

## **TOURISM TREND IN THE BANGLADESH SUNDARBANS MANGROVE FOREST: A PESTEL FRAMEWORK ANALYSIS FOCUSING ON SUSTAINABLE ECOTOURISM DEVELOPMENT**

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### **Abstract:**

This research aims to look into the challenges and opportunities of ecotourism in the Sundarbans mangrove forest in Bangladesh from a macro level. We have gathered tourist data of Sundarbans from the Bangladesh Forest Department and analyzed the trend from 2009-2022. The trend shows that domestic tourism was rising significantly in the Sundarbans. Both domestic and foreign revenue data were collected to measure the trend. Secondary data was collected using a literature review of published research works, reports, and policies from various government and non-government agencies, websites, and legal document content analysis. The gathered data were analyzed by the PESTEL framework based on detailed political, economic, social, technological, environmental, and legal aspects of tourism and ecotourism activities in the Sundarbans. The PESTEL approach reflected the requirement of sustainable ecotourism development and the recommendations to focus on the relevant areas of improvement to minimize threats and vulnerabilities in the Sundarbans mangrove forest from tourism activities. It requires the development of plans and programs guided by a strategic environmental assessment and strategic environmental management plans that can support ecotourism. Subsequently, ecotourism projects in the Sundarbans also require environmental impact assessment and mitigation measures guided by strategic environmental assessment.

**Keywords:** Sundarbans Mangrove Forest (SMF), Ecotourism, Tourism policy, Sustainability

### **1. INTRODUCTION**

Tourism is one of the world's most important economic sectors and growing industries, contributing directly to GDP and employing locals. In addition, tourism creates an enabling environment of unity, financial success, and regional and international associations, all of which affect the achievement of product life targets. Tourism is dependent on and developed on local natural, physical, and cultural resources (Simão and Partidário 2012). Therefore, tourist destinations are valuable resources that inspire travellers and differentiate locations from others. One of the pull factors driving this movement is a desire to pursue the sociocultural identities and cultural heritage of the identified communities, which can sustain ecotourism

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development. As a result, tourist activities are projected to influence the host community (Metilelu 2021) substantially. Globally, forest-based ecotourism is handled by many stakeholders while supporting sustainable forest management (Zoysa 2021). Ecotourism is a subset of tourism in which travellers travel to see intact ecosystems and natural wonders (Hosseini & Paydar 2021). However, the presence of undeveloped natural resources and cultural/heritage treasures has hampered the growth of ecotourism (Brillo & Simondac-Peria 2021).

Sustainable tourism is conducive to environmental conservation and the socioeconomic well-being of local communities (Oladeji et al., 2022). As developing nations embrace new types of tourism, particularly nature-based and community-based varieties, the idea is that an ecotourism-driven economy provides a sustainable future for local populations (Lasso and Dahles 2021). However, ecotourism as a source of income, community involvement, conservation, and services as practical factors in enhancing ecotourism efficiency necessitates strategic management priorities to create quality tourism experiences, and the sustainability of tourism is in question (Setini et al., 2021). Therefore, many governments and the international community (e.g., UNESCO, UNWTO) have placed a growing emphasis on ecotourism to improve the sustainable development of these places (Cobbinah et al., 2021).

Over the last ten years, the travel and tourist industry has been associated with improved financial sustainability and inclusive growth, and its significance is generally recognized globally. Tourist revenue is one of the world's most important and rapidly expanding industries. The World Tourism Organization (WTO) has promoted ecotourism since the late 1980s. The Earth Summit in Rio de Janeiro in 1992 set a new course for the travel and tourism industry's eco-development. As a result, sustainable rules and principles for the travel and tourist industry were adopted by Agenda 21, the global environmental agenda (UNWTO n.d). (Eco)Tourism creates jobs, infrastructure development, revenue generation, environmental costs, and educational opportunities (Mozumder et al., 2018;). Tourism is considered a competent driver of development in emerging economies (Postma and Schmuecker 2017). A 1% increase in tourism significantly enhances gross domestic product (GDP) by 0.051%, foreign direct investment by 2.647%, energy development by 0.134%, and agriculture by 0.26%. It reduces poverty by 0.51% in the long run (Khan et al., 2020). Before the COVID-19 pandemic, travel and tourism (including its direct, indirect, and induced effects) accounted for one-fourth of all new employment produced globally, 10.3% of total jobs (333 million), and 10.3% of global GDP (US\$9.6 trillion). In 2020, 62 million jobs were lost, leaving just 271 million people employed globally. This 18.6% drop was felt throughout the industry. With bouncing back, travel and tourism's contribution to the global economy is predicted to expand at a 5.8% annual pace between 2022 and 2032 (WTTC 2022).

However, Tourism expansion in many countries, regions, and destinations remains uneven economically, socially, and ecologically, frequently due to rapid and unplanned rise in visitor numbers (OECD 2020). Tourism development has also been proven to have adverse effects on price rises, social conflicts, cultural development, increased environmental costs such as noise, and pollution, and other negative impacts on ecosystem services and carrying capacity. For example, conventional mass tourism in Fiji is overly dependent on foreign capital resulting in leakage of tourism revenues, misconduct of tourism policies, ecological degradation, and contamination (Prentice et al., 2021). On the contrary, ecotourism is an alternate kind of tourism that mainly relies on natural resources with an economic focus that benefits nature stewardship and the well-being of the local population (Khanara et al., 2021; Singh et al., 2022). The goal of ecotourism is to improve positive environmental, economic, and sociocultural

outcomes. It is usually, but not always, organized for small groups by professional tour operators. Service provider partners are typically small, locally owned businesses at the destinations (WTO 2001). Ecotourism is defined as nature-based tourism activities that promote environmental education and learning (Prentice et al., 2021; WTO 2001). Sustainable ecotourism requires the preparation of adequate ecotourism policies on the part of the governments at different levels and the action of local communities needed to protect their natural resources, protect their environment, and support sustainable tourism (Shasha et al., 2020; WTO 2001).

Tourism in Bangladesh accounted for approximately 3% of the total economy in FY2019, amounting to about US\$ 9.11 billion, according to the World Travel & Tourism Council (WTTC 2022). Travel and tourism further supported 1.86 million jobs (2.9% of total employment), international visitors contributed \$369.6 million (0.7% of total exports), and domestic visitors contributed 8375.5 million. However, in 2020 due to COVID-19, it only contributed 1.9% GDP of the entire economy. Approximately a 50.4% GDP decline was observed in 2020 due to the travel ban and lockdown. However, in 2021 almost a +21.7% GDP increase in Bangladesh's travel and tourism sector (WTTC 2022; GED 2020). Due to the COVID-19 pandemic, the tourism and hospitality sector lost about Tk 60,000 crore in revenue in 2020 and 1.1 lakh jobs (TBS 2022). An economic downturn increases locals' support for tourism owing to a significant fall in inhabitants' perceptions of the expenses associated with such development (Garau-Vadell et al., 2018). However, there was less pollution and crowd in the tourist spots, and endangered turtles were seen on St. Martin Island laying eggs, which was a positive effect of standstill tourism. Subsequently, both domestic and international tourism increased significantly after COVID-19.

With the emergence of a truly united conservation plan between the authorities of Bangladesh, India, and the United Nations Educational, Scientific and Cultural Organization (UNESCO), the Sundarbans mangrove forest (SMF) has been a protected area and world heritage site with restricted tourism activities. It is also a Ramsar site and a Class 3 tiger conservation landscape of global priority (Mukul et al., 2020). Mangroves provide essential ecosystem services, such as providing habitat for economically critical aquatic larvae, acting as a buffer against coastal erosion, and acting as a significant carbon sink (Siddique et al., 2021). Mangrove forests are vital to people's livelihoods in the tropics. As a result, there might be conflicts between preserving the environment and the economic benefits of mangroves and their ecosystem services. SMF is a popular tourist destination despite being a fragile ecosystem. Ecotourism operations may also vary, and the consequences for various stakeholders might be complex (Swangjang & Kornpiphat, 2021). However, a significant obstacle to wildlife management within the region is the lowest-income people who can not be engaged in any income-generating activities (Ghosh & Ghosh, 2019).

Inadequate planning, infrastructures, and corrupt administration are significant obstacles to implementing ecotourism operations in the SMF along with the unaware tour operators. On the other hand, a lack of education and training on ecotourism operations, limited support from local authorities, security concerns, fraudulent intermediaries, and unaware tourists are severe challenges to ecotourism in Sundarbans (Hoque et al., 2018). Raising public awareness is an urgent need among tour operators and tourists on responsible tourism and safeguarding the natural and cultural resources of the SMF (Afroz & Mahmud, 2017). Impacts on mangrove ecosystems should be considered on both a local and macro level, with climate change and the hidden effects of ocean acidification being fundamental (Swangjang & Kornpiphat, 2021).

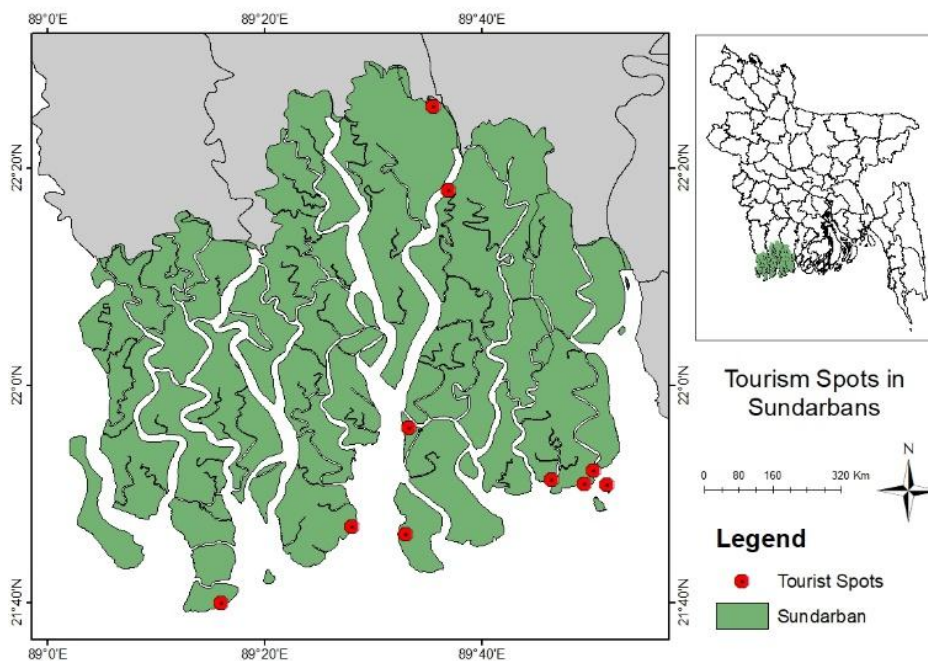
On the one hand, ecotourism can help protect the SMF's biodiversity and natural ecosystem while also helping to increase the tourism business. In such a scenario, it is significant to measure the macro-effect for strategic management, which is found in the so-called organizational macro-environment, which may be categorized into political, economic, legal, technical, sociocultural, and ecological sectors, among others. Therefore, this article aims to identify current trends and status of tourism activities in SMF Bangladesh and identify the strategic sustainable ecotourism possibilities, problems, and strategic management by PESTEL (Political-Economic-Social-Technological-Environmental-Legal) framework analysis.

## 2. METHODOLOGY

### 2.1. Study area

Sundarbans spans an area of 6017 km<sup>2</sup> in Bangladesh, accounting for 4.13% of the total land area and 38.12% of the entire forest land (BFD, 2017). Sundarbans mangrove forest lies south of the Tropic of Cancer, between 89°00'E and 89°40'E longitude and 21°40'N and 22°20'N latitude (Figure 1). The tourist spots are Katka Beach, Karamjol, Dublar Char Island, Hiron Point, Kochikhali, Mandarbaria, Tiger Point, Jamtola Beach, Harabaria Sundarban, Tin Kona Island, etc. Sundarbans symbolizes the eternal global quandary/conflict between developmental and ecological values, attracting tourists from all over the country and contributing to the state's status as a major tourist destination (Figure 1).

**Figure 1.** Major tourist destinations in the Sundarbans mangrove forest (SMF) in Bangladesh



Source: Authors

The vast area represents a large mangrove wetland ecosystem, a fragile and economically viable zone for the region's residents (Mukherjee, 2021). SMF works as a buffer for cyclones that often occur and helps protect South Bengal, particularly Kolkata and southern Bangladesh. However, Sundarbans face numerous challenges with rising sea levels, climate change, intensified cyclone events, and disappearing biodiversities (Bhattacharjee & Ganguly, 2021).

The Royal Bengal Tiger is the iconic animal of the Sundarbans (Ghosh & Ghosh, 2019; Khanom and Buckley 2015). In addition, the Sundarbans are home to countless plant, animal, birds, insects, and fish species that make a rich biodiversity (Islam, 2016). Most tourists come to the Sundarbans to go forest hiking, animal watching, beach strolling and cruising (Khanom et al., 2011).

The rich biodiversity of the Sundarbans is a source of income for local people in the area. Indigenous vegetation, honey extraction, and fishing in rivers, lakes, and creeks have high economic value in neighbouring markets. The local community was deeply tied to their land, air, water, animals, and plants, all of which have been part of their culture and history. Water transportation by boat, ship and launch is the only way to get around the Sundarbans. The tourist season in Sundarbans starts on September 1 and ends in April-May.

## 2.2. Study Framework

In the Sundarbans mangrove forest (SMF), ecotourism is becoming popular, despite creating significant pollution. SMF requires people and environmentally friendly practices and plans for sustainable ecotourism development. In this study, we have analyzed the trends of tourists in the Sundarbans and explored the possibility of sustainable ecotourism in Bangladesh Sundarbans. The number of domestic and foreign tourists data were collected from the Bangladesh Forest Department from 2009-2022. Tourist statistics were collected from the two stations of Sundarbans, namely, the Sundarbans East Forest Division, Bagerhat, and the Sundarbans West Forest Division, Khulna. Both domestic and foreign revenue data were collected to measure the trend. Secondary data was collected using a literature review of published research works, reports, and policies from various government and non-government agencies, websites, and legal document content analysis. The gathered data were analyzed by the PESTEL framework (Political-Economic-Social-Technological-Environmental-Legal) (Figure 2).

**Figure 2.** Study framework



Source: Authors

## 2.3 PESTEL analysis

There are many policies for sustainable ecotourism from our government. In addition, there are also many linked relevant policies, and legislations to promote sustainable ecotourism

(Bashar, 2018). The PESTEL framework (Political-Economic-Social-Technological-Environmental-Legal) is a strategic analysis tool for macro-context. It is a qualitative, descriptive analysis with documentary content research (de Sousa et al., 2022). PESTEL analysis mainly provides a generalized idea about the macro-environmental conditions that may affect a system or organization (Song et al., 2017). The PESTEL study compares the external reality and is a valuable key strategy for increasing the knowledge of the "big picture" of the surrounding where tourist numbers operate, allowing businesses to capitalize on employment options while minimizing risks. The above assessment will provide a basis for sustainable growth once corporate strategy plans are implemented justly (Nicula & Sp, 2019). PESTEL analysis framework (Figure 3) is adopted here to provide a long-term perspective and to define the strategic possibilities and risks that the tourism industry in the Sundarbans might face. It would also provide recommendations for sustainable ecotourism.

**Figure 3.** PESTEL analysis framework encompassing political, economic, social, technological, environmental, and legal issues at the macro-context



Source: Authors

### 3. RESULTS AND DISCUSSION

#### 3.1. Tourism profile analysis in the Sundarbans (2009-2022)

Sundarbans is one of Bangladesh's most popular tourist destinations and is primarily a nature-based ecotourism sector. The current study's findings suggest that appropriate planning

to promote community participation and tourist development with critical environmental legislation in place will help assure the long-term viability of ecotourism in the Sundarbans. Political issues- The political and governance context and government policies, plans, and programs (PPPs), budgets, incentives, and taxes on tourism, travel, foreign tourist policy requirements and others.

Economic issues include short- and long-term economic development trends, inflation, currency exchange, interest rates, inflation, credits, banking and others.

Social issues include local population, workforce, foreign tourists, service sectors and local tourist behaviour, foreign tourist behaviour, cultural values, indigenous communities.

Technological issues- Adopting evolving technologies to the sectoral context and new requirements.

Ecological/environmental factors- Environmental impacts and ecological protection such as waste management, environmental management, disaster management, climate change, and biodiversity protection are growing concerns in tourism.

Legislative issues- Occupational health and safety law at work, environmental law, labour law, labour rules, legislation regarding consumer protection and others.

The Sundarbans are vulnerable due to various anthropogenic activities, including intensive boating and fishing, dredging, tourism, and port activities, operation of mechanized boats, excavation of sand from (Hossain & Khanal, 2020) riverbeds, and the establishment of coal power plants. Delays in formulating such policies could cost the destruction of the Sundarbans (Hassan et al., 2019).

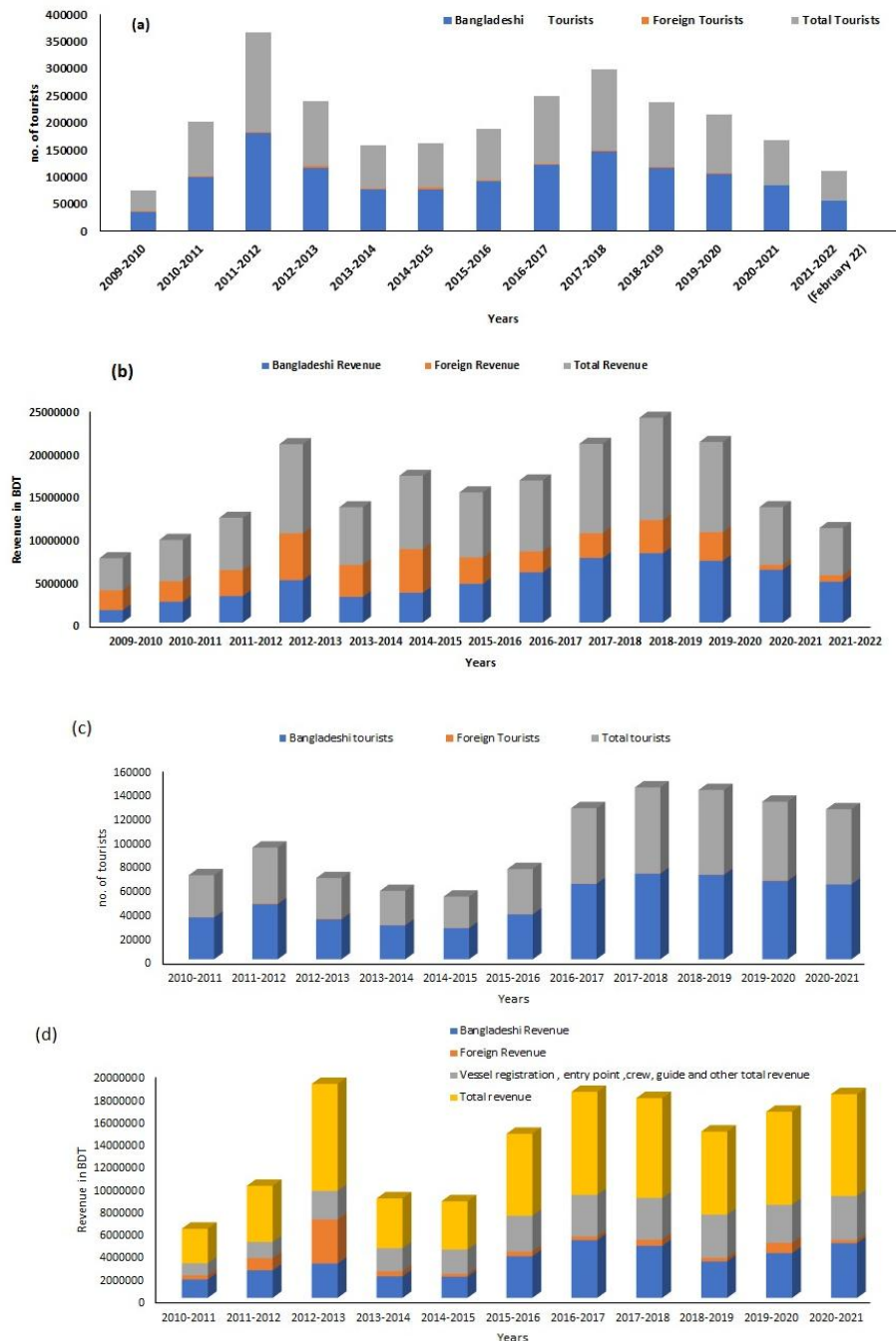
The demand for tourism is measured by the number of tourists and revenue generated through tourism (Kundra et al., 2021). According to the Bangladesh Forest Department (2009-2022), the Sundarbans East Forest Department has 23 registered tour operators, of which 19 were registered in the east, and four were registered in the West Forest division. Moreover, there were not many tour operators in 2009-2010. The West Forest Department of the Sundarbans now has 57 registered tour operators in 2022. According to the records of the Bangladesh Forest Department (2009-2022), about 1308283 domestic and 29394 foreign tourists visited the Sundarbans East Forest Department (Figure 4a). Figure 4b shows the amount of revenue earned for the same period in the Sundarbans. Interestingly before the COVID-19 period lockdown, foreign and domestic tourists were rising in the Sundarbans along with revenues earned. Unfortunately, from 2020-2022 February (the data collection time), the number of tourists and revenue earned could be compared to the 2010-2011 period.

Figure 4(c) shows the number of domestic and foreign tourists visit in the Sundarbans west Forest Department from 2010-11 to (2021-22 (February)). However, decreased domestic tourism in the Sundarbans remained the same during the COVID-19 period.

As soon as the lockdown period was withdrawn, domestic tourists visit was higher compared to the 2018-19 period. Moreover, domestic and foreign tourist registration fees, entry fees, and ship operating license fees increased, and revenue were higher than in the 2018-19 period. In the Sundarbans West forest division, from 2009 to 2021, total revenue earned from domestic tourists was (36462415 BDT), foreign tourists (8860240 BDT) and ship operation, entry fee, guide fee, etc. 30949044 BDT. For the Sundarbans East forest division, from 2009 to 2022 February total revenue earned from domestic tourists was 62215329 BDT, foreign

tourists 38842740 BDT, and ship operation, entry fee, guide fee, etc. 101057169 BDT, respectively.

**Figure 4.** (a) Number of Bangladeshi & Foreign Tourists visited the East forest division of Sundarbans from (2009-2022); (b) Amount of revenue earned from East forest division of Sundarbans from (2009-2022); (c) Number of Bangladeshi & Foreign Tourists visited From (2010-2021) in the Sundarbans West forest Divisions Bangladesh; (d) Amount of revenue earned, in the Sundarbans West forest Divisions Bangladesh (2010-2021)



Source: Data collected from Bangladesh Forest Department, 2022; graph: authors



### **3.2. Tourism policy and plan analysis**

The tourism industry requires extensive preparation, adequate resource management, and legal and technological assistance to develop a service sector. Developing an ecotourism sector requires assisting local and international travellers with legislation, guidelines, and regulatory requirements. Current development, demands, and changes in the external and internal contexts are usually the driving forces behind policy planning. Tourism policies and plans aim to address challenges related to tourism development, preserve built and natural heritage and promote long-term socioeconomic growth for present and future generations. However, the tourist sector's performance is influenced by several factors, including a country's policy formulation position and the active participation of important stakeholders. The government adopted Environment Policy 2018 and National Tourism Policy 2010 to develop sustainable ecotourism by conserving natural resources and promoting the interests of communities, as well as preserving the cultural values of the local people by ensuring their participation in the whole process. The tourism industry is growing rapidly and now requires a planning process to implement the National Tourism Policy (Khondkar & Anis, 2016).

Ecotourism has drawn the attention of various interests, both as economically productive leisure and as a means for conservation and growth, which is described as responsible tourism to natural areas which conserves our environment and enhances the welfare of local people (Afroz & Mahmud, 2017). Ecotourism Development and Management Plan 2004 and National Tourism Policy 2010 (Table 1) were developed by the government and are currently in use. The Ministry of Civil Aviation and Tourism (MoCAT) is also working to diversify tourist destinations and improve service to attract more visitors from home and abroad by adopting flexible policy approaches (FD/MoF/GoB 2020). The mentioned actions are aimed at following local regulations and measures listed:

- Assisting tourism services and providing basic safety.
- Locating prospective popular attractions throughout the region and ensuring they are properly maintained, modernized, and supervised.
- Spreading and maximizing the capacity of natural ecotourism without depleting or perverting assets.
- Receiving attention across communally engaging actions.
- Inclusion of governmental agencies in the development of ecotourism-related operations.
- Government partnerships are used to develop capacity and improve oversight of the tourist and tourism activities industries (PPP).
- Promote operational steps and regular track of public participation and monitoring success.
- Construction and implementation of tourism sector training centers for service providers (Khondkar & Anis, 2017).

Excursions into various areas of the ecological sites are the critical analysis of ecotourism sites and products, and ecotourism-related principles, factors, and objectives (Gani et al., 2016). If ecotourism in a mangrove environment is to be a viable, sustainable tourism, a data planning and implementation plan should be developed. In addition, any tourist advancement should consider the connections between tourist information activities and the environmental systems

and any environmental, sociocultural, and institutional limitations in the region. If no precautions are adopted to mitigate the requirement for ecotourism development, the capacity to maintain the coastal ecosystems will be damaged (Swangjang & Kornpiphat, 2021). As Sundarbans is an ecologically critical area (BECA 1995), any destructive industrial development such as economic zones, power plant development, shipping industry, and port activities should be carefully considered. Furthermore, visitor numbers and tourist carrying capacity of the Sundarbans ecosystem must be carefully considered when developing tourism facilities (BFD 2021). In addition, community involvement, cultural archaeological and historical tourism, and riverine and rural tourism can be considered for forest-based ecosystem services in future PPPs.

**Table 1.** Relevant Policies, plans, and programs (PPP) and acts to support ecotourism in the Sundarbans (source: authors)

<b>Tourism PPPs</b>	<b>Remarks</b>
1. National Tourism Policy 2010 (MoCAT 2010)	<ul style="list-style-type: none"> <li>• Establishing the tourism industry as a significant development sector.</li> <li>• Identification of major tourist attraction zones and tourist points.</li> </ul>
2. Ecotourism Development and Management Plan 2004 (Khondkar & Anis 2017).	<ul style="list-style-type: none"> <li>• Ecotourism development and management, which has been in service since 2010</li> <li>• Involvement of local government organizations and private sectors in investment, development, and marketing of ecotourism</li> <li>• The number of visitors should be within carrying capacity</li> </ul>

Source: Authors

### 3.3. Economic issues

Long-term economic development planning in Bangladesh has been characterized by prudent macroeconomic management. By 2041, Bangladesh will be on the pathway to becoming a developed economy (GED/Plancom/MP/GoB 2020). The South West region of Sundarbans has excellent development potential in terms of helping to achieve this goal. The government is dedicated to ensuring that such development is long-term and does not jeopardize the Sundarbans' exceptional universal significance (BFD, 2021). The Sundarbans play an essential role in regional and national economies and climates. It offers many direct benefits to the surrounding communities (e.g., fuelwood collection, fishing, etc.). Around one million people depend directly or indirectly on Sundarbans' livelihood resources. It protects the lives and properties of the surrounding people against tidal waves and tropical cyclones. This forest falls into a portion of sediment transported through the Ganges River system into the Bay of Bengal and controls coastal and bank erosion (Mahmood et al., 2021).

The engagement of both the public and private sectors can advance Bangladesh's tourist industry by canceling out each other's flaws and achieving higher efficiency in policy execution (Amin 2021). Ecotourism provides local employment opportunities, aids the growth of the transportation industry and tour operators, and guides and involves local people in economic empowerment. The industry has a significant impact on a country's economy. Tourism contributed about BDT 296.6 billion to the GDP in 2014, according to WTTC (2015) data, and will contribute BDT 566.3 billion in 2025 (Afroz & Mahmud, 2017). The Sundarbans' primary provisioning services are timber, fuel wood, fish, thatching materials, honey, and waxes. In

addition, tourism is the immediate cultural service (Uddin et al., 2013). According to a study, the value was the highest for the Sundarbans (USD 2176 ha<sup>-1</sup> yr<sup>-1</sup>) (Barua et al., 2020).

### 3.4. Social issues

Policy consistency and coherence are essential for competitiveness, sustainability, and maximizing benefits from (eco)tourism (Khan et al., 2020). In the vicinity of the site, millions of people work as woodcutters, fishermen, honey collectors, and leaves and grass collectors for sustainable livelihoods (Jashimuddin, 2015). The Sundarban gives a source of income again for local people currently residing within the area who are poor and unable to find jobs. These people can be trained in the ecotourism service sector as tour operators, guides, caterers, ship and boat operators, etc. However, biotic pressure and man-animal conflicts routinely endanger the Sundarbans fragile mangrove environment potentially. To maintain occupational health and workers' safety, Bangladesh's labour policy must be followed (Table 2). Tourism in Sundarbans is currently not environmentally friendly, and tourists do not have many options. Therefore, unfitting tourist behaviour and unethical community interactions by local and foreign visitors must be discouraged in the Sundarbans. In addition, noisy tourist behaviors the use of loudspeakers, and firing should be avoided to protect wildlife. Furthermore, tourist projects are seldom well-structured, and government monitoring is frequently ineffective.

**Table 2.** Relevant macroeconomic PPPs on supporting ecotourism in the Sundarbans (source: authors)

<b>Economic perspective and programs</b>	<b>policy plans and</b>	<b>and</b>	<b>Remarks on supporting ecotourism</b>
Vision 2041 and 2nd Perspective Plan (GED/Plancom/MP/GoB 2020)	2021-2041		✓ Ensuring alternative livelihood for the poor people living adjacent to the forest areas, especially the Sundarbans Mangrove Forest
Delta Plan (GED/Plancom/GoB 2018)	2100		<ul style="list-style-type: none"> <li>✓ Introduction of ecotourism and private sector initiatives in sea cruises, as well as pollution-free coasts and sea ports.</li> <li>✓ Conservation of Sundarbans and rebuilding of dead/low flowing rivers and basin-wide management of transboundary rivers for increasing freshwater supply.</li> </ul>
8 <sup>th</sup> 5-year plan (GED/MP/GoB 2020)	2020-2025		<ul style="list-style-type: none"> <li>✓ Under the 8FYP, the government will enhance fiscal support for ecotourism, which safeguards the environmental balance of tourist sites and facilitates biodiversity protection in Bangladesh.</li> <li>✓ Improve the socio-economic condition of local poor and forest-dependent communities: Ecotourism development in protected areas, alternative income generation for forest-dependent communities; participatory/collaborative and sustainable management of forests.</li> </ul>

Source: Authors

### 3.5. Technological issues

The fragile ecosystem of Sundarbans is becoming vulnerable due to unscrupulous traffickers, littering of wastes, and heavy pressure on tourist vessels in the creeks. As a result, to implement ecotourism development in the Sundarbans, the GOB should also focus on the relevant technical issues to solve the environmental problem, such as oil leakage from ships, intentional oil spillage, waste littering, noise, and emissions. Updating national shipping policy

and incorporating relevant technologies can be compatible with environmental standards (Table 3).

**Table 3.** Relevant Labour policy to support ecotourism in the Sundarbans (source: authors)

Labour Policy	Main focus	Remarks
Bangladesh Labour Policy 2012 (Ministry of Labour and Social Affairs, Bangladesh 2012)	<ul style="list-style-type: none"> <li>To guarantee that all active citizens work in a constructive, non-discriminatory, non-exploitative, and healthy environment.</li> <li>The policy is a framework for dealing with labour-related issues like labour rights and welfare.</li> <li>It establishes wage rates and evaluates wage levels.</li> <li>In addition, the policy emphasizes decent work, workers' rights, labour dignity, and bargaining power.</li> </ul>	Workers involved in the ecotourism and tourism sector, shipping, catering, tour operators, and guides should follow the policy 2012 and the respective guidelines.

Source: Authors

Mongla seaport is Bangladesh's second-largest seaport, located at the confluence of the Poshur and Mongla rivers. Mongla port is located very close to the ecologically critical area of SMF-Bangladesh, which has global trade links. Ships and cargo boats of all sizes transport goods through SMF's rivers to the port (Islam et al., 2017).

**Table 4.** Relevant technological policy to support ecotourism in the Sundarbans (source: authors)

Shipping Policy	Main focus	Remarks
National Shipping Policy 2000 (MoS 2000)	To ensure shipping, inland shipping, and port activities safely while protecting the environment.	<ul style="list-style-type: none"> <li>Low-polluting vehicles in the Sundarbans for ecotourism and commercial purposes</li> <li>Pollution from water vessels should be lessened in terms of oil spillage, waste management etc.</li> <li>Ship/boat engines should be regularly serviced to minimize oil leakages, noise, emissions, etc.</li> <li>A distance from wildlife habitats, breeding habitats, and dolphin sanctuaries should be maintained (to evade stressing the animals).</li> </ul>
Cyber security strategy 2021-2025 (ICT Division 2021)	To develop national cyber security capacity for governance, business development, and information protection.	<ul style="list-style-type: none"> <li>Secured online payment system and revenue collection into a locally registered company.</li> <li>Prevent fraudulent behavior and protect domestic and foreign tourists</li> <li>Promote local products and e-commerce for buying products of Sundarbans and ecotourism services to increase local community involvement.</li> </ul>

Source: Authors

Low polluting vehicles, prevention of oil spillage, regular servicing, polluter pays principle, and avoiding wildlife habitat is essential for touring inside the Sundarbans. The Mongla Port Authority (MPA) and the Department of Environment (DoE) should be stringent in maintaining environmental standards. Both the authorities should consider technologies and technological policies, and legislations to minimize pollution levels, as well as technological innovations that will help to preserve the existence and the environment. For example, cameras, drones, and robotic systems, real-time remote sensing should be provided to monitor the forest and tourism activities. In addition, cyber security should be considered for online payment and revenue collection and prevent fraudulent activities. In addition, local products, handicrafts, and signature items should be promoted by e-commerce.

### 3.6. Environmental issues

The Bangladesh Forest Department (BFD) oversees all of the Bangladesh Sundarbans and carries out the planning process through the Annual Development Programme (ADP) (Khan et al., 2020). In a disaster-prone country like Bangladesh, tourism is not spared from climate change and environmental impacts (Mohiuddin et al., 2021). The Sundarbans, are highly vulnerable to climate change, sea level rise will increase saltwater intrusion, which will harm the forest and its diverse ecosystem (GED/Plancom/GoB 2018). In addition, other anthropogenic factors responsible for the deterioration of Sundarbans are shrimp farming, coal/oil-containing barge accidents, intentional oil spills, fires, industrial pollution, port activities, and a variety of other factors (Niloy et al., 2022; Khan et al., 2020).

**Table 5.** Relevant environmental and forestry PPPs to support ecotourism in the Sundarbans (source: authors)

<b>Environmental Policy</b>	<b>Main focus</b>	<b>Remarks concerning ecotourism</b>
Bangladesh National Environmental Policy, 2018	2018 policy encourages forest-based ecosystem services to reduce poverty and participation of local communities.	Promote local ownership and ecosystem service of the tourism industry.
<b>Forestry PPPs</b>		
1. National Forest Policy 2016 (BFD/MoEFCC 2016) 2. Bangladesh Country Investment Plan (CIP) for Environment, Forestry and Climate Change 2016 (BFD/MoEFCC 2017) 3. Forest Investment Plan (FIP) 2017 (BFD/MoEFCC 2017) 4. Seventh (7th) Five-year Plan for the Forestry Sector 2017 (GED 2015) 5. Bangladesh Forestry Master Plan 2017-36 (BFD/MoEFCC 2016) 6. National Biodiversity Strategy and Action Plan of Bangladesh 2016 (DoE 2016)	In Bangladesh, a policy is followed by its legal implementation, which includes both primary and secondary legislation of the Forest act 1927 (Ahammad, et al., 2021).	Promote and protection of forest-based ecosystem services, biodiversity, and partnership development with the local people for project beneficiaries, in the forest products and the tourism industry.

Source: Authors

In Khulna, Bagerhat, and Satkhira districts, industrialization and unplanned urbanization are increasing around the ecologically critical area (ECA). At least 40 types of industry/mills were found to release nitrates and phosphates into the Passur-Shibsa River system (BFD 2021). The Mongla Port Authority (MPA, 2021) also plans to increase shipping.

### 3.7. Legal issues

Sustainable ecotourism development in the Sundarbans mangrove forest can harness ecosystem services, promote social and environmental development, and contribute to national GDPs. For this purpose, GoB has been working for a long time. There are legal measures for tourism companies to follow and maintain in the Sundarbans in their operational activities. If needed, the government will implement new laws and rules to apply ecotourism in every corner of Sundarban. Based on the National Tourism Policy 1992, the GoB rewrote this statute, making a few significant amendments and entitled it the National Tourism Act 2010 (MoCT/GoB 2010). The goal of this program was to effectively close the gaps left by the preceding policy and create jobs in the tourism sector. It would result in the country's growth and promotion. This legislation's primary goal is to promote ecotourism by protecting natural resources and improving the very well of indigenous governments. The legislation consists of a detailed strategic action plan aimed at advancing the following areas: such as nature conservation in the Sundarbans' mangrove areas, tourism along the river and in the immediate vicinity, protection of places of worship, protection of sites of cultural and archaeological significance, coastal beaches, social geographic features and heritage locations etc. However, to promote ecotourism in the Sundarbans, other relevant acts and legislations are required such as environmental acts and legislations, forestry acts and legislations, labour acts and rules, food safety, travel agency control acts and many others (Table 6).

**Table 6.** Relevant tourism, environmental, forestry and labour acts and legislations in Bangladesh for ecotourism development (source: authors)

Acts	Remarks
<b>Tourism Acts and legislations</b>	
<ol style="list-style-type: none"> <li>1. Bangladesh Tourism Board Act 2010 (Amendment 2019) (MoCAT 2019)</li> <li>2. Bangladesh tourism protected areas and special tourism zone Act 2010 (MoCAT/GoB 2010a)</li> <li>7. Bangladesh tourism protected areas and special tourism zone Rules 2010; Amendment 2011 &amp; 2013 (MoCAT/GoB 2011)</li> </ol>	<ul style="list-style-type: none"> <li>• Establishment of the Tourism Board for the overall development, operation, and growth of the tourism industry</li> <li>• The acts and rules prevent unplanned structures in potential tourist areas.</li> </ul>
<b>Environmental acts and legislation</b>	
<ol style="list-style-type: none"> <li>1. Environmental Conservation Act 1995</li> <li>2. Environmental Conservation Rules 1997</li> <li>3. Ecological Critical Area 1995</li> <li>4. Environmental court act 2000</li> </ol>	<ul style="list-style-type: none"> <li>• The tour operators must adhere to the environmental standards and requirements during their tour operations.</li> <li>• Speeding and noise of ships should be avoided to protect dolphins from collisions.</li> <li>• Discharge of kitchen waste, plastic waste (litter) from ships, and sewage should be avoided.</li> </ul>
<b>Forestry acts and legislation</b>	
<ol style="list-style-type: none"> <li>1. The Forest Act 1927 (BFD 2020)</li> <li>2. Social Forestry Rules (SFR)</li> </ol>	<ul style="list-style-type: none"> <li>• The Forest Act of 1927 is the primary regulatory instrument that supports national forest policy</li> </ul>

<p>2004 (BFD/MoEFCC 2020)</p> <p>3. Bangladesh Biodiversity Act 2017 (BFD/ MoEFCC 2017)</p> <p>4. Wildlife (Conservation and Security) Act 2012</p>	<p>implementation by enacting laws concerning forests, the transportation of forest products, and the imposition of duties on timber and other forest products (Ahammad et al., 2021).</p> <ul style="list-style-type: none"> <li>• The laws prohibit tourists from harming biodiversity, trespassing, and creating fire and nuisance in the mangrove forest</li> </ul>
<p><b>Labour acts and Rules</b></p>	
<p>1. Bangladesh Labor Act 2006, amendment 2013 and 2015 (MoLE 2015)</p> <p>2. Bangladesh Labor Rules 2015 (MoLE 2015)</p> <p>3. Bangladesh Labor Welfare Foundation Rules 2015 (MoLE 2015)</p>	<ul style="list-style-type: none"> <li>• Legal protection of workers involved in the tourism industry.</li> </ul>
<p><b>Other acts and legislations</b></p>	
<p>1. The Food Safety Act 2013 (MoF/GoB 2013)</p> <p>2. Consumers' right Protection Act 2009 (MinLaw/GoB 2009)</p>	<ul style="list-style-type: none"> <li>• The act is about regulatory authority relating to food production, import, processing, etc., and the protection of consumers' rights to prevent anti-consumer behaviour.</li> <li>• It also provides tour operators to provide safe food and maintains hygiene during the preparation</li> </ul>
<p>Mongla Port Authority Act 1995 (MPA 1995)</p>	<ul style="list-style-type: none"> <li>• For the management, maintenance, and development of Mongla Port in connection with shipping operations, import, export, and vehicle/ship operation in the seas and inland waters.</li> </ul>
<p>1. Bangladesh Travel Agency Registration and Control Act 2013, amendment 2021 (MoCAT 2022)</p> <p>2. Bangladesh travel agency registration and control rules 2014, amendment 2022 (MoCAT 2022).</p>	<ul style="list-style-type: none"> <li>• To control and regulate travel agencies and prevent fraudulent behaviour.</li> </ul>

Source: Authors

## 2.7. Ecotourism Development in the Sundarbans

The Ministry of Civil Aviation and Tourism (MoCAT) of GoB is responsible ministry to providing comfortable, secure, and convenient civil aviation facilities, as well as attracting tourists through product diversification and improved service delivery. The affiliated organizations of MoCAT are the Civil Aviation Authority, Biman Bangladesh Airlines Ltd., Bangladesh Parjatan Corp., Bangladesh Tourism Board, Hotels International Limited, and Bangladesh Services Limited. The Bangladesh Parjatan Corporation (BPC) and Bangladesh Tourism Board (BTB) are the National Tourism Organization (NTO) with a vision to develop Bangladesh as an exotic tourist destination (MoCAT 2022). The Bangladesh Tourism Board's 2011 tourism advertisement, "Beautiful Bangladesh (school of life) (<https://beautifulbangladesh.gov.bd/>)," was an attempt to transform the country's reputation and position it as a tourist destination and investment opportunity in the eyes of international stakeholders. It demonstrated that a developing country, such as Bangladesh, can successfully use tourism advertising and destination branding as public diplomacy tools to better brand and

promote itself among a wide range of international stakeholders (Hasnat and Steyn 2020). The strategic advertisement showed that the commercial "bleed-over" effect generated a more positive mindset among foreign tourists and increased GDP earnings. Similar but different advertisement strategies can be taken for ecotourism development in the Sundarbans while providing infrastructural facilities, training, and skill-building incentives for the travel agencies

It is also obvious that the limited practice of ecotourism in the Sundarbans will make the place even more attractive, and reduce the cost and pollution while increasing the revenues. The government should develop a clear long-lasting view to developing ecotourism in the Sundarbans together with private sector investments (Afroz & Mahmud, 2017). Ecotourism is frequently suggested as the solution, particularly in protected areas in the Global South, which in theory, can provide economic benefits to economically disadvantaged communities living near protected areas and inspire them to protect biodiversity in their interests (Ghosh & Ghosh 2019). However, it is also important that a SEA should be done for such plans or programs at the strategic tier led by MoCAT, BPC, BTB, and other relevant stakeholders such as DoE and BFD within the ministries.

## **2.8. Ecotourism development guided by Strategic Environmental Assessment (SEA)**

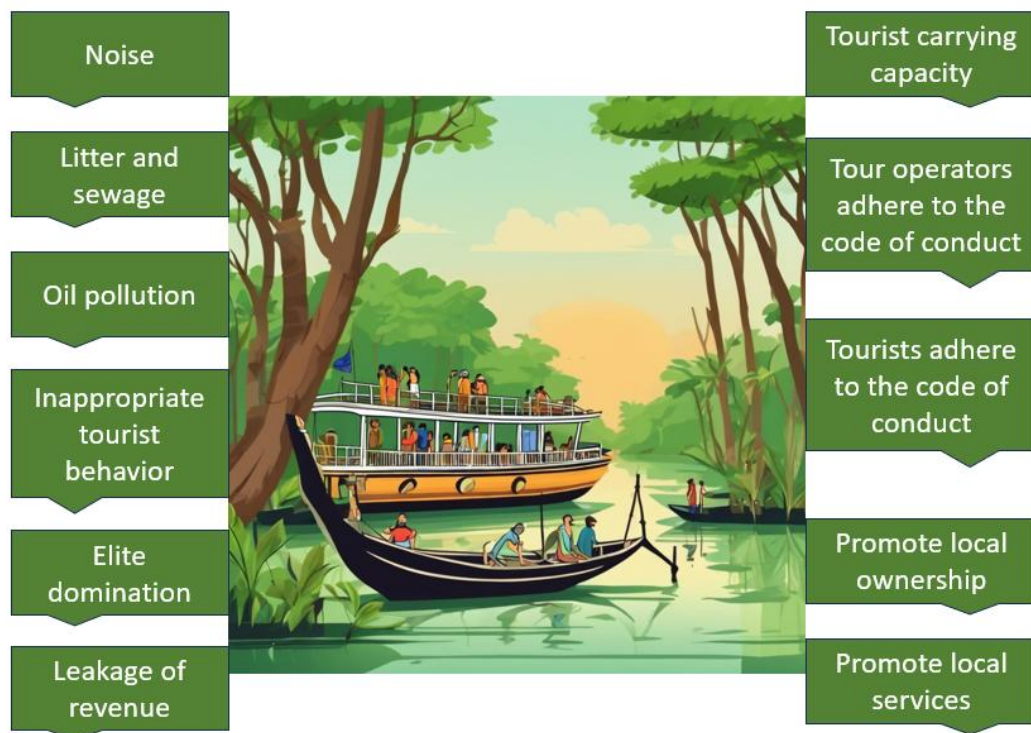
It is important to keep in mind that a lack of well-designed strategies and regulations may result in inefficient tourism development. Consequently, it may result in negative externalities such as loss of natural landscapes and environmental and cultural degradation (Anika et al., 2020). Considering the socioeconomic implications are all taken into account, a Strategic Environmental Assessment (SEA) is needed for this sector. The SEA is a tool for assessing the environmental and socioeconomic consequences of PPPs and ensuring that these consequences are taken into account during the formulation and implementation (OECD 2006). The SEA will assess the current and potential environmental and socioeconomic impacts of the current and future development of ecotourism and relevant PPPs in the Sundarbans.

Very recently, BFD conducted SEA of the South-West Region of Sundarbans and has given some specific comments on it. The SEA concentrated on public-private partnerships in all relevant sectors, including forestry, fisheries, transportation and communication, industry, power and energy, water resources, shipping, urbanization, and tourism, among others (BFD 2021). There is concern regarding pollution and noise from tourism activities in and around the Sundarbans area – noise is particularly disruptive to animals. If not properly and effectively managed, tourism could cause increasing problems, particularly as the sector grows. Moreover, the carrying capacity for tourism activities in the Sundarbans should be scientifically determined, and tourist visitors/activities managed accordingly. The SEA also produced a Strategic Environmental Management Plan (SEMP) for ecotourism in the region, which would serve as a tool for assisting the transition to sustainable development by establishing a framework for monitoring the implementation of PPPs and individual mega-project activities. It further suggested that tourists, local tour operators, tourist boat owners and other stakeholders should follow updated eco-tourism guidelines and ban/restrict tourism in sensitive protected areas of the Sundarbans to conserve biodiversity (BFD 2021). Furthermore, the strategic Environmental management plan (SEMP) of the Sundarbans South West Region suggested community involvement in conservation and tourism, including deriving benefits, possible impacts on habitats and wildlife from increasing tourism within the Sundarbans (e.g. noise, litter, bow waves from fast-moving boats, pollution from waste, engine fuel and grease, etc.) (Figure 5). It was also recommended to establish a scientifically-based tourism carrying capacity, including a balanced mix of tourism types such as low-volume/high-cost and high-



volume/low-cost options, and to impose a suspension on any further expansion of tourism in the Sundarbans beyond current levels. Additionally, there is a need to revise the code of conduct for all tourism operators to ensure control over tourist behaviour, preventing issues such as noise, littering, speeding boats, discharge of waste or pollution, and disturbance to wildlife. Measures should also include regular servicing of boat engines to minimize fuel leakages and noise, maintaining a distance from wildlife to avoid causing stress and avoiding known wildlife and fish breeding areas and dolphin sanctuaries. Moreover, efforts should be focused on enhancing employment opportunities and livelihoods while promoting local ownership and services.

**Figure 5.** Development of Ecotourism inside Sundarbans as recommended in the strategic environmental assessment (SEA) and strategic environmental management plan (SEMP) of the South-West Region



Source: authors

The implementation of SEA and SEMP suggestions on the ecotourism project, plan or program in the Sundarbans requires a multi-sectoral, coordinated approach. Projects to construct tourist infrastructures such as hotels and lodges, resorts, access roads, associated sanitation, and waste disposal facilities should adhere to the existing regulations and must be developed with relevant environmental impact assessment (EIAs) and relevant environmental management plans (EMPs) to mitigate the impacts, monitoring of EMPs and follow-ups. The Sundarban Biodiversity Conservation Project (SBCP) is a tourism activities initiative that includes a variety of actions. The SBCP is a well-known way to promote sustainability, concern for the environment, and youth development among all decision-makers, as well as making sure that both internal and external tourists can appreciate nature. The government and industry are affected by the decision on their ways to make different reserves and create jobs. With the help of UNDP, the Tourism Sector established a Management Master Plan for such

interconnected tourists (Khondkar & Anis, 2016). Such projects must be guided by the SEA of the Sundarbans or other PPPs relevant to Sundarbans to reduce conflicts. It is also important to integrate other relevant ministerial and local government stakeholders. Rules are needed to specify which developments and activities are permitted or restricted in various protected/restricted areas. There is a need to ensure that tourism rules and guidelines are fully and effectively implemented, with significantly improved awareness-raising to ensure appropriate behaviour by tourists and tour operators, as well as government departments/agencies in the private sector that control tourism activities in their respective areas. In addition, climate change strategy and action plan, Bangladesh Delta plan 2100, socio-economy and demand analysis based on suggested indicators, scenario analysis and forecasting should be considered when preparing project plans. The decision support system must be prepared based on SEA and SEMP guidelines integrating ecotourism for PPPs.

### **3. CONCLUSION**

Ecotourism is a type of responsible tourism that takes place in delicate and sensitive natural areas with the least negative influence on the environment and contributes to the socioeconomic development of the local people. Ecotourism is a growing industry that has the potential to make a balanced contribution toward future economic development for the protection of the Sundarbans mangrove forest in Bangladesh. PESTEL analysis provided the existing policy, economic status, social and cultural status, technological requirements, environmental obligations, and legal requirements for ecotourism development in the Sundarbans in the macro-context. It requires the development of plans and programs guided by a strategic environmental assessment that can support ecotourism. The Government of Bangladesh should look into the human resources and infrastructure development required to build ecotourism in the Sundarbans. Subsequently, ecotourism projects also require EIAs and EMPs guided by the SEA and SEMP. To sum up, the government must be friendly and forceful enough to protect Sundarbans while ensuring the growth of ecotourism following the appropriate plans and recommendations of tourist industry experts, forestry and environment experts and other relevant stakeholders. Furthermore, the agencies should highlight the importance of an effective promotional campaign to aid in the extensive promotion of ecotourism products, packages, and services in the Sundarbans. For ecotourism to be truly effective, a proper forest-based ecotourism package needs to be developed for Sundarbans to engage the local population to be beneficiaries of the development.

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