



Preparation of Payra Kuakata Comprehensive Plan Focusing on Eco-Tourism Project  
Urban Development Directorate (UDD)  
Ministry of Housing and Public Works  
Government of the People's Republic of Bangladesh

Draft Action Area Plan  
of  
Sonar Char Eco-Tourism for Foreign Tourists

June 2022

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## **Executive Summary**

The overall goal of the Action Area Plan is to achieve Eco-tourism for foreign tourist and ecofriendly development of the Sonar Char and surrounding Char by integrated planning and implementation through government authority, privet investors involvement and community participation for optimum utilization of resources and reduction of poverty in this region. The Action Area Plan includes four Char namely Sonar Char, Char Montaz, Andar Char, Char Taposhi and Char Hare from Patuakhali district under Rangabali Upazila.

### **Background**

On February 25, 2012, the Honorable Prime Minister of the People's Republic of Bangladesh committed during a gathering at the M.B. College ground in Kalapara Upazila, Patuakhali district, that the Sonar Char in Rangabali Upazila will be developed exclusively for foreign tourists. There will be a tourist zone developed in the Kuakata, Taltoli, and Patharghata Upazilas.

#### Location of the project area

Sonar Char is located near the Bay of Bengal on the southern boundary of Patuakhali's Rangabali Upazila. A vast mangrove forest and a long beach can be found here. The Sonar Char has been designated as a Wildlife Sanctuary.

#### Demographic profile of sonar char and surrounding char

The only places where people live are Char Montaz and Andar Char. In Sonar Char and Char Taposhi, there is a substantial mangrove forest. Waterways are the only communicable ways to reach Cahr Hare, Sonar Chahr and Char Mertaz.

#### Geological condition of sonar char and surrounding area

The Sonar Char Wildlife Sanctuary has a low salinity. The degree of saltiness fluctuates depending on whether it is wet or dry. Wild geese, wild ducks, jungle fowls, cranes, and spines are among the bird species that call the area home. The ideal months to visit Sonar Char are November, December, January, and February. The planning area mainly falls under the Ganges Tidal floodplain. The upazilas of the planning area are at risk of being affected by the sea level rise due to climate change. Forests in the planning area are not much prominent and mostly are reserved areas. The size and shape of Chra are chaning over the years due to sedimentation and erosion. The only Char where most of the pople live in Cahr Montaz.

#### Ecology and Environment of Sonar Char

A diverse nature of flora and fauna can be seen in the planning area. Even several trees from the Sundarbans can be found here too. Despite importance of ecological integrity and bio-diversity, the flora and fauna in this region are being affected by over exploitation, deforestation, inefficient

forest management. The Sonar Char is a reserve forest area. The weather becomes reasonably quiet throughout these months, and the days are longer. In the months of March, April, and May, the temperature is over 30 degrees. A strong wind blew from the south-south-east during this period.

#### Disaster Risk of Sonar Char and Surrounding Area

Lack of safe drinking water has been identified as the number one issue for coastal population. A comprehensive disaster management program (CDMP) is being implemented. The majority of Sonar char and Char Taposhi is covered with forest, and has a low disaster risk.

#### **Understanding Tourism and Eco-tourism Facilities**

Bangladesh is a land of scenic beauty with verdant forests, reverie countryside and long structures of sun-bathed beaches, fearsome wilds, meandering rivers and venerable shrines. This country needs a proper strategy and policy to attract both foreign and domestic tourists. Eco-tourism has become very important to our society, since it deals with the preservation of natural areas and the wellbeing of the local people. There is a need to inform the world about this crisis because of the destruction of our surroundings. Our future depends on saving our planet.

#### **Current Scenarios and Development Potentials**

Sonar Char is developing an ecotourism industry with unique foreign visitor amenities like private cottages, pavilions, and tents. This tourist attraction will be transformed into something like India's Aman-i-Khás, Indonesia's Amanwana, and the Philippines' Amanpulo. In 1975, a forest department was responsible for covering up to 5.5 acres of land with kewra, Andari, khulsi, and other plants. Sonar char is rich in biodiversity, including foxes, bulls, boars, monkeys, and other animals. A large number of red crabs may be seen on the beach. In two rounds of Sonar Char in 1995, a total of nine deer were freed. Between Sonar Char and Char Montaz, Andar is the closest Char. This Char is expected to be created solely for international tourists. A small wooded area can be found in the northern part of the Char. The population of this Char is currently around 4,000 people. The Sonar Char and Char Taposhi are the two most northerly branches of the Char Hare. Camping and meditation are both allowed in this Char.

#### **Action Area Plan of Sonar Char**

The Action Area Plan (AAP) is re-examining land uses in the Sonar Char and adjacent areas for ecotourism. It outlines comprehensive land use distributions and establishes a schedule for implementing ideas in regions of transition, such as Sonar Chars. There are two types of infrastructure that need to be developed for feasible the project for a long run. Andar Char is located between Sonar Char and Char Montaz. On the Char's southern shore, there is a boat dock, which will be completed with modern amenities for boats and water vehicles. At plot number 171, a hotel-motel zone will be constructed in Char Montaz. The Sonar char Action Area Plan is both environmentally benign and limited.

## Development Cost and Benefit of Tourism

1. Development of Andar Char: Andar Char is located between Sonar Char and Char Montaz. This Char has only four thousand people, which the government can use for future tourist-related facilities. There are plenty of facilities that will be developed to serve as more authentic and eco-friendly facilities for foreign tourists.
2. Development of Sonar Char: This is an ecologically sensitive area as well as a low-salinity animal sanctuary. There is a reserve forest in this area. The sonar char's action area is both environmentally benign and limited. Tourists can enjoy loungers, watch towers, tree houses, jungle safaris, rafting boats, exclusive floating docks, and flotels in sonar char. Near Sonar Char, a movable dock must be constructed. Beach nourishment, whether permissible or regulated, may be a viable option for protecting the beach from erosion.
3. Development of Char Taposhi: There is a mangrove forest in this area. Tourists can enjoy watch towers, tree houses, jungle safaris, rafting boats. Near Char Taposhi, a movable dock must be constructed. This Char is located to the western side of the Char Andar and Sonar Char.
4. Development of Char Hare: To the east of Char Hare, Sonar Char and Char Taposhi can be found. Along the Char's southern reaches, there is plenty of flat area to build on. In this area, camping and meditation are permitted.
5. Development of Char Montaz: In the Sonar Char and nearby area, Char Montaz is the largest of the Char. For the significance of this place, a stunning roadside landscaping may be developed on both sides of the road. On the Char's southern shore, there is a boat dock, which will be completed with modern amenities for boats and water vehicles. At plot number 171, a hotel-motel zone will be constructed.

## Transportation System for Tourist

Water transport is the primary mode of transportation between the islands or Char in Sonar Char and the surrounding area. This region, on the other hand, will establish a well-organized multimodal transportation infrastructure. The tourism business requires a flexible and well-organized transportation system. Road networks exist in Char Montaz and Andar Char. The Ministry of Road Transport and Bridges will be responsible for the development of all roadways. Biodegradable paths will be built in the Sonar Char, Andar Char, and Char Hare for environmentally friendly development initiatives. A helipad is to be developed near the hotel-motel zone of the Char Montaz. The tour operator will be arranging a helicopter for air transport facilities. In the future, other facilities of air transport will be available near the Payra-Kuakata region. In the Sonar Char, a flexible and adaptable floating dock for boats will be located. A number of well-decorated and modern flotels will be available for foreign travellers. For jungle excursions and water sports, there will be a large number of rafting boats accessible.

### **Benefits of Tourism**

Because of the minimal skill and investment requirements, much of the employment created by the tourism sector is accessible to the poor. Many tourism activities are suitable for people from disadvantaged backgrounds, notably in Bangladesh. There are indications that this promise is being realized, as many poor people find work in tourism-related industries. According to Farzana (2014), nearly 80 percent of the poor in Kuakata sea beach work in tourism-related occupations, compared to 74.05 percent for the rest of the population. Analysis shows that there is still a lot of untapped potential for poverty reduction in the country's coastal areas and islands. Travel and tourism directly employed 1,328,500 people in 2013, a 4.0 percent increase expected in 2014. It will rise at a 2.7 percent annual rate over the next ten years. By 2024, travel and tourism are expected to employ 4.2 percent of the workforce. Tourism has a 9% direct, indirect, and induced impact on GDP, creating 1 in 11 jobs and accounting for 6% of global exports. Emerging economies' market share climbed from 30% in 1980 to 45% in 2014 and is predicted to reach 57% by 2030.

### **Source of Finance**

Sonar Char has no permanent residents and is an ecological landmass. The Bangladesh government or a Public-Private Partnership (PPP) will fund the development of this area. Foreign tourists will be able to enjoy the natural beauty of this Char and the adjacent Char.

### **Services and Facilities for Foreign Tourist**

Sonar Char is an eco-friendly island in the Bay of Bengal with mangrove forests, beaches and waterways. These areas are providing a unique combination of various facilities and attractions. Tourists seeking a break from the stresses of everyday life priorities rest, relaxation, and rejuvenation during their vacations. These guests like to stay in a tranquil and pleasant setting, such as an eco-resort, beach resort, or forest-based facility. The family unit is involved in many sorts of tourism activities as part of family tourism. This involves paying for visits to family and friends for social reasons. There are plenty of opportunities for participating in sporting event while away from home. These types of events typically serve as motivators for tourists to participate in activities like jungle safari, and mini golf.



# CHAPTER ONE

## 1.1 Background of the Action Area Plan for Sonar Char

On February 25, 2012, the Honorable Prime Minister of the People's Republic of Bangladesh committed during a gathering at the M.B. College ground in Kalapara Upazila, Patuakhali district, that the Sonar Char in Rangabali Upazila will be developed exclusively for foreign tourists. There will be a tourist zone developed in the Kuakata, Taltoli, and Patharghata Upazilas.

The Honorable Prime Minister's aim is for the Sonar char and adjacent area to be developed as an exclusive international tourist zone in the future, which is her dream and guidance. The Action Area Plan of Sonar Char is a strategy for gaining a better understanding of Sonar Char's natural environment and transforming the area into a viable eco-friendly tourist destination for visitors for the long run. This tourist spot will be developed for both domestic and international tourists.

## 1.2 Objectives

The main purpose of the Action Area Plan is to accelerate the transformation of Sonar Char and surrounding Char into a tourist spot for foreigners. The Action Area Plan for Sonar Char has been developed with the aid of a wide-ranging public consultation process and has been supported and informed by a series of technical studies. Three objectives were identified for Sonar Char Action Area Plan, which are:

- To make Sonar Char and its surroundings a home for future foreign tourists.
- To provide tourists with high-quality services and facilities.
- To achieve an environmentally friendly development strategy.

## 1.3 Location of the Project Area

Sonar Char is located near the Bay of Bengal on the southern boundary of Patuakhali's Rangabali Upazila. A vast mangrove forest and a long beach can be found here. Small and big waves assaulted the shoreline. People may observe the sunrise and sunset from the beach at Sonar Char. As the sea level rises, Sonar Char takes on a new beauty. Sonar Char is only an hour and a half away from Galachipa's launch dock by speed boat. To the south, Sonar Char is located between Char Montaz, Rangabali, and Andar Char. Soar Char covers a total area of around 18 square kilometers. This is a significant ecological area. This is a coastal mangrove plantation and a reserve woodland. This place is known as a saline tidal floodplain since it is located near a coastal area. The Ganges tidal floodplain is the physiography of this site. Sonar Char lies in the Pathuakhali district's Rangabali Upazila. The Sonar Char has been designated as a Wildlife Sanctuary.

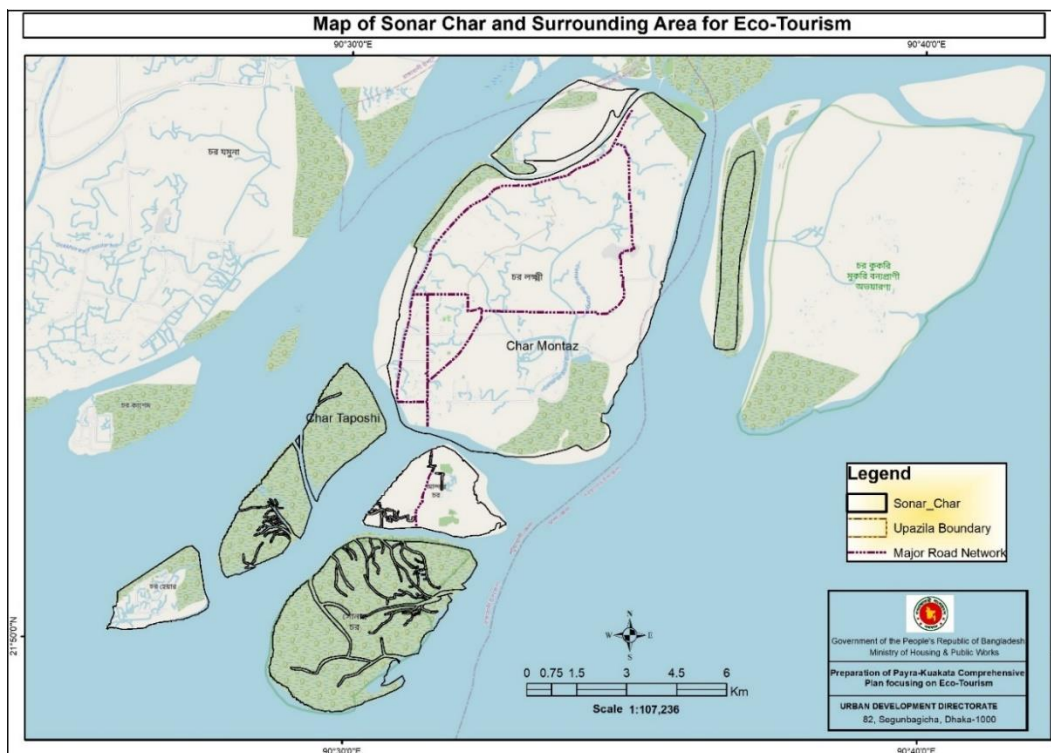


Figure 1: Location of Sonar Char and Surrounding Char

#### 1.4 Demographic Profile of Sonar Char and Surrounding Char

The only places where people live are Char Montaz and Andar Char. Char Montaz is home to the majority of the residents in this area. Andar char and Char Montaz are more solid and livable. In Sonar Char and Char Taposhi/Kolagasi, there is a substantial mangrove forest. In the northern half of the Char Hare, there is a mangrove forest. The largest land mass of these char is Char Montaz. The road and pathways are available in the char Montaz and Andar cahr. Waterways are only communicable ways to reach Cahr Hare, Sonar Char and Char Taposhi/Kolagasi.

Table 1: Distribution of Population and Area of Char

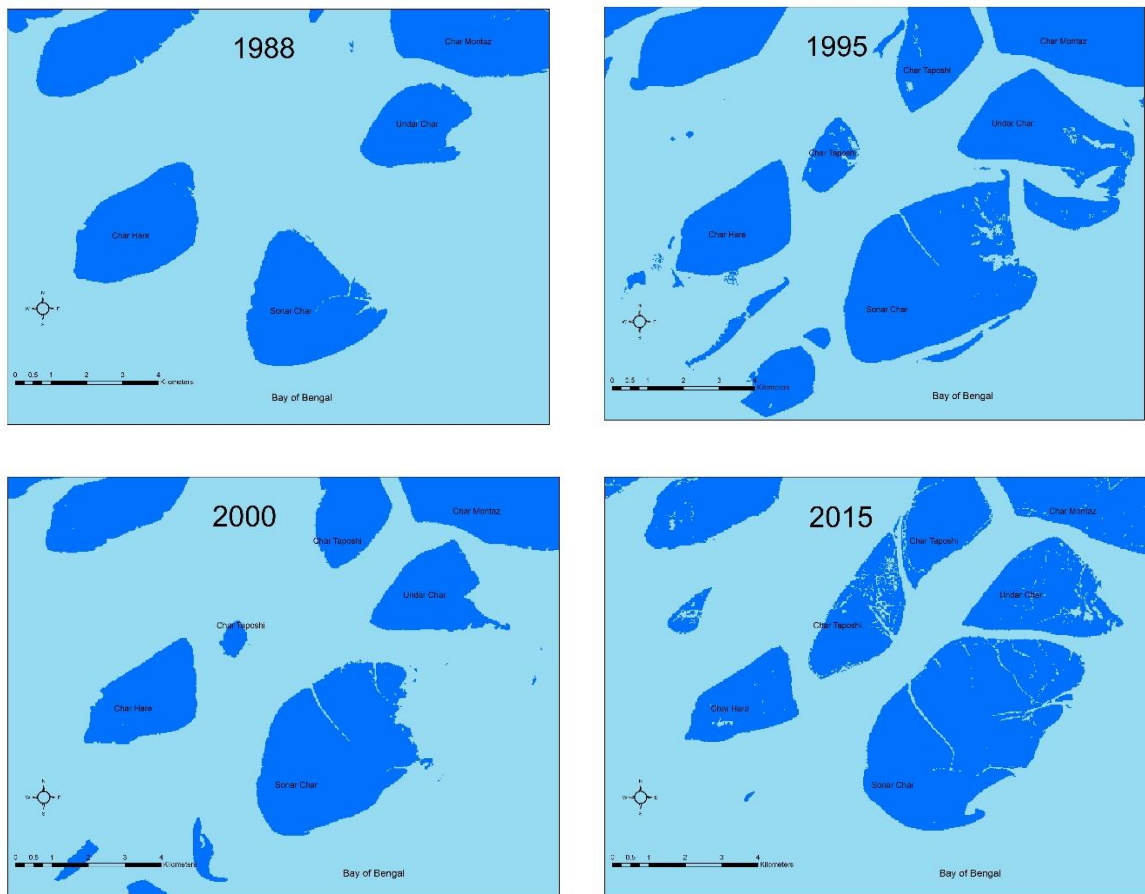
Name of Char	Total Population (BBS 2011)	Approximate Total Area (Acre) GIS Calculation
Char Montaz	19569	17728.46
Char Andar	3782	1682.87
Char Hare	0	1173.87
Sonar Char	0	4968.67
Char Boro	0	2887.59
Taposhi/Kolagasi		
Total	23351	28441.46

## 1.5 Geological Condition of Sonar Char and Surrounding Area

Over the year, the shape and size frequently change. It is clearly showing that the size of some char is increasing, whereas some char lose land on a regular basis. In Figure 1-2, we are discussing the changes in shape and size of four char for five distinct years.

*Year 1988:* There are three Char namely Char Hare, Sonar Char, and Andar Char. The size of this char was relatively smaller in 1988. The position of Sonar Char is located to the south of Andar Char. The distance from Andar Char to Sonar Char is around 10 nautical miles.

*Year 1995:* A new Char immerge was introduced, which was Char Taposhi/Kolagasi. The location of the Char Taposhi/Kolagasi is on the western side of Sonar Char and Andar Char. The size of the Andar Char increased significantly on the eastern coast of this island. Similarly, the size of Andar Char increased towards the eastern coast.



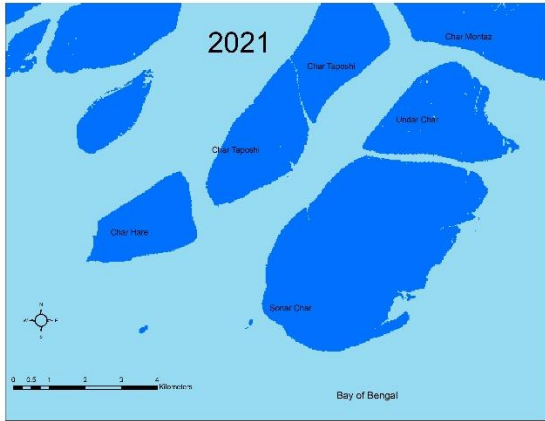


Figure 2: Changing of Area and Shape of Char over the Years

(Source: USGS Landsat 7-8)

**Year 2000:** Char lost a significant amount of land in this year. The shape and size of Char are changing slightly. The area between the eastern banks of Andar Char and Sonar Char has been reduced.

**Year 2015:** In this year, all chars gain land. The area of this land increased significantly more than in the year 2000. In the last five years, Char Taposhi/Kolagasi has acquired the majority of the land.

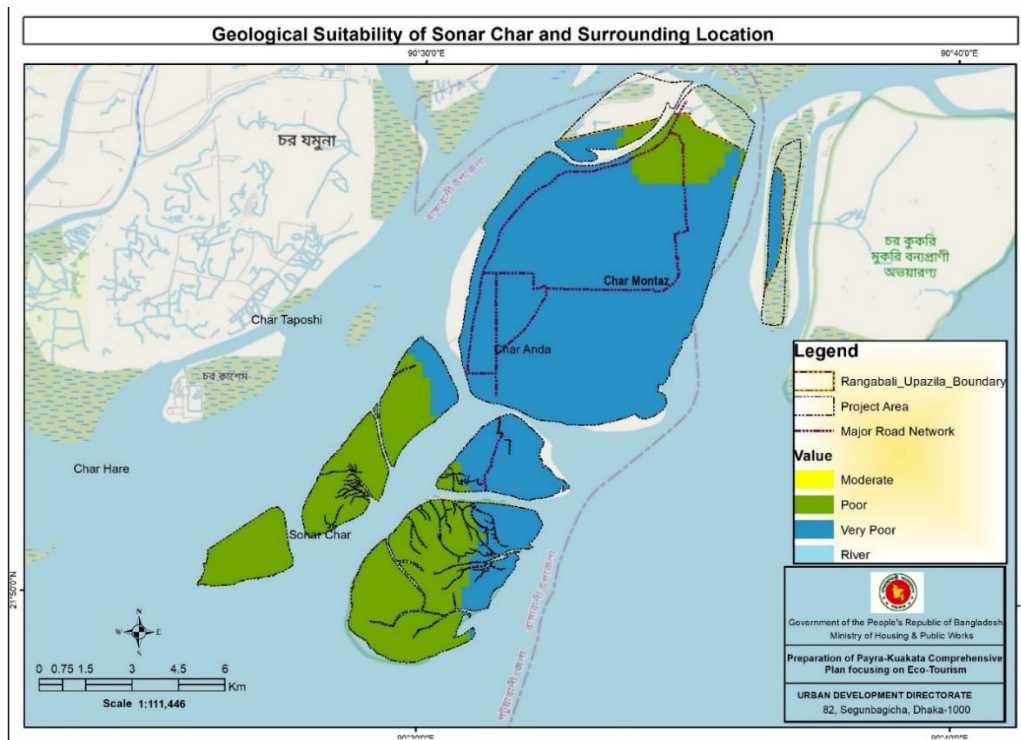


Figure 3: Geological Sustainability of the Region

*Year 2021:* The total area of these char and shapes has remained constant over the last five years, from 2015 to 2021. It is predicted that the soil conditions of these char are not stable. The areas of Char change frequently over the year given in this figure.

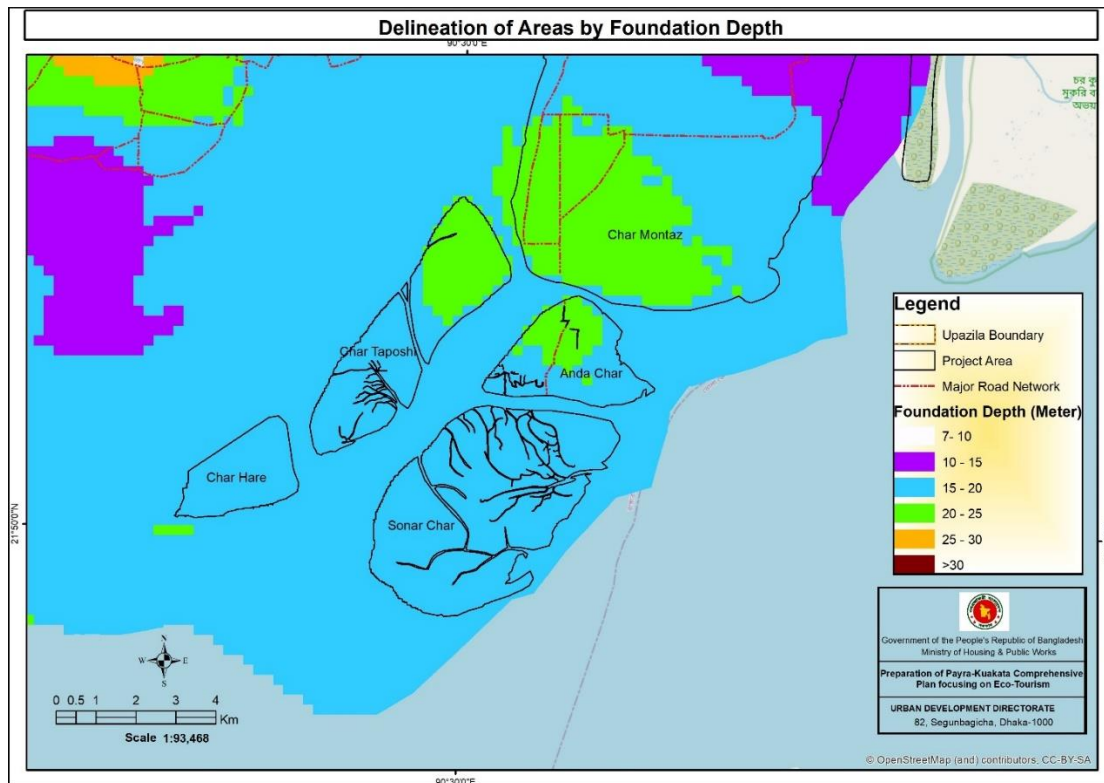


Figure 4: Suitable Foundation Depth of Sonar Char and Surrounding Area

The study area of Sonar Char and the surrounding area is located in one Stable Continental Crust (SCC) section in Bangladesh. In Figure 1-4, Char Montaz and Andar Char are located in first degree sensitive lowrise and first degree sensitive highrise buildings. Char Montaz and Andar Char are located in first degree for earth quake sensitivity. Liquefaction potential index is very high; it is 67.79%. Liquefaction potential index (LPI) is one of the major components in seismic hazard analysis. Therefore, the LPI map has been developed using the PGA and physical properties of the sub-soils. The Compression Index is moderately to very highly compressible from 0.138 Cc to 0.387 Cc. Reconsolidation stress is moderately consolidated between 130 kPa and 350 kPa.

### 1.6 Ecology and Environment of Sonar Char

In Sonar Char, there is a forest beat office. The Sonar Char Wildlife Sanctuary has a low salinity. This Char has a lower saline content. The degree of saltiness fluctuates depending on whether it is wet or dry. In the north, the soils near Sonar Char are non-saline for most of the year, but become saline during the dry season. The north-east region of Char is prone to flooding during the rainy season. There are a lot of weeds in this area, and there are a lot of palm trees and bamboo chumps in the animal sanctuary. Wild geese, wild ducks, jungle fowls, cranes, and spines are among the bird species that call the area home. Plants naturally grow in this Char. The Patuakhali Forest Department planted kewra, Andari, khulsi, and koroi plants on up to 5.5 acres of land in 1975. As a result, Sonar Char has been transformed into a lovely forested land. Sonar char is home to a vast



diversity of creatures, including foxes, bulls, boars, and monkeys. The forest service released a total of nine deer in sonar char in 1995. Tourists may find red crabs on the seashore to be an intriguing sight.

### 1.6.1 Flora and Fauna

Sonar Char is a significant place for Bangladesh's ecology and ecosystem. Sonar Char is home to a variety of wild animals, including deer, monkeys, and pigs, among others. Furthermore, 26,000 hectares of mangrove forest have been set aside. Sonar Char awoke in 2004, alongside the Char Montaz in the Bay of Bengal. The Patuakhali Coastal Forest Department subsequently reforested this char. Visitors see a variety of bird species. In addition to the 300 deer, the woodland is home to monkeys, wild buffaloes, pigs, and other wild creatures, according to estimates.

### 1.6.2 Weather and Climate of Sonar Char

The Paris Agreement of 2015 sets out a global framework to limit global warming to well below 2 °C, preferably to 1.5 °C (degrees Celsius), compared to pre-industrial levels. To achieve this global temperature goal, countries aim to reduce greenhouse gas emissions as soon as possible and achieve rapid reductions thereafter, based on the best available science and economic and social feasibility.

Mean yearly temperature, trend and anomaly, 1979–2022.

Sonār Char 21.83 N, 90.49 E.

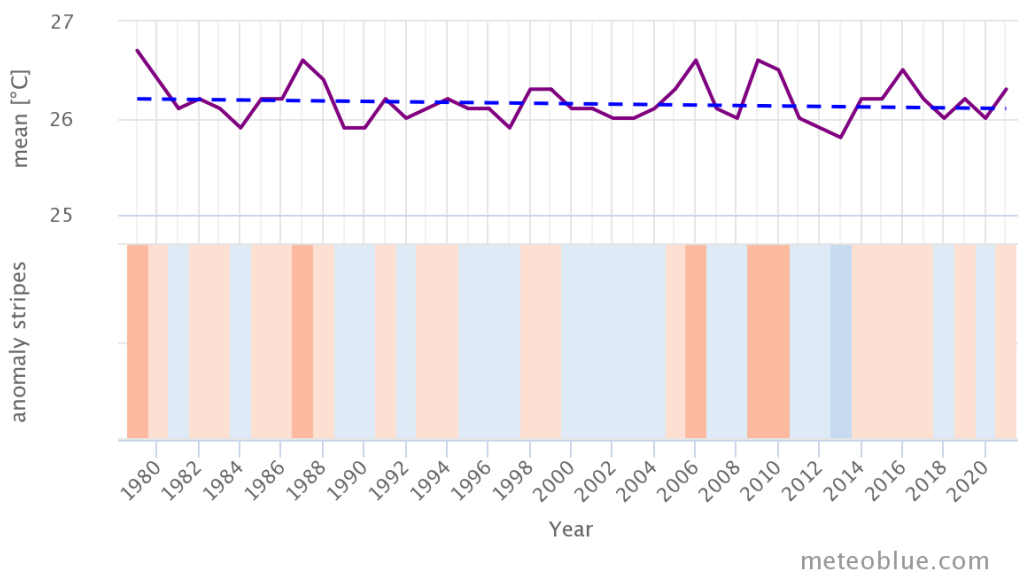


Figure 5: Temperature Trend Analysis of Sonar Char and Surrounding Area

(Source: Meteoblue, 2022)

Climate change is already causing rising air temperatures, melting glaciers and shrinking polar ice caps, rising sea levels, increased desertification, and more frequent extreme weather events such

as heat waves, droughts, floods, and storms. Climate change is not globally uniform and affects some regions more than others. In the following diagrams, you can see how climate change has already affected the region of Sonār Char during the past 40 years. The data source used is ERA5, the fifth generation ECMWF atmospheric reanalysis of the global climate, covering the time range from 1979 to 2021, with a spatial resolution of 30 km. The data will not show conditions at an exact location. Micro-climates and local differences will not appear. Therefore, temperatures will often be higher than those displayed, especially in cities, and precipitation may vary locally, depending on topography.

The above graph shows an estimate of the mean annual temperature for the larger region of Sonār Char. The dashed blue line is the linear climate change trend. If the trend line is going up from left to right, the temperature trend is positive and it is getting warmer in Sonār Char due to climate change. If it is horizontal, no clear trend is seen, and if it is going down, conditions in Sonār Char are becoming colder over time. In the lower part of the graph, the so-called warming stripes appear. Each colored stripe represents the average temperature for a year—blue for colder and red for warmer years.

Mean yearly precipitation, trend and anomaly, 1979–2022.

Sonār Char 21.83 N, 90.49 E.

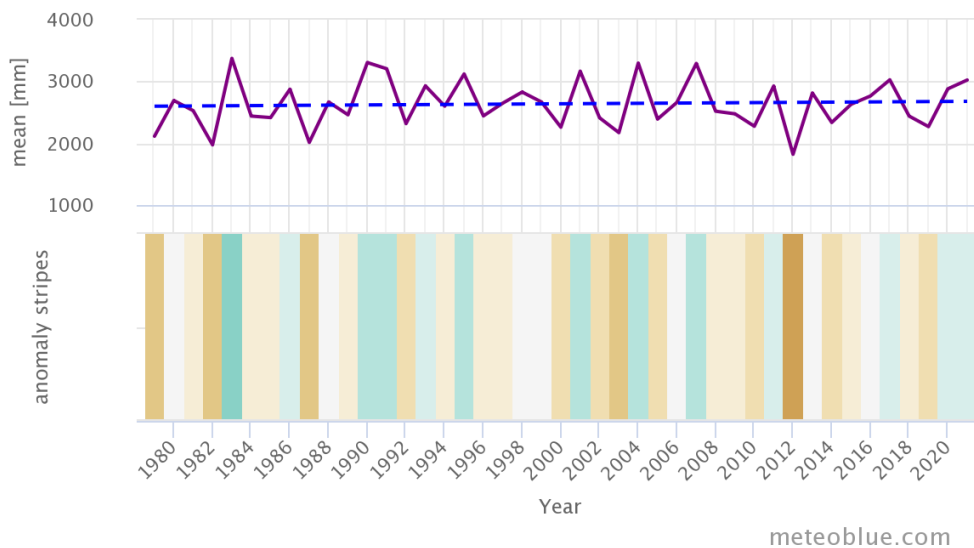


Figure 6: Precipitation Trend Analysis of Sonar Char and Surrounding Area

(Source: Meteoblue, 2022)

The top graph shows an estimate of mean total precipitation for the larger region of Sonār Char. The dashed blue line is the linear climate change trend. If the trend line is going up from left to right, the precipitation trend is positive and it is getting wetter in Sonār Char due to climate change. If it is horizontal, no clear trend is seen, and if it is going down, conditions are becoming

drier in Sonār Char over time. In the lower part of the graph, the so-called precipitation stripes are shown. Each coloured stripe represents the total precipitation of a year—green for wetter and brown for drier years.

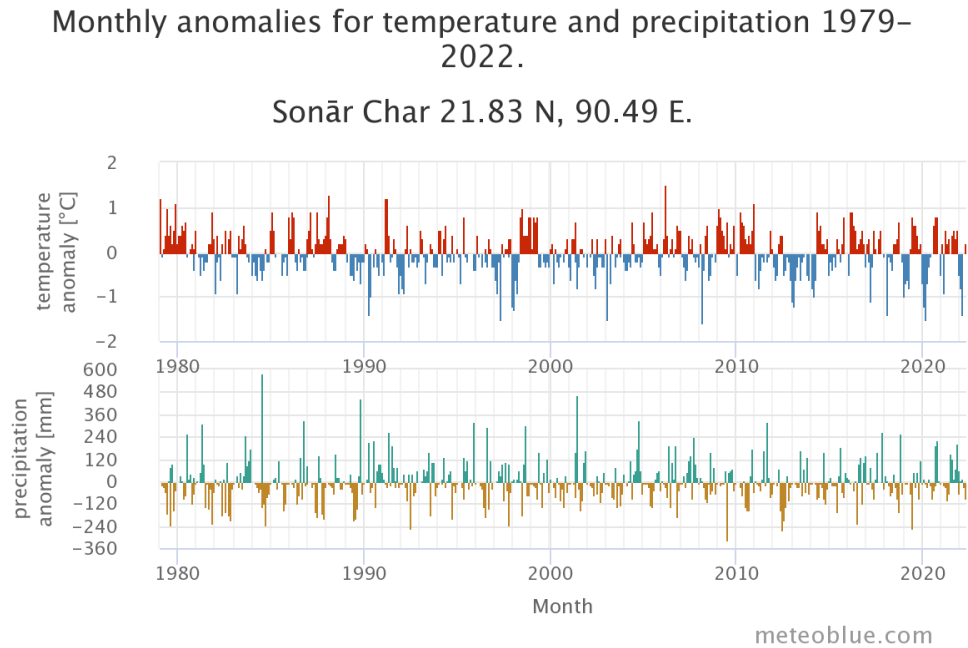


Figure 7: Monthly Precipitation and Temperature Trend Analysis of Sonar Char

(Source: Meteoblue,2022)

The above graph shows the temperature anomaly for every month from 1979 up to now. The anomaly tells you by how much it was warmer or colder than the 30-year climate mean of 1980-2010. Thus, the red months were warmer and the blue months were colder than normal. In most locations, you will find an increase in warmer months over the years, which reflects the global warming associated with climate change. The lower graph shows the precipitation anomaly for every month from 1979 up to now. The anomaly tells you if a month had more or less precipitation than the 30-year climate mean of 1980-2010. Thus, green months were wetter and brown months were drier than normal.



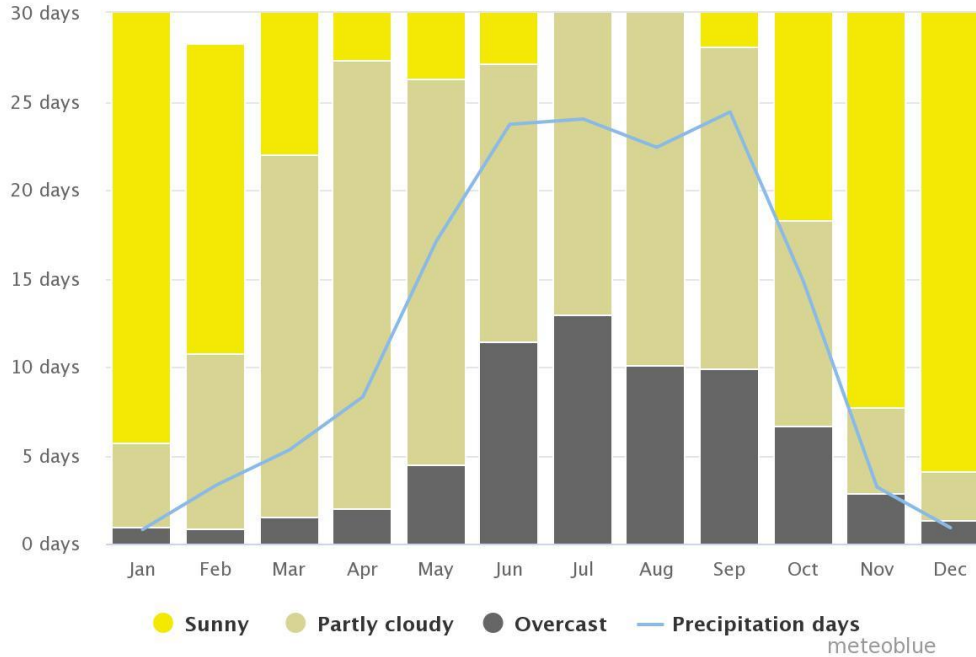


Figure 8: Cloudy, and Sunny Days Sonar Char and Surrounding Areas

(Source: Meteoblue, 2022)

The ideal months to visit Sonar Char are November, December, January, and February. The weather becomes reasonably quiet throughout these months, and the days are longer than on other days of the year. The amount of precipitation is higher between April and October.

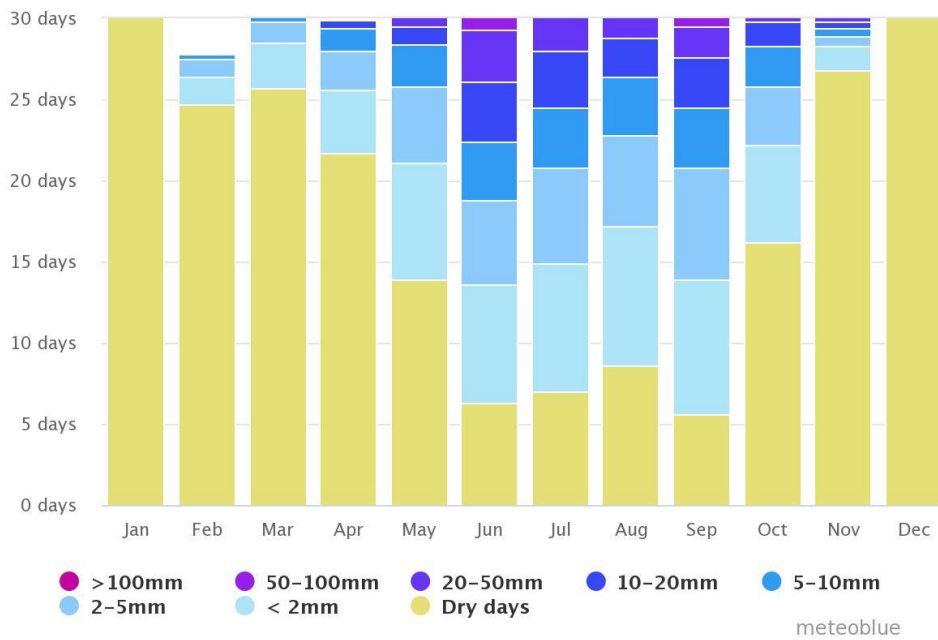


Figure 9: Amount of Precipitation in Months

(Source: Meteoblue, 2022)

The graph demonstrates that the weather becomes dry from November to March. These months are a better time to visit Sonar Char and the surrounding area.

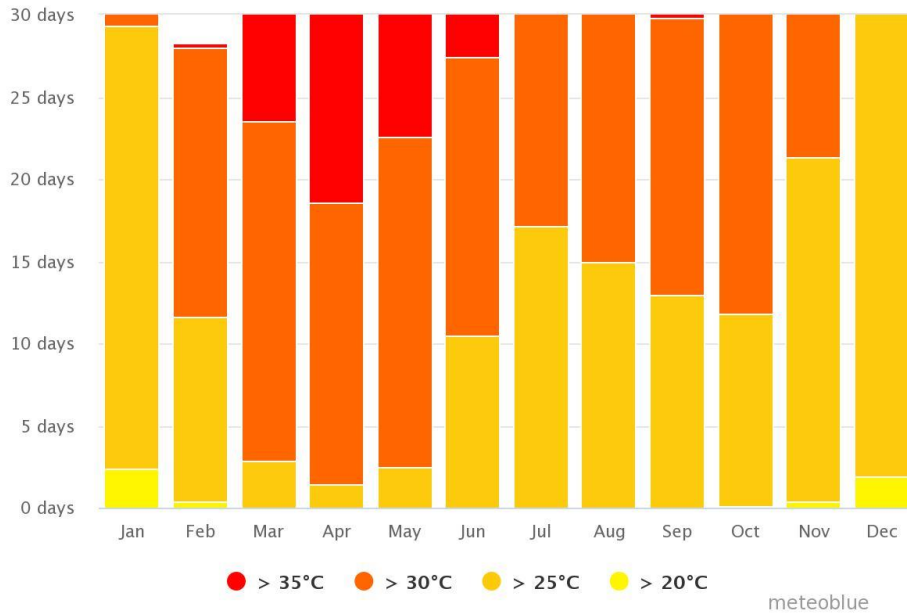


Figure 10: Temperature Variation in Sonar Char and Surrounding Areas

(Source: Meteoblue, 2022)

The months of November, December, and January are the coldest of the year. In the months of March, April, and May, the temperature is over 30 degrees.

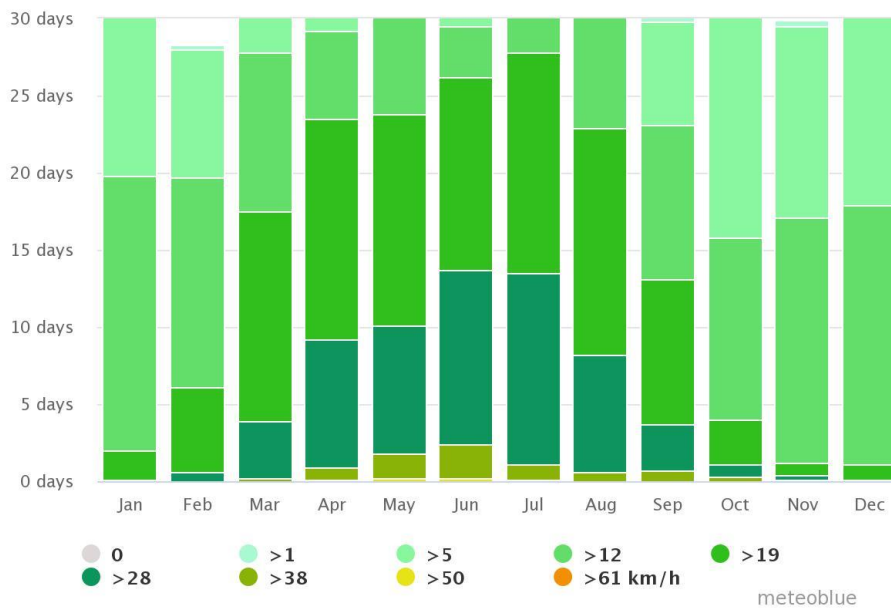


Figure 11: Wind Speed in the Months

(Source: Meteoblue, 2022)

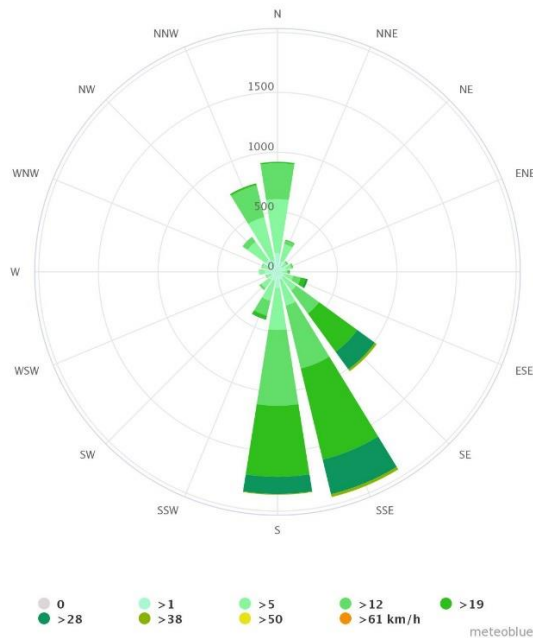


Figure 12: Wind Direction (Wind Rose Diagram) for Sonar Char and the Nearest Locations

(Source: Meteoblue, 2022)

The wind rose above shows that during this particular period a strong wind blew from the south-south-east, from the south and the southeast corner of the Sonar Char.

### 1.6.3 Disaster Risk of Sonar Char and Surrounding Area

People in the Sonar Char live in an extremely dynamic estuarine environment. A comprehensive disaster management program (CDMP) is being implemented. Lack of safe drinking water has been identified as the number one issue for coastal population. The coastal zone experiences extensive ecosystem degradation. The Bangladesh Bureau of Statistics generated this map in 2011 to show six natural disasters, including cyclones, floods, and drought. In this study, the number of human settlements in the studied area is considered. Only Char Montaz and Andar Char have a higher population density in Soanr Char and the surrounding area. Andar Char and Sonar Char have a low disaster risk. The majority of Sonar char and Char Taposhi/Kolagasi is covered with forest.

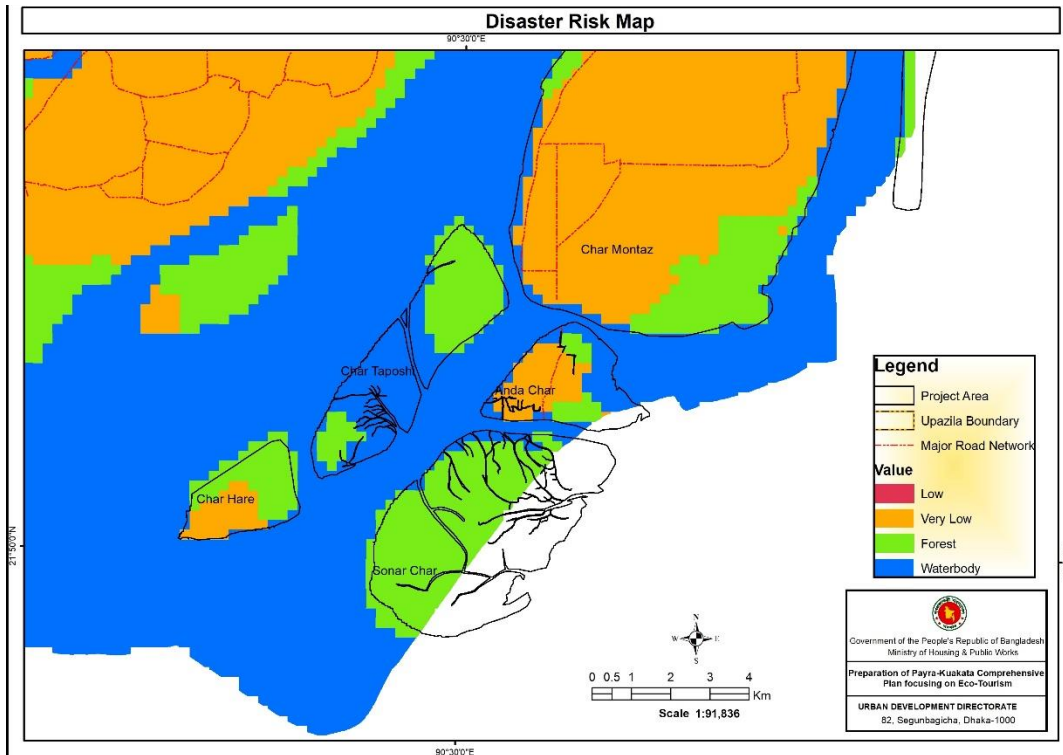


Figure 13: Disaster Vulnerability of Sonar Char and Surrounding Area

(Source: Disaster Atlas, BBS, 2018)

# CHAPTER TWO

## 2.1 Understanding Tourism and Eco-tourism Facilities

Tourism has grown from the pursuits of a privileged few to a mass movement of people with the urge to discover the unknown environment, to undergo new experiences, and the desire to be both educated and entertained. Tourism is now a rapidly emerging and rapidly growing industry in both the global and rural economies, particularly in developing countries. The importance of tourism as an instrument of economic development and employment generation is recognized all over the world. Data from various global organizations, including the World Tourism Organization (WNTTO), show that tourism contributes significantly to a country's GDP and foreign exchange reserves. Bangladesh is a land of scenic beauty with verdant forests, reverie countryside and long structures of sun-bathed beaches, fearsome wilds, meandering rivers and venerable shrines, which hold high potential for tourism. This country needs a proper strategy and policy to attract both foreign and domestic tourists. Governments as well as private sectors may come forward to create the basis of the tourism industry. From the wide variety of tourism, we need to understand the tourism opportunities for our project.

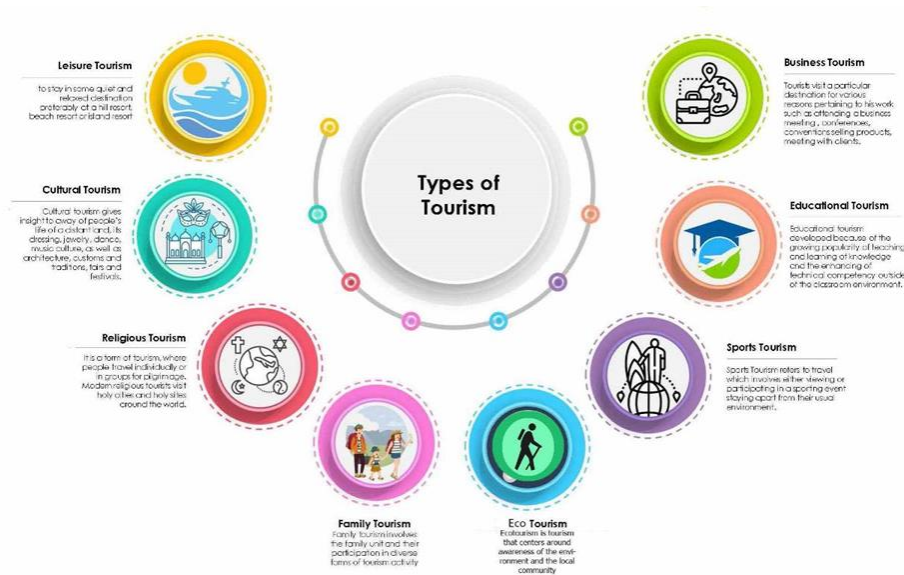


Figure 14: Types of Tourism

The project has an opportunity to explore leisure tourism, cultural tourism, family tourism, ecotourism, sports tourism, and educational tourism. The port area has a small possibility of business tourism. A survey may be needed to explore religious tourism.

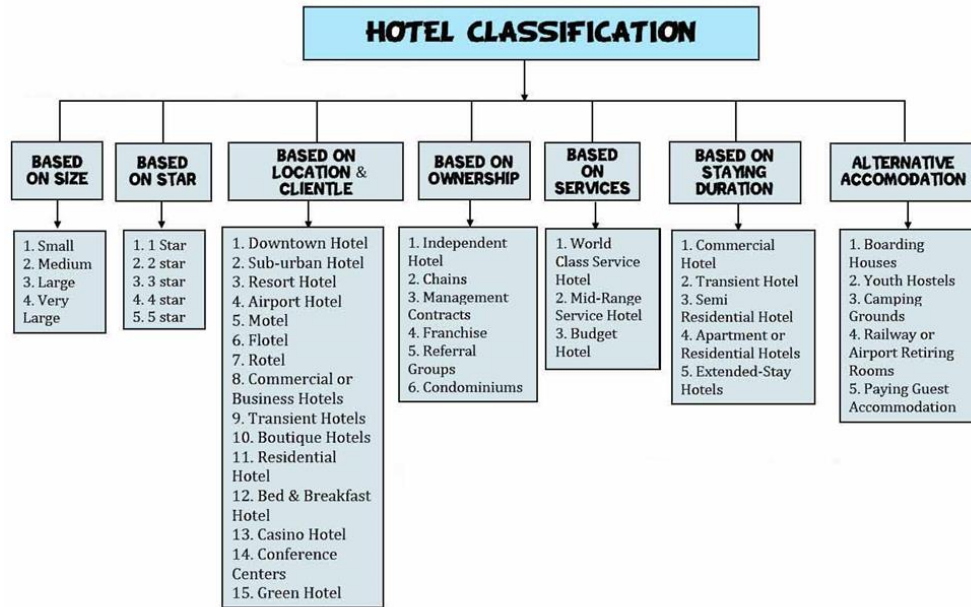


Figure 15: General Classification of Hotel

From the variety of hotel types, motels, resorts, and restaurants will have the opportunity to open or expand in the proposed area. These hotels and restaurants will serve both domestic and international tourists in the future. A good business model and research must be accommodated in Sonar Char.

## 2.2 Understanding of Eco-tourism and Community

Eco-tourism has become very important to our society, since it deals with the preservation of natural areas and the wellbeing of the local people and their communities. Issues arise when there is not an adequate understanding and interconnectedness between tourists, communities, and our environment.

This conflict has been present for years, and there is a need to inform the world about this crisis because of the destruction of our surroundings. Our future depends on saving our planet. Currently, people are focused on their own daily routines, not considering that ahead of us there is an issue that has been following us for such a long time, and there has been so little done to resolve it.



Contemporary approaches |

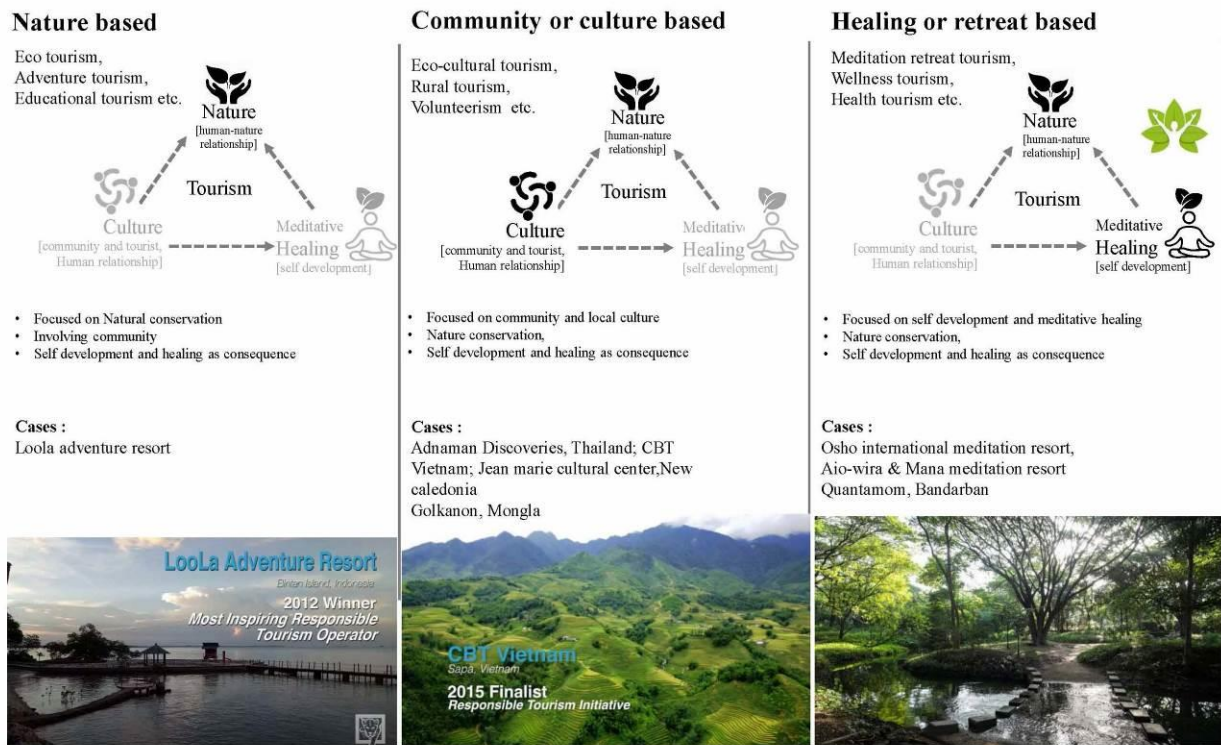


Figure 16: Relationship of Eco-tourism and Community

Eco-tourism is about caring for nature, trying to conserve our environment, with as minimal impact on our surroundings as possible. Again, sustainable architecture tries to minimize the negative environmental impact on the environment of buildings by enhancing efficiency and careful use of materials, energy, and space efficiency. In many cases, however, we, as designers, are not aware of "sustainable" architecture and its real meaning. With new discoveries and technologies, we have forgotten how to build with the environment. Therefore, the main challenge for us as designers, is to find solutions that do not disturb the environment.

The proposal for designing a sustainable tourism model and/or an eco-lodge near an eco-tourist location should be connected to the community and nature. That will accommodate not only tourists coming to visit the area but also local people who are going to interact with the tourists in a social and cultural aspect. A sustainable model will be introduced, while at the same time giving these local people employment opportunities, improving their quality of life while still preserving their culture. Architects, designers, and planners have some social responsibility along with ecological design.

*Successful characteristics of ecotourism include:*

- Minimizing the negative impacts on nature and culture that can damage a destination.

- Educating the traveler on the importance of conservation.
- Stressing the importance of responsible business and working in cooperation with local authorities and people to meet local needs and deliver conservation benefits.
- Directing revenues to the conservation and management of natural and protected areas and biological diversity.
- Emphasizing the need for both regional tourism zonings and visitor management plans designed for either regions or natural areas that are slated to become eco-destinations.
- Emphasizes the use of environmental and social baseline studies as well as long-term monitoring programs to assess and minimize impacts.
- Maximizing economic benefit for the host country, local businesses and communities, particularly those living in and adjacent to natural and protected areas.
- Supporting the economic empowerment of communities through training and hiring local people, paying fair wages and benefits, buying supplies locally, and supporting local ownership or joint ventures with outside business or NGO partners of tourist families and concessions.
- Ensuring that tourism development does not exceed the social and environmental limits of acceptable change as determined by researchers in cooperation with local residents.
- Relying on infrastructure that has been developed in harmony with the environment: minimizing use of fossil fuels, conserving local plants and wildlife, and blending with the natural and cultural environment.

### 2.3 Architectural Indicators for Eco-Tourism

The following issues should be addressed well when designing the architectural conceptual model:

The Design: An efficient plan is a simple and effective method of limiting the environmental "footprint" of the building. He should be sensible to the local site context and ecology.

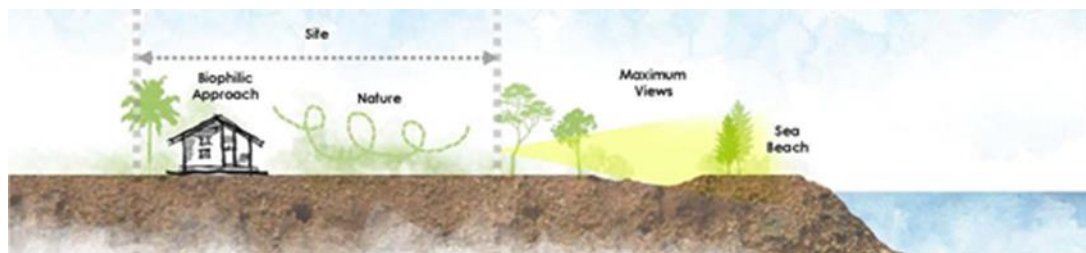


Figure 17: Efficient Planning with Nature and Sea



A conceptual design may be awarded after vigorous study of the site, community, climate, and context.

*Structure and Materials:* Sustainable structures and materials should be selected where building materials will be lightweight and allow for simple construction techniques. A limited number of materials should be used to minimize the amount of wastage.

*Thermal Comfort:* A combination of thermally sensitive design and openable windows allows for efficient and effective cooling from cross ventilation. By shading the house during hot summer days and opening it during the cool evenings, comfortable conditions can be maintained without air conditioning.

*Ancillary Services:* A well-connected network of back house hospitality will be the prime objective of a decent resort.

*Site Specific Development Responses:* Design should address the sites. Before designing the retreat, the designer should study the context. If the site is eco-sensitive, the design should be environmentally friendly.

*Fire Protection Considerations:* forest and non-permanent building materials are characterised by a high level of fire hazard. It will be the responsibility of designers to accomplish the considerations of fire detection (FDS) and fire protection systems (FPS).

*Safety and Security:* Safety and security are the prime responsibility of the complex operator and local authorities.

*Water:* The water source for the lodge is supplied by rainwater collectors from the roofs and preserves into tanks or ponds. This water is used for showers, kitchen use, and bushfire protection. Rainfall in the area is providing an adequate water supply.

*Waste:* organic kitchen waste is treated on site through a dry composting system. Waste is passed through a 'digester' where it is further filtered. Solid waste is recycled where possible. The retreats rely on an Envirocycle septic system. The Envirocycle system is an aerobic waste treatment system that recirculates clean, nutrient-rich water into the surrounding landscape.

## **2.4 Current Scenarios and Eco- tourism Potentials in Sonar Char and Surrounding Area**

Sonar Char and the neighbouring Char offer a plethora of tourist development potential. The region is home to a diverse range of flora and fauna, as well as numerous scenic wonders. The region is perfect for tourist development because of its forests, beaches, lakes, and rivers. An Action Area Plan was created based on a number of tourist-friendly areas. It finds five unique Chars with essential traits that may entice domestic and international tourists. The distinctive traits and facilities of five of these destinations make them appealing. There are two char (a small island) that have both mangrove forest and beaches. To ensure the correct development of these Char, an Action Area Plan was created to ensure the provision of adequate and proper tourist service infrastructure in order to attract tourists from both within and outside the country.

### 2.4.1 Sonar Char

Sonar Char is around 18 square kilometers in size. The trees had been uprooted, leaving Sonar Char bare. Recognizing Sonar Char's tourism potential, Bangladesh Parjatan Corporation (BPC) suggested a tourist complex that would contain a youth inn, a café, picnic huts, an outdoor party area, and eco-cottages. However, due to a lack of communication infrastructure, inadequate lodging, and inadequate utility services, the project is now unviable. Sonar Char is developing an ecotourism industry with unique foreign visitor amenities like private cottages, pavilions, and tents. This tourist attraction will be transformed into something like India's Aman-i-Khás, Indonesia's Amanwana, and the Philippines' Amanpulo.



Figure 18: Natural Beauty of Sonar Char and Surrounding Char

In 1975, the Patuakhali Forest Department assumed responsibility for reforesting the char. The department covered up to 5.5 acres of land with kewra, Andari, khulsi, and koroï plants. Many plants also grow on their own due to natural processes. Sonar Char was transformed into a beautiful woodland because of these plants.



Figure 19: Beautiful Beach of Sonar Char

(Source: *facebangla*)

A large number of red crabs may be seen on the beach. Many different bird species can be seen, especially during the winter when migrant birds arrive. Sonar Char is rich in biodiversity, including foxes, bulls, boars, monkeys, and other animals. In two rounds of Sonar Char in 1995, a total of nine deer were freed. At this time, there are no confirmed numbers on the overall number of deer in the Char, but many can be seen grazing throughout the woodland.

#### 2.4.2 Andar Char

Sonar Char and Char Montaz are about two nautical miles away. Between Sonar Char and Char Montaz, this is the closest Char. This Char is expected to be created solely for international tourists, with a variety of modern facilities. The population of this Char is currently around 4,000 people. A small wooded area can be found in the northern part of the Char. The remainder of the Char is used for agriculture. The geological conditions in this Char are generally stable, allowing for the construction of environmentally friendly infrastructure.

#### 2.4.3 Char Taposhi/Kolagasi

The Sonar Char and Char Unda are located to the west of Char Taposhi/Kolagasi. This Char is ideal for a jungle adventure. The Char is densely forested with mangroves. Water, plants, and fauna are available to foreign visitors. It would be ideal to spend time in a tree house. In Char Taposhi/Kolagasi, there are no people.

#### 2.4.4 Char Hare

Sonar Char and Char Taposhi/Kolagasi are located to the west of Char Hare. Unlike the Sonar Char and Char Taposhi/Kolagasi, this Char is geologically stable. A mangrove cover can be seen on the Sonar Char's southern side. Plenty of flat ground is accessible for construction along the Char's southern reaches. On the southern side of the Char Hare River, there is a long and magnificent beach. Camping and meditation are both allowed in this region.

# CHAPTER THREE

## 3.1 Action Area Plan of Sonar Char and Surrounding Area

The Action Area Plan (AAP) is re-examining land uses in the Sonar Char and adjacent areas for ecotourism in order to make the most use of the available land. The Action Area Plan outlines comprehensive land use distributions and establishes a schedule for implementing ideas in regions of transition, such as Sonar Char. Surrounding four Char of Sonar Char namely Char Montaz, Char Hare, Char Andhar, and Char Taposhi/Kolagasi action area plan for exclusive foreign tourist zone has been proposed, expecting this will offer tourists to enjoy river cruising. Moreover, the biodiversity of each char has been considered fully to develop the Char as ecofriendly. The four distinct char has been considering to minimize the effects on a particular chat due to the developments and tourist activities. The total area for the construction of various facilities in Char Montaz, Andhar Char, and Char Hare is 217.12 acres, 206.57 acres, and 18.26 acres, respectively.

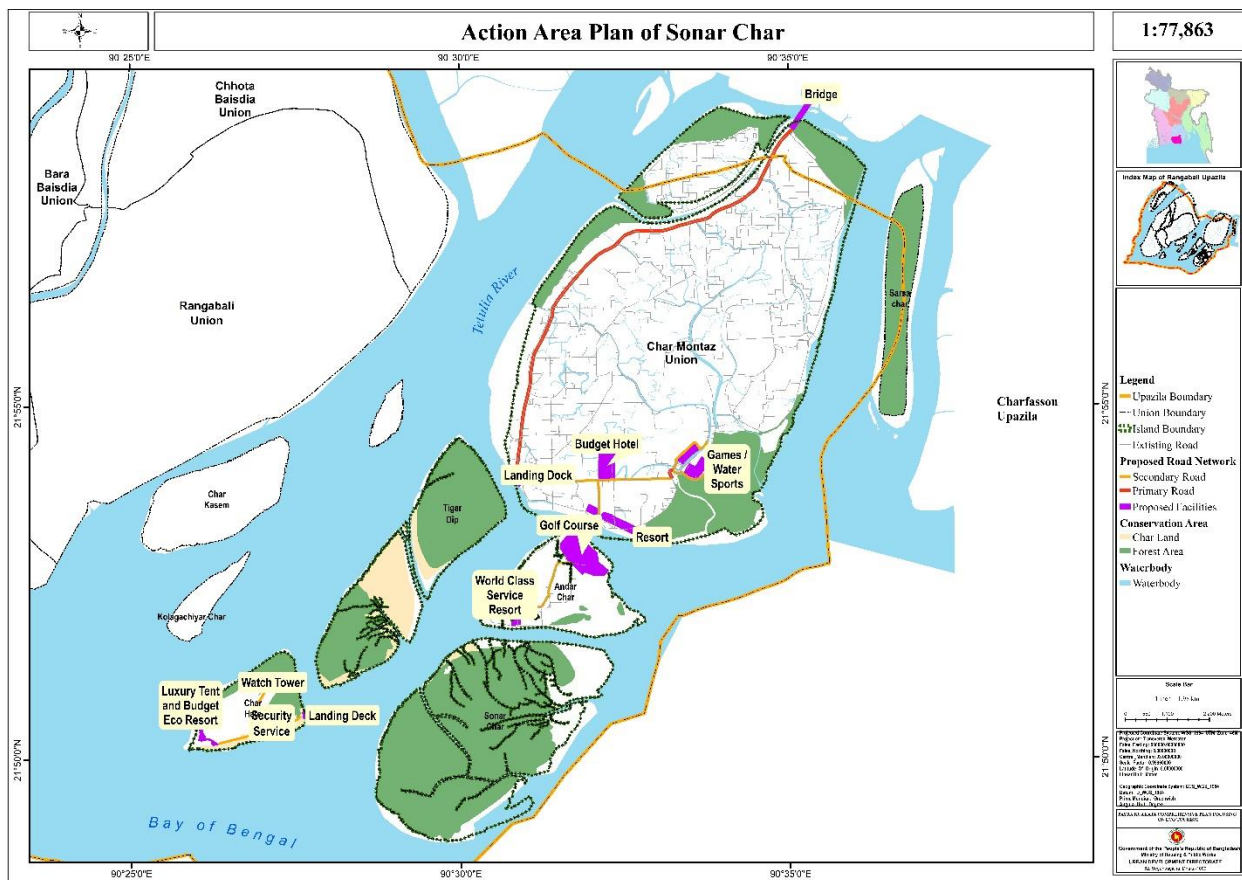


Figure 20: Action Area Plan of Sonar Char and Surrounding Area

This involves considering the proposed land uses in the Sonar Char and surrounding Chars, as well as other relevant policies; consulting with the local community on current needs and priorities; taking advice from technical development specialists about what is possible; and putting together an Action Area Plan to guide the future development of the area. At each stage of the Action Area

Plan preparation, the community and stakeholders have been contacted and invited to participate. Every step of the Action Area Plan's creation looked at local challenges that the new policy framework would address and identified viable development solutions. The Action Area Plan may also include other elements, such as design criteria. There are two types of infrastructure one is hard infrastructure and other is soft infrastructure that need to be developed for feasible the project for a long run. In the Sonar Char and nearby area, Char Montaz is the largest of the Char. For the significance of this place, a stunning roadside landscaping may be developed on both sides of the road. On the Char's southern shore, there is a boat dock, which will be completed with modern amenities for boats and water vehicles. At plot number 171, a hotel-motel zone will be constructed. Andar Char is located between Sonar Char and Char Montaz. The government can easily engage these people for future tourist-related facilities. Eco-resort, villa type tent, entertainment and sports area, and an adjustable dock for boats are among the amenities. The sonar char's action area is both environmentally benign and limited. Tourists can enjoy loungers, watch towers, tree houses, jungle safaris, rafting boats, floating docks, and flotels. To the east of Char Hare, Sonar Char and Char Taposhi/Kolagasi can be found. Along the Char's southern reaches, there is plenty of flat area to build luxury tents and relax areas. There is a mangrove forest in this area. Tourists can enjoy watch towers, tree houses, jungle safaris, rafting boats. Near Char Taposhi/Kolagasi , a movable dock must be constructed. This Char is located to the western side of the Char Andar and Sonar Char.

### **3.2 Development Cost Calculation**

This section determines a preliminary cost for the development of eco-tourism. The cost is calculated based on the function and use of the amenities. The use of eco-friendly design to promote tourism is a source of worry. Sonar Char is a protected area, so any construction or development is prohibited. All of the facilities in Sonar Char and the surrounding area will be environmentally friendly and have a low carbon footprint. In this location, biodegradable products and easily transportable structures should be prioritized during development. In Sonar Char and the adjacent area, temporary structures such as luxury tents will be preferred. Local raw materials will be used to build flotels.

#### **3.2.1 Development of Char Andar**

Andar Char is located between Sonar Char and Char Montaz. This is the perfect location to develop luxury and modern facilities for tourists. There are plenty of facilities that will be developed to serve as more authentic and eco-friendly facilities for foreign tourists. This is a perfect location for foreign tourists to spend quality time. This Char has only four thousand people. The government can easily engage these people for future tourist-related facilities and services. The Andhar Cahr action area plan has a variety of tourist-friendly amenities. A golf course and a world-class resort are amenities. The figure 21-23 includes a description of each facility's entire layout plan.





Figure 21: Action Area Plan of Andhar Char



Figure 22: Proposed Layout Plan of Resort in Andar Char





Figure 23: Proposed Layout Plan of Resort in Andar Char


Eco-resort, villa type tent, traditional type resort, entertainment and sports area, multifunctional sports complex (gym, swimming pool), mini golf ground, mud bath pond, BBQ place, party square, security facilities, police station, fire service facilities, health care facilities, and an adjustable dock for boats are among the amenities that could be built in this Char.

Table 2: Approximate Cost for Development of Andar Char

Facilities /Items	Mauza (Andar Char), Plot	Quantity	Area (Sq. Feet)	Approximate Cost (Cr. Taka)	Tentative Theme
Eco-Resort					
Villa Type	170 (153)	20	800	8	
Tent Type	170 (153)	16	400	6	



Traditional Type	170 (153)	16	600	6	 <p>Amanwana Tent Resort, Indonesia</p>  <p>Diphlu River Lodge, India</p>  <p>Rua Resort, Indonesia</p>
<b>Entertainment/Sports Area</b>					
Multifunctional Sports Complex (Gym, Swimming Pool, Shelter)	170 (153)	1	100000	80	 <p>Pool and Sports Thailand</p>
Mini Golf Ground	170 (153)	1	304920	0.35	
Mud Bath Pond	170 (153)	-	2000	1	 <p>Mud Bath Place Vietnam</p>
BBQ Place/Party	170 (153)	1	43560	1	 <p>BBQ place Thailand</p>
<b>Security /House Keeping</b>					
Police, Fire Service, Health, Utilities etc.	170 (153)	-	60000	48	

Dock (Adjustable)	-	2	5000	0.50	
Total Infrastructure Development Cost			517280	150.35	
Furnishing Cost			-	90	
Total			-	240.35	

### 3.2.2 Development of Sonar Char

This is an ecologically sensitive area as well as a low-salinity animal sanctuary. There is a reserve forest in this area. The sonar char's action area is both environmentally benign and limited.

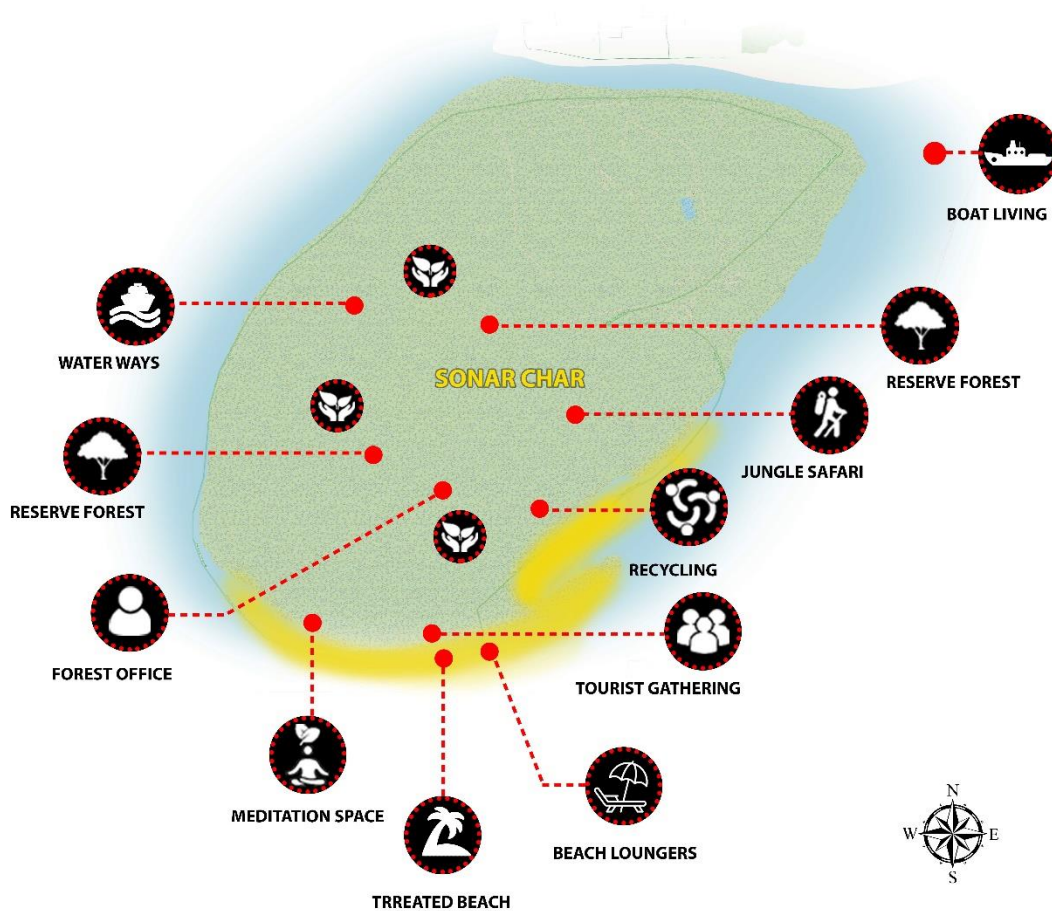


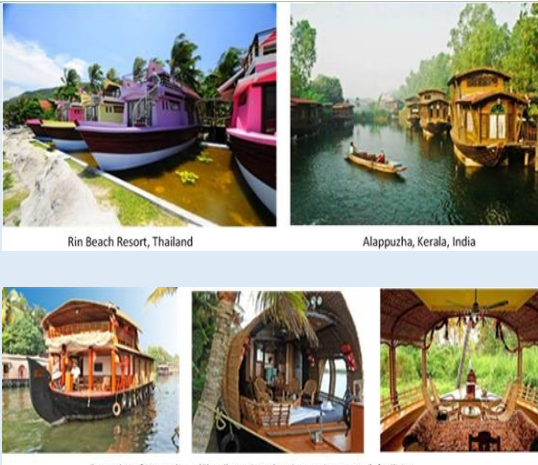







Figure 24: Action Area Plan of Sonar Char:

Tourists can enjoy loungers, watch towers, tree houses, jungle safaris, rafting boats, exclusive floating docks, and flotels in sonar char. Near Sonar Char, a movable dock must be constructed. Beach nourishment, whether permissible or regulated, may be a viable option for protecting the beach from erosion.

Table 3: Approximate Cost for Development of Sonar Char

Facilities/Items	Quantity	Area (Sq. Feet)	Approximate Cost (Cr. Taka)	Tentative Theme
Beach Nourishment	-	-	25	 <p><b>Beach nourishment (East Sussex, UK)</b></p>
Dock (Adjustable)	2	5000	0.50	 <p><b>Floating Dock China</b></p>
Floating Hotel/Boat (Anchored)	10	-	3	 <p>Rin Beach Resort, Thailand      Alappuzha, Kerala, India</p> <p>Examples of House boat (Flotel) tourism showing environment &amp; facilities</p>
Rafting Boat	20	-	2	 <p><b>Rafting/Floating Boat</b></p>






Exclusive Floating Dock	5	-	0.25	
Loungers	100	-	2	 <small>Beach Loungers in Caribbean Islands</small>
Watch Tower	4	-	1	
Tree House	15	-	1.5	
Embankment	-	-	5	
Jungle Safari	-	-	8	 <b>Mangrove Jungle Safari</b>
Total Infrastructure Development Cost		5000	48.25	
Total Furnishing Cost		-	15	
Total Cost			63.75	

3.2.3 Development of Char Taposhi/Kolagasi

There is a mangrove forest in this area. Tourists can enjoy watch towers, tree houses, jungle safaris, rafting boats. Near Char Taposhi/Kolagasi, a movable dock must be constructed. This Char is located to the western side of the Char Andar and Sonar Char.

Table 4: Approximate Cost for the Development of Char Taposhi/Kolagasi

Facilities/Items	Quantity	Area (Sq. Feet)	Approximate Cost (Cr.)	Tentative Theme
Jungle Safari	-	-	8	 <b>Mangrove Jungle Safari</b>
Tree House/Eco resort/Tent	15	-	1.5	
Dock (Adjustable)	2	5000	0.50	 <b>Floating Dock China</b>
Watch Tower	4	-	1	
Total Infrastructure Development Cost			11	
Total Furnishing Cost			0.1	
Total Cost			11.1	




### 3.2.4 Development of Char Hare

To the east of Char Hare, Sonar Char and Char Taposhi/Kolagasi can be found. This Char is geologically stable, unlike Sonar Char and Char Taposhi/Kolagasi. On the Sonar Char's southern bank, a mangrove cover may be seen. Along the Char's southern reaches, there is plenty of flat area to build on. A lengthy and lovely beach may be found on the Char Hare's southern shore. In this area, both camping and meditation are permitted. To convey the tourists from another Char, authority will need an adjustable dock. For camping in this Char, tree huts and temporary luxury tents are ideal. To the south of the beach is a lovely and magnificent beach, which is even additional advantage for spending quality time. Detail of the plan given below.



Figure 25: Action Area Plan of Char Hare

Table 5: Approximate Cost for the Development of Char Hare

Facilities/Items	Quantity	Area (Sq. Feet)	Approximate Cost (Cr. Taka)	Tentative Theme
Jungle Safari	-	-	5	 <b>Mangrove Jungle Safari</b>
Tree House	15	-	1.5	
Dock (Adjustable)	2	5000	0.50	 <b>Floating Dock China</b>
Watch Tower	4	-	1	
Total Infrastructure Development Cost			8	
Total Furnishing Cost			0.1	
Total Cost			8.1	

### 3.2.5 Development of Char Montaz

In the Sonar Char and nearby area, Char Montaz is the largest of the Char. The connectivity of this char can be relayed to the rest of the country. There is a road network in this part of the char. For the significance of this place, a stunning roadside landscaping may be developed on both sides of the road. The Char Montaz action area plan includes numerous tourist-friendly features. Budget hotels, a game and sports zone, a resort, and a landing dock are available facilities. The figures Figure 27-29 include a description of each facility's entire layout plan.



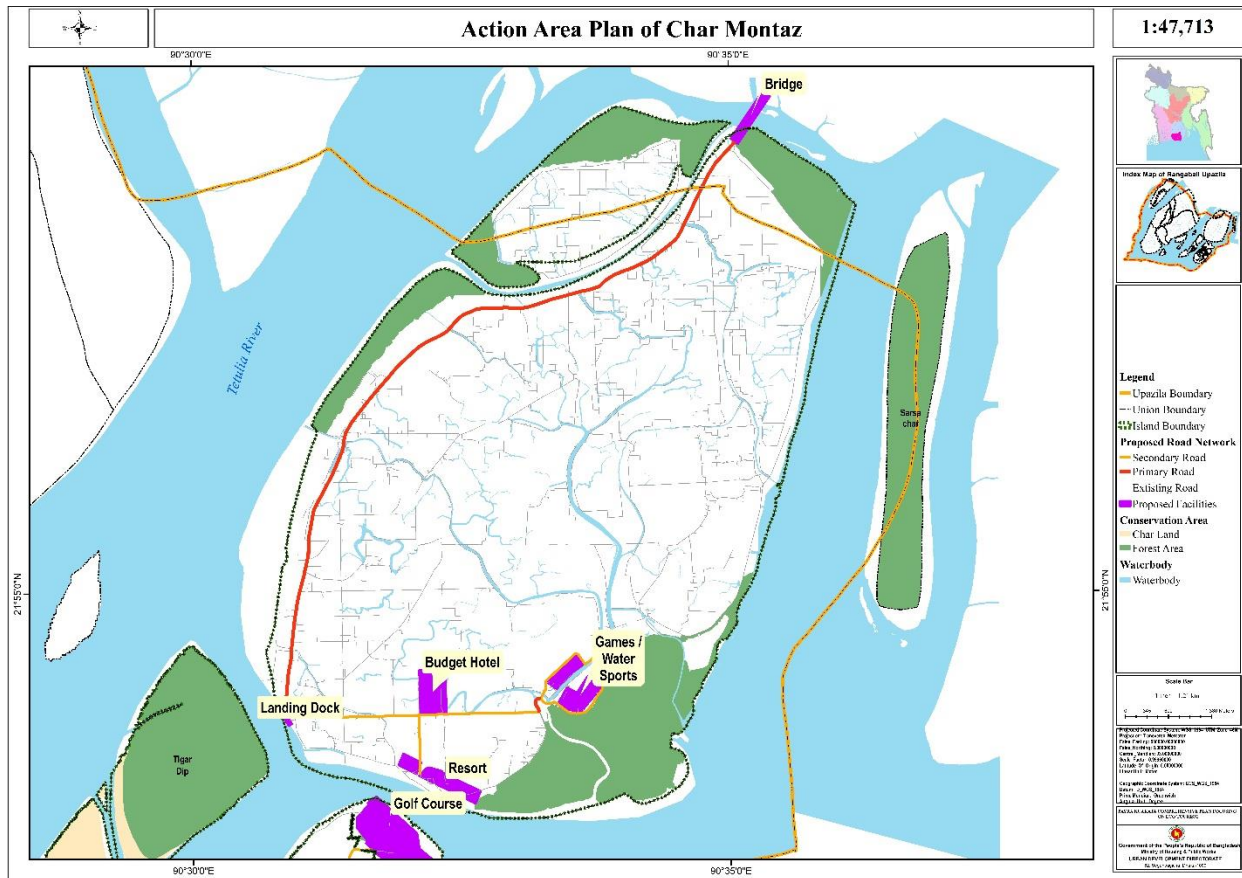


Figure 26: Action Area Plan of Char Montaz

The majority of the landscape will be natural and adaptable to the surrounding environment. On the Char's southern shore, there is a boat dock. The sonar char and surrounding canal will be accessible from this pier, which will be completed with modern amenities for boats and water vehicles. At plot number 171, a hotel-motel zone will be constructed. A helipad near the hotel and motel zone should be constructed for air connection. Before heading to Sonar Char and others char, foreign tourists will enjoy a variety of amenities in this Char. In this location, the chain hotel model works well. Apart from chain hotels, there are also budget hotels that can be used as a base for visiting tourist destinations. For the length of the day, the forest coverage area will be tuned into a pleasant setting. The Ministry of Environment, Forest and Climate Change, Bangladesh Parjatan Corporation, and the Public-Private Partnership (PPP) will collaborate to create a miniature fantasy region. Rocket Steam from Bangladesh Water Transport Corporation is another appealing option that the government would consider (BIWTC). This will serve as an important landmark and a point of interest for visitors to the area. Detail of the layout plan of each facility given below.





Figure 27: Proposed Layout Plan of Resort at Char Montaz

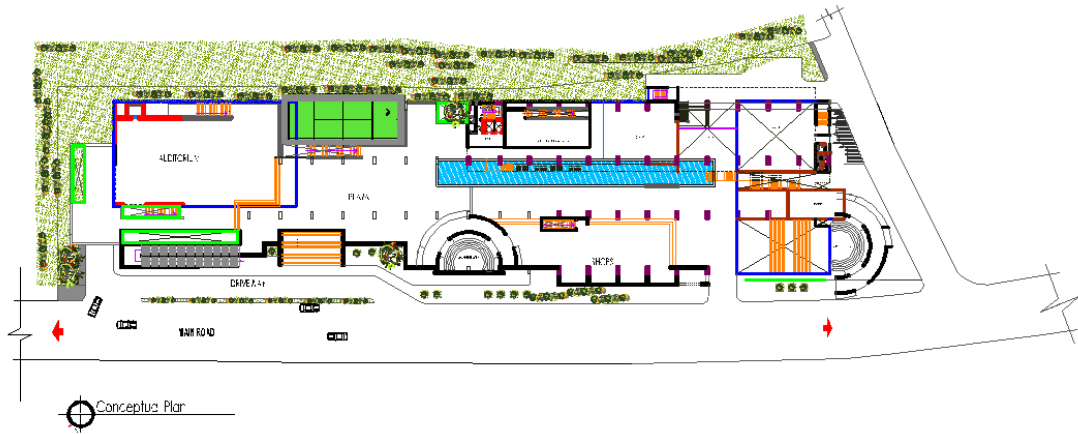


Figure 28: Proposed Layout Plan of Games zone at Char Montaz

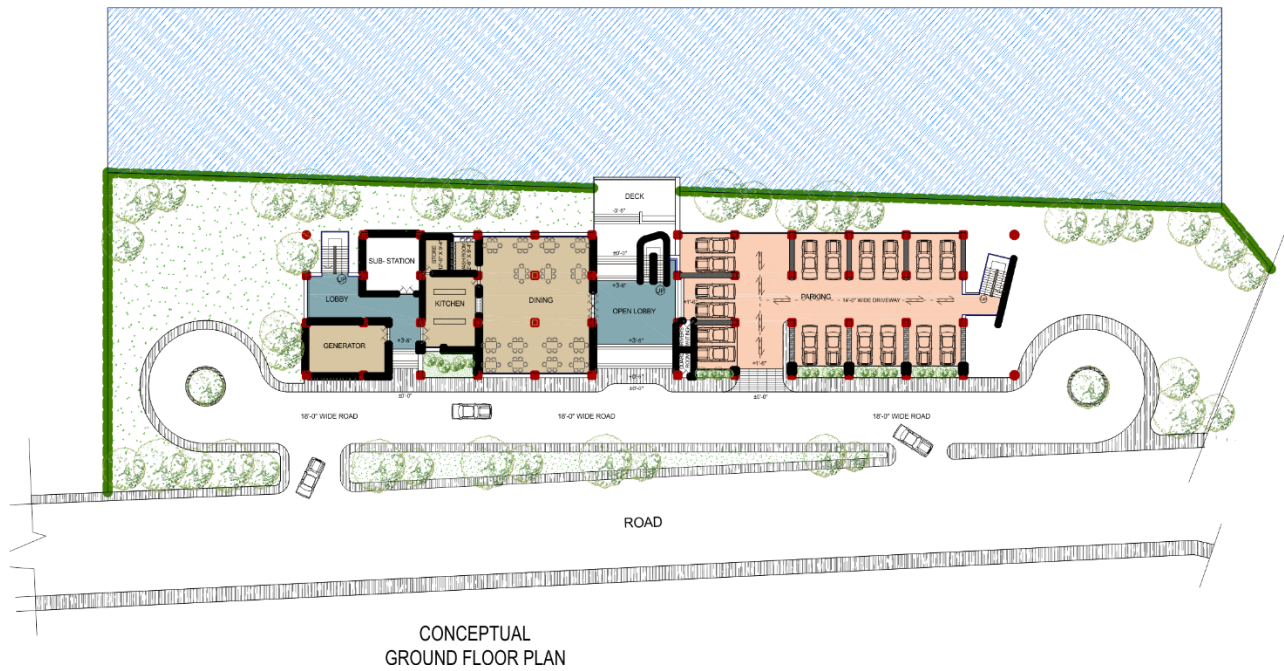



Figure 29: Proposed Layout Plan of Budget Hotel at Char Montaz

Table 6: Approximate Cost for the Development of Char Montaz

Facilities/Items	Mouza (Char Montaz) Plot	Quantity	Area (Sq. Feet)	Approximate Cost (Cr.)	Tentative Theme
<b>Economic Hotel</b>					
Economic Class	171	1 (40 Rooms)	35000	20	
<b>Exclusive Hotel</b>					
Business Class	171	1 (30 Rooms)	35000	35	
Luxurious Class	171	1 (20 Rooms)	35000	35	
Police, Fire Service, Health, Utilities etc.	171	-	60,000	48	
Total Infrastructure Development Cost				90	
Total Furnishing Cost				80	
Total			165000	308	

### 3.2.6 Transportation and Communication Facilities for Tourist

The major goal of this project is to create a comprehensive plan to boost tourism while also improving Sonar Char's socioeconomic and infrastructure development. The transportation model created as part of this project will optimise the overall transportation system as well as business operations related to major transportation hubs such as Payra Port and Kuakata Sea Beach, as well as other small-to-medium growth centres in the project area. For the future scenario, the model predicts that the projected land use change in the study region will greatly increase vehicular movement in the network, indicating that the proposed road network extension can be justified to manage future traffic demand. At the same time, the network will not become unduly congested, allowing for a reasonable amount of operational speed. This adds to the argument that the proposed road network is adequate.

The tourism business requires a flexible and well-organized transportation system. The water transport service is the primary mode of transportation between the islands or Char in Sonar Char and the surrounding area. This region, on the other hand, will establish a well-organized multimodal transportation infrastructure.

*Road Network:* Road networks exist in Char Montaz and Andar Char. In Char Montaz, there are numerous well-maintained roadways. Locals in Andar Char have access to two important roadways. The Ministry of Road Transport and Bridges will be responsible for the development of all roadways and bridge. There will be a bridge that will be connected Bhola and Char Montaz. From Proposed bridge to dock road will be widened to 100 feet. In addition, the facilities of Char Montaz will be communicate with 60 feet wide roads. In addition, Biodegradable paths will be built in the Sonar Char, Andar Char, and Char Hare for environmentally friendly development initiatives.

*Air Communication:* It is expected that foreign tourists will prefer to fly. The tour operator will be arranging a helicopter for air transport facilities. The respective government authorities will develop a helipad near the hotel-motel zone of the Char Montaz. In the future, the plan and other facilities of air transport will be available near the Payra-Kuakata region.

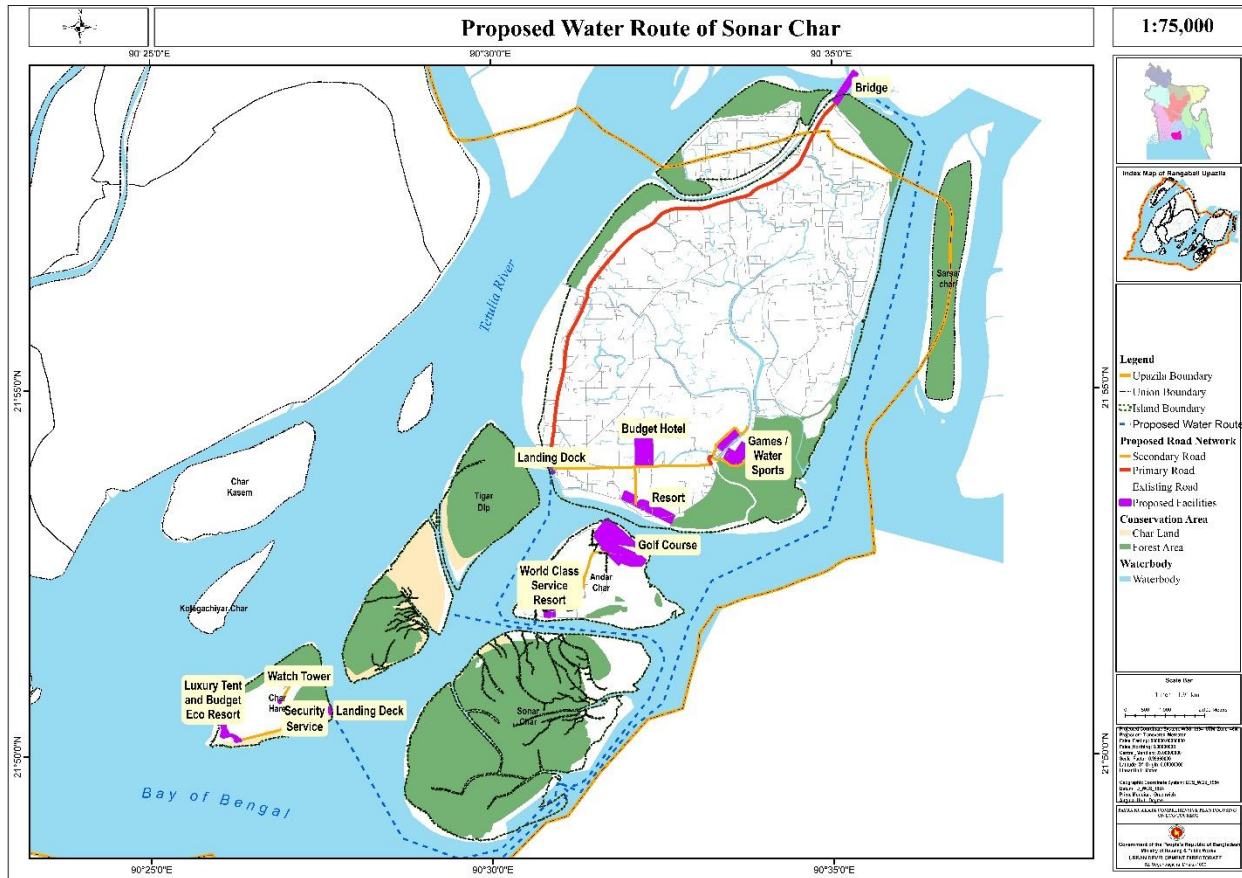


Figure 30: Water Based Communication System for Tourist

**Waterways:** Near the Char Montaz's southern end, there is a large and modern boat dock. This pier will be upgraded to provide modern tourist amenities. In the Sonar Char, Char Taposhi/Kolagasi, Andar Char, and Char Hare, a flexible and adaptable floating dock for boats will be located. In this region, a number of well-decorated and modern flotels will be available for foreign travelers. For jungle excursions and water sports, there will be a large number of rafting boats accessible. For connectivity among the Char, modern boats will be arranged.

This eco-friendly development process requires less intervention in the Sonar Char reserve forest area. The boat will be developed locally with modern facilities. Boats will be anchored in the water near the beaches. Boats will be used as hotel rooms, called flotels. Tourists enjoy the beauty of the water forest and beaches. During the Cyclones, boats will be docked in the canal in Sonar Char and in between Sonar Char and Andar Char.



## Design Concept of Flotel/ House boat

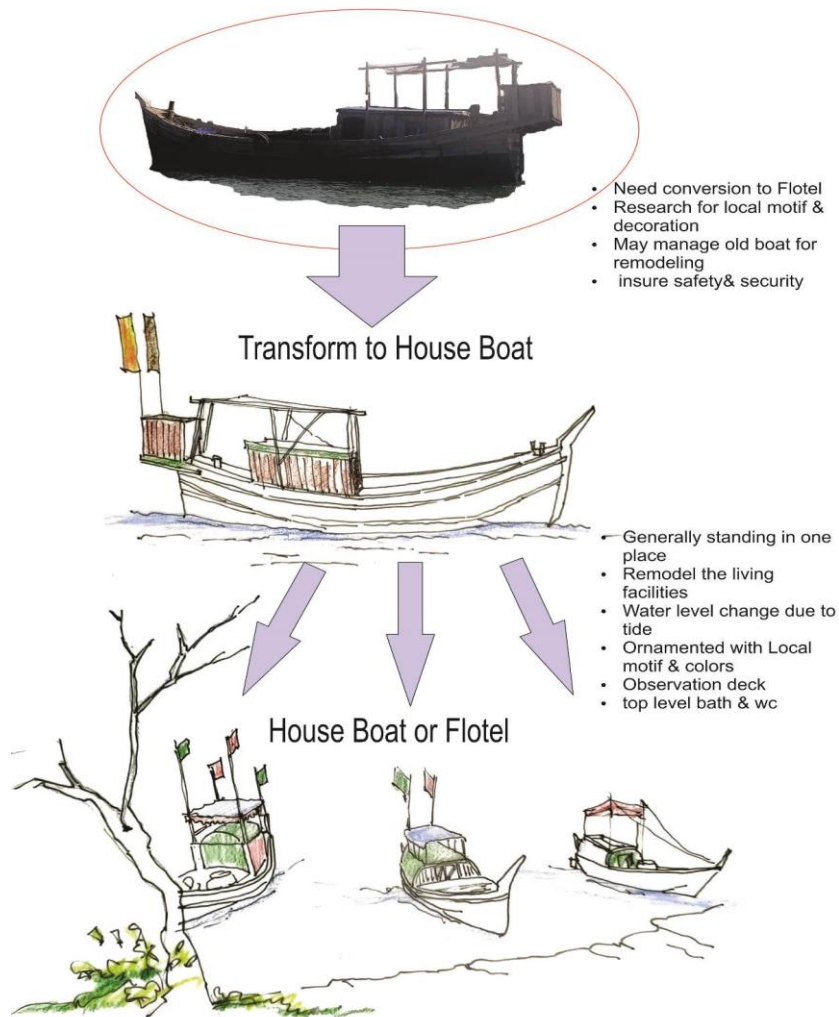


Figure 31: Anchored Flotel/Hotel Boat for Tourist in Water

Table 7: Approximate Cost for the Transportation System

Facilities/Items	Quantity	Area (Sq. Feet)	Approximate Cost (Cr. Taka)	Location
Helipad	1	3927	0.5	Char Montaz
Big Dock/Ghat	1	-	5	Char Montaz
Road-side Land Scape (Trees)	9850	-	1	Char Montaz, Char Andar
Bio-Degradable Pathways	-	1000000	50	Sonar Char, Char Andar, Char Montaz, Char Hare, Char Taposhi/Kolagasi ,
Total	-	-	56.5	



Table 8: Total Construction and Furnishing Cost

Name of the Location	Cost (Cr. Taka) BDT
Sonar Char	63.25
Unndar Char	240.35
Char Montaz	308
Char Taposhi/Kolagasi	11.1
Char Hare	8.1
Total	630.8

Table 9: Annual Maintenance Cost

Name of the Location	Cost (Cr. Taka) (Including Salary and Utilities)
Sonar Char	0.5
Anda Char	3
Char Montaz	2
Char Taposhi/Kolagasi	0.2
Char Hare	0.2
Total	5.9

### 3.3 Benefit of Tourism

Environmentally sensitive places in the Sonar Char and neighbouring areas need to be protected from hazardous human intrusion. Simultaneously, development initiatives for poverty reduction and livelihood activities must be fostered. The creation and implementation of an integrated Action Area Plan would be required to achieve these goals. Any development strategy is ultimately reduced to a set of programmed that cover all elements of development. Sonar Char Action Area Plans have been formulated based on problems and opportunities. Management of the coastal environment, including its protection and regeneration; management of the region's water resources; facilitation of sustainable economic opportunities for coastal communities; development of productive eco-tourism activities; development of infrastructure; and modern facilities are the main areas of focus.

#### 3.3.1 Poverty Alleviation

Because of the minimal skill and investment requirements, much of the employment created in the tourism sector is accessible to the poor. Many tourism activities are suitable for people from disadvantaged backgrounds, notably in Bangladesh's coastline region. Meanwhile, poverty is widespread in Bangladesh's coastal region. Twelve million people are expected to live in poverty in this region (World Bank, 2016). That suggests there is an adequate supply of labor compared to demand, indicating the possibility of poverty alleviation. There are indications that this promise is being realized at least partially, if not completely; many poor people find jobs in tourism destinations. According to Farzana (2014), in the Kuakata sea beach area, 77.12 percent of the poor work in tourism-related occupations, compared to 74.05 percent for the entire population. However, the analysis reveals that there is still a lot of untapped potential for poverty reduction.

### 3.3.2 Employment Opportunity

Travel and tourism directly employed 1,328,500 people in 2013, with a 4.0 percent increase expected in 2014. Hotels, airlines, travel agents, and other passenger transportation industries are among the employers in this sector. It will rise at a 2.7 percent annual rate over the next ten years. Travel and tourism employed 2.8 percent of the workforce in 2013. This is expected to rise to 3.9 percent of total employment in 2014. By 2024, travel and tourism are expected to employ 4.2 percent of the workforce (Roy SC, Roy M., 2015).

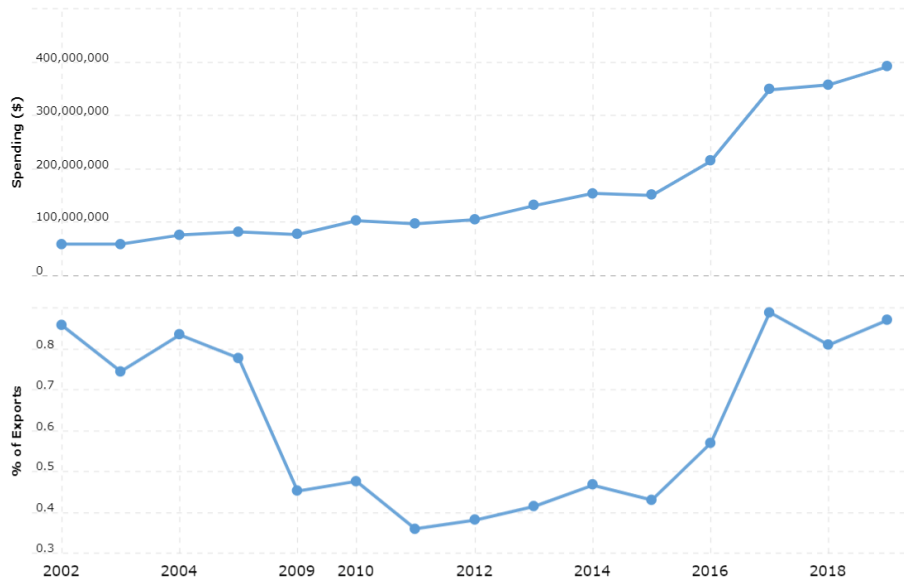


Figure 32: Economic Potentiality of Foreign Tourist for Bangladesh

(Source: World Bank, 2022)

International visitor arrivals climbed from 25 million in 1950 to 80 million in 1980, 527 million in 1995, and 1133 million in 2014, with 1.8 billion predicted by 2030. Similarly, international receipts received by destinations around the world have increased from \$2 billion in 1950 to \$104 billion in 1980, \$415 billion in 1995, and \$1.24 billion in 2014. (2015 Edition of UNWTO Tourism Highlights) Tourism has a 9% direct, indirect, and induced impact on GDP, creating 1 in 11 jobs and accounting for 6% of global exports in 2014, according to the UNWTO.

The upward trend in visitor arrivals and profits is expected to continue. Emerging economies' market share climbed from 30% in 1980 to 45 percent in 2014 and is predicted to reach 57 percent by 2030, equating to more than 1 billion international visitor visits. The tourism industry's ongoing expansion around the world is encouraging, and countries are getting worried about enticing more tourists to their own places (Sultana S., 2016).

According to a World Bank study, international visitor spending has gradually increased from approximately \$8000000 in 2002 to \$40000000 in 2019. The tourism sector's share of exports is steadily increasing, rising from 0.6 percent to 0.9 percent by 2019.

Table 10: International Tourist Arrival in Bangladesh

Year	Tourists arrival
2000	199000
2001	207000
2002	207000
2003	245000
2004	271000
2005	208000
2006	200000
2007	289000
2008	467000
2009	267000
2010	139000
2011	157000
2012	160000
2013	104000
2014	134000
2015	126000
2016	182000
2017	237000
2018	267000
2019	323000

(Source: World Bank, 2019)

The return of investment for tourism in Sonar Char especially for foreign tourists is fretful. It is assumed in various studies shows that the number of foreign tourists rise gradually. Therefore, the return of investment of Sonar Char will be achieved.

### 3.3.3 Environmental Benefits

Because sustainable tourism is frequently based on ecotourism, it encourages local people to actively participate in management, raising public awareness of the importance of the environment and nature. As a result, local citizens favor the preservation of the tourist attraction. Furthermore, various fees and taxes collected from tourists might be used to compensate for environmental damage. Although Bangladesh cannot claim to have totally sustainable coastal and marine tourism, it appears to be on its way there. All of these advantages would be available to it (Nur Nobil M., Majumder M., 2019).

According to a survey by the World Travel and Tourism Council (WTTC), travel and tourism contributed 4.4 percent of GDP in 2013 and are anticipated to expand by 7.9% to 4.5 percent of GDP in 2014. It is expected to rise by 6.5 percent per year to 4.7 percent of GDP by 2024. It is worth noting that the total contribution includes direct, indirect, and induced contributions (Roy SC, Roy M., 2015).

### 3.4 Catchment Area of the Project

International tourists have a large and diverse catchment area. Domestic tourism is growing in popularity. During vacations and festivals, the beaches and tourist attractions are packed. The number of tourists is likely to increase in the future. Furthermore, providing luxurious facilities and services for international tourists may encourage additional visitors to visit tourist destinations. The Sonar Char will be equipped with a wide range of foreign-friendly features. Foreign tourists

are expected to make use of the numerous facilities and services available in Indonesia, Malaysia, and Thailand. Every component of this tourist destination is a beautiful blend of forest, beaches, and sea. Sonar Char is suitable for foreign visitors due to its unique and different eco-friendly tourist attractions.

## CHAPTER FOUR

### 4.1 Source of Finance and Responsible Authorities

Sonar Char has no permanent residents. It is a significant ecological landmass. This area will be constructed solely for international visitors. This tourist attraction has become environmentally friendly. At the same time, foreign tourists will enjoy the natural beauty of this Char and the adjacent Char. The Department of Forestry will follow stringent guidelines in accordance with current laws and regulations in order to protect the island's current status, environment, and beauty. The Bangladesh government or a Public-Private Partnership (PPP) will fund the development of this area as a premier foreign tourism destination.

Table 11: Employing authority for Source of Finance

Construction and maintenance of Infrastructure	Source of Finance
Construction of Forest Office	Ministry of Environment, Forest and Climate Change
Boat dock in Sonar Char	Bangladesh Parjatan Corporation, Bangladesh Tourism Board and Public-Private Partnership (PPP)
Meditation Spaces	Ministry of Environment, Forest and Climate Change, Bangladesh Parjatan Corporation
Water Transport Facility (Boat)	Bangladesh Parjatan Corporation and Public-Private Partnership (PPP)
Maintain Reserve Forest	Ministry of Environment, Forest and Climate Change
Facilities for Jungle Safari	Ministry of Environment, Forest and Climate Change, Bangladesh Parjatan Corporation and Public-Private Partnership (PPP)
Family Gathering Space	Ministry of Environment, Forest and Climate Change and Bangladesh Parjatan Corporation and Public-Private Partnership (PPP)
Eco-resort and Entertainment Facilities	Bangladesh Parjatan Corporation and Public-Private Partnership (PPP)
Hotel and Motel	Bangladesh Parjatan Corporation and Public-Private Partnership (PPP)

Table 12: Areas of Concern for Environmental Assessment

Area of Concern	Step 1	Step 2	Step 3	Step 4	
Habitats Management	Survey	Analysis	Presentation	Report	
Species Management	Flora	Survey	Analysis	Presentation	Report
	Fauna	Survey	Analysis	Presentation	Report
Protected landscape	Agricultural	Survey	Analysis	Presentation	Report
	Forest	Survey	Analysis	Presentation	Report
	Mixed Use	Survey	Analysis	Presentation	Report
Protected Seascape	Marine ecology	Survey	Analysis	Presentation	Report
	Marine Biology	Survey	Analysis	Presentation	Report



	Marine Species	Survey	Analysis	Presentation	Report
Use of Natural Resources		Survey	Analysis	Presentation	Report
Strict Natural Reserve		Survey	Analysis	Presentation	Report

#### 4.2 Period of Action Area Plan and Responsible Authorities

The Sonar Char and its environs are close to the sea. Due to the lack of a road network, air communication, utilities, and services, it is estimated that Sonar Char will take five years to develop as a tourist destination. The period of Action Area Plan is divided into eleven distinct phases.

Table 13: Period of Action Area Plan

	Year One				Year Two				Year Three				Year Four				Year Five			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Formulation of Sonar Chra Eco-tourism Development Committee																				
Community, Stakeholders Participation and Publicity																				
Feasibility Study																				
Preparation of Detail Design and Drawing																				
Design Discussion and Feedback Analysis																				
Formulation of Final Design																				
Tendering and Other Procedure																				
Resource Mobilization																				
Construction																				
Project Hand over to Sonar Chra Eco-tourism Development Committee																				
Formulation of Management Plan for the Sonar Chra Eco-tourism Development																				

Table 14: Involvement of Authority for Implementing Action Area Plan

Name of the Ministry/Department/Institutions	Responsibilities/Scope/Areas
Ministry of Environment, Forest and Climate Change	To ensure the guidelines and conditions of environmental laws and regulation before, during and after implementation of Action Area Plan (AAP)
Ministry of Home Affairs	To ensure the security of foreigner tourists, local community

Ministry of Foreign Affairs	To ensure the services and facilities of foreigner tourists
Ministry of Road Transport and Bridges	Construction of Infrastructure to ensure quality services and facilities for foreign tourists
Ministry of Health and Family Welfare	Construction of Health Infrastructure to ensure quality services and facilities for foreign tourists and local communities
Bangladesh Parjatan Corporation	Construction of Infrastructure to ensure quality services and facilities for foreign tourists
Bangladesh Tourism Board	Ensure quality services for foreign tourists
Payra Port Authority	To ensure the guidelines and conditions of laws and regulations before, during and after implementation of Action Area Plan (AAP)
Roads and Highways Department	Construction of road Infrastructure to ensure quality services and facilities for foreign tourists, and local communities
Local Government Engineering Department (LGED)	Construction of Rural Infrastructure to ensure quality services and facilities for foreign tourists and local communities
Bangladesh Coast Guard	To ensure the security of foreigner tourists, local community

### 4.3 Responsible Institution for Tourism in Bangladesh

*Bangladesh Tourism Board:* The Bangladesh Tourism Board was founded in 2010 to satisfy the high demand for tourism professionals in the commercial sector. It is a member of the World Tourism Organization of the United Nations (UNWTO).

*Bangladesh Parjatan Corporation (BPC):* BPC was founded in 1972 as an autonomous entity under the Ministry of Civil Aviation and Tourism. BPC's main goal is to expand the tourism industry and provide services to both domestic and international tourists.

*National Hotel and Tourism Training Institute (NHTTI):* Professional development leads to more effective management. Bangladesh Parjatan Corporation established NHTTI in 1974. This institute provides courses that provide qualified workers for the hotel and tourism industries. In 1994, NHTTI began a two-year diploma programme in hotel management. The institute also provides on-the-job training for BPC employees and hosts special tourism-related seminars and workshops.

### 4.4 Integration of Higher-level Plan

Bangladesh's coastal zone encompasses 19 districts that face the Bay of Bengal or are close to the sea, and the bay's exclusive economic zone (EEZ) is widely regarded as a vulnerable region. Bangladesh's government has already designated the area as "prone to hazardous ecological processes" (ERD, 2003). However, the zone has a lot of potential. Natural resources abound in coastal zones, and their economies are largely dependent on them. The government has devised a number of initiatives, plans, programmes, and actions to address the problem of natural resource

free-riding in this zone. The following is a summary of coastal area management strategies, plans, policies, and laws.

Table 15: Integration of Higher-level Plan

Existing Plan, Policies and Strategies	Tasks of Integration	Integration with Sonar Char Action Area Plan
<ul style="list-style-type: none"> <li>❖ National Tourism Policy, 2010</li> </ul>	<ul style="list-style-type: none"> <li>▪ Development and maintenance of tourism products by developing eco-tourism while maintaining ecological balance</li> <li>▪ Prepare national, regional and zonal master plans to develop tourism industry</li> <li>▪ Prepare an integrated tourism plan to develop tourism</li> <li>▪ prepare and implement short, mid and long-term work plan and strategic paper</li> <li>▪ Initiate vigorous campaign to attract foreign tourists</li> <li>▪ Take integrated steps to attract foreign tourists</li> <li>▪ Engage local government agencies to develop, expand and manage tourism</li> <li>▪ Diversify the tourist attractions including the development of rural, riverine, agricultural, health, sports, alternative and community tourism</li> </ul>	<ul style="list-style-type: none"> <li>• Basic guideline for taking any development work for the tourism sector in Bangladesh</li> </ul>

<p>❖ Bangladesh National Conservation Strategy (2016-2031)</p>	<ul style="list-style-type: none"> <li>▪ Promote Conservation</li> <li>▪ Enhancing Natural Resources</li> <li>▪ Ensure Sustainable Development Goals (SDG).</li> </ul>	<ul style="list-style-type: none"> <li>• To build boat dock in sonar char</li> <li>• To build meditation spaces</li> <li>• To maintain reserve forest</li> <li>• To facilities for jungle safari</li> </ul>
<p>❖ Coastal Development Strategy, 2006</p>	<ul style="list-style-type: none"> <li>▪ Ensuring fresh and safe water availability</li> <li>▪ Management of natural resources</li> <li>▪ Improving people's livelihood conditions, particularly women Empowerment</li> </ul>	<ul style="list-style-type: none"> <li>• To construct of forest office</li> <li>• To build meditation spaces</li> <li>• To facilitate water transport facility (boat, ferry etc.)</li> <li>• To maintain reserve forest</li> <li>• To facilities for jungle safari</li> <li>• To build family gathering space</li> </ul>
<p>❖ Coastal Zone Policy 2005</p>	<ul style="list-style-type: none"> <li>▪ Providing guidelines to all agencies and organizations confine harvesting, extraction, or usage of coastal resources</li> </ul>	<ul style="list-style-type: none"> <li>• To maintain reserve forest</li> <li>• To facilities for jungle safari</li> </ul>
<p>❖ Coastal Environmental Management Plan for Bangladesh 1988</p>	<ul style="list-style-type: none"> <li>▪ Socio-economic aspects into environmental challenges</li> </ul>	<ul style="list-style-type: none"> <li>• To facilitate water transport (boat, ferry etc.)</li> <li>• To facilities for jungle safari</li> </ul>

		<ul style="list-style-type: none"> <li>• To construct family gathering space</li> </ul>
❖ The Environmental Court Act 2000	<ul style="list-style-type: none"> <li>▪ Jurisdiction, suitable punishments involving pollution in the Sonar Char</li> </ul>	<ul style="list-style-type: none"> <li>• To build boat dock in sonar char</li> <li>• To build meditation spaces</li> <li>• To build water transport facility (boat, ferry etc.)</li> <li>• To construct family gathering space</li> </ul>
❖ National Water Policy, 1999	<ul style="list-style-type: none"> <li>▪ Water management strategies at the local levels</li> <li>▪ It addresses agricultural water usage with land use planning</li> <li>▪ Advocates for utilization of surface water and groundwater</li> </ul>	<ul style="list-style-type: none"> <li>• To construct of forest office</li> <li>• To construction of boat dock in sonar char</li> <li>• To build meditation spaces</li> <li>• To facilitate water transport (boat, ferry etc.)</li> <li>• To maintain reserve forest</li> <li>• To facilities for jungle safari</li> <li>• To construct family gathering space</li> </ul>
❖ National Environmental Management Plan, 1995	<ul style="list-style-type: none"> <li>▪ Advocate government agencies, NGOs, and the general public for fishing and agriculture-related initiatives</li> </ul>	<ul style="list-style-type: none"> <li>• Basic guideline for taking development activities in coastal region</li> </ul>



<p>❖ Environmental Conservation Act, 1995</p>	<ul style="list-style-type: none"> <li>▪ Control through mitigation of pollutants</li> <li>▪ Addresses pollution-causing processes and activities</li> <li>▪ Identify operations and processes in ecologically critical zones</li> </ul>	<p>Control the pollution during, before and after the construction of various facilities in Sonar Char given below:</p> <ul style="list-style-type: none"> <li>• To construct of forest office</li> <li>• To build boat dock in sonar char</li> <li>• To build meditation spaces</li> <li>• To build water transport facility (boat, ferry etc.)</li> <li>• To maintain reserve forest</li> <li>• To facilities for jungle safari</li> <li>• To construct family gathering space</li> </ul>
<p>❖ National Environmental Policy, 1992</p>	<ul style="list-style-type: none"> <li>▪ Policy support to control polluting and environmentally degrading activities</li> <li>▪ Policy support for ensuring environmentally sound development</li> <li>▪ Policy support for ensuring environmentally sound use of all-natural resources</li> </ul>	<p>Control the pollution during, before and after the construction of various facilities in Sonar Char given below:</p> <ul style="list-style-type: none"> <li>• To construct of forest office</li> <li>• To construct boat dock in sonar char</li> <li>• To build meditation spaces</li> <li>• To arranging water transport facility (boat, ferry etc.)</li> </ul>

		<ul style="list-style-type: none"> <li>• To maintain reserve forest</li> <li>• To facilities for jungle safari</li> <li>• To constructing family gathering space</li> </ul>
❖ Bangladesh Delta Plan 2100	<ul style="list-style-type: none"> <li>▪ Ensure long-term water and food security, economic growth</li> <li>▪ Resolving the Coastal Zone's difficulties and challenges</li> <li>▪ Expansion, reclaiming additional land in the coastal zone</li> </ul>	<ul style="list-style-type: none"> <li>• To follow Basic guideline for taking development activities in coastal region</li> </ul>
❖ Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009	<ul style="list-style-type: none"> <li>▪ Ensure climate-resilient, and low-carbon development strategy</li> </ul>	<ul style="list-style-type: none"> <li>• To ensure low-carbon or ecofriendly concept during construction period</li> </ul>
❖ National Adaptation Programmed of Action (NAPA) 20	<ul style="list-style-type: none"> <li>▪ Identified 15 priority activities in vulnerable regions, including general awareness-raising, capacity-building, and project implementation</li> </ul>	<ul style="list-style-type: none"> <li>• To follow Basic guideline and for taking development activities in ecologically vulnerable region</li> </ul>
❖ Land Use Policy 2001	<ul style="list-style-type: none"> <li>▪ It emphasized the need of coastal land zoning in particular</li> </ul>	<ul style="list-style-type: none"> <li>• To follow guideline for land zoning</li> </ul>

## CHAPTER FIVE

### 5.1 Exclusive Services and Facilities for Foreign Tourist

Sonar Char-based amenities are available to foreign visitors. This island is set in a stunning setting with thick mangrove forests, beaches, and waterways. Sonar Char provides a variety of environmentally friendly services. The entire region may be enjoyed by visitors, who will bring tranquil and pleasant memories with them. These areas are providing a unique combination of various facilities and attractions. Families can enjoy this area in various ways.

*Leisure Tourism:* Tourists may travel to learn more about the culture of a country and to enjoy a change in climate and location. Tourists seeking a break from the stresses of everyday life priorities rest, relaxation, and rejuvenation during their vacations. These guests like to stay in a tranquil and pleasant setting, such as an eco-resort, beach resort, or forest-based facility.

*Family Tourism:* The family unit is involved in many sorts of tourism activities as part of family tourism. This involves paying for visits to family and friends for social reasons. There are plenty of opportunities for participating in sporting event while away from home. These types of events typically serve as motivators for tourists to participate in activities like the mud game, jungle safari, and mini golf.

#### 5.1.1 Char based Facilities and Services

*Char Montaz:* For international tourists, the authorities plan to build economic, business, and luxury hotels in this Char. A large dock will be developed by the authorities to transport people to another Chars. For air-based communication, a well-equipped helipad will be built at a suitable location.

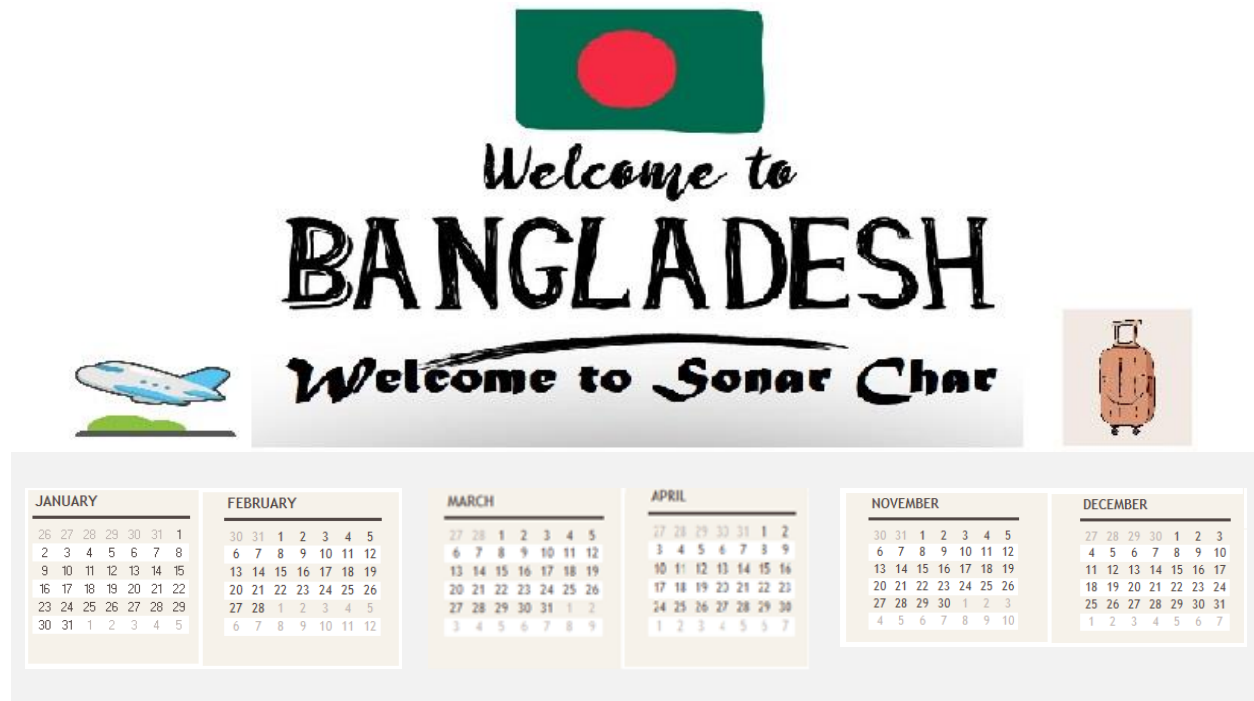
*Andar Char:* For international tourists, this is the primary zone or "buffer zone." This Char will include a welcoming dock, eco-resorts, a gym, a swimming pool, a mini golf course, mud bath ponds, a BBQ area, a party area, a police station, a fire station, a health care center, and other utilities. This Char is a short distance from the Sonar Char.

*Sonar Char:* Sonar Char is an ecologically significant location. Tourists can use a variety of environmentally friendly facilities. The floating hotel, rafting boat (for jungle safari), unique floating dock, loungers, watch tower, tree house, and jungle safari are among the amenities available.

*Char Taposhi/Kolagasi:* This Char is located on the sonar Char's western side. Tourists can see the lovely mangrove forest in Char. There are numerous options to go on a forest safari.

*Char Hare:* Sonar Char and Andar Char are both far away from this Char Hare. This Char is about two nautical miles west of Andar Char and four nautical miles west of Sonar Char. A mangrove forest can be found in a small area to the north of the Char. The southern part of the Char, on the other hand, boasts a fantastic beach.

### 5.1.2 Tour Plan for Foreigners



- ❖ A Jungle Safari might be an exclusive attraction for foreign tourists. Tourists might enjoy the stunning beauty of the mangrove forest in Sonar Char, Char Hare, and Char Tree at House Taposhi/Kolagasi .
- ❖ Eco-friendly community resorts are available with decent services and facilities in Char Montaz. Exclusive facilities for tourist are located near the Sonar Char at Andar Char. Tourists can enjoy traditional folk music and dances in the playground.
- ❖ Eco-friendly tents or tree houses are located in this area. Tourists enjoy the tents and tree houses a lot.
- ❖ Boards or ferry are outfitted with a mix of traditional and modern amenities. Visitors can enjoy the journey in these boats.
- ❖ Loungers are located on the beaches in Sonar Char, Andar Char and Char Montaz. Tourists can enjoy the sunbath and the beauty of the sun.
- ❖ The most exciting location for tourist would be Char Hare. There is a perfect beach to see sunrise and sunset.

For Sonar Char, the "mean daily maximum" (solid red line) depicts the maximum temperature on an average day for each month. The average minimum temperature is shown by the "mean daily minimum" (solid blue line). The average of the hottest day and coldest night of each month over the last 30 years is shown as dashed red and blue lines. People can plan their vacations based on the average temperatures and be prepared for hotter and colder days. Figure-001 shows that the months of January, February, March, October, November, and December are the best months for international tourists to arrange their vacations. There are fewer odds of encountering a cyclone and precipitation at this time.

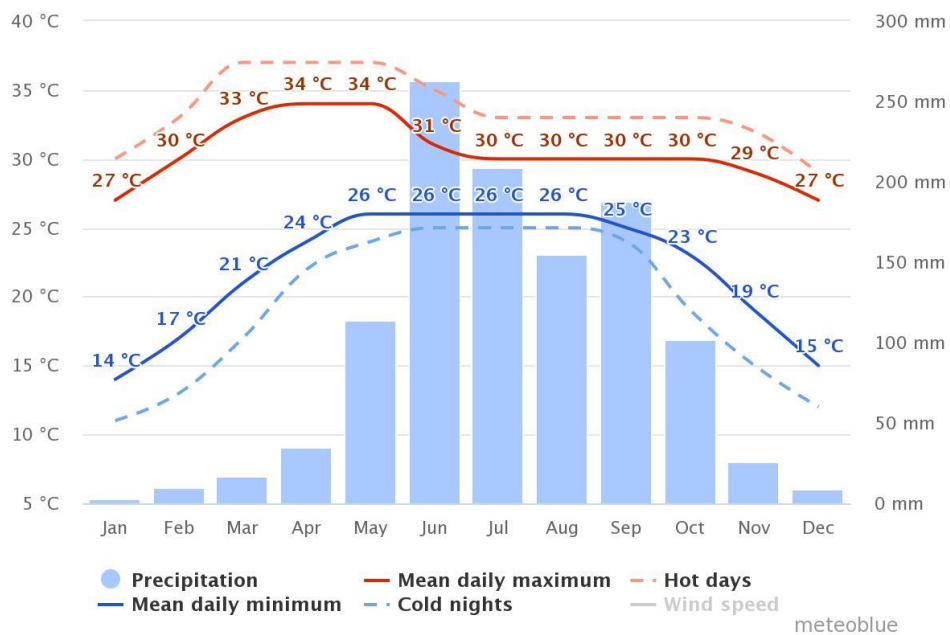


Figure 33 Weather of sonar Char and Surrounding Area:

(Source: Meteoblue, 2022)

### 5.1.3 Tourist Transport Route

The Sonar Char was declared an ecologically significant area. The modes of transportation are eco-friendly and more environmentally friendly. The transport system is designed on the basis of three key concerns. First of all, the mode of transportation is reliable in terms of the environment it operates in and is easy to operate. Secondly, the transportation system among the Chars and surrounding Sonar Char is based on water. Lastly, the modes of transport are luxury and comfort for foreign tourists.

### 5.1.4 Transportation System

Tourists come to Char Montaz by helicopter. A well-functioned and well-equipped helipad will be fully functional at Char Montaz. Tourists also use the roads to come to the Char Montaz. A large dock will be located near the Char Montaz. Small boats will be distributed for tourists to transport them to and from Under Char, which will be developed as an exclusive area for tourists. There is another welcoming dock located in Underchar for communication between tourists and Sonar Char. Tourists who are likely to visit Sonar Char, Under Char, Char Taposhi/Kolagasi, and Char Hare will find an available dock.

All the pathways and roads in Sonar Char and Unda Char will be made of bio-degradable materials. Approximately ten kilometers of bio-degradable pathways will be constructed across the Chars.

### 5.1.5 Cyclone and Flood Preparedness for Foreign Tourists

Sonar Char and surrounding Chars are located in the disaster vulnerable area. Cyclones have frequently passed through this area historically. However, preparedness for natural disasters in the Sonar Char is a top priority for authorities. In the Char Montaz Hotel, which will be constructed to tackle natural disasters. The architectural and structural design of the hotel will be focused on natural disasters such as cyclones and floods. Moreover, the rapid evacuation process will be functional and collaborate with the national disaster preparedness process. The authorities will consider finding a place for safe evacuation from Sonar Char and surrounding areas if necessary. The months of October to March are relatively safe for tourists to visit Sonar Char. During other months of the year, authorities take extra measures for tourists.

### 5.1.6 Suitable Period in Sonar Char

The Bay of Bengal is close to Sonar Char and the adjacent locations. Natural disasters such as cyclones and tidal floods are expected to occur frequently in this region. This location has been shown to be affected by cyclones in the past. A calendar year is divided into three segments for a tour plan based on weather and the environment. Periods are listed below.

Table 16: Suitable Period in Sonar Char for Vacation

	Highly Suitable			Moderately Suitable				Less Suitable				
	Vacation Planning											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
High												
Moderate												
Less												

**Highly Suitable Period:** The best times to visit the sonar char and adjacent areas are during the months of October and December, and January and March. October, November, and December are good months to start planning your trip to Sonar Char. The temperature is warm, ranging between 23 and 25 degrees Celsius. The days are bright and sunny. The scenery around Sonar Char, Under Char, and the neighboring places will appeal to foreign visitors. Sonar Char is a tourist spot where visitors can enjoy the festive atmosphere on Christmas Day. Long, bright days and pleasant temperatures characterize the months of January to March. Rain and cyclones are less likely during these six months.

**Moderately Suitable Period:** The moderately suitable months for touring in the Sonar Char and surrounding areas are April, May, August, and September. Cyclones generally happen in this period of time. Nor ‘westers or the Kalbaishakhi happiness during this period of the year. Though the respective authorities would be prepared to respond to any kind of natural disaster. Foreign tourists need extra caution during this period of the year. Bangladesh is well-known across the world for its quick response and disaster preparedness programmes for responding to disasters.

**Less Suitable Period:** During the months of June and July, the amount of precipitation is higher in comparison to other months of the year. In addition, the probability of cyclones happening in this



region is higher in this particular period of time. It is estimated that during the period of natural disasters, there is a higher chance of creating a flood-like situation in the lower part of these Chars. Foreign tourists are highly discouraged from visiting Sonar Char and the nearby places.

#### 5.1.7 Buffer Zone Concept for Foreign Tourist

The buffer zone concept is designed for foreign tourists. Under char is designed exclusively for foreign tourists. This Char is developed with various facilities. There is a welcome dock and luxury facilities such as an eco-resort, gym, swimming pool, mini golf ground, mud bath ponds, barbecue place, party place, police station, fire service station, health care center and other utility facilities. These premium facilities are provided for foreign tourists. In this char the privacy of foreign tourist will be considered exclusively.

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