Bangladesh (A World Heritage Site): Issues and Actions," Journal of Business Studies, P. 43.)

Actions Plan: A five-year (2024-2028) action plan has been prepared based on the SMART objectives for developing sustainable tourism by mitigating the environmental crises on the coastal beach at Kuakata.

| <i>Objectives (According to priority and total score)</i> | <i>Recommended actions</i> | <i>Responsibility</i> | <i>Success Criteria</i> | <i>Time</i> |
|---|---|--|--|--|
| 1. Coastal erosion, water pollution, flood, excessive rain, etc. (Code: MCW) (1st) | MCW1: Making groins or jetties, breakwaters, beach nourishment, vegetation or seawalls, etc. | MCW1: Ministry of Road Transport and Bridges, Ministry of Civil Aviation and Tourism, Bangladesh Parjatan Corporation (BPC), Bangladesh | Pollution and erosion will be reduced. | MCW1 :By 2024- ongoing |

| | | | | |
|--|--|--|--|---------------------------------|
| | | Tourism Board (BTB). | | |
| 2. Wastage and sewage disposal. (Code: TFS) (1st) | WSD1: Law barring the discarding of sewage and food waste from boats, plastic bottles, polythene, etc. | WSD1: Local people and administrations, Public and private organizations (BPC, BTB, Tour operators, Travel agents). | Water pollution will be reduced, and water-related tourism activities can be developed. | WSD1: By 2024 - 2025 |
| 3. Absence of policy support to engage the local community in tourism activities. (Code: PPP). (1st) | APL1: Local people will actively participate in tourism activities that will help develop sustainable tourism. Destination Management Organizations (DMOs) will formulate policies. | APL 1: Tourism stakeholders, tourism organization (DMO). | The cooperation of host communities can develop sustainable tourism. | APL1: By 2024-2025 |
| 4. Earthquake and Deforestation. (Code: ED). (2nd) | ED1: Taking necessary steps to stop deforestation. Necessary measurements should be taken to mitigate the damages after an earthquake. | ED1: Ministry of Environment and Forest (MoEF), Department of Forest (DoF), Ministry of Defence. | Help to reduce hazards, preserve the environment, and increase the carrying capacity of the destination. | ED1: By 2024-ongoing. |
| 5. Insufficient Tourism infrastructure and superstructure. (code: IT IS). (2nd) | ITIS1: To invest in developing infrastructural and superstructure activities. | ITIS1: Ministry of Civil Aviation and Tourism, Ministry of Local Government, Rural Development and Co-operatives, BPC, BTB, DMO, Private organizations. | Flourish the tourism and travel activities in Kuakata. | ITIS1: By 2024-2025 |

| | | | | |
|--|---|--|--|----------------------------------|
| 6. Lack of awareness about conservation and development of tourism facilities. (Code: LADF). (2nd) | LADF1: Increasing campaigns and seminars will raise awareness among tourists and hosts. Taking the necessary steps to conserve and preserve resources. | LADF1: Host communities, tourists, and Destinations Management Organizations (DMO). | It helps to conserve tourism resources for future generations and attracts a large number of tourists. | LADF1: By 2024-2025. |
| 7. Absence of proper monitoring system of tourism assets. (Code: LPM). (2nd) | APT1: Creating a resource monitoring team. | APT1: Ministry of Civil aviation and tourism, BPC, BTB, DMO, and Local administration. | Preservation and conservation of tourism resources from all kinds of disasters. | APT1: By 2024-ongoing |
| 8. Lack of planning for mitigation of environmental crisis. (Code: LPP). (2nd) | LPM1: Creating a master plan for facing challenges before, during, and after environmental hazards. | LPM 1: Ministry of Civil Aviation and Tourism, BPC, BTB, Private organizations, and Local Administration. | It helps to develop sustainable tourism by reducing the impacts of natural calamities in Kukata. | LPM1: By 2024-1 July 2024 |
| 9. Poor management by tourism authorities. (Code: PM). (2nd) | PM1: Making and imposing strong management policies and teams by the public and private organizations. | PM1: Destinations Management Organizations. (DMO). | It helps to protect and develop sustainable tourism in coastal areas (Kuakata). | PM1: By 2024-ongoing |
| 10. Tourists inflow beyond the carrying capacity. (Code: TIC). (3rd) | TIC1: Taking the necessary steps for visitor management and carrying capacity. | TIC1: Destinations Management Organizations (DMOs) like (BPC, BTB, TOAB). | It helps maintain the sustainability of the Kuakata Sea Beach. | TIC1: By 2024-2026 |

Table 6: A recommended action plan for the years 2024–2028 for mitigating environmental crises. (Adapted From Amin, Mohammad Ruhual (2018), "Sustainable Tourism Development in Sundarbans, Bangladesh (A World Heritage Site): Issues and Actions," Journal of Business Studies, P. 49.)

Theoretical Contribution: The findings of the study expect some contributions to protect the environmental crisis at Kuakata Beach and ensure sustainable tourism there. The research has identified the significant places that create environmental problems in the study area. As such, all the concerned stakeholders will be aware of those crises and may take the necessary measures to help eradicate them. The Prioritization Matrix (PM) shows that coastal erosion, water pollution, floods, tidal surges, excessive rain, etc. (18.2), waste and sewage disposal (20.29), and the absence of policy support to engage the local community in tourism activities (19.84) are the vital issues deterring the development of sustainable tourism in Kuakata Sea Beach. The other problems are also scored sequentially. The government authority and the policy planners can develop long-term or strategic master plans based on the findings, thus ensuring sustainable tourism development in Kuakata with minimal environmental impact. The paper proposes an action plan based on the objectives for developing sustainable tourism by mitigating the Kuakata Sea Beach ecological crisis. The action plan (according to the objectives) shown in the paper will provide more specific guidelines to the Destinations Management Organizations (DMOs) to take the necessary steps. Lastly, through all the building blocks of theory, the research concludes that environmental crises can't be eliminated. The damages can be mitigated by taking the necessary steps before and after the natural hazards. The destinations' management authorities can also reduce the negative impacts by following some steps (the short- and long-term strategies shown in the above tables and figures).

Concluding remarks: The study aims to find out the negative impacts of environmental hazards on sustainable tourism development at Kuakata Sea Beach. More specifically, the research has shown that the beach faces many environmental crises such as river erosion, water pollution, deforestation, excessive rain and floods, etc. To make the research fruitful, the researcher has interviewed the tourism stakeholders and identified some key complications along with natural calamities such as tourist inflow beyond the carrying capacity, lack of awareness about the conservation and development of tourism facilities, lack of proper policies, absence of a proper monitoring system for tourism assets, absence of policy supports engaging the local community in tourism activities, lack of planning for the mitigation of environmental crises, and poor management by tourism authorities that deterring tourism in the Kuakata Sea Beach.

The study has several contributions. Firstly the research has expanded a Prioritization Matrix (See Tab.4) that highlights the crisis based on the questionnaire survey. Secondly, the paper has developed SMART objectives (See tab.5) to achieve long-term sustainability on the beach. If all the objectives can be accomplished, the crisis can be reduced gradually. After that, the study recommended a five-year action plan (See tab.6). The action plan

focuses on the activities that need to be done to reduce the environmental crisis. It also shows that the organizations which are responsible to take the necessary steps. The framework also explains the success that can be achieved and the duration that is needed to complete each task. The author assumes that this paper's action plan and strategies are expected to mitigate the environmental crises to develop sustainable tourism in Kuakata Sea Beach.

The study is unique from the perspective of Bangladesh for beach tourism to the point that it has included a large sample and in-depth analysis compared to other studies. The study of Rahman, (2023) has shown only the impacts of climate change on the Kuakata Seashore. The paper doesn't cover the issue of the long-term sustainability of the beach. Then the research article of Alam *et al.*, (2018) assessed the effects of natural disasters and their coping strategies in the Kuakata Coastal Belt of Patuakhali. They develop some strategies for pre and post-disaster management for the Kuakata Sea Beach. On the contrary, this paper has incorporated SMART objectives and a five-year action plan that will help destination management organizations take the necessary steps to reduce environmental crises. Therefore, the result of this paper is more research-based and conclusive.

The study recognizes a couple of limitations. Firstly it was difficult to get appropriate and more information from the secondary sources. The websites of Bangladesh Parjatan Corporation, and Bangladesh Tourism Board don't update any specific statistical data of tourists on Kuakata Sea Beach. Secondly, many experts in tourism organizations were inclined to provide information for secrecy. Lastly, it is difficult to consider all the facts and issues related to the tourism and hospitality industry because of it being the largest industry. In sum, future researchers will be able to conduct research with a large sample of national and international tourism based on this paper. They will have opportunities to focus on each issue to ensure long-term sustainable tourism development in Kuakata Sea Beach. Finally, the fruitful research and implications of its result will be helpful to make beach tourism sustainable and more attractive to the tourists.

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