



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

ACTION AREA PLAN (2023 – 2028)
SONAR CHAR EXCLUSIVE TOURIST ZONE

PREPARATION OF PAYRA KUAkata COMPREHENSIVE PLAN FOCUSING ON ECO-TOURISM PROJECT

Action Area Plan: 2023 - 2028

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EXECUTIVE SUMMARY

The Action Area Plan (AAP) aims to promote eco-tourism for foreign visitors and sustainable development of the Sonar Char and nearby Char's (islands) through coordinated efforts of government, private and community stakeholders. An Exclusive Tourist Zone (ETZ) plan seeks to use the resources efficiently and reduce poverty in this region. The plan covers five Char islands: Sonar Char, Char Montaz, Andar Char, Char Taposhi and Char Hare, which belong to the Patuakhali district under Rangabali Upazila.

The AAP is exploring how to use the land in the Sonar Char and nearby areas for eco-tourism. It proposes detailed land use plans and sets a timeline for executing them in changing regions, such as Sonar Chars.

The Action Area Plan (AAP) wants to turn Sonar Char and its surroundings into a destination for eco-tourism for foreign tourists. It also wants to offer high-quality services and facilities that are environmentally friendly. Sonar Char is near the Bay of Bengal, on the south edge of Patuakhali's Rangabali Upazila. It has an area of about 18 square kilometers. There are big mangrove forests in Sonar Char and Char Taposhi/Kolagasi. There is also a mangrove forest in the north part of Char Hare. The biggest island of these char is Char Montaz. There are roads and paths in Char Montaz and Andar Char. The only way to get to Char Hare, Sonar Char and Char Taposhi/Kolagasi is by water. Only 19569 people live in Char Montaz and 3782 people live in Andar Char. The shape and size of these char change often, as shown by Landsat 7-8. Some chars are getting bigger, and some are getting smaller. The Sonar Char Wildlife Sanctuary has low salinity. The saltiness of this char changes with the seasons. Climate change is causing higher temperatures, melting ice, rising sea levels, more deserts, and more extreme weather like heat waves, droughts, floods, and storms. Water transport is the main way to travel between the islands or char in Sonar Char and the area around it. There are road networks in Char Montaz and Andar Char. The Ministry of Road Transport and Bridges will take care of all the roads. Biodegradable paths will be made in Sonar Char, Andar Char, and Char Hare for eco-friendly development. There is a helipad in Char Montaz. In Sonar Char, there is a flexible and adaptable floating dock for boats and speed boat Ghat. About 72.94% of the land is covered with water and 12.15% is agriculture land. Water is the most common land use on these char and agriculture is the second most common.

From suitability analysis, a suitable location for ecotourism of sonar char has identified. In geological suitability analysis, around 21.2% of the areas found moderately suitable and 74.2% found less suitable as well as 4.6% of areas are not suitable. And it is found that Char Montaz and Char Hare are situated in moderately suitable area, from hydro-geological suitability analysis, it is found that the 95.4% percent of the area was found hydro-geologically moderately suitable, only 4.6% of the area was not Suitable. About 75.64% of the area is the least suitable area which is the majority portion of sonar char and surrounding areas as well as 17.18% area is less suitable and only 1.8% area is highly suitable area for human settlement.

From disaster risk, Andar Char and Sonar Char have a low disaster risk because of Vegetation. Most of the Sonar char, Char Taposhi and Tiger Dwip are covered with forest. Development suitability and tourism suitability have been done to identify suitable location. From tourism suitability analysis, is found that 48.04% of areas are less suitable areas according to tourism potentiality. Only 10.5% of the area is suitable and moderately suitable for tourism and all proposals are given based on suitable site.

The AAP report has planned the specific proposals for ETZ around Sonar Char and its surroundings Char area according to suitable location. Char Hare is the ideal place to build state-of-the-art and luxurious facilities for tourists. They will enjoy eco-friendly and authentic services that showcase the local culture and nature. Sonar Char is a pristine landmass with the least human inhabitants. The government or a Public-Private Partnership (PPP) will finance its development as an eco-tourism zone. Foreign tourists will marvel at the beauty of this char and its neighbors. Sonar Char is a forested area with rich vegetation and wildlife. It can attract tourists from all over the world. However, Sonar Char needs better communication, utilities, and services to become a tourist site. It may take five years or more to achieve this goal. The government has planned various measures and actions to overcome the challenges and make Sonar Char an exclusive tourist destination. The government has also integrated different levels of stakeholders to ensure the success of the plan.

This AAP report has demonstrated that Sonar Char has a great potential for developing sea beach tourism that benefits the local community and preserves the environment of those islands. However, this potential can only be realized if the action area plan is implemented effectively and efficiently, with the support and cooperation of all the stakeholders. Therefore, the report recommends that the action area plan (AAP) should be adopted and executed as soon as possible, and that the progress and performance of the plan should be regularly assessed and improved.

CHAPTER ONE: INTRODUCTION

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 (Mozaharuddin Biswas College) ground in Kalapara Upazila, Patuakhali district, that the Sonar Char in Rangabali Upazila will be developed and facilitated exclusively for foreign tourists. There will be a tourist zone developed in the Kuakata, Taltoli, and Patharghata Upazilas.

The Honorable Prime Minister's vision is to make Sonar Char and its surrounding area an exclusive international tourist zone in the future, following her dream and guidance. The Action Area Plan (AAP) of Sonar Char is a way to learn more about Sonar Char's natural environment and turn it into a sustainable eco-tourism spot for visitors in the long term. This tourist spot will cater to both local and foreign tourists. An Exclusive tourist zone (ETZ) is a place where tourists who want a luxury trip can make their dreams come true. They can find something unique, beyond their expectations, with excellent service that meets their needs and wants. This includes exclusivity, privacy, and a range of options from relaxation to adventure, with pampering and extras. Exclusive tourist zones (ETZ) generally have hotels, cottages, beach villas, night clubs, a convention hall, and an amusement park. Cultural center, watch towers, shopping malls, food courts, games complex, cineplex's and swimming pools can be found as supporting facilities. ETZ must be well-connected by Road, Air, and Waterways.

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 AAP 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.

The Action Area Plan (AAP) for Sonar Char and its surrounding area has three main objectives:

- (i) To make it a home for foreign tourists;
- (ii) To provide high-quality services and facilities; and
- (iii) To achieve an eco-friendly development strategy.

The plan will develop exclusive and luxurious facilities in Char Hare, affordable facilities in Char Montaz and Andar that create a sustainable eco-tourism in the zone of Sonar Char and improve the accessibility and mobility of the tourists and the locals. The plan will also offer eco-friendly and authentic services that showcase the local culture and nature, ensure the safety and comfort of the travelers, and raise awareness and interest among the target market of tourism. The plan will also conserve the environment and benefit the local people

by following the principles and practices of eco-tourism, educate and train the stakeholders on the concept and benefits of eco-tourism, and establish a clear policy framework and a participatory approach to ensure the sustainability and quality of the eco-tourism initiatives.

1.2.1 Tasks to Fulfill the Objectives

An Action Area Plan (AAP) provides a framework for the sustainable, phased, and managed development of a specific area. It also defines the specific objectives for each action area. The AAP for Sonar Char follows the directives from the Regional Plan PKCP, 2023 and the Structure Plan of Rangabali Upazila, 2023, which aim to achieve the objectives of the AAP. Moreover, the AAP incorporates the inputs from various stakeholders, such as public representatives, local people, government and non-government entities, and local tour operators, through consultation. The AAP also considers the feasibility, suitability, social, economic, and environmental impacts of the proposed development. Structure density, settlement suitability, Infrastructure suitability, Geological Suitability, Hydro-geological suitability, Economic Region, Hydrology, Road Proximity, Water Quality, and other Physical Feature parameters are selected to calculate development potential sites of sonar char and surrounding areas for the AAP.

The AAP specifies the general policy and the specific priorities for each area, covering various topics such as residential, traffic and transportation, sustainable design, natural and built environment, etc. The AAP also explains how the Plan will be carried out, including the sources of funding, the administrative actions, the priorities and phases of development, and the alternative options and proposals that have been evaluated so far.

1.3 METHODOLOGY OF AAP PREPARATION

The methodology of an AAP for Sonar Char and surrounding Chars is the process of developing and implementing a plan for Sonar Char ETZ, which is a new and emerging sea beach and tourism center in the south of Bangladesh. The AAP for Sonar Char follows the general steps of the methodology of an action area plan, but with some modifications and adaptations to suit the specific context and needs of Sonar Char. The steps of the methodology of an AAP for Sonar Char are:

- ✓ Define the problem or the goal of the plan. This involves identifying the current situation, the desired situation, and the gap between them for Sonar Char ETZ. The problem or the goal of the plan is to develop Sonar Char and surrounding Chars as a tourist destination that benefits the local community and preserves the natural environment mellow.
- ✓ Collect and analyze the data related to the problem or the goal. This involves gathering relevant information from various sources, such as literature, surveys, interviews, observations, etc., and analyzing the data to find the causes, effects, and trends of the problem or the goal for Sonar Char area. The data sources include

the Regional Plan PKCP, 2021 and the Structure Plan of Rangabali Upazila, 2022 with others necessary data and maps, which provide the directives and guidelines for the development of Sonar Char ETZ. The data sources also include the consultation with various stakeholders, such as public representatives, local people, government and non-government entities, and local tour operators, who provide the inputs and feedback for the development of Sonar Char. The data sources also include the feasibility, suitability, social, economic, and environmental impact assessment, which provide the evaluation and recommendation for the development of Sonar Char and surrounding other Chars.

- ✓ Clarify and prioritize the problems. This involves narrowing down the focus of the plan, setting the criteria for success, and ranking the importance and urgency of the problem or the goal for Sonar Char. The problem or the goal of the plan is divided into four sub-goals, which are: improving infrastructure and connectivity, enhancing quality and diversity of tourism products, promoting marketing, and branding, and fostering stakeholder collaboration and capacity building.
- ✓ Study the national and international tourist areas and complexes to understand the development and diversity of the attractions and activities for tourists.
- ✓ Implement solutions or actions for each problem or goal. This involves developing and executing an action plan that outlines the tasks, resources, timeline, and responsibilities for each sub-goal of the plan.
- ✓ Monitor and evaluate the progress and outcomes of the plan. This involves tracking and measuring the performance and impact of the plan, using indicators and tools, such as dashboards, reports, feedback, etc., and comparing them with the expected results and the goal statements. Also refine the old one. This involves reviewing and reflecting on the plan, identifying the strengths and weaknesses, the achievements and challenges, and the lessons learned, and deciding whether to continue, modify, or adjust.

These are the steps of the methodology of an AAP for Sonar Char, but they may vary depending on the availability of resources, the feasibility of implementation, and the feedback of the stakeholders. Therefore, the methodology of an AAP for Sonar Char should be flexible and adaptable to the changing needs and situations of Sonar Char ETZ.

Table 1: Data and Information for Preparing Action Area Plan

Survey and Study	Various Mapping and Suitability Study	Current Scenarios and Eco- tourism: Home and Abroad	Eco- tourism Potentials and Exploration
<ul style="list-style-type: none"> • Understanding the Site, Environment and Context • Physical survey & site exploration • Demographic Profile 	<ul style="list-style-type: none"> • Land-use Map. • Geological Suitability Map • Hydro-Geology Suitability Map 	<ul style="list-style-type: none"> • Understanding Tourism and Eco-tourism Facilities • Understanding of Eco-tourism and Community 	<ul style="list-style-type: none"> • Architectural Indicators for Eco-Tourism • Suitable place-making for tourist facilities

Survey and Study	Various Mapping and Suitability Study	Current Scenarios and Eco- tourism: Home and Abroad	Eco- tourism Potentials and Exploration
<ul style="list-style-type: none"> • Transportation System and communication study • Agricultural, Geological Condition, Hydro-Geology survey, etc. • Weather and Climate • Disaster Risk of Sonar Char • Current tourism • Stakeholder feedback, FGD & others 	<ul style="list-style-type: none"> • Environmental risk map • Structure Density Map • Infrastructure suitability • Development suitability • Human settlement suitability • Tourism Suitability 	<ul style="list-style-type: none"> • Types of Tourism • General Classification of Hotel & Resorts • Examples study around the world • Study on Local resorts & tourist facilities. 	<ul style="list-style-type: none"> • Conceptual architectural exploration on and around the Sonar char/surrounding. • Connectivity mapping for tourists

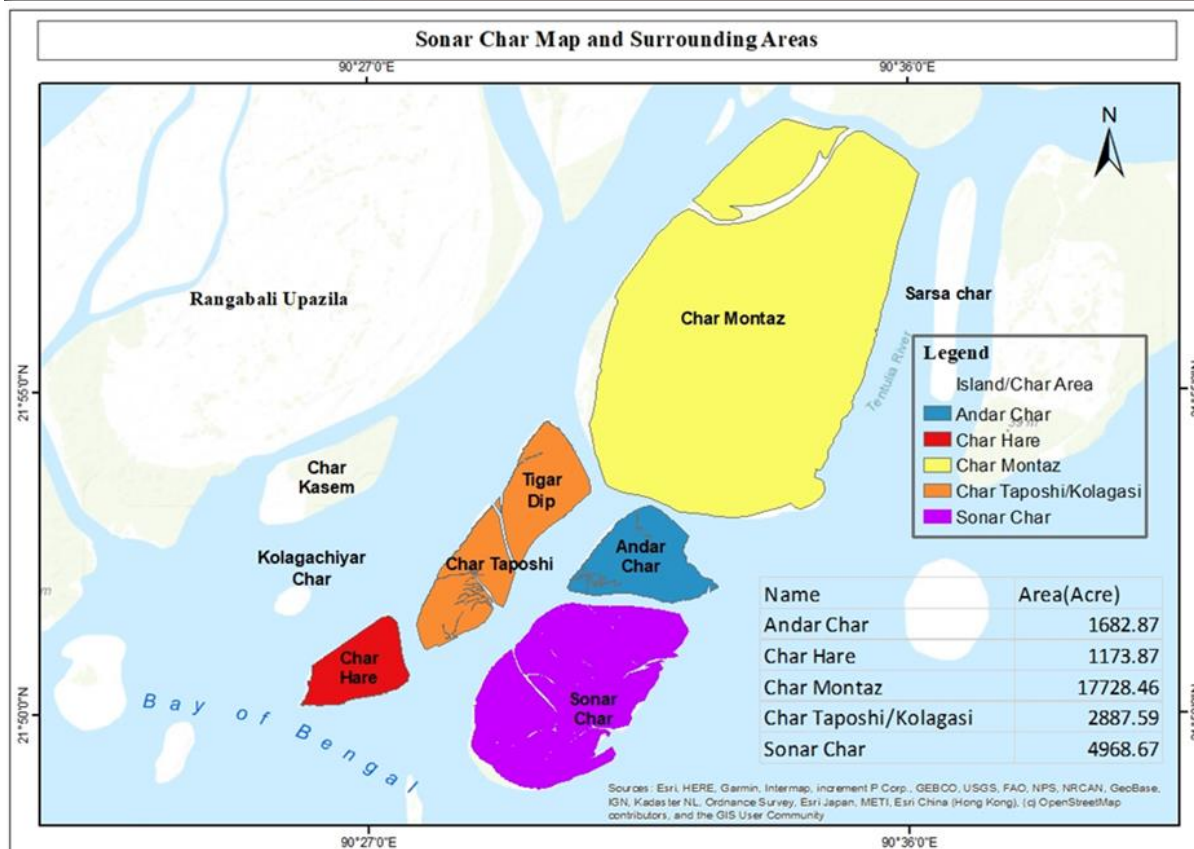
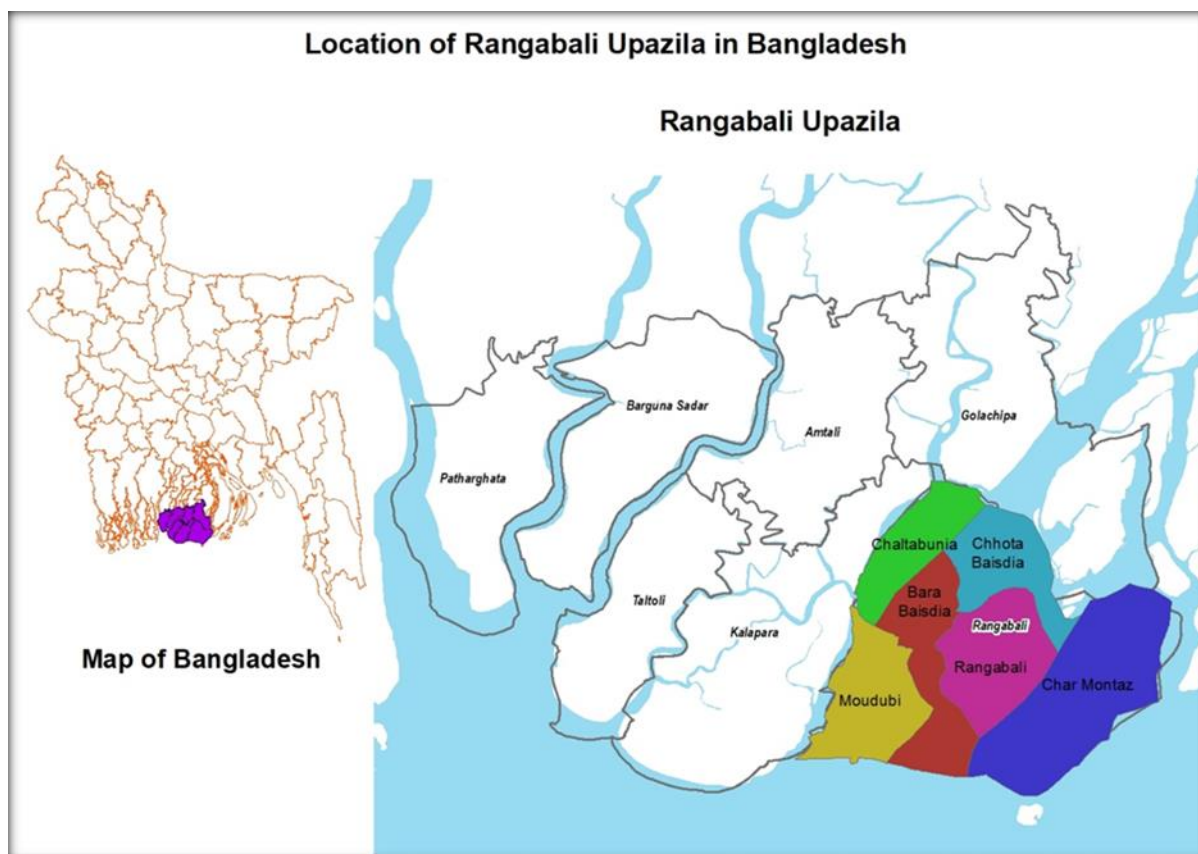
1.4 LOCATION OF THE PROJECT AREA

Sonar Char is located near the Bay of Bengal on the southern boundary of Patuakhali's Rangabali Upazila. A vast mangrove forest with rich wildlife and a 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. Sonar Char covers a total area of around 18 square kilometers. This is a significant ecological area. This is a coastal mangrove plantation and 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 Patuakhali district's Rangabali Upazila. The Sonar Char has been designated as a Wildlife Sanctuary (WS) on 24 December 2011 (USAID, 2021).

Table 2: Area of Sonar Char and Surrounding Areas

Name of Char	Approximate Total Area (Acre) GIS Calculation
Char Montaz	17728.46
Char Andar	1682.87
Char Hare	1173.87
Sonar Char	4968.67
Char Boro Taposhi/Kolagasi	2887.59
Total	28441.46

Source: PKCP Project, UDD, 2019

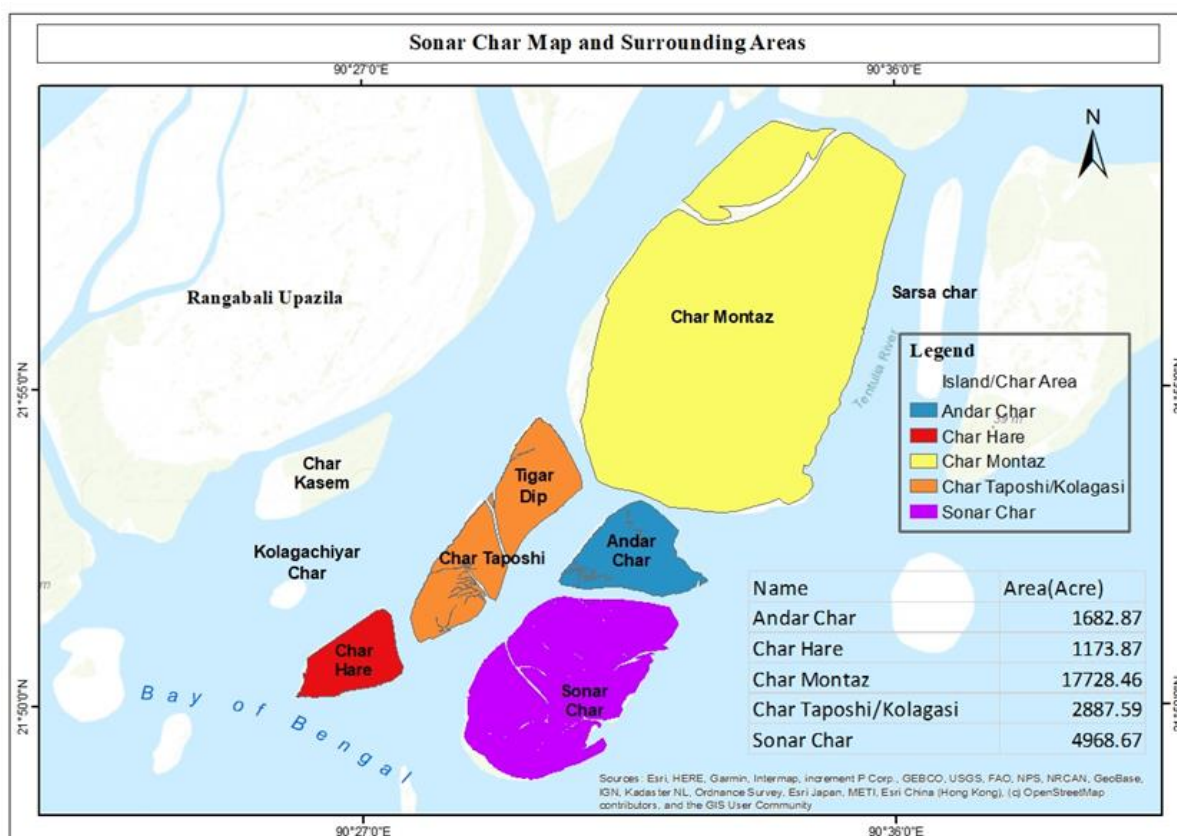


Source: PKCP Project, UDD, 2019

Map 1: Location of Sonar Char and Surrounding Char

1.5 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 most of the residents in this area. Andar Char and Char Montaz are more solid and livable. In Sonar Char, Char Taposhi and Tiger Dwip, 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 Char. Waterways are the only communicable ways to reach Char Hare, Sonar Char, Char Taposhi and Tiger Dwip. A table (Table 3) and concern map will help to understand the demographic Profile of Sonar Char and Surrounding chars.



Source: PKCP Project, UDD, 2019

Map 2: Location of Sonar Char and Surrounding Char

Table 3: Distribution of Population and Area of Char

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

Source: BBS, 2011 & PKCP Project, UDD, 2019

The table above shows that many people live mainly in Char Montaz and Andar Char. Some seasonal fishermen and others have moved temporarily to other Chars, as observed during the field study.

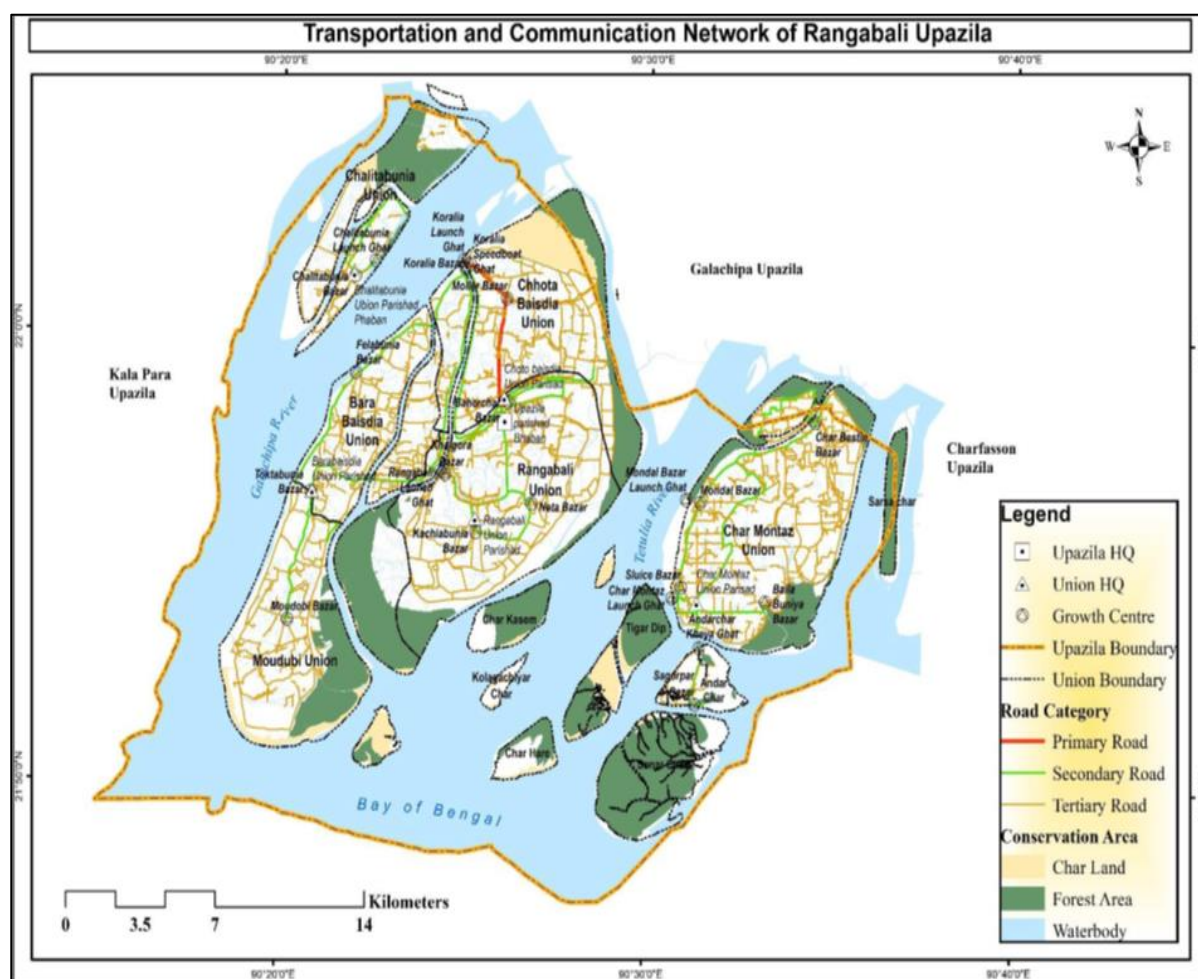
1.6 TRANSPORTATION SYSTEM AT SONAR CHAR AND SURROUNDING AREAS

Road Network

Road network exists only in Char Montaz and Andar Char. Numerous well-maintained roadways are available in Char Montaz. Locals in Andar Char have access to two important roadways. Total length of road is 265 km whereas 249 km roads exist in Char Montaz and 15 km road has found in Andar Char

Air Communication

It is expected that foreign tourists will prefer air transportation. To ensure air connectivity, the respective government authorities will develop the existing helipad of the Char Montaz (Located in front of Char Montaz High School near Char Montaz Union Parishad).



Source: PKCP Project, UDD, 2019

Map 3: Transportation and Communication Network of Rangabali Upazila

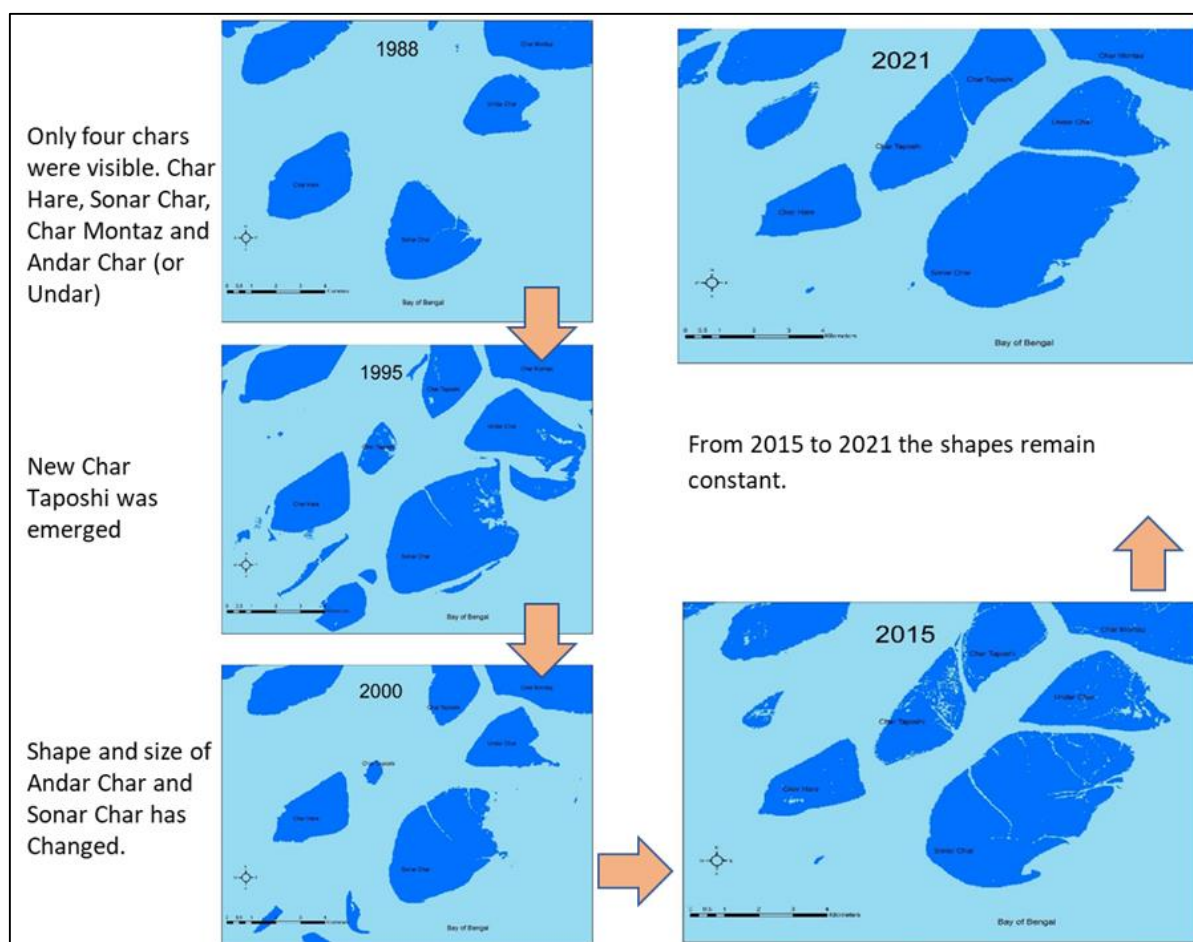
Waterways

Near Char Montaz's southern end, there is a large and modern boat dock. This pier will be upgraded to provide modern tourist amenities. In Sonar Char, Char Taposhi, Andar Char, and Char Hare, a flexible and adaptable floating dock for boats will be established.

Recommendation from Structure Plan of Rangabali Upazila 2022, has advised to promote tourism, international tourist fairs, tourism products, services, and overall tourism industry to attract the tourist. New and update of transport facilities, planned ghats and terminals will be connected the Sonar Char and surrounding chars with the Upazila headquarter.

1.7 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, there show some changes in shape and size of four char for five distinct years.



Source: USGS Landsat 7-8

Figure 1: Changing of Area and Shape of Char over the 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.

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 most of the land.

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 Chars change frequently over the year given in this figure.

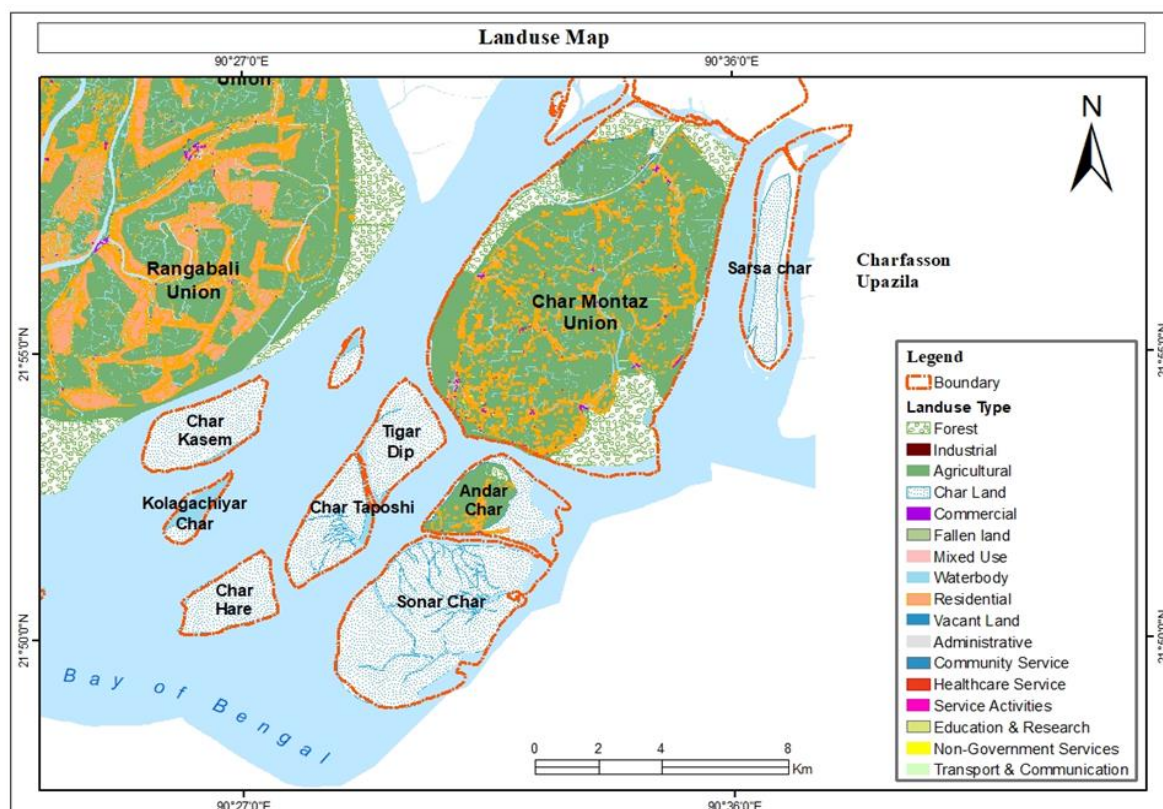
1.8 EXISTING LAND USE OF SONAR CHAR AND SURROUNDING AREAS

It is found that about 72.94% of Land is water body and 12.15 % is agriculture Land. Most of the water body has found on these chars and agriculture has covered second largest portion of land uses.

Table 4: Existing Land Use of Sonar Char and Surrounding Areas

Land use Type	Area (Acre)	Percentage (%)
Agricultural Land	12457.64	43.80
Char Land	9330.85	32.80
Forest	2636.86	9.27
Residential	2016.69	7.09
Waterbody	1758.83	6.18
Administrative	1.43	0.01
Commercial	21.64	0.08
Community Service	5.35	0.02
Education and Research	12.31	0.04
Non-Government Services	0.61	0.00
Service Activities	0.27	0.00
Fallen Land	8.97	0.03
Health Service	0.24	0.00
Mixed Use	1.16	0.00
Transport & Communication	163.48	0.57
Vacant Land	27.88	0.10
Total Area	28444.20	100.00

Source: PKCP Project, UDD, 2019



Source: PKCP Project, UDD, 2019

Map 4: Existing Land Use of Sonar Char and Surrounding Areas

1.9 RECOMMENDATION FROM STRUCTURE PLAN OF RANGABALI UPAZILA FOR TOURISM DEVELOPMENT OF SONAR CHAR AND SURROUNDING AREA

The PKCP area has been identified as having high potential for attracting tourists. One of the key strategies to increase tourism in the PKCP area is through ecotourism. Ecotourism is a form of tourism that focuses on visiting natural areas in a way that is ecologically sustainable and socially responsible. In addition to that a massive tourism marketing strategy should be developed to promote the PKCP area as a tourist destination. The marketing strategy should emphasize the unique features of the PKCP area, such as its natural beauty, cultural heritage, and recreational opportunities. Capacity building in the tourism sector is also an important instrument for expanding tourism in the PKCP area. Expanding tourism in the PKCP area can have a significant impact on the local economy by creating jobs, boosting GDP growth, and supporting conservation efforts. To achieve this, a combination of strategies is required as mentioned above.

TD-01: Encouraging Eco-tourism Development

Justification

Investments in eco-tourism can be positive for environmental conservation as well as income generation. The natural sites at the Upazila level have potential for such investments and development.

Strategies

Eco-tourism development prospects in the Upazila should be explored for investment in ecotourism. Attractive natural sites will be identified and offered for eco-tourism development.

Implementing Agencies

Bangladesh Parjaton Corporation and the National Tourism Development Board should be supporting and guiding tourism development at local levels by enacting favorable policies and laws. Local and regional trade associations are important for promoting tourism development in the Upazila.

TD-02: Promoting and attracting public and private investments in Tourism Development

Justification

Tourism can be an important sector for revenue earning by the local authorities. The process of development in this sector attracts investments in various services. There is scope for promoting tourism development in the Upazila.

Strategies

Identifying, demarcating, and developing suitable locations within the Upazila for creating attractions may be potential for attracting investment. Investment can be encouraged by creating attractive sites for development in the tourist locations. The local and regional investors can be attracted with possible options of incentives.

1.10 ECOLOGY AND ENVIRONMENT OF SONAR CHAR

In Sonar Char, there is a forest beat office. The Sonar Char Wildlife Sanctuary has 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.

1.10.1 Flora and Fauna

Sonar Char and Taposhi Char are wholly covered with Mangrove Forest. This forest is exclusively dominated by Mangrove Apple/kewra (*Sonneratia apetala*) with a maximum

height of 60 feet (CEGIS, 2017). Among the other tree species, Crabapple Mangrove/Ora (Sonneratia caseolaris), Indian Mangrove/Bain (Avicennia officinalis), Black mangrove/Kankra (Bruguiera gymnorhiza), Blinding Tree/Gewa (Excoecaria agallocha), Sunder Tree/Sundaree (Heritiera fomes), Nipa Palm/Golpata (Nypa Fruticans), Mangrove Date Palm/Hental (Phoenix paludosa), Indian beech/Koronja (Pongamia pinnata), etc. are frequently found. Some non-mangrove species like Papuan Wattle Akashmoni (Acacia auriculiformis) Rain Tree/Rendi Koroi (Samanea saman) exist on dry land of forest with other mangrove species. The estuarine area of the river and its mudflats favor migratory birds during winter. Homesteads of Char Motaz and Char Andar are vegetated with local planted trees like Rain Tree, Coconut, Banana, Palmyra Palm and Date Palm. Presence of Coast Sheoak/Jhau (Casuarina equisetifolia) tree and Bayhopes/Sagorkolmi (Ipomoea biloba) indicate the unique characteristic of sand dunes.



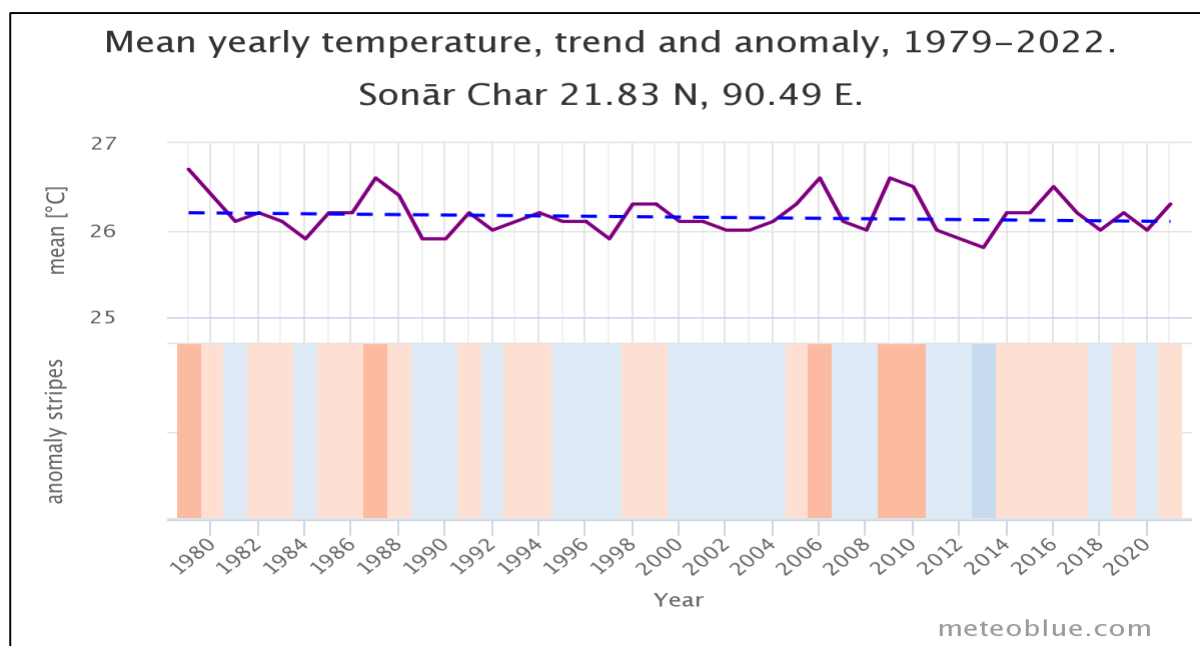
Figure 2: Existing Flora and Fauna of Sonar Char and Surroundings

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 Bura Gouranga River supports wide abode for numerous fish species and dolphins (CEGIS, 2017). 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.

1.10.2 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.



Source: Meteoblue, 2022

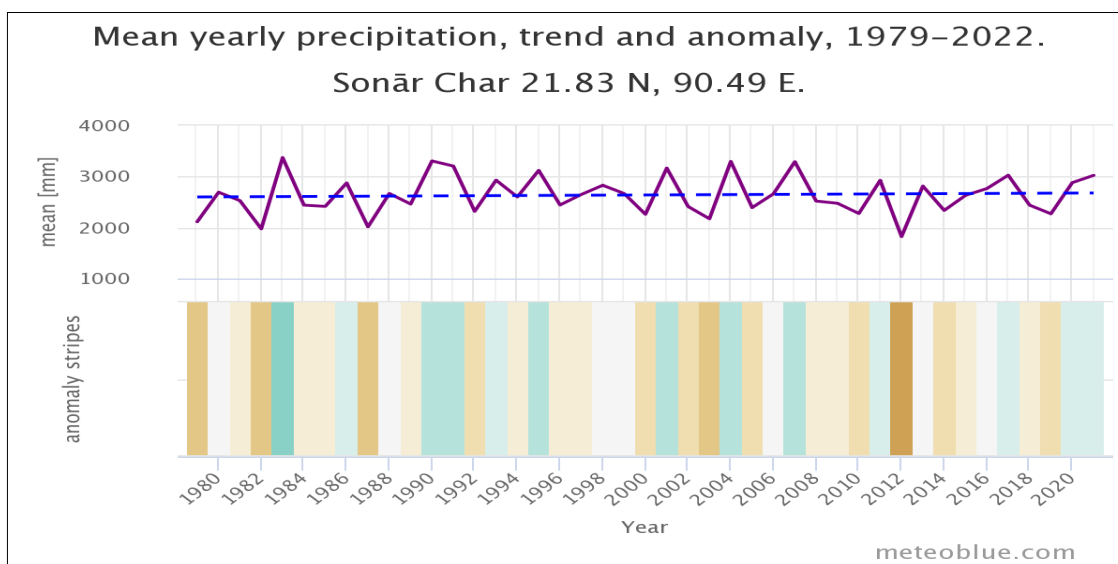
Figure 3: Temperature Trend Analysis of Sonar Char and Surrounding Area

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 Sonar 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 Sonar 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 Sonar Char due to climate change. If it is horizontal, no clear trend is seen, and if it is going down, conditions in Sonar 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.

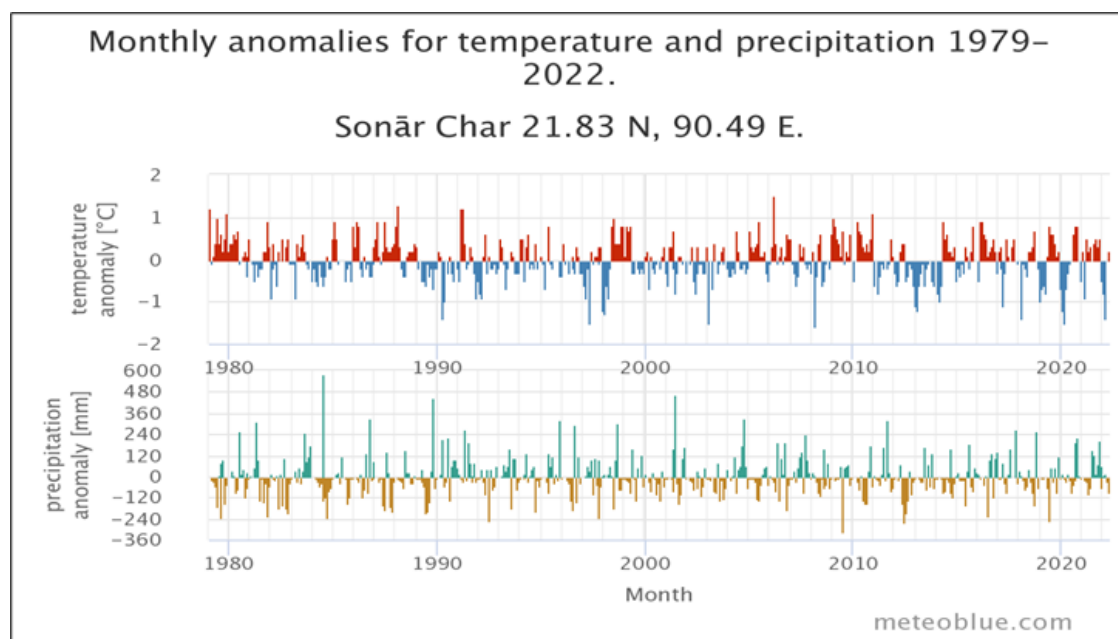
The top graph shows an estimate of mean total precipitation for the larger region of Sonar Char. The dashed blue line is the linear climate change trend. If the trend line is going up from left to right, the precipitation trend is positive, and it is getting wetter in Sonar Char due to

climate change. If it is horizontal, no clear trend is seen, and if it is going down, conditions are becoming drier in Sonar Char over time. In the lower part of the graph, the so-called precipitation stripes are shown. Each colored stripe represents the total precipitation of a year green for wetter and brown for drier years.



Source: Meteoblue, 2022

Figure 4: Precipitation Trend Analysis of Sonar Char and Surrounding Area

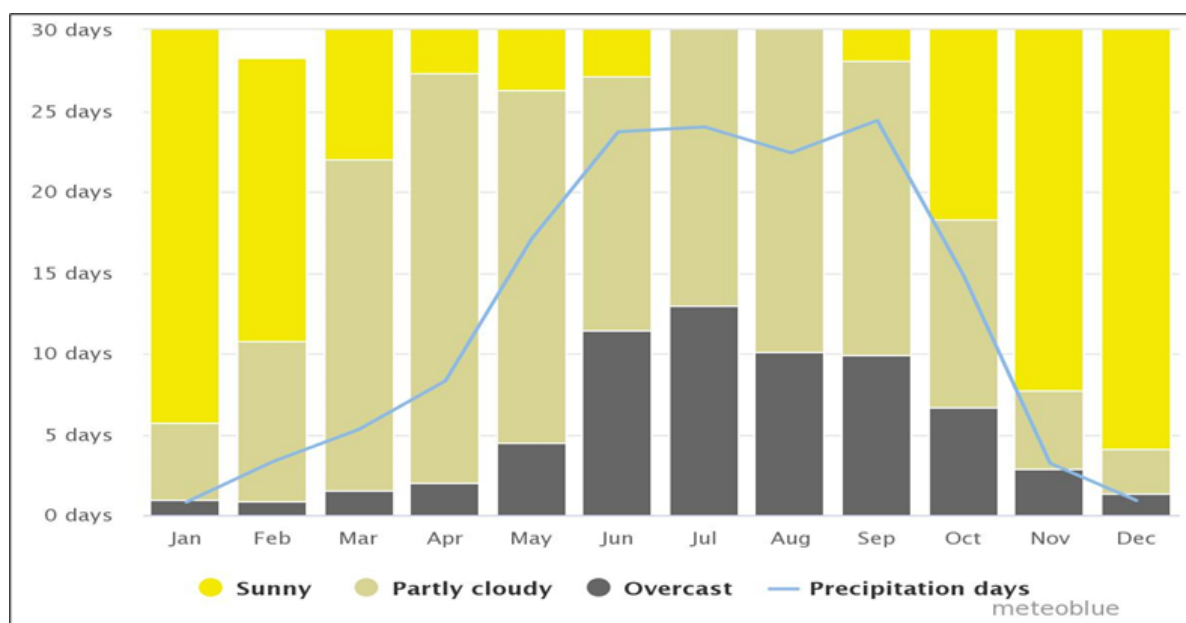


Source: Meteoblue, 2022

Figure 5: Monthly Precipitation and Temperature Trend Analysis of Sonar Char

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

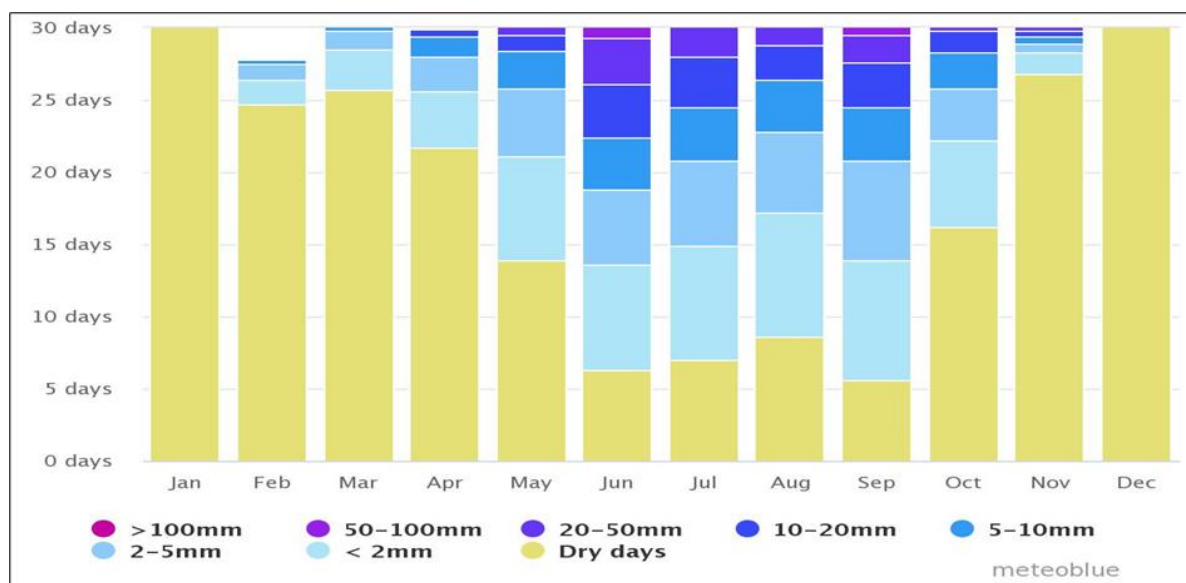
precipitation anomaly for every month from 1979 up to now. The anomaly tells you if a month had precipitation than the 30-year climate mean of 1980-2010. Thus, green months were wetter and brown months were drier than normal.



Source: Meteoblue, 2022

Figure 6: Cloudy and Sunny Days Sonar Char and Surrounding Areas

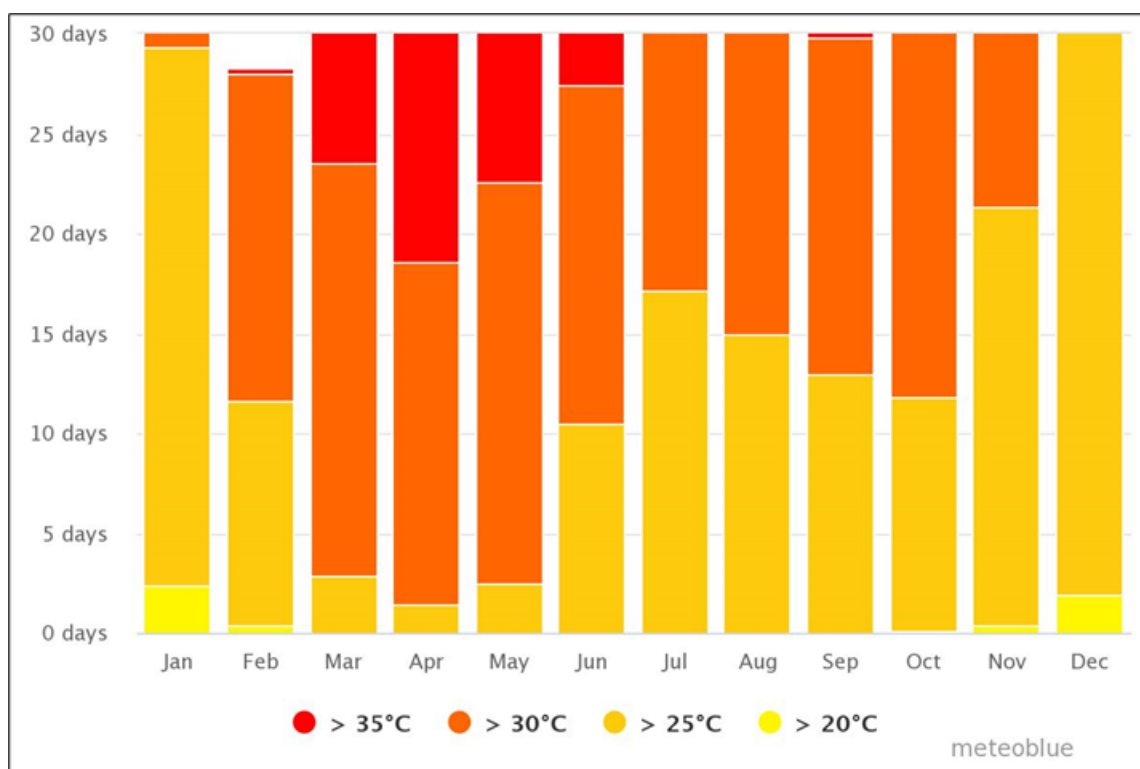
The ideal months to visit Sonar Char are November, December, January, and February. The weather becomes reasonably quiet throughout these months, and the days are longer than on other days of the year. The amount of precipitation is higher between April and October.



Source: Meteoblue, 2022

Figure 7: Amount of Precipitation in Months

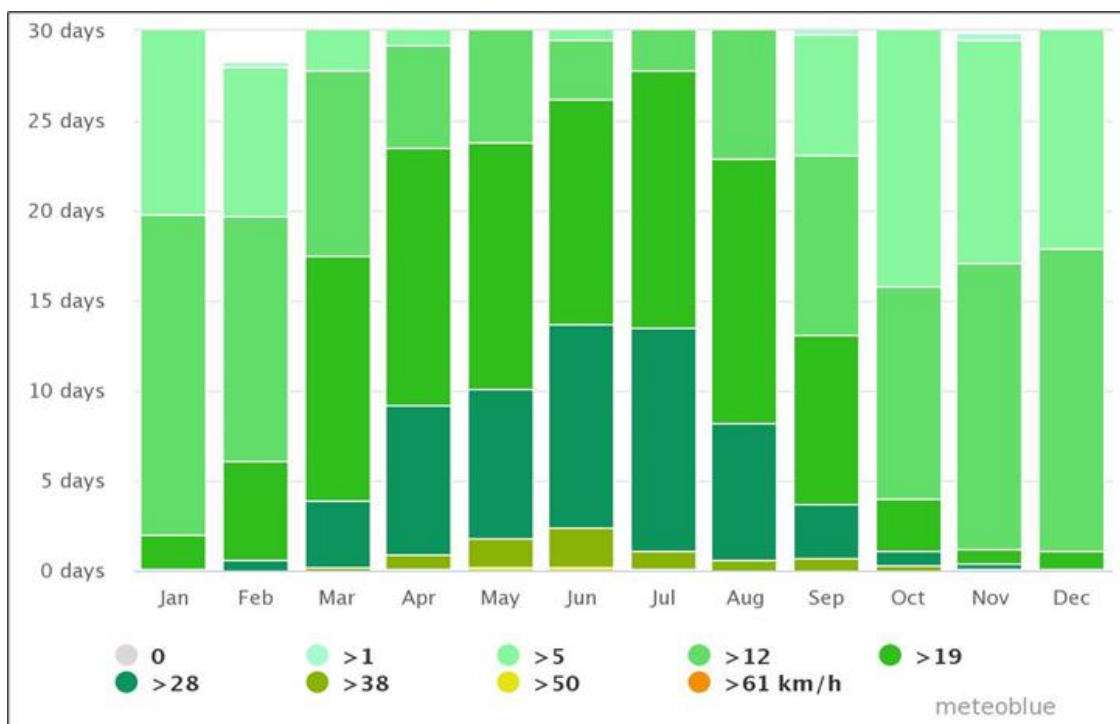
The graph demonstrates that the weather becomes dry from November to March. These months are a better time to visit Sonar Char and the surrounding area.



Source: Meteoblue, 2022

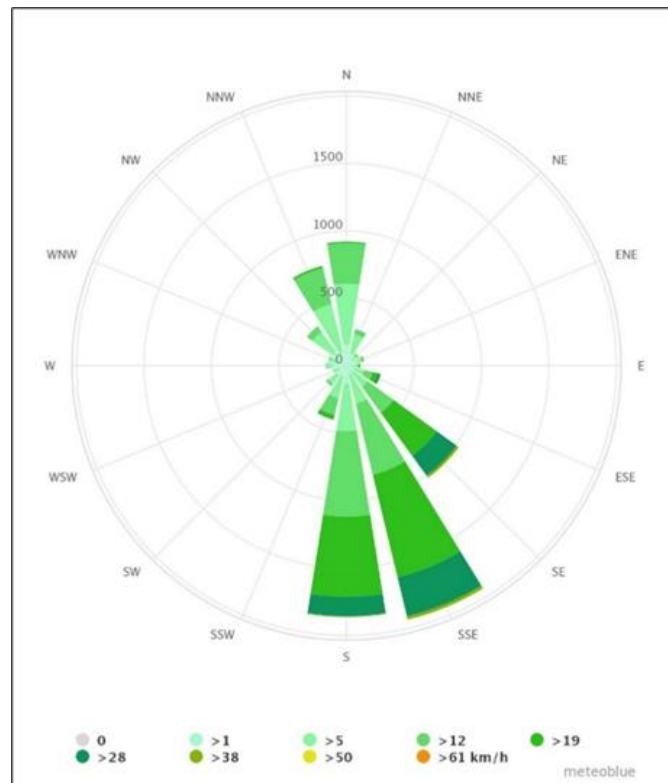
Figure 8: Temperature Variation in Sonar Char and Surrounding Areas

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.



Source: Meteoblue, 2022

Figure 9: Wind Speed in the Months



Source: Meteoblue, 2022

Figure 10: Wind Direction (Wind Rose Diagram) for Sonar Char and the Nearest Locations

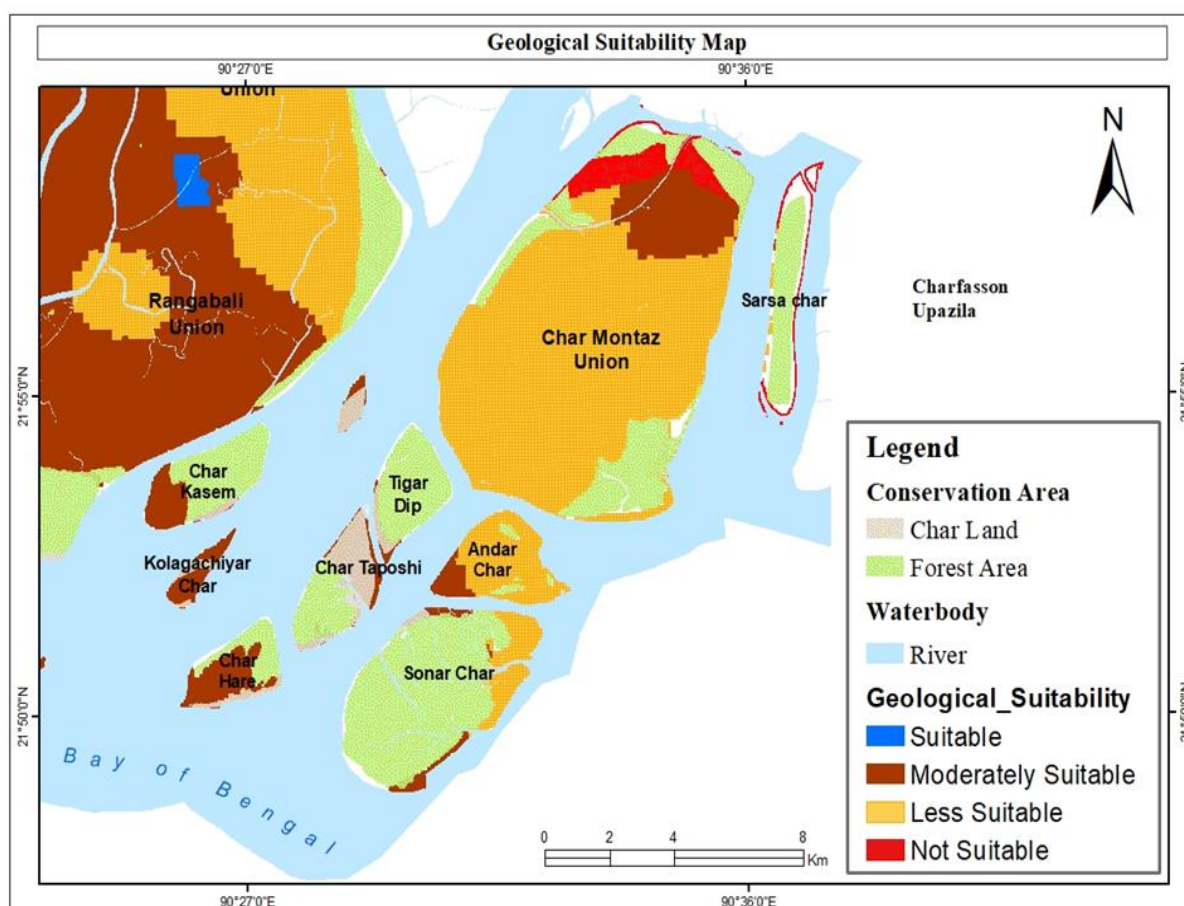
The wind rose above shows that during this period a strong wind blew from the south-south-east, from the south and the southeast corner of the Sonar Char.

CHAPTER TWO: SUITABILITY ANALYSIS

2.1 SUITABLE SITE RANKING - FINDINGS FROM SUITABILITY ANALYSIS

2.1.1. Ranking Suitable Areas based on Geological Attributes

Two-step multi-criteria decision making (MCDM) technique has been applied to rank Geological suitability sites. PGA, Foundation layer depth, Soil Type, Liquefaction Potential Index, and Building Height Recommendation have been considered as important dependent variables and to find out the relative weight of these variable AHP pairwise comparison has been applied. After getting the weighted value, the weighted sum model was applied to find the final suitability map (Map 5).



Source: PKCP Project, UDD, 2019

Map 5: Geological Suitability Map of Sonar Char and Surrounding Areas

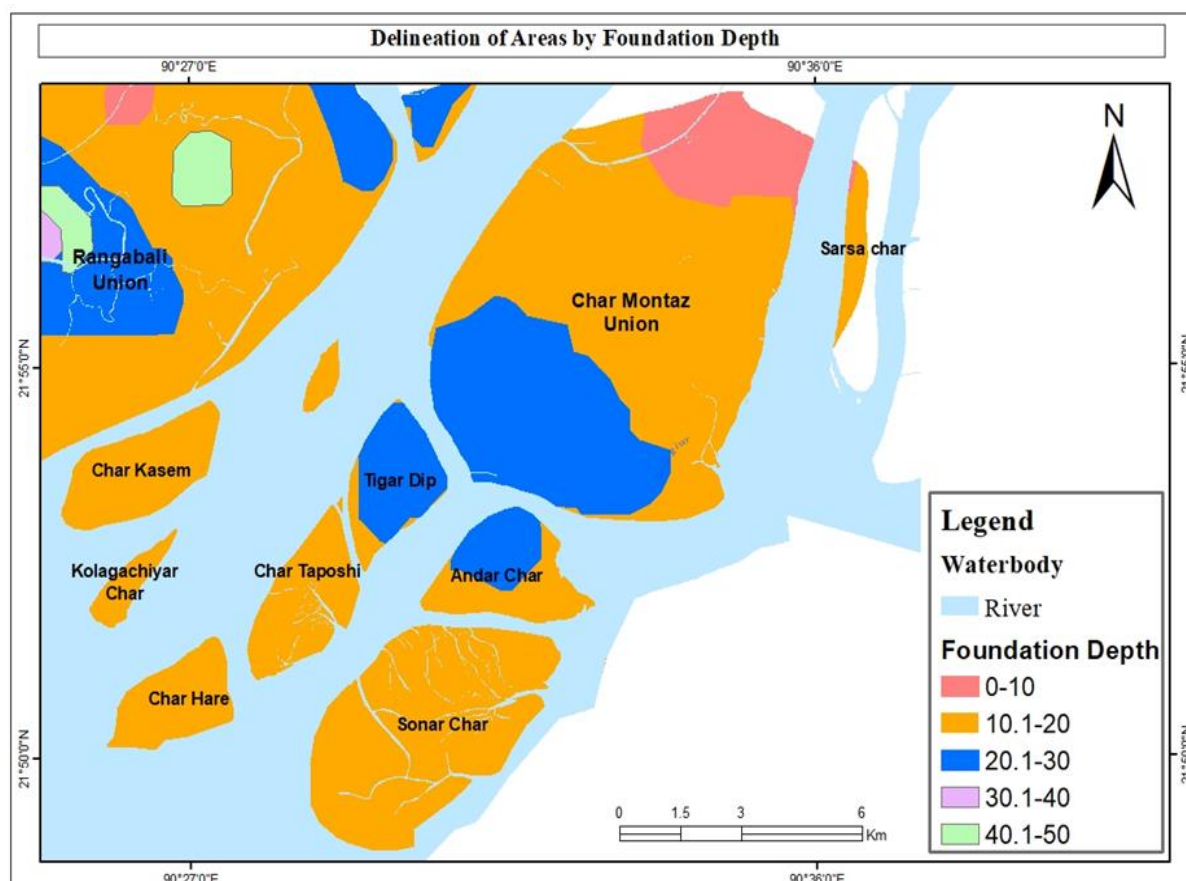
Table 5: Area Percentage of Ranks from Geological Suitability

Ranks	Area in Percentage
Moderately Suitable	21.2
Less Suitable	74.2%
Not Suitable	4.6%

Source: PKCP Project, UDD, 2019

Around 21.2 percent area found moderately suitable, and 74.2 percent found it less suitable as well as 4.6% area are not suitable. And it is found that Char Montaz and Andar Char are situated in less suitable area.

The study area of Sonar Char and the surrounding area are in one Stable Continental Crust (SCC) section in Bangladesh. Map 5, Char Montaz and Andar Char are in not suitable areas in geological perspective.



Source: PKCP Project, UDD, 2019

Map 6: Foundation Depth of Sonar Char and Surrounding Area

2.1.2. Ranking Suitable Areas based on Hydro-geological Attributes

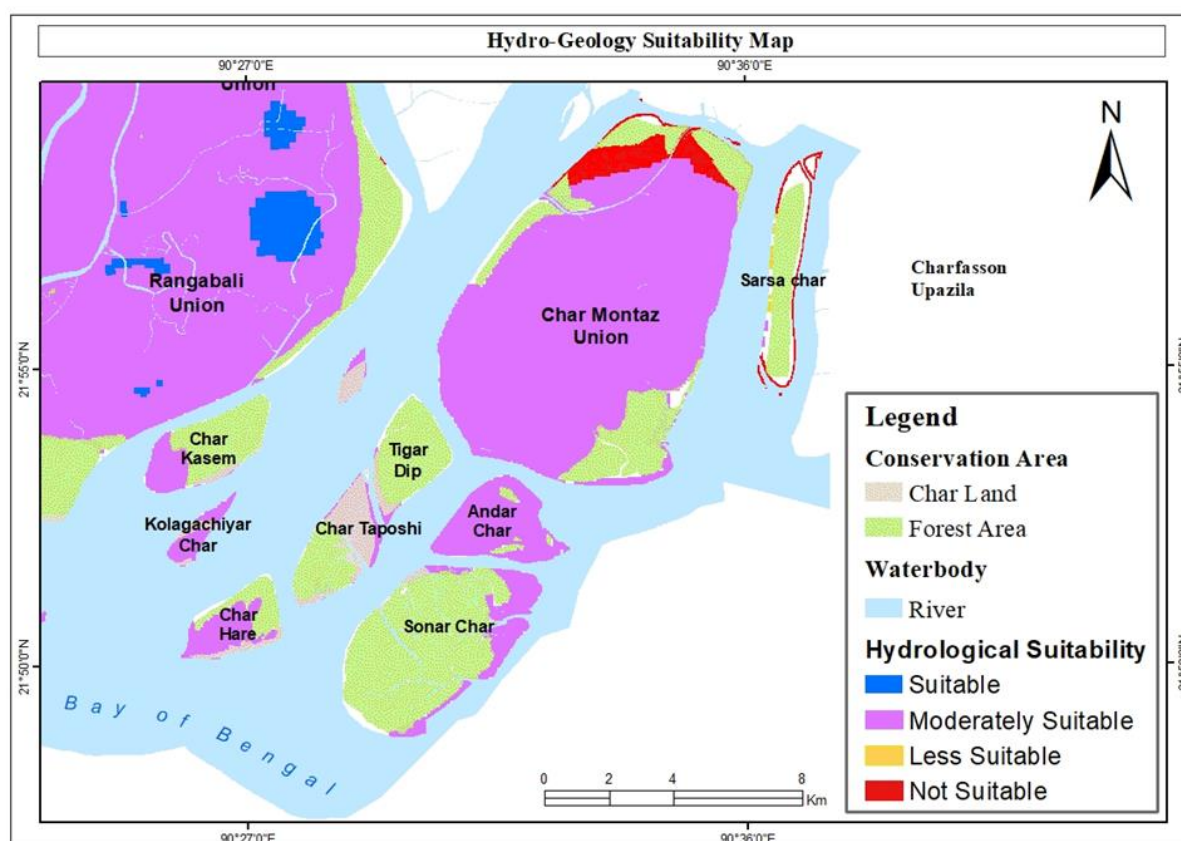
Most natural processes rely on water. It shapes the landscape by transporting silt and solutes to lakes and oceans. Hydrogeological study has been conducted to understand water flow and distribution below the earth's surface. Suitable sites based on hydrological attributes have been judged considering the availability of quality groundwater for human use.

Table 6: Area percentage of Ranks from Hydro-Geological Suitability

Ranks	Area in Percentage
Moderately Suitable	95.4
Not Suitable	4.6%

Source: PKCP Project, UDD, 2019

It is found that 95.4% of the area was found hydro-geologically moderately suitable, only 4.6% of the area was not suitable.

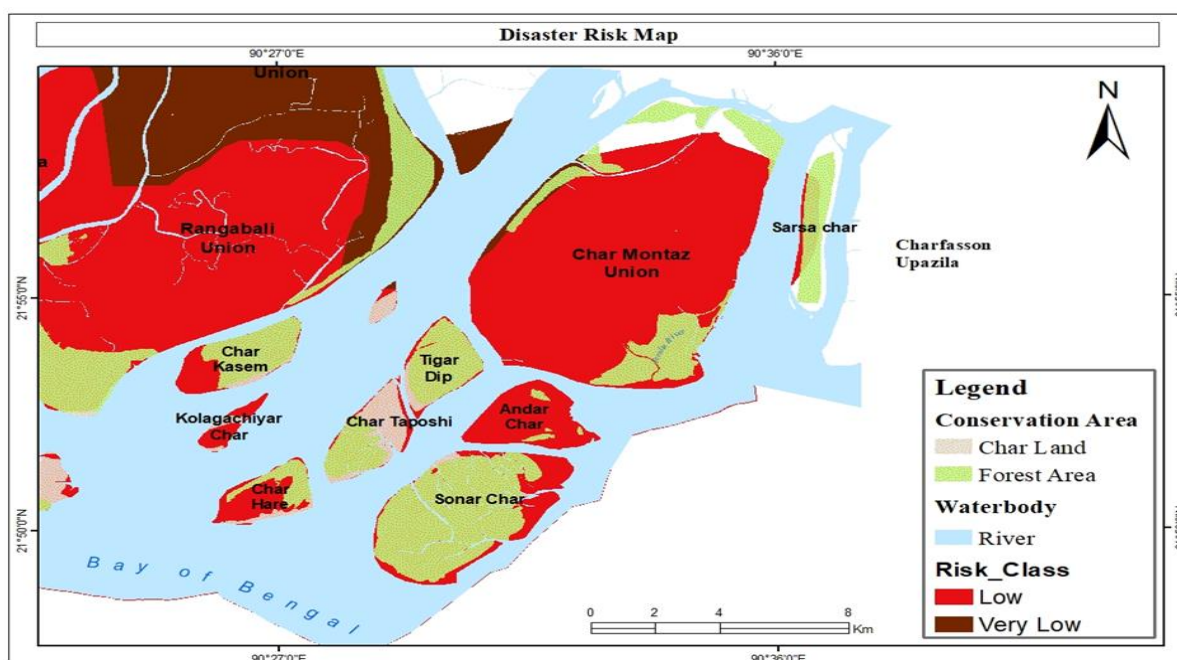


Source: PKCP Project, UDD, 2019

Map 7: Ranking of Suitable Sites Considering Quality and Quantity of Groundwater

2.1.3. 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. Andar Char and Sonar Char have a low disaster risk. Most of the Sonar char and Char Taposhi/Kolagasi is covered with forest.

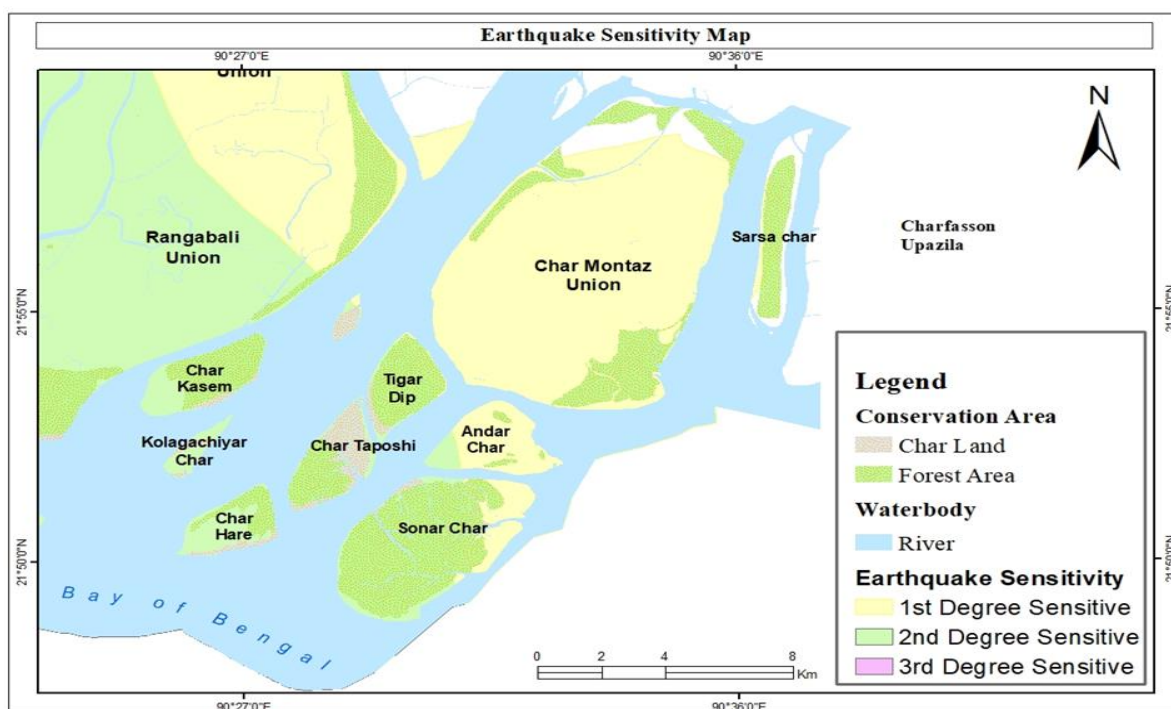


Source: PKCP Project, UDD, 2019

Map 8: Disaster Vulnerability of Sonar Char and Surrounding Area

2.1.4. Earthquake Sensitivity Map

In Map 9, Char Montaz and Andar Char are in first degree sensitive low rise and first degree sensitive Highrise buildings. Char Montaz and Andar Char are in first degree for earthquake sensitivity.

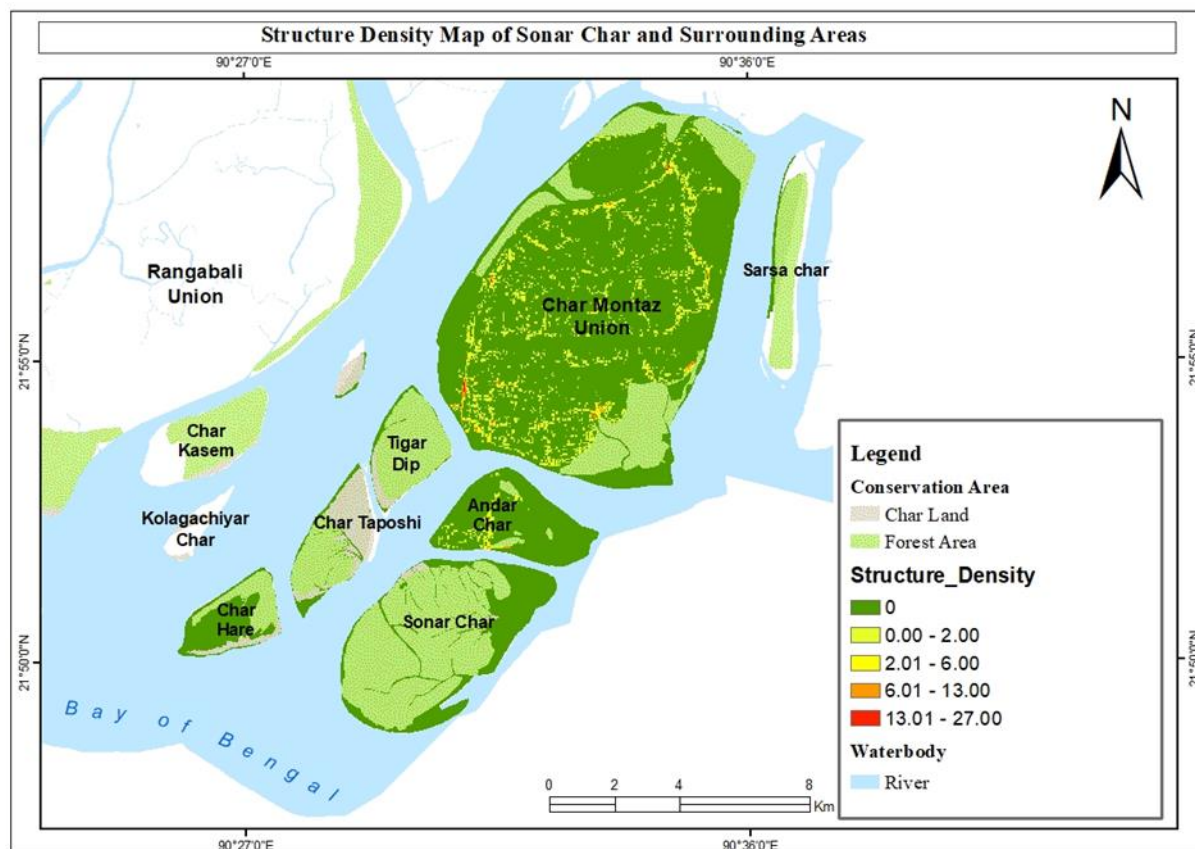


Source: PKCP Project, UDD, 2019

Map 9: Earthquake Sensitivity Map of Sonar Char and Surrounding Area

2.1.5. Structure Density Map

It is found that structures are found only in the Char Montaz area and some areas of sonar char area. Density of structures is very low in sonar char and surrounding area. Only a minimum number of 13 to 17 structures is found in Char Montaz and Andar Char.



Source: PKCP Project, UDD, 2019

Map 10: Structure Density Map of Sonar Char and Surrounding Area

2.2 SUITABLE SITE RANKING - FINDINGS FROM MULTI-CRITERIA ANALYSIS

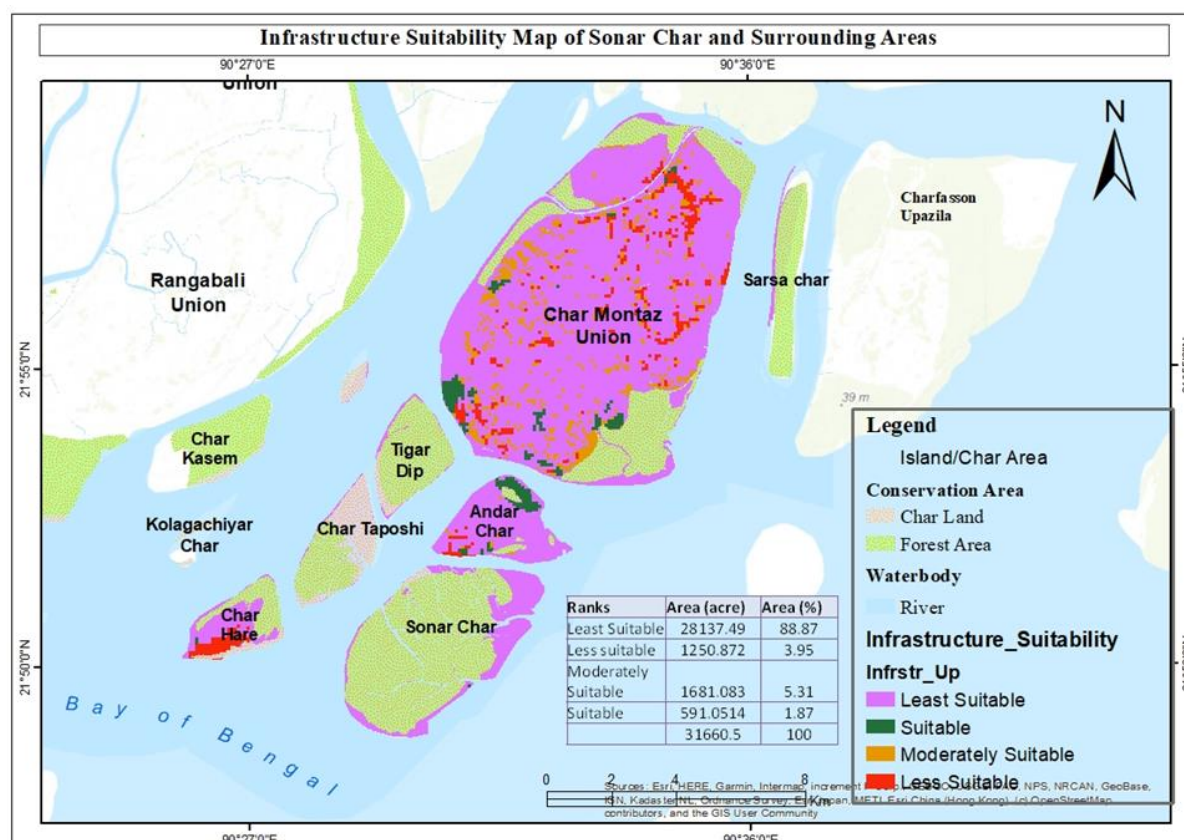
2.2.1 Ranking Suitable Areas for Infrastructure Development

Infrastructures are the basic facilities and equipment required to produce a product or deliver a service. Infrastructures should supply the necessary conditions and equipment to carry out the necessary business tasks and operations, as well as aid in reaching the intended product and service conformance. To rank suitable sites for infrastructure development geological attributors of the upazila, disaster risk, elevation and building height zones has been considered. Due to up gradation of construction technology, it is possible to reach foundation depth 25m to more than 30m. side by side the Upazila's soil condition is suitable for low-rise building construction.

Table 7: Area percentage of Ranks of Infrastructure Suitability

Ranks	Area in Acre	Area in Percentage
Suitable	591.05	1.87
Moderately Suitable	1681.08	5.31
Less Suitable	1250.87	3.95
Least Suitable	28137.49	88.87
Total	31660.50	100.00

Source: PKCP Project, UDD, 2019

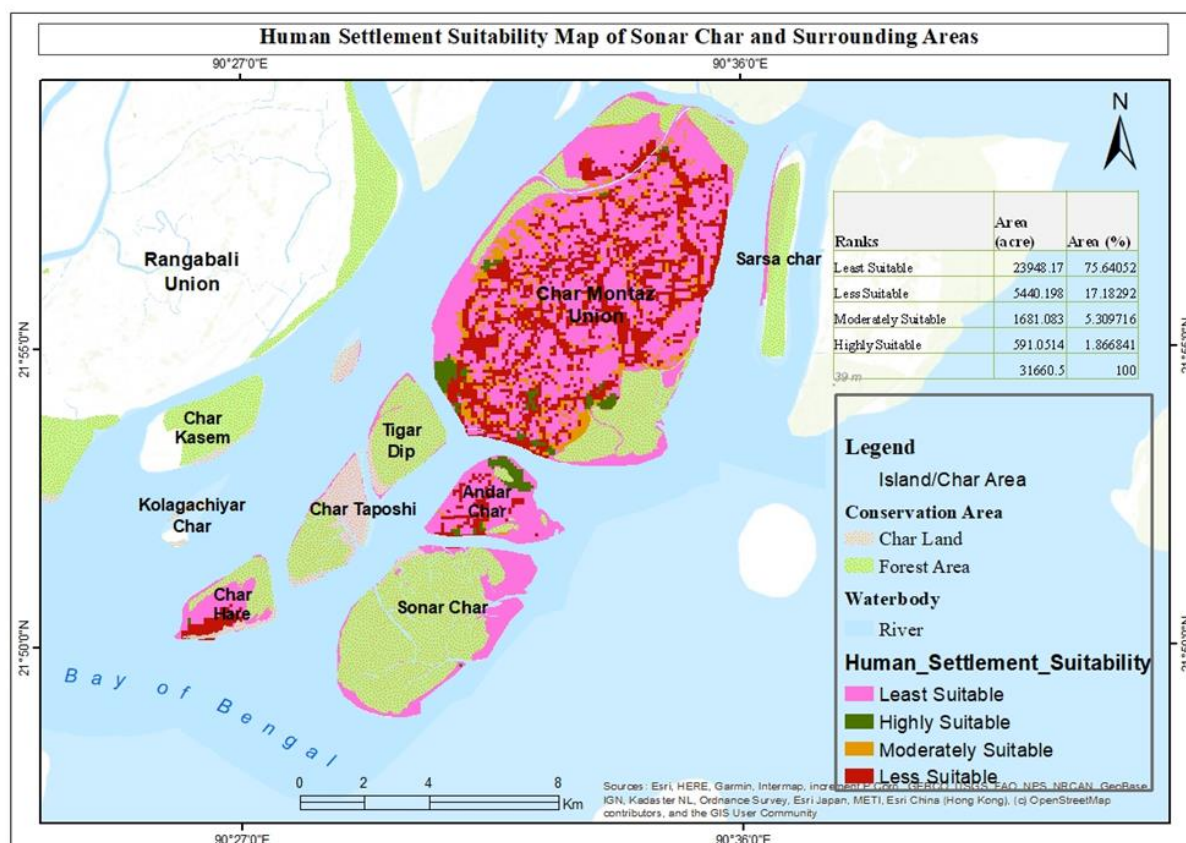


Source: PKCP Project, UDD, 2019

Map 11: Infrastructure Suitability Map of Sonar Char and Surrounding Areas

2.2.2 Ranking Suitable Areas for Human Settlement

The human settlement environment includes both surface spaces and space places that are inextricably linked to human activity and life. Sonar char and its surrounding areas are a seaside location with a low level of urbanization. However, it comes with a slew of issues, including a scarcity of high-quality water and the threat of disaster. As a result, hydro-geological and geological features, proximity to roadways, elevation, and disaster risk level have all been considered when ranking human settlement sites (Map 12).



Source: PKCP Project, UDD, 2019

Map 12: Human Settlement Suitability Map of Sonar Char and Surrounding Areas

Table 8: Area Percentage of Ranks from Human Settlement Suitability

Ranks	Area in Acre	Area in Percentage
Highly Suitable	591.05	1.87
Moderately Suitable	1681.08	5.31
Less Suitable	5440.19	17.18
Least Suitable	23948.17	75.64
Total	31660.50	100.00

Source: PKCP Project, UDD, 2019

About 75.64% of the area is least suitable area which is the majority portion of sonar char and surrounding areas as well as 17.18% area is less suitable and only 1.8% area is highly suitable area for human settlement.

2.3 DEVELOPMENT POTENTIALITY MAP

Development potentiality has calculated by weighted overlay index tool in Arc GIS. Structure density, settlement suitability, Infrastructure suitability, Geological Suitability, Economic Region, Hydrological, Road Proximity, Water Quality, Rangabali Physical Feature parameters are selected to calculate development potential sites of sonar char and surrounding areas. In below table, all criteria and weightage has been given:

Table 9: Parameter and Weightage of Development Potentiality

Parameter	Data Requirement	Discussion	Category	Numeric Value	Normalized/Scale Value (1-9)	Weight (in 100)
Geological Suitability	Geological suitability data from a separate analysis from Regional Plan	A Geological suitability map will be produced showing which areas are geologically more suitable.	Not Suitable	1	1	10
			Less Suitable	2	3	
			Moderately Suitable	3	5	
			Suitable	4	7	
			Highly Suitable	5	9	
Hydro-Geological Suitability	Hydro-Geological Suitability data from a separate analysis from Regional Plan	A Hydro-Geological Suitability map will be produced showing which areas are hydro-geologically more suitable.	Not Suitable	1	1	10
			Less Suitable	2	5	
			Moderately Suitable	3	7	
			Suitable	4	9	
Infrastructure Development Suitability	Roads, Electricity availability data, Drinking water source, Hotels, Tour operator's information	Infrastructure Accessibility will indicate the areas with different infrastructure accessibility level.	Not Suitable	1	1	10
			Less Suitable	2	3	
			Moderately Suitable	3	5	
			Suitable	4	7	
			Highly Suitable	5	9	
Human Settlement Suitability	Human Settlement Suitability data from a separate analysis from Regional Plan	A Human Settlement Suitability map will be produced showing which areas are more suitable for human Settlement.	Not Suitable	1	1	10
			Less Suitable	2	3	
			Moderately Suitable	3	5	
			Suitable	4	7	
			Highly Suitable	5	9	
Economic Region Suitability	Economic Region Suitability data from a separate analysis from Regional Plan	An Economic Region Suitability map will be produced showing which areas are more suitable for economic development.	Not Suitable	1	1	10
			Less Suitable	2	3	
			Moderately Suitable	3	5	
			Suitable	4	7	
			Highly Suitable	5	9	
Agricultural Suitability	Agricultural Suitability data from a separate analysis from Regional Plan	A Agricultural Suitability map will be produced showing which areas are more suitable for agricultural production.	Not Suitable	1	9	10
			Less Suitable	2	7	
			Moderately Suitable	3	5	
			Suitable	4	3	
			Highly Suitable	5	1	
Erosion & Deposition	Erosion & Deposition data	A map will be produced showing which areas more erosion prone or contained with relatively new deposited soil.	Newly Deposited Soil	1	1	10
			Relatively Matured Soil	2	9	
Landform	Satellite imagery analysis data of land stability Types	A Landform Stability map will be produced showing which areas are more stable in context of geographical formation. Typologies of tourism site will be useful to define the type of treatment required for the respective type of site to be developed.	Most Stable	4	9	10
			Highly Stable	3	7	
			Moderately Stable	2	5	
			Less Stable	1	1	

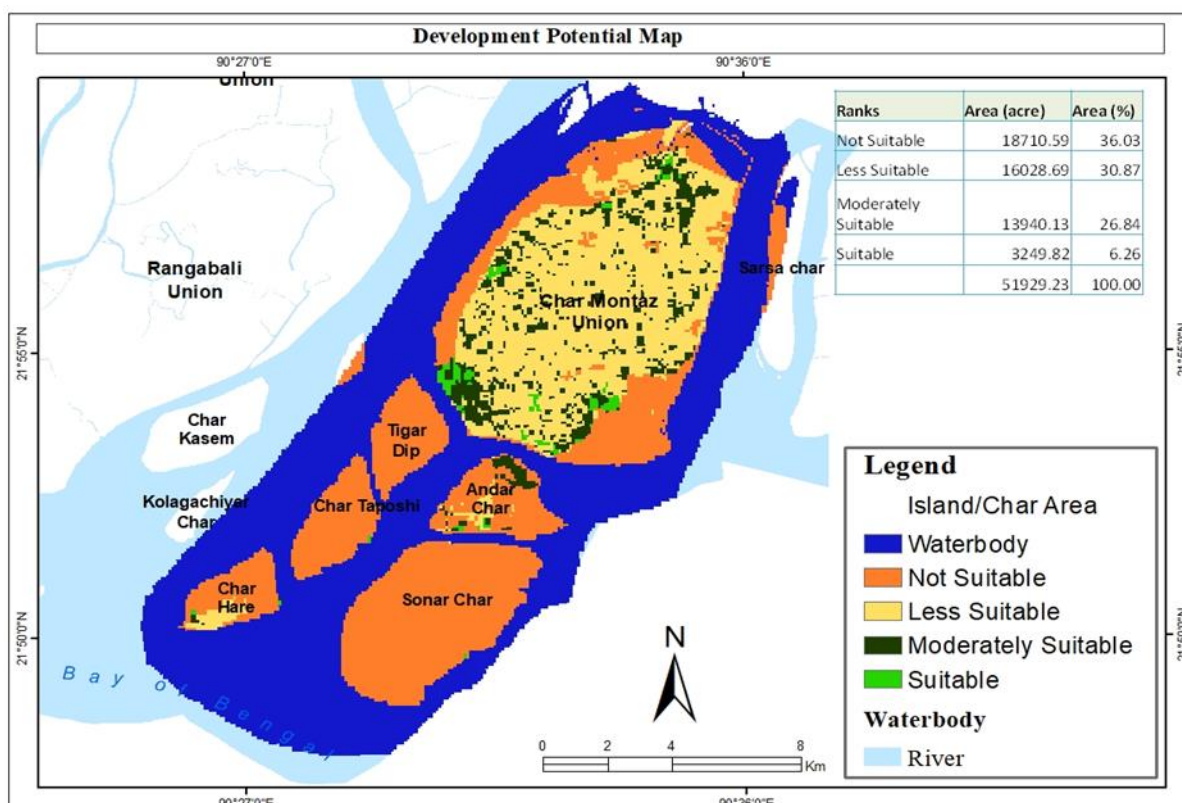
Parameter	Data Requirement	Discussion	Category	Numeric Value	Normalized/Scale Value (1-9)	Weight (in 100)
Disaster Risk	Disaster risk data from Regional Plan Analysis	A disaster risk map will be produced showing areas with different disaster risk level.	Highest Risk	1	1	10
			High Risk	2	3	
			Moderate Risk	3	5	
			Low Risk	4	7	
			Lowest Risk	5	9	
Structure Density	Structure Density layer from Structure Plan Analysis	Structural density of different land parcel will be shown in this map.	0 - 25.67	1	1	10
			25.68 - 83.43	2	3	
			83.44 - 164.72	3	5	
			164.73 - 308.04	4	7	
			308.05 - 545.5	5	9	

Source: PKCP Project, UDD, 2019

Table 10: Area Percentage of Ranks

Ranks	Area (Acre)	Area (%)
Suitable	3249.82	6.26
Moderately Suitable	13940.13	26.84
Less Suitable	16028.69	30.87
Not Suitable	18710.59	36.03
Total	51929.23	100.00

Source: PKCP Project, UDD, 2019



Source: PKCP Project, UDD, 2019

Map 13: Development Suitability Map of Sonar Char and Surrounding Areas

2.4 TOURISM SUITABILITY MAP OF SONAR CHAR AND SURROUNDING AREA

Some parameters are selected to calculate tourism suitable area in sonar char and surrounding areas. Geology, Hydrology, Bay of Bengal, Tourist Spot, Bazar Point, Structure Density, DEM, Storm Tract, Land use, human settlement, Infrastructure settlement, Disaster are considered.

Table 11: Parameter and Weightage of Tourism Potentiality

Parameter	Data Requirement	Discussion	Category	Numeric Value	Normalized/ Scale Value (1-9)	Weight (in 100)
Geological Suitability	Geological suitability data from a separate analysis from Regional Plan	A Geological suitability map will be produced showing which areas are geologically more suitable.	Not Suitable	1	1	10
			Less Suitable	2	5	
Hydro-Geological Suitability	Hydro-Geological Suitability data from a separate analysis from Regional Plan	A Hydro-Geological Suitability map will be produced showing which areas are hydro-geologically more suitable.	Not Suitable	1	1	5
			Less Suitable	2	3	
			Moderately Suitable	3	5	
Infrastructure Suitability	Roads, Electricity availability data, Drinking water source, Hotels, Tour operator's information	Infrastructure Accessibility will indicate the areas with different infrastructure accessibility level.	Less Suitable	2	4	5
			Moderately Suitable	3	5	
			Suitable	4	3	
			Highly Suitable	5	9	
Human Settlement Suitability	Human Settlement Suitability data from a separate analysis from Regional Plan	A Human Settlement Suitability map will be produced showing which areas are more suitable for human Settlement.	Less Suitable	2	4	10
			Moderately Suitable	3	5	
			Suitable	4	3	
			Highly Suitable	5	9	
Proximity to Bay of Bengal	Easy access to Bay of Bengal	All attraction points are connected to Bay of Bengal.		1	1	10
			Less Suitable	2	3	
			Moderately Suitable	3	5	
			Suitable	4	7	
			Close	5	9	
Proximity to Tourist Attraction Points	Tourists can travel to those area where the attractions are more, and they can enjoy more, and existing tourist attraction points are used to give weightage	Existing tourist attraction points are considered	Very Far from Existing Attraction Points	1	9	20
			Far from Existing Attraction Points	2	7	
			Moderately Close to Existing Attraction Points	3	5	
			Close to Existing Attraction Points	4	3	
			Very close to Existing	5	1	

Parameter	Data Requirement	Discussion	Category	Numeric Value	Normalized/ Scale Value (1-9)	Weight (in 100)
			Attraction Points			
Proximity to Bazar Point	Tourists can get all facilities and amenities from bazar area and existing growth center data is used	Commercial and growth center has been considered	Far from Growth center	1	1	10
			Close to Growth center	2	9	
Storm Tract	Cyclone path s is selected to identify storm tract which give minimum weightage for tourism potentiality	Cyclone path has considered.	Very Far from Storm Tract	4	9	10
			Far from storm Tract	3	7	
			Close to storm Tract	2	5	
			Very Close to storm tract	1	1	
DEM	Disaster risk data from Regional Plan Analysis	A disaster risk map will be produced showing areas with different disaster risk level.	Highest Risk	1	1	10
			High Risk	2	3	
			Moderate Risk	3	5	
			Low Risk	4	7	
			Lowest Risk	5	9	
Structure Density	Structure Density layer from Structure Plan Analysis	Structural density of different land parcel will be shown in this map.	0	5	9	10
			0 - 20	4	7	
			2.01 – 6.01	3	5	
			6.01 - 13	2	3	
			13.01 - 27	1	1	

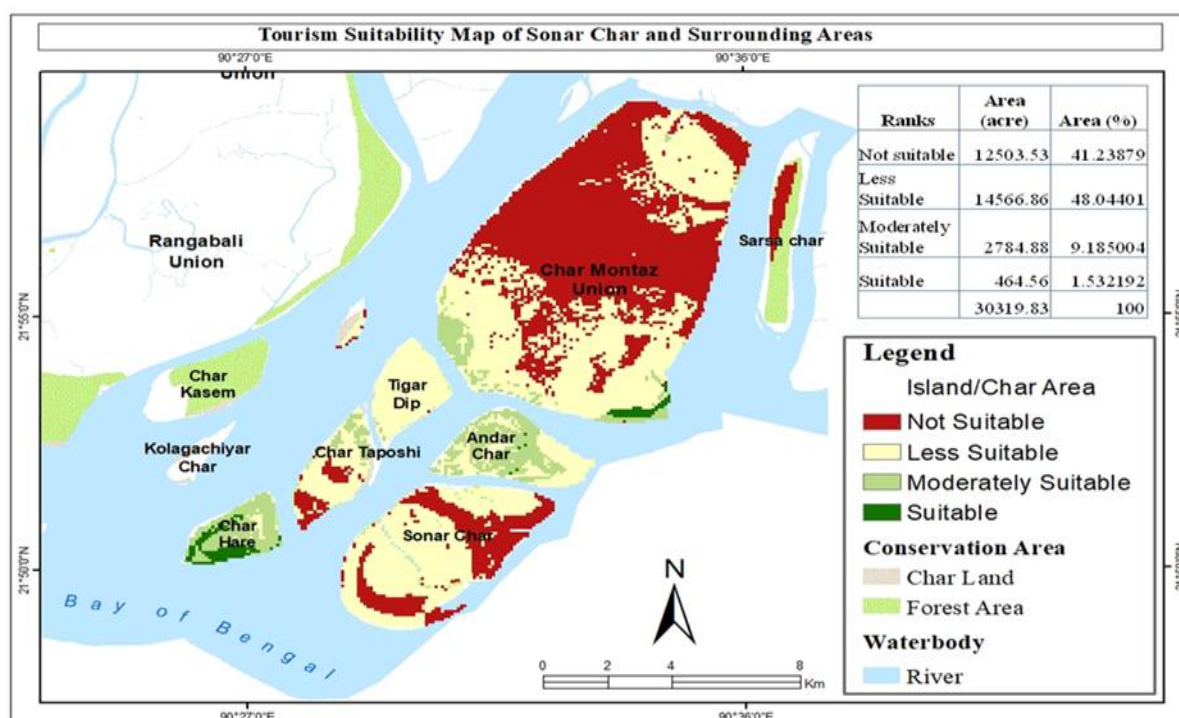
Source: PKCP Project, UDD, 2019

From Table 12 it is found that 48.04% of the area is a less suitable area according to tourism potential. Only 1.5% of the area is suitable for tourism and all proposals are given based on suitable site.

Table 12: Area Percentage of Ranks of Tourism Potentiality

Ranks	Area (acre)	Area (%)
Suitable	464.56	1.532192
Moderately Suitable	2784.88	9.185004
Less Suitable	14566.86	48.04401
Not suitable	12503.53	41.23879
Total	30319.83	100

Source: PKCP Project, UDD, 2019



Source: PKCP Project, UDD, 2019

Map 14: Tourism Suitability Map of Sonar Char and Surrounding Areas

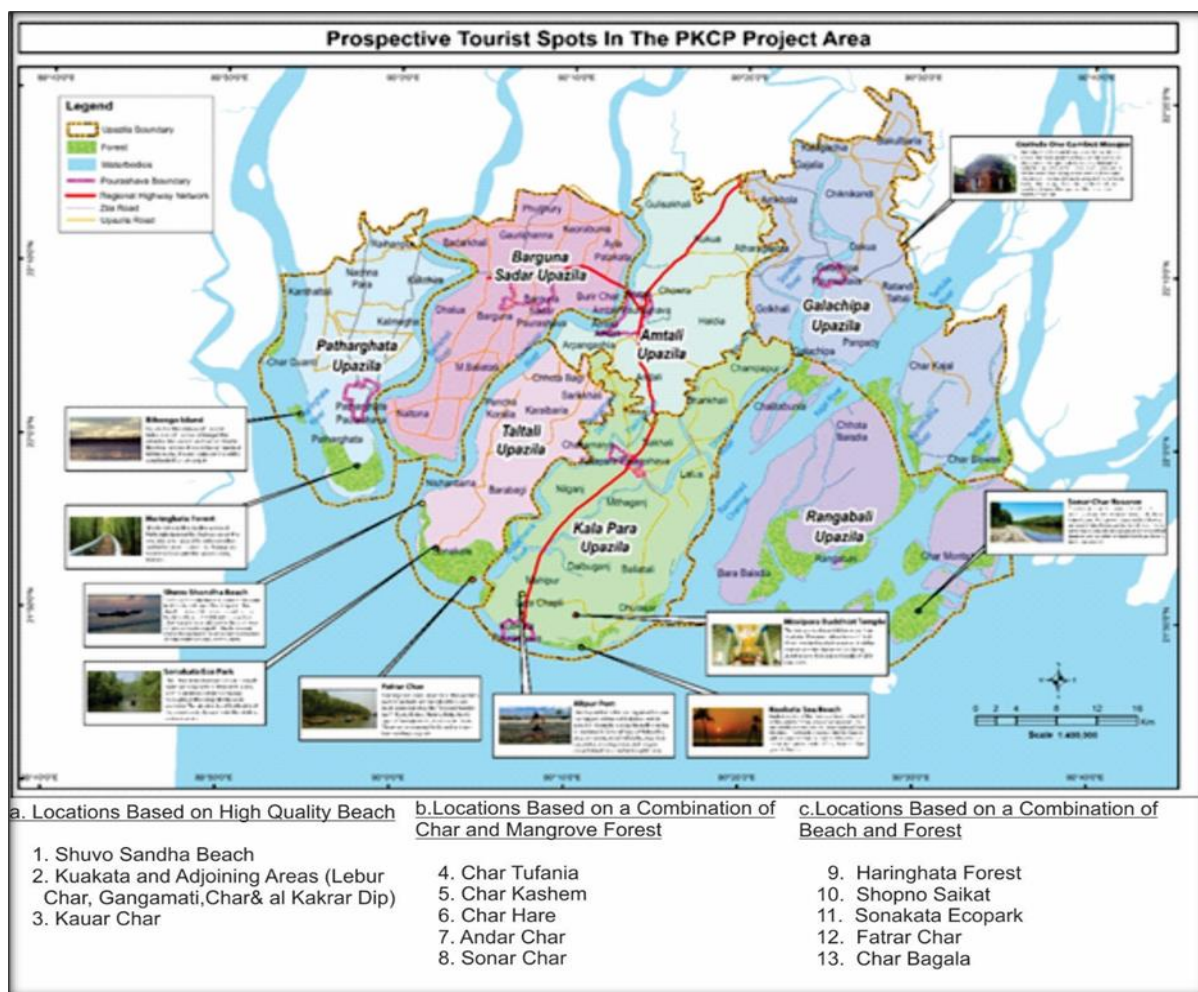
CHAPTER THREE: UNDERSTANDING OF TOURISM

3.1 INTRODUCTION

This Chapter presents a design concept for an Exclusive Tourist Zone (ETZ) that caters to both foreign and local tourists. Before introducing the design possibilities, the first part analyzes the UNWTO international tourism policy related to tourism in Bangladesh, with a focus on the Payra-Kuakata region and the Sonar Char area. Secondly, secondly explores the potential sites of Sonar Char and its surrounding islands from the perspective of tourism facility development. These overviews may help identify appropriate architectural functions that respect the site and its context. The AAP report assesses Sonar Char's potential for an Exclusive Tourist Zone (ETZ) for foreigners. In the third section, based on the initial assessment, suitability mapping and other information, it appears that Sonar Char can be a gated Exclusive Tourist Zone along with some other chars in the area. The report explores sustainable architectural programs and possibilities for eco-tourism for Sonar Char and surrounding islands.

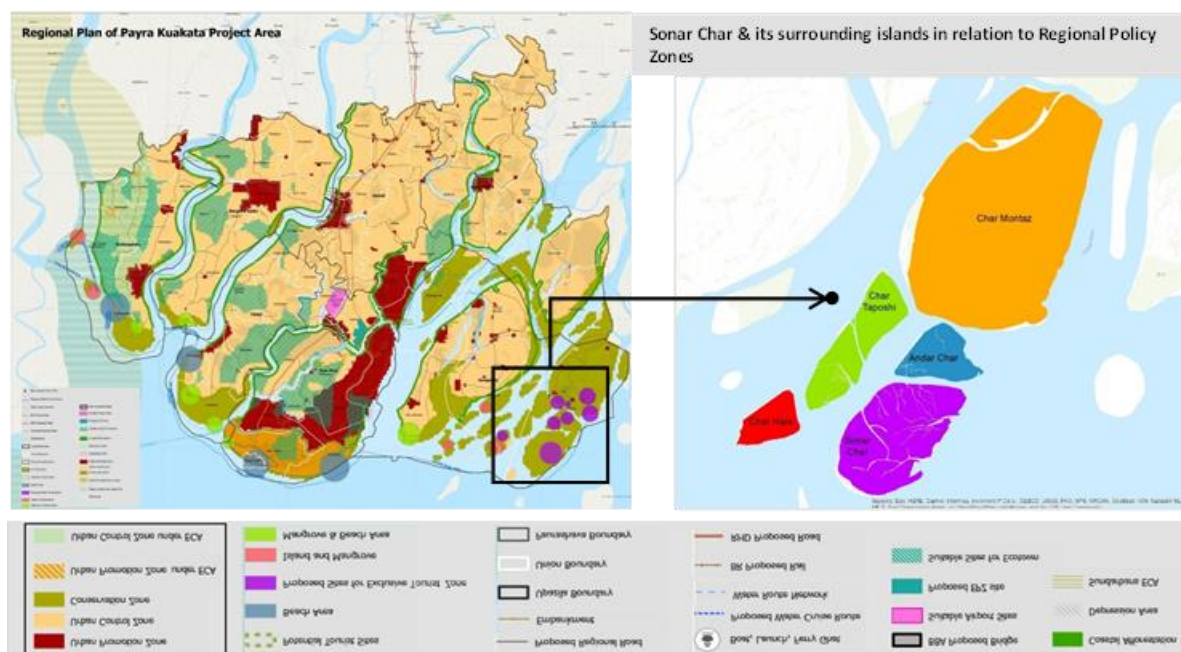
The Payra-Kuakata region, located southern costal part of Bangladesh, is rich with ample opportunities to create facilities for tourists. The region has a diverse and unique natural environment, with forests, beaches, canals, lakes, and rivers. This region is suitable for ecotourism development, as it showcases the beauty and richness of nature. Based on various attractions and locations, a tourist zoning map has been prepared to identify 13 zones (Map 15) that have different features that can appeal to both domestic and international tourists (PKCP, 2021). Some of these zones have high-quality beaches, some have a mix of forest and char (small island), and some have both beach and mangrove forest. To develop these zones, innovative ideas and recommendations have been desired to provide adequate and proper Tourist Service Infrastructure (TSI) to attract more visitors from home and abroad.

The geological formation of Bangladesh is developed by the three mighty river systems as the Ganges-Padma River system, Brahmaputra-Jamuna River system, and Surma-Meghna River system. Quaternary Sediments deposited from these three-river systems has formed this delta plain and major coastal areas of southern Bangladesh. The project area of Payra-Kuakata is located to this coastal region (Map 15) consisting of several upazilas of Patuakhali and Barguna District. Patuakhali and Barguna district fell in the Ganges tidal floodplain. Generally, the coastal areas of Bangladesh are classified under two broad categories viz. interior coast and exterior coast (Ahsan, 2013). Within this coastal areas of Bangladesh, Sonar Char, and its surrounding islands (Map 16) in Rangabali Upazila has potential to be developed exclusively for foreign tourists that may be identified as Exclusive tourist zone (ETZ). The area 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 that gives a wonderful glimpse of Sundarbans.



Source: PKCP Project, UDD, 2019

Map 15: Prospective Tourist Locations/Spots of Project Area



Source: PKCP Project, UDD, 2019

Map 16: Sonar Char and its Surrounding Islands

The tourism business has seen significant growth worldwide because of economic growth and accompanying improvement in people's quality of life (Dwyer, 2020). Numerous studies have established tourism as a primary driver of economic growth in every country (Badulescu et al. 2020; Swangjang & Kornpiphat 2021). Numerous tourists visit various places of the world for leisure or business purposes (Barbhuiya & Chatterjee 2020). Despite the global tourism industry's expansion, destination managers are growing increasingly concerned about the elements that contribute to tourist reservation (Pulido-Fernández et al. 2015; Drimili et al. 2020).

World Tourism Organization (UNWTO), a United Nations specialized agency, is responsible for the promotion of responsible, sustainable, and universally accessible tourism geared towards the achievement of the universal 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs).

UNWTO's leadership vision acknowledges the most pressing challenges facing tourism and identifies the sector's ability to overcome them and to drive wider positive change, including the opportunities responsible tourism offers for the advancement of the 17 Sustainable Development Goals (SDGs). Payra-Kuakata Tourism must be fully-compliant to 17 Sustainable Development Goals (SDGs) of UNWTO.



Figure 11: 17 SDGs of UNWTO

Beside that Tourism in modern times can be of vital importance to the economy of a country. Not only can it contribute handsomely to the natural exchequer, but it can also prompt goodwill among different peoples of the world. It leads to a high degree of social and cultural attainment too. Many of the world societies, cultures and civilizations would have become excellent ages ago had it not been for tourism. Every year thousands of tourists are attracted to the centers of these civilizations, which are ancient and traditional by nature, thus keeping

them alive and thriving. Examples of such societies can be found in Maori tribes of New Zealand, the aborigines of Australia, the Red Indians of U.S.A. and the various ancient societies and tribes of Africa.

Tourism is an increasingly essential element of economic, social, and cultural development and it has become one of the largest global economic activities (Liu, 2022). Where Ecotourism refers to tourism that is based on the natural environment but that seeks to minimize the harmful impacts and better still, seeks to promote conservation. It focuses on local cultures, wilderness adventures, volunteering, personal growth and learning new ways to live on our vulnerable planet. Ecotourism has been defined as 'environmentally friendly' tourism and classified by the International Ecotourism Society (1991) as: "responsible travel to natural areas that conserves the environment and sustains the well-being of local people" (Elperwood, 2002). Ecotourism is one kind of sustainable tourism, both environmentally and culturally, which has the capability to ensure economic and social benefits to the whole society. Ecotourism presents a small segment of nature-tourism, which is understood as travelling to relatively undisturbed or uncontaminated natural areas (Gossling, 1999).

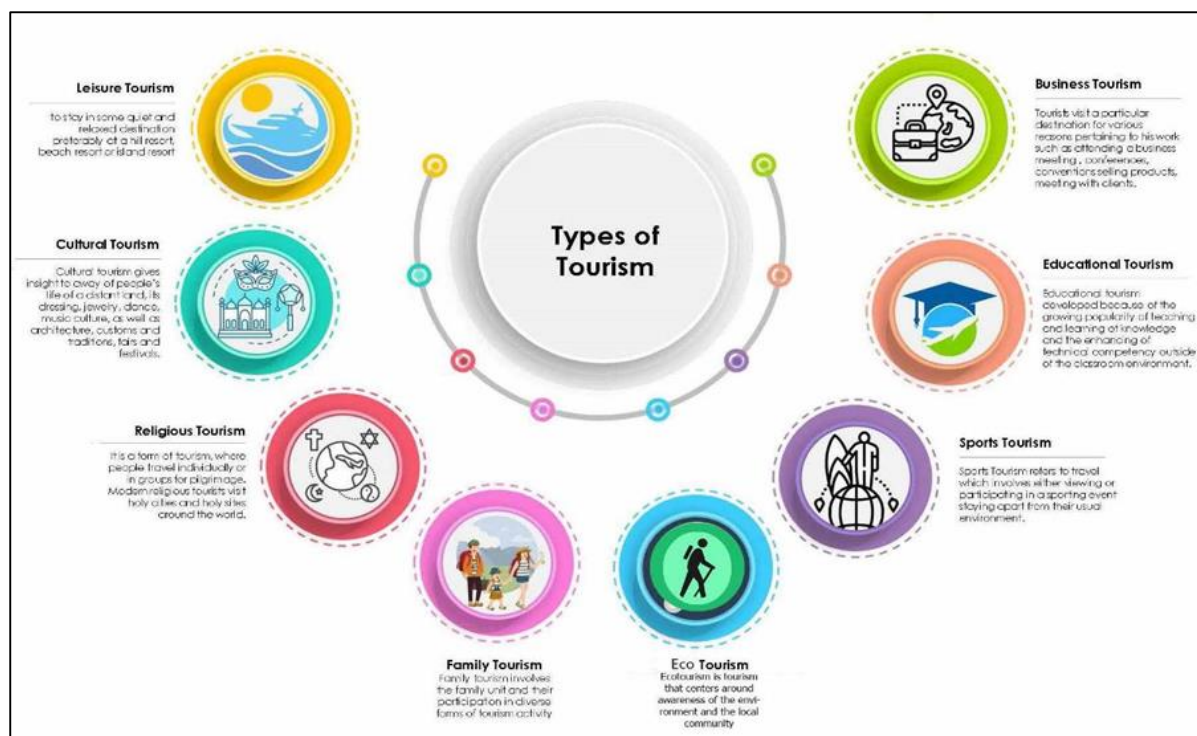
3.2 UNDERSTANDING TOURISM & FACILITIES:

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, today, has become a very emerging and the fastest growing industry both in the global and rural economy, and particularly in the developing countries (Liu, 2022). The importance of tourism as an instrument of economic development and employment generation is recognized all over the world. The data released by different global bodies, including the World Tourism Organization (WTO) indicate significant contribution of tourism to country's GDP and foreign exchange reserves.

Bangladesh is a land of scenic beauty of verdant forests, serene countryside and long structures of sun-bathed beaches, fearsome wilds, meandering rivers, and venerable shrine, which hold high potential for tourism. This country needs a proper strategy and policy to attract both foreign and domestic tourists. Government as well as private sectors may come forward to create the base of the tourism industry.

From the wide variety of tourism, we need to understand the tourism opportunities for our project. The project has a good opportunity to explore Leisure Tourism, Cultural tourism, Family tourism, Eco Tourism, Sports Tourism, and Educational Tourism. The port area has a small possibility for Business Tourism. A survey may be needed to explore religious tourism.

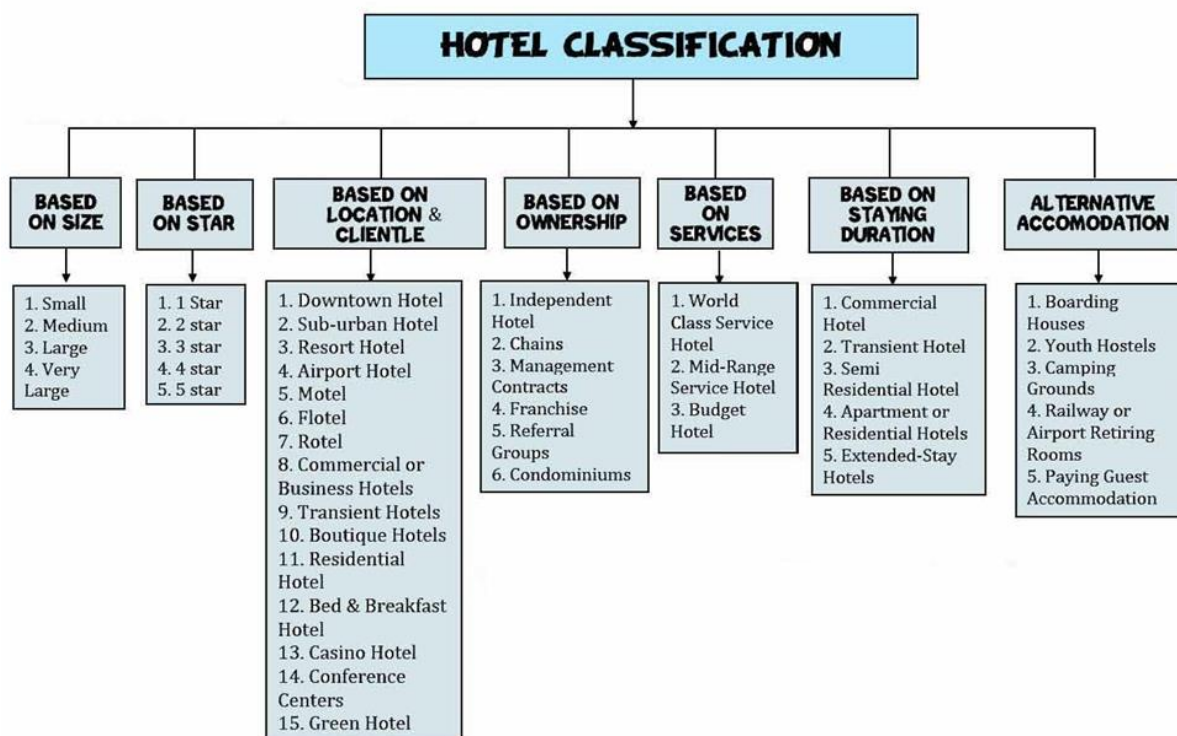
To develop the tourist facilities and accommodation is the prime objective, especially to select the type of hotels and resorts.



Source: Architecture Discipline, KU

Figure 12: Type of Tourism

According to IHM India there are several hotel/ resort classifications. A very common type is dissuaded here that are appropriate for the project.



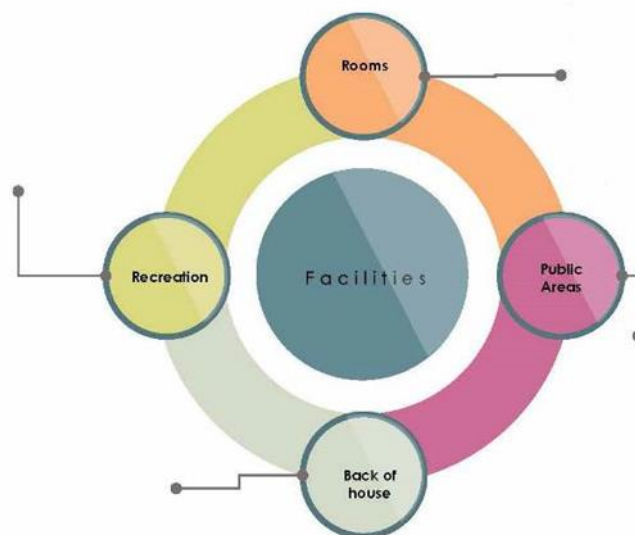
Source: Hospitality-school.com

Figure 13: Hotel Classification

From the variety of typology of hotels, motels, resorts, and restaurants will have opportunity to open or expand in 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 project Payra-Kuakata region.

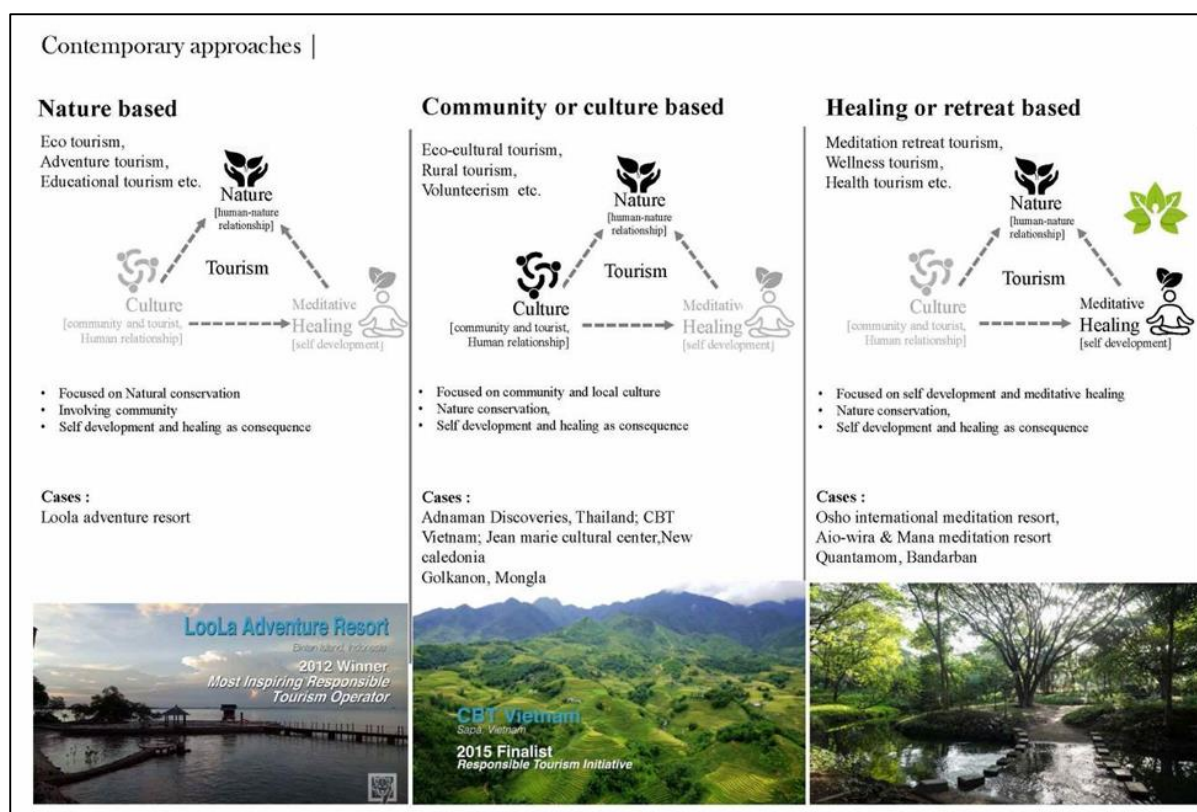
3.3 UNDERSTANDING ECO-TOURISM AND COMMUNITY

Eco-tourism has become very important to our society, since it deals with the preservation of natural areas, the wellbeing of the local people and their communities (Boo, E. 1990; Cater & Lowman 1994). 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, and our future depends on saving our planet.



Currently, people are focused on their own life routine; not considering that ahead of us there is an issue that has been following us for such a long time, and there has been done so little to resolve it.

Eco-tourism is about the care for nature, trying to conserve our environment, with as minimal impact on our surroundings as possible (Ceballos-Lascurain, H., 1993). Again, Sustainable architecture tries to minimize the negative environmental impact on the environment by buildings by enhancing efficiency and careful use of materials, energy, and space efficiency (Akadiri et al, 2012). 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 which do not disturb the environment.



Source: Architecture Discipline, KU

Figure 14: Contemporary Approach of Tourism

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 that are going to interact with the tourists within 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 (Dokumen, 2020).

Successful Characteristics of Ecotourism' include—

- ✓ Minimizing the negative impacts on nature and cult that can damage a destination.
- ✓ Educating the traveler on the importance of conservation.
- ✓ Stressing the importance of responsible business and the work 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.
- ✓ Emphasizing use of environmental and social base-line studies, as well as long-term monitoring programs, to assess and minimize impacts.

- ✓ Maximizing economic benefit for the host country, local business, and communities, particularly people 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 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.

3.4 ARCHITECTURAL INDICATORS FOR ECO-TOURISM

According to Claudia P. Gil (2009), for designing the architectural conceptual model, following issues should be addressed well:

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

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



Figure 15: Innovative Structure Solution

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

Thermal Comfort	A combination of thermal sensitive design and openable windows allow 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 network of back house hospitality will be the prime object of a decent resort.
Site Specific Development Responses	Design should address the sites. Before designing the retreat, designers should study the context. If the site is eco sensitive, design should be environment friendly.



Figure 16: Understanding Context and Climate

Fire Protection Considerations	Forest and non-permanent building materials consist of high level of fire hazard. It will be the responsibility of designers to accomplish the considerations of fire detection (FDS) and fire protection system (FPS).
Safety and Security	Safety and security are the prime responsibility of the complex operator and local authority.
Water	The water source for the Lodge is supplied by rainwater collectors from the roofs and preserved in tanks or ponds. This water is used for showers, kitchen use and bushfire protection. Rainfall to the area is providing an adequate water supply.
Waste	organic kitchen waste is treated on site through 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 reticulates clean nutrient rich water into the surrounding landscape.

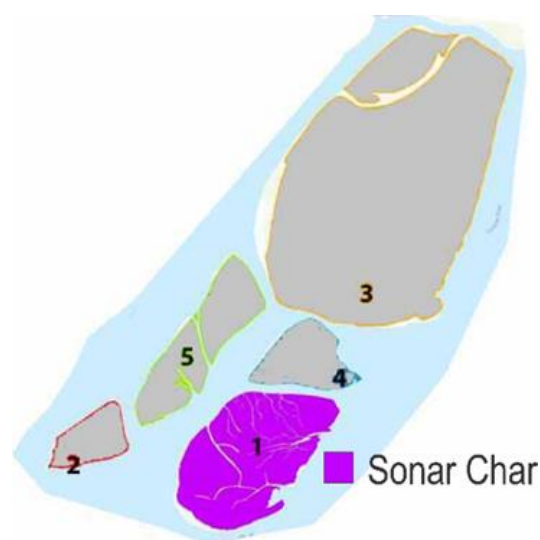
CHAPTER FOUR: CURRENT SCENARIO

4.1 CURRENT SCENARIOS AND ECO- TOURISM POTENTIALS IN SONAR CHAR AND SURROUNDING AREA

Sonar Char and the neighboring 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 several 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 to attract tourists from both within and outside the country.

4.1.1 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 Parjaton 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.

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 Koroi plants. Many plants also grow on their own due to natural processes. Sonar Char was transformed into beautiful woodland because of these plants.

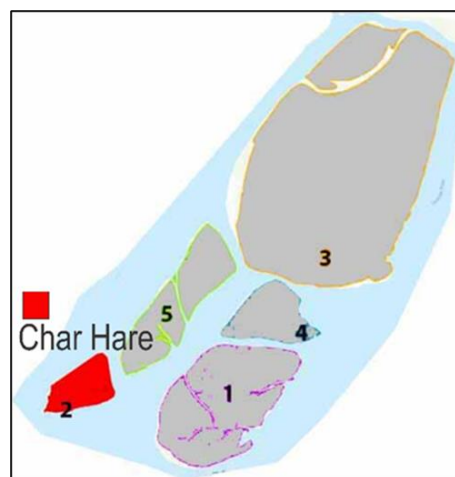


Figure 17: Natural Beauty of Sonar Char and Surrounding Char

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.

4.1.2 Char Hare

Char Hare is located to the west of Sonar Char. Unlike the Sonar Char and Char Taposhi and Tiger Dwip, this Char is geologically stable. A mangrove cover can be seen on the Char Hare'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.



4.1.3 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 young tourists and backpacker accommodations international tourists, with a variety of modern facilities. The population of this Char is currently around 3782 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.



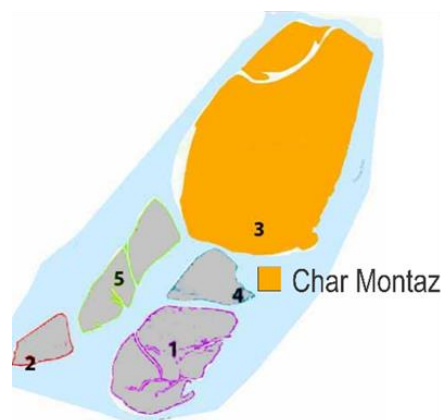
4.1.4 Char Taposhi and Tiger Dwip

The Sonar Char and Char Andar 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.



4.1.5 Char Montaz

Char Montaz is an ideal location to develop luxury and eco-friendly facilities for tourists from home and abroad. It has scenic beauty, cultural diversity, agricultural products, and community participation. The authority can easily involve the local people, especially the women, in the tourism-related facilities and services.



The action area plan proposes various facilities and activities for tourists, such as resorts, green belt, helipad, convention facilities, cultural complex, hospital, jungle safari, launch ghat, speed boat ghat, tourist police, walkway, watch tower, water sports, and wooden walkway. The local house form can inspire Community-based tourism (CBT). The action area plan also promotes the CBT with the local people as the prominent stakeholders.

4.2 EXPLORATION OF SONAR CHAR

Administrative Identity	:	This area is under Galachipa Thana and Patuakhali District.
Location	:	Sonar Char is located at the South of Char Montaz, Rangabali and Andar Char.
Area	:	7.27 km ²
Forest Type	:	Coastal Mangrove Plantations
Bio-Ecological Zone	:	Saline Tidal Floodplain
Physiography	:	Ganges Tidal Flood Plain
Coordinate	:	210 50'-260 30' N and 88047' - 90010' E
Forest Beat (S)	:	Sonar Char Wildlife Sanctuary

4.3 ECOLOGICAL CONTEXT:

At Sonar Char Wildlife Sanctuary, the soil is non-saline throughout the year over substantial amount of areas in the north but grows to be saline to varying degrees in the dry season. In the north-east, there is moderately deep flooding during the wet season. A good number of weeds grow in this area and several types of palms and bamboo chumps grow throughout the wildlife sanctuary. Wild goose, wild duck, jungle fowls, cranes and spines are among the notable avian species found in this area. There is a forest Beat office.

Sonar Char is located around 50-kilometer south-east and 40 kilometers from the Kuakata tourist zone at the estuary of Buragauranga River. The Patuakhali Forest Department took the responsibility of reforesting the char in 1975 (UDD,2022). The forest department planted kewra, Sundari, Khulsi, Koroï plants covering up to 5.5 acre of land. Besides, many plants were grown on their own through the natural courses. These plants turned Sonar Char into an amazing forest land. Besides the flora, Sonar char has ample amounts of fauna as well as foxes, bulls, boars, monkeys etc. In 1995 a total of nine deer were released in sonar char in

two bouts (UDD,2022). In the beach an abundant number of red crabs can be sighted. Myriads of species of birds can also be observed especially in winter when migrant birds arrive here.

4.4 TOURISM POTENTIALITY

Regarding the environmental sustainability Sonar Char tourism may be recommended as responsible tourism that can promote awareness of and support for the conservation of local Eco-system simultaneously creating economic opportunities for our country and communities.

According to Islam (2014), Ecotourism is a form of tourism involving visiting fragile, pristine, and relatively undisturbed natural areas, intended as a low-impact and often small-scale alternative to standard commercial (mass) tourism. Its purpose may be to educate the traveler, to provide funds for ecological conservation, directly benefit the economic development and political empowerment of local communities, or to foster respect for different cultures and for human rights. Andersen (1993) describes ecotourism facilities as a “window to the natural world.” It explains as both emblematic of our relationship to the environment and as a “vehicle for learning and understanding” (1993: 116).

In draft Structure Plan of Rangabali Upazila (UDD, 2022) noted that Sonar char Eco-Tourism & Wildlife Sanctuary can be a good place for ecotourism development due to the visual splendor created by the mangrove plantation. It can provide a sense of seclusion from other regions of the world and has enormous potential for developing eco-tourism destinations. A survey data shows that 80-100 visitors generally travel to Sonar char on weekend during winter season still there are no suitable river or sea cruising facilities (UDD,2023).

Before the proposal of the tourism development for the Sonar Char, we should understand and explore the following elements of tourism development.

Attraction

Any visitor service or product which tourists would enjoy visiting or using. To be considered an attraction, a product must be a. Findable (clearly located on maps and street addresses, and directions provided). If tourists can't find the facility, it is not a tourist attraction. For Sonar Char limited Forest safari can be proposed.

Accommodation

Accommodation (Acc) is the process by which the vertebrate opportunities and quality of living environment. For Sonar Char maximum 5~7 exclusive tent or temporal cottages (like Amanwana in Indonesia tourist facilities). The facilities must be minimum intervention of the nature & forest.

Adventure

An adventure is an exciting or unusual experience. It may also be a bold, usually risky undertaking, with an uncertain outcome. Adventures may be activities with some potential

for physical danger such as skydiving, mountain climbing, river rafting or participating in extreme sports. The term also broadly refers to any enterprise that is potentially fraught with physical, financial, or psychological risk, such as a business venture, a love affair, or other major life undertakings. Boat safari, mud beach experience, scuba diving, deer spotting/sighting and any other thrilling experiences for the paid tourists may be housed at Sonar Char.

Hospitality

Generous and friendly treatment of visitors and guests: hospitable treatment and the activity of providing food, drinks, etc. for people who are the guests or customers of an organization. Leisure: Leisure, or free time, is time spent away from business, work, and domestic chores. For sonar char 5 star rated hospitality will be needed if we promote exclusive tourism. On the other hand, paid-tourists optimum in numbers may visit the Sonar char during the day schedule and take rest at nearby island's tourist complex.

Recreation

Recreation is an activity of leisure, leisure being discretionary time. The "need to do something for recreation" is an essential element of human biology and psychology. Recreational activities are often done for enjoyment, amusement, or pleasure and are "fun." For Sonar Char we may develop a few amusements activity in a month to attract the people and must be 'branded' by media.

Tourist

Visitors who stay one or more nights in the place visited. For Sonar char there may be two types of options. One for exclusive tourism but limited in numbers like Maldives or Amanwana in Indonesia. Other one, optimum number of tourists for day trip may be allowed they will stay neighboring island.

Same-Day Visitor

Visitors who do not spend the night in collective or private accommodation in the place visited.

Tourism Policy

a progressive course of actions, guidelines, directives, principles, and procedures set in an ethical framework that is issues-focused and best represents the intent of the community to effectively meet the planning, development, product, service, marketing and sustainability goals and objectives for the future growth of tourism.

Transport

Transport or transportation is the movement of people, animals, and goods from one location to another. Modes of transport include air, rail, road, water, cable, pipeline, and space. The field can be divided into infrastructure, vehicles, and operations. Transport is important since it enables trade between people, which in turn establishes civilizations. For Sonar char, seaplane landing facilities may be developed. Exclusive cruise service may be proposed.

Travel Agency/Travel Organization

A travel agency is a private retailer or public service that provides tourism-related services to the public on behalf of suppliers such as airlines, car rentals, cruise lines, hotels, railways, and package tours. In addition to dealing with ordinary tourists most of the travel agencies have a separate department devoted to making travel arrangements for business travelers and some travel agencies specialize in commercial and business travel only. For branding and promoting Sonar char, a well network with national and international Travel Organizations will explore.

Virtual Tour

A virtual tour is a simulation of an existing location, usually composed of a sequence of video or still images. It may also use other multimedia elements such as sound effects, music, narration, and text. We shall initiate a virtual tour connecting Safari tour, Heritage tour, cultural tour etc. as promotion.

Airline

A system for scheduled air transport of passengers and freight. In another word, a business providing a system of scheduled air transport is also called airway. Recommendation for airline network.

Tourism Development Strategy

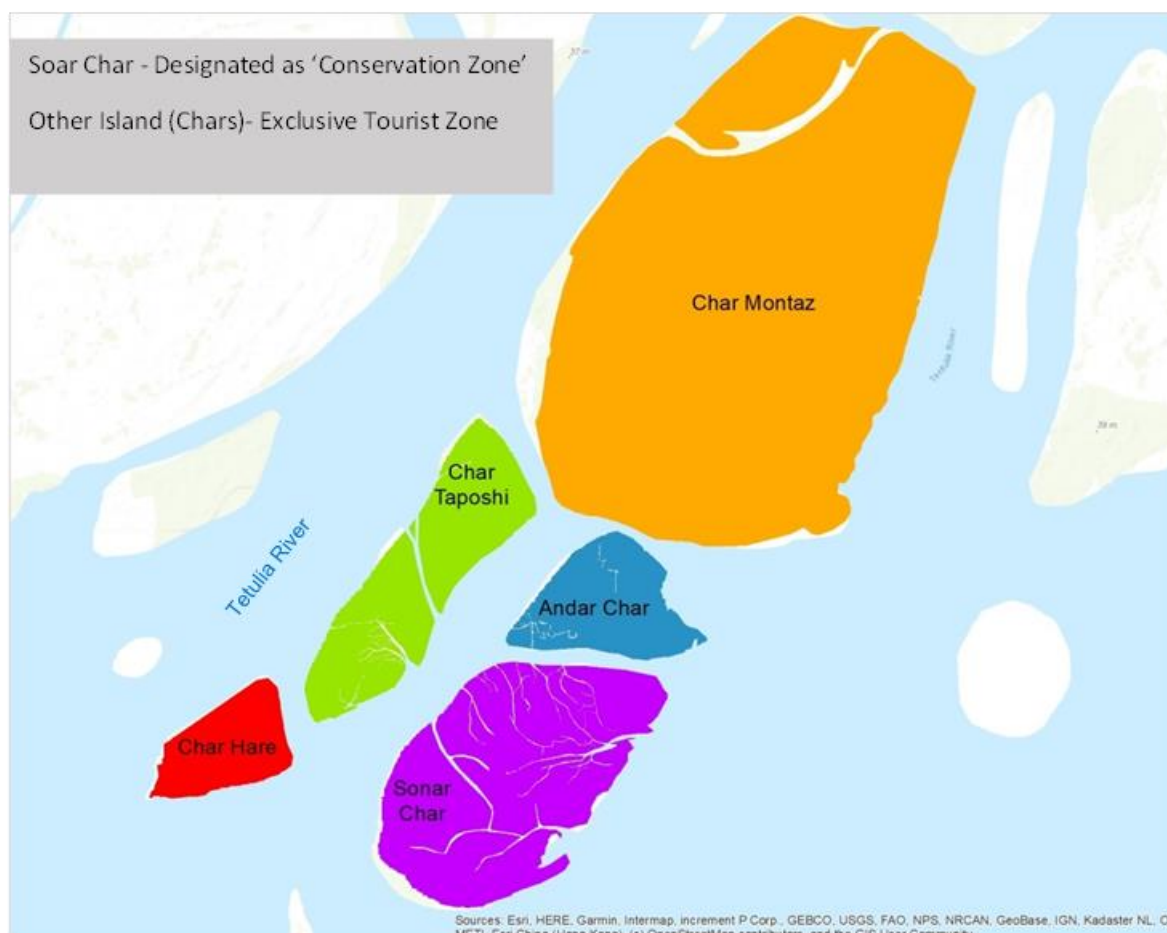
Tourism development strategy is future action plans, which define the long-term objectives, conduct a market and competitive analysis, assess the present scenario, do a SWOT analysis, and required resources to achieve the desired goals for getting the destination competitiveness. It seeks to ensure maximum potentialities of the tourism industry enables it to grow in a way that is economically, socially, and environmentally sustainably set the foundation for a vision and will be encompassed within the wider country's plan. Tourism Development Strategy must be complained with Sonar char tourism special regarding to Tourism Marketing Planning and Tourism Management.

Beach nourishment

Beach nourishment is the process of placing additional sediment on a beach or in the near shore. A wider and higher beach can provide storm protection for coastal structures, create new habitats, and enhance the beach for recreation.

4.5 ACTION PLAN REGARDING THE TOURISM PLANNING AROUND SONAR CHAR

Exclusive tourist zone (ETZ) is a place where tourists are looking for a luxury trip and want their dreams to become reality. They look for something unique, above their expectations with superb service where their needs and wants are fulfilled. This includes exclusivity, privacy, and everything from relaxation to adventure, with pampering and extras.



Source: PKCP Project, UDD, 2019

Figure 18: Location of Sonar Char that is Designated as a Conservation Zone

Exclusive tourist zones generally have hotels, cottages, beach villas, night clubs, a convention hall, and an amusement park. Watch towers, shopping malls, food courts, Cineplex's and swimming pools can be found as supporting facilities. ETZ must be well-connected by Road, Air, Waterways.

Sonar Char and the neighboring chars offer a plethora of tourist development potential. The planning can be prepared focusing on the distinctive traits and facilities of the five chars that may entice both domestic and international tourists. But the Sonar Char itself is an ecologically sensitive area as well as a low-salinity animal sanctuary and reserve forest. The Sonar Char has been designated as a Wildlife Sanctuary (WS) on 24 December 2011 (USAID, 2021). This Sonar Char is one of the protected areas (PAs) for preserving the wildlife of Bangladesh. For further information that the current PA system of Bangladesh includes 18 national parks, 20 wildlife sanctuaries, one marine protected area, two safari parks, 10 eco-parks and 10 ecologically critical areas that collectively cover an area of 285,841 ha, amounting to nearly 15.2% of all the legally constituted forests in the country. The plan is to raise this proportion to 30% of the forest area of the country (FD, 2016).

The planning strategy should be proposed to minimum intervention and remain the Eco-footprint less in limit. That is way, it is suggested that most of the parts of Sonar char will be

un-touched as reserve forest. Only permitted and limited visitors will be allowed for forest visit or Jungle Safari with prior permission. Tourists can visit and have jungle safari with limited scope that insures the ecological sanctuary. A good network of water transport may be provided to connect Sonar Char with neighboring islands.

We can develop different tourist facilities located on neighboring islands of Sonar char to keep its environment less interrupted. Detail study on those islands is necessary to explore this design concept. Moreover, a well worked water transport network is essential to connect those islands for sustainable tourism.

Tourist facilities can be developed in Char Muntaz, Andar Char, Char Hare where geo-formation is more stable keeping the Sonar Char intact of Eco- Forest.

4.6 INFRASTRUCTURE AND FACILITIES FOR ECO-TOURISM

The creation of appropriate infrastructure and facilities is critical to attracting eco-tourists and ensuring their enjoyment while maintaining the natural environment. Here are some significant characteristics of Sonar Char ETZ's eco-tourism infrastructure and facilities:

Eco-Lodges and Eco-Friendly Accommodation: Eco-lodges and eco-friendly lodging options are critical for eco-tourism. These accommodation facilities should be built using environmentally friendly materials, renewable energy sources, and energy-efficient features. Eco-lodges fit harmoniously with their surroundings and minimize their environmental impact by emphasizing natural aesthetics and delivering a comfortable stay experience (Mondol et al., 2018).

Visitor Centers and Interpretative Facilities: Eco-tourists rely heavily on visitor centers and interpretative facilities for educational purposes. These centers can provide information about the local ecosystem, biodiversity, conservation activities, and environmentally friendly behaviors. Interactive exhibits, guided tours, and educational programs can all serve to raise awareness about the need for environmental conservation (Hossain et al., 2021).

Eco-Friendly Transportation: Eco-tourism entails reducing the environmental impact of travel. Tourists can explore the area while lowering carbon emissions and environmental disruptions by providing eco-friendly transit options such as electric automobiles, bicycles, or non-motorized watercraft. D. A. Fennell (2015).

Nature Trails and Informative Walkways: Creating well-planned nature trails and informative walkways allows tourists to discover costal char's natural splendor while minimizing environmental impact. These trails must be carefully developed to conserve fragile habitats and species while also offering tourists safe and entertaining experiences (Mondol et al., 2018).

Waste Management Systems: Proper waste management systems are crucial for preventing contamination and preserving the region's natural integrity. Waste recycling, composting, and

litter reduction measures ensure that eco-tourism activities have no negative environmental impact (Rashid et al., 2019).

Wildlife Viewing Stations: Wildlife viewing stations or hides can be deliberately placed to provide tourists with the opportunity to observe wildlife in their natural habitats without disturbing the animals. Viewing stations that are properly designed reduce human-wildlife interactions and protect the well-being of the surrounding fauna (Hossain et al., 2021).

Water-Based Activities: The coastal location of Sonar Char ETZ provides chances for a variety of water-based eco-tourism activities such as kayaking, paddle-boarding, and boat cruises. The use of environmentally friendly equipment and adherence to wildlife protection legislation are critical for the preservation of the marine ecosystem (Fennell, D. A., 2015).

4.7 DESIGN CONSIDERATIONS FOR ECO-TOURISM SPOTS

Sonar Char ETZ, a sustainable and eco-tourism destination, necessitates careful consideration of design principles and techniques. Ecotourism destinations must implement sustainable methods, protect natural and cultural assets, and put a priority on tourist experiences if they are to succeed. The main design factors for eco-tourism destinations in this Sonar Char ETZ, Bangladesh, are highlighted in this section with an emphasis on fostering sustainability, increasing the visitor experience, and conserving the ETZ's distinctive features.

- 1) **Site Selection and Integration:** Choose sites for eco-tourism spots that maximize the natural beauty, biodiversity, and cultural heritage of Sonar Char and surrounding islands. Sites should be carefully assessed to minimize environmental impact and ensure compatibility with existing ecosystems. Integration with the surrounding environment is crucial, incorporating architectural designs that harmonize with the landscape and utilize local materials. Designs should respect the natural topography, vegetation, and water bodies, minimizing disturbance to the ecosystem (Fennell, D. A., 2015).
- 2) **Sustainable Architectural Design:** Incorporate sustainable architectural design principles to minimize the ecological footprint of eco-tourism spots. Utilize energy-efficient building materials, renewable energy sources, and passive design strategies to reduce energy consumption. Optimize natural lighting and ventilation to decrease reliance on artificial systems. Water conservation measures, such as rainwater harvesting and wastewater recycling, should be integrated into the design. The use of sustainable building materials, such as bamboo or locally sourced timber, can reduce environmental impact (Weaver, D. B., 2019).
- 3) **Cultural Preservation and Interpretation:** Preserve and celebrate the cultural heritage of costal islands of this region through architectural designs that respect local traditions, architecture, and craftsmanship. Develop visitor centers and interpretive spaces that provide educational exhibits and interactive experiences, offering insights into the region's cultural heritage. Collaborate with local communities to

ensure their involvement in preserving and sharing their cultural practices. Designs should reflect the unique identity of the community and promote cultural appreciation among visitors (Fennell, D. A., 2015).

- 4) **Sustainable Infrastructure and Services:** Develop sustainable infrastructure and services to support eco-tourism spots in Sonar Char ETZ. Implement waste management systems that prioritize recycling and minimize waste generation. Provide eco-friendly amenities, such as composting toilets and renewable energy-powered facilities. Design transportation systems that prioritize low-emission options, such as cycling infrastructure and electric shuttles. Infrastructure should be designed to be accessible to all, ensuring inclusivity and barrier-free access for visitors with disabilities (Fennell, D. A., 2015).
- 5) **Visitor Experience and Education:** Enhance the visitor experience by providing educational opportunities and immersive experiences in eco-tourism spots. Design interactive exhibits, guided tours, and interpretive signage that educate visitors about the importance of conservation, sustainability, and the unique natural and cultural heritage of costal Chars. Promote responsible tourism practices and encourage visitors to minimize their impact on the environment. Engage local guides and experts to provide authentic and knowledgeable experiences for visitors (Weaver, D. B., 2019).
- 6) **Collaboration and Community Engagement:** Engage local communities, stakeholders, and businesses in the design and development of eco-tourism spots. Foster partnerships that ensure community ownership and equitable distribution of economic benefits. Collaborate with local businesses to provide sustainable products and services, supporting the local economy. Engage the community in decision-making processes and involve them in monitoring and managing eco-tourism activities (Weaver, D. B., 2019).

Sonar Char and surrounding Chars may develop eco-tourism destinations that offer distinctive experiences, promote environmental preservation, and contribute to the general sustainability and well-being of the city and its citizens by taking these factors into account.

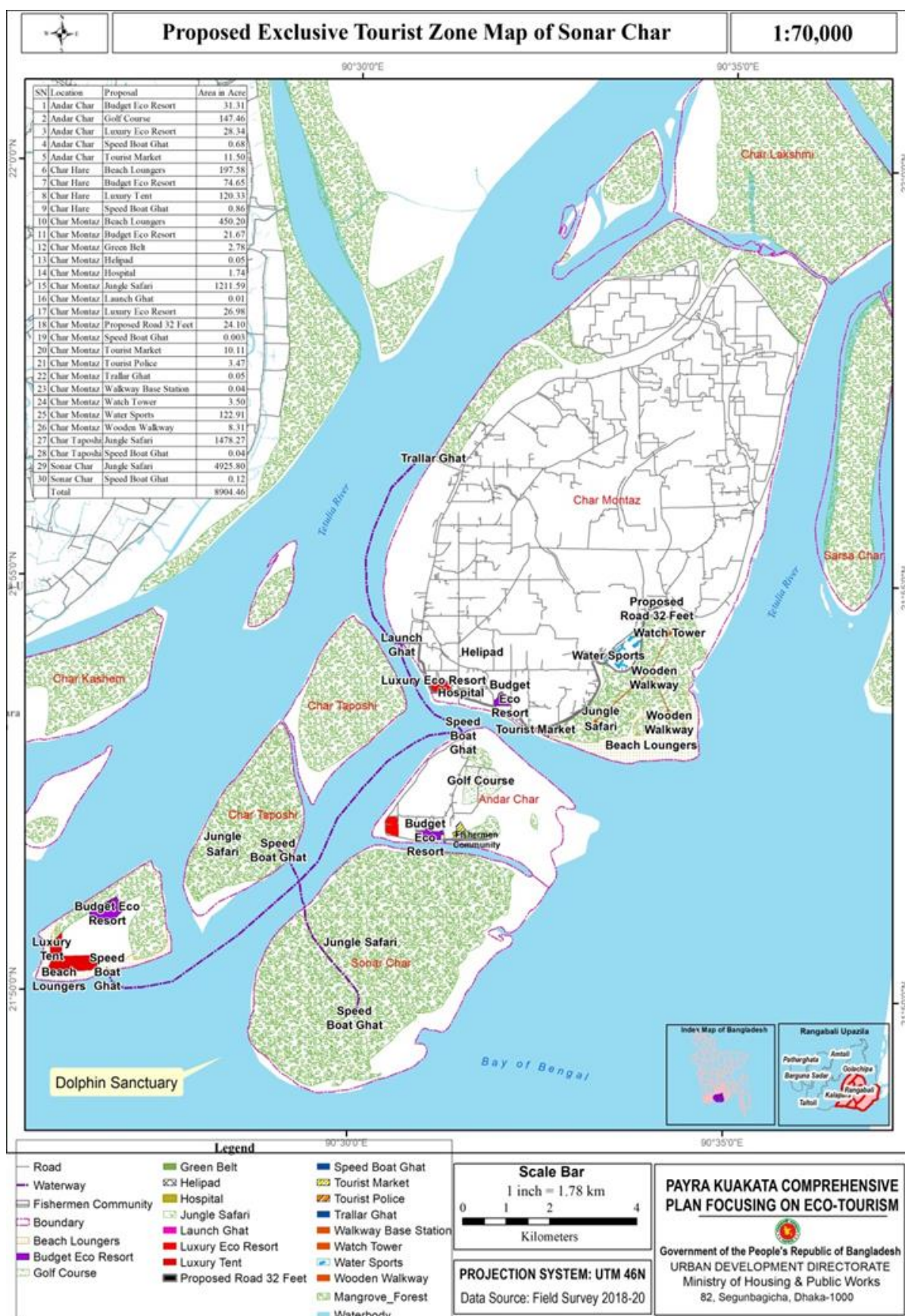
CHAPTER FIVE: ACTION AREA PLAN

5.1 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 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.

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.

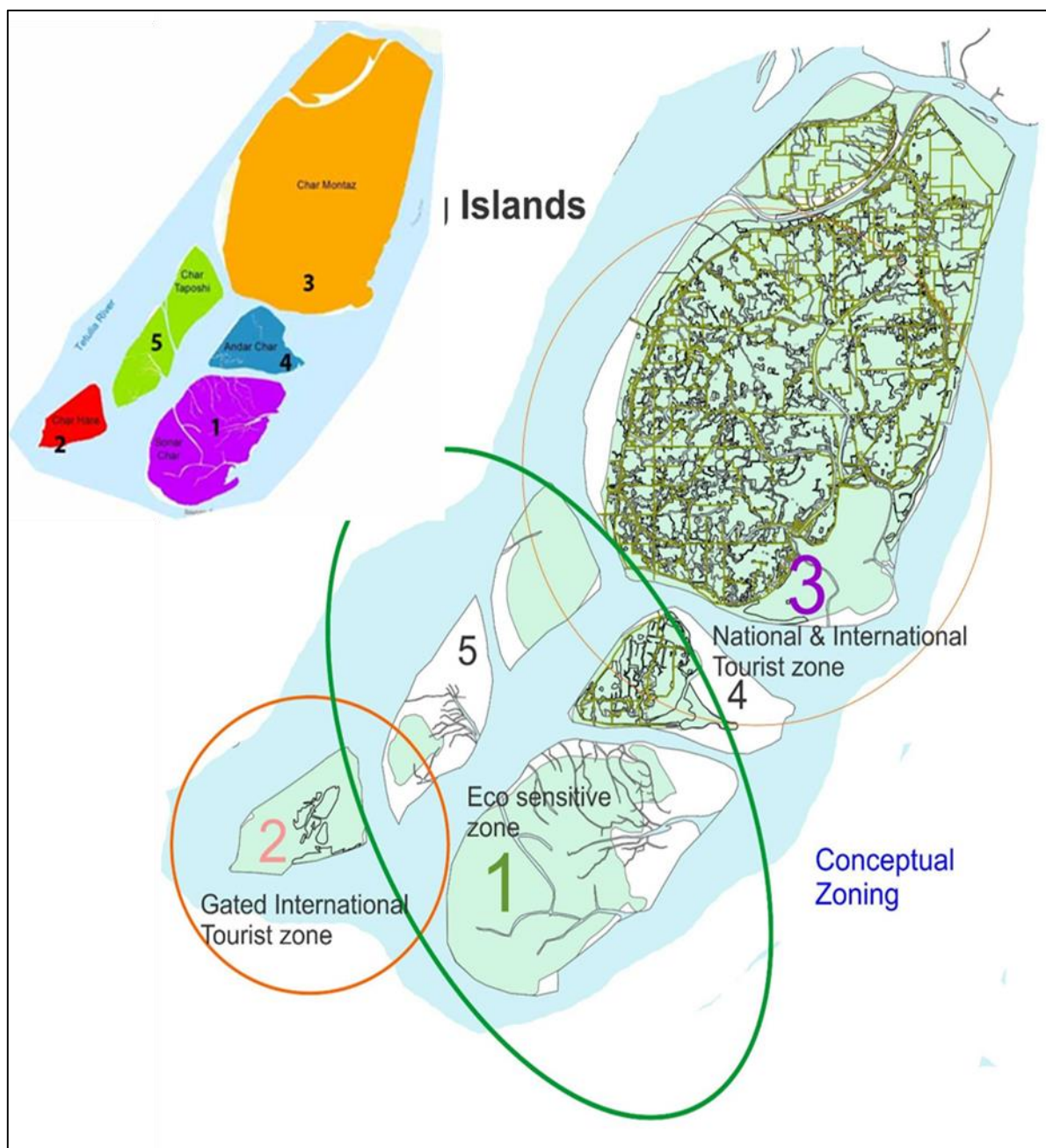
Due to limitation of mass tourist-facility expansion at Sonar Char respecting the wildlife sanctuary, we suggest and prepare an alternative conceptual planning. According to that plan, Exclusive tourist zone (ETZ) will cover the five islands surrounding the Sonar char area.



Source: PKCP Project, UDD, 2019

Map 17: Action Area Plan of Sonar Char and Surrounding Area

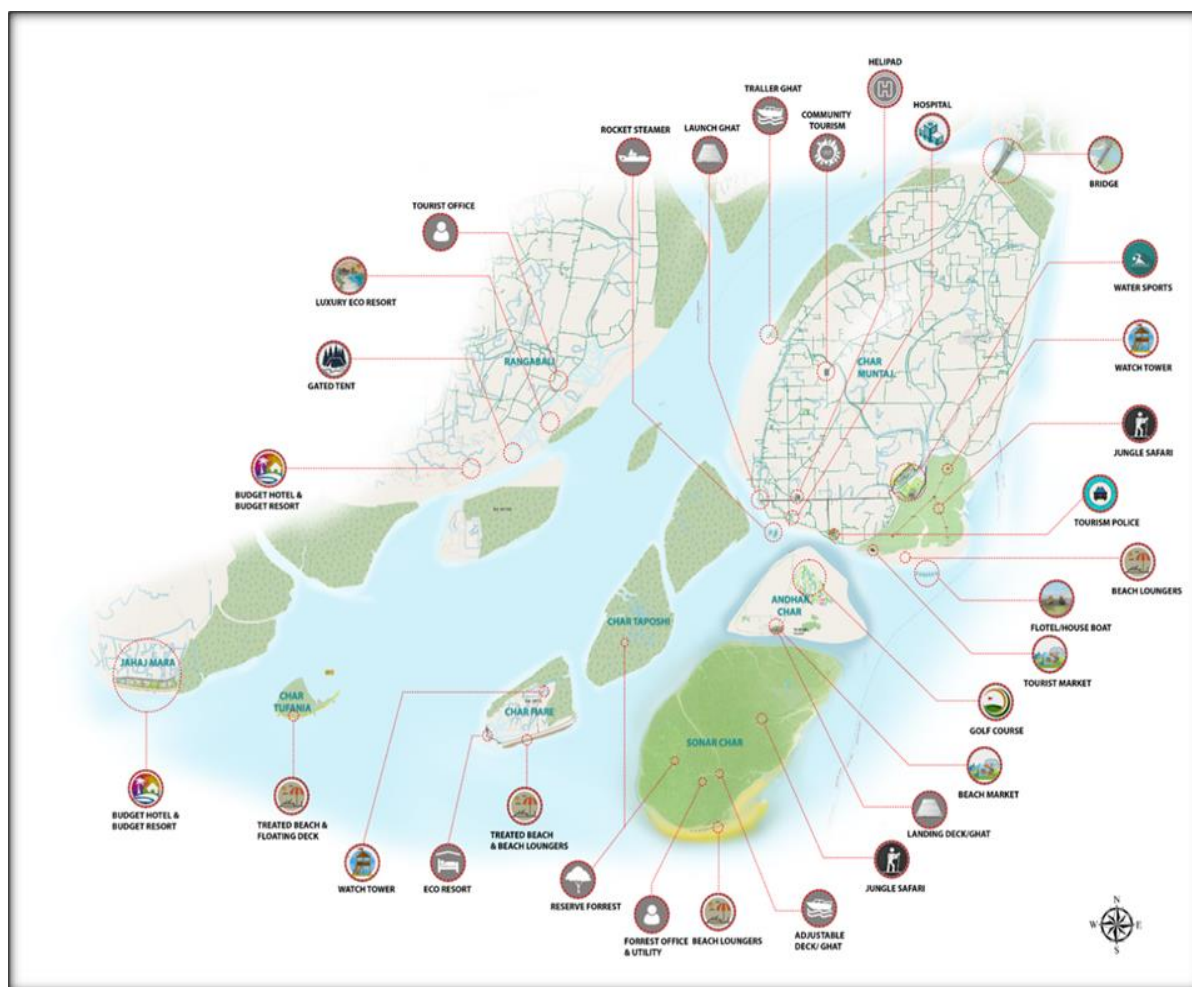
We suggest the Sonar char as an eco-sensitive zone marked as 1 (Map 18). Where Char Hare (marked as 2) for confined or gated international tourist zone and Char Montaz (marked 3) and Andar Char (marked 4) for both national and international tourist zone. Char Taposhi marked as 5 has on its formation stage of foresting.



Source: PKCP Project, UDD, 2019

Map 18: Proposed Zoning of Action Plan of Sonar Char and Surrounding Islands

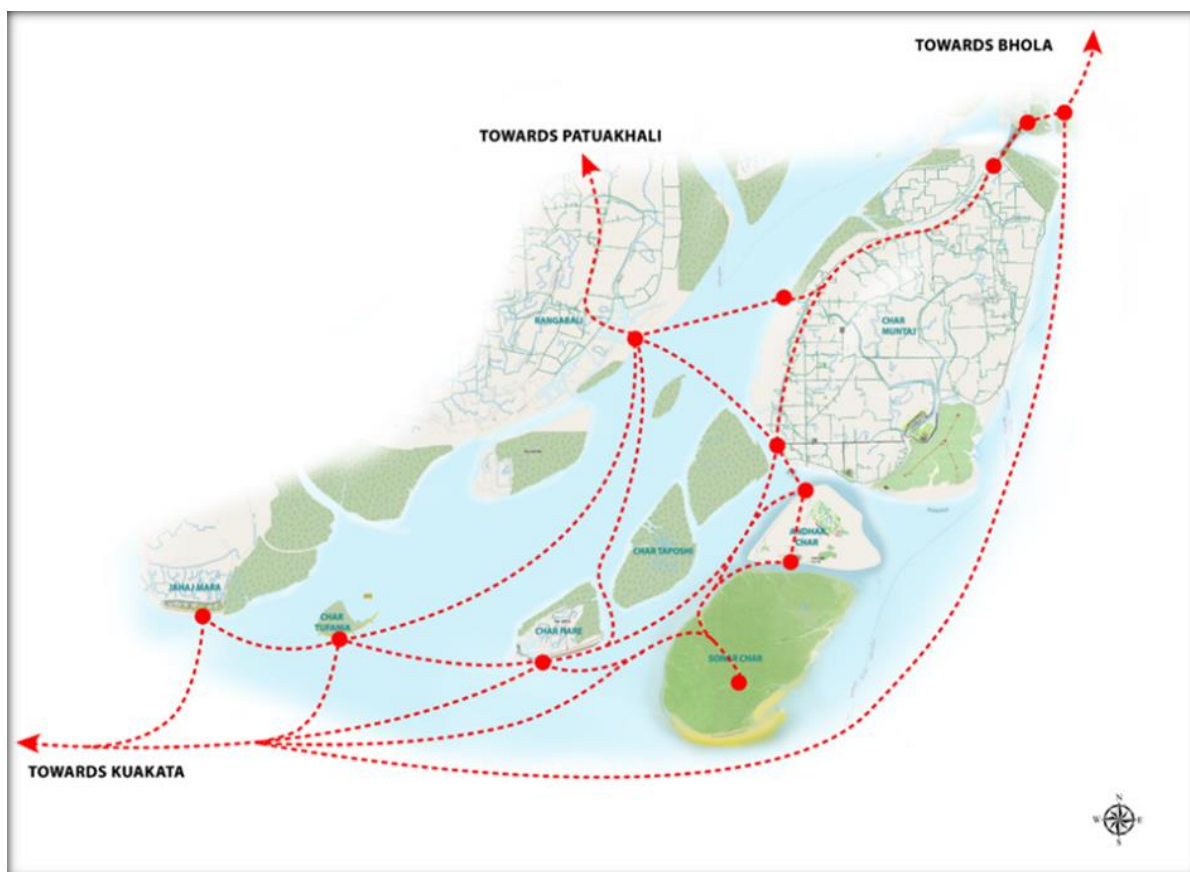
Above layout, only for the conceptual understanding of the site and its surrounding. A detail master plan proposal will prepare after the site analysis of the Sonar char area. Beside that beach nourishment is necessary for stable beach of Sonar char.



Source: PKCP Project, UDD, 2019

Map 19: Action area Plan of Sonar Char and Surrounding Area

The river network of Rangabali Upazila as the most important transport artery in the isolated areas communication sector plays a vital role in their daily life. Almost all char area of the Rangabali Upazila grew up in the middle part of the rivers and sea. A connectivity network mainly waterway connectivity is suggested from mainland to Char Montaz, Andar Char, Sonar Char and Char Hare and towards Kuakata Sea Beach. In Char Montaz and Andar Char there are some road networks is suggested to link with Bhola. Currently, Speedboat is the fastest medium for communication.



Source: PKCP Project, UDD, 2019

Map 20: Connectivity map with Sonar Char and Surrounding Area

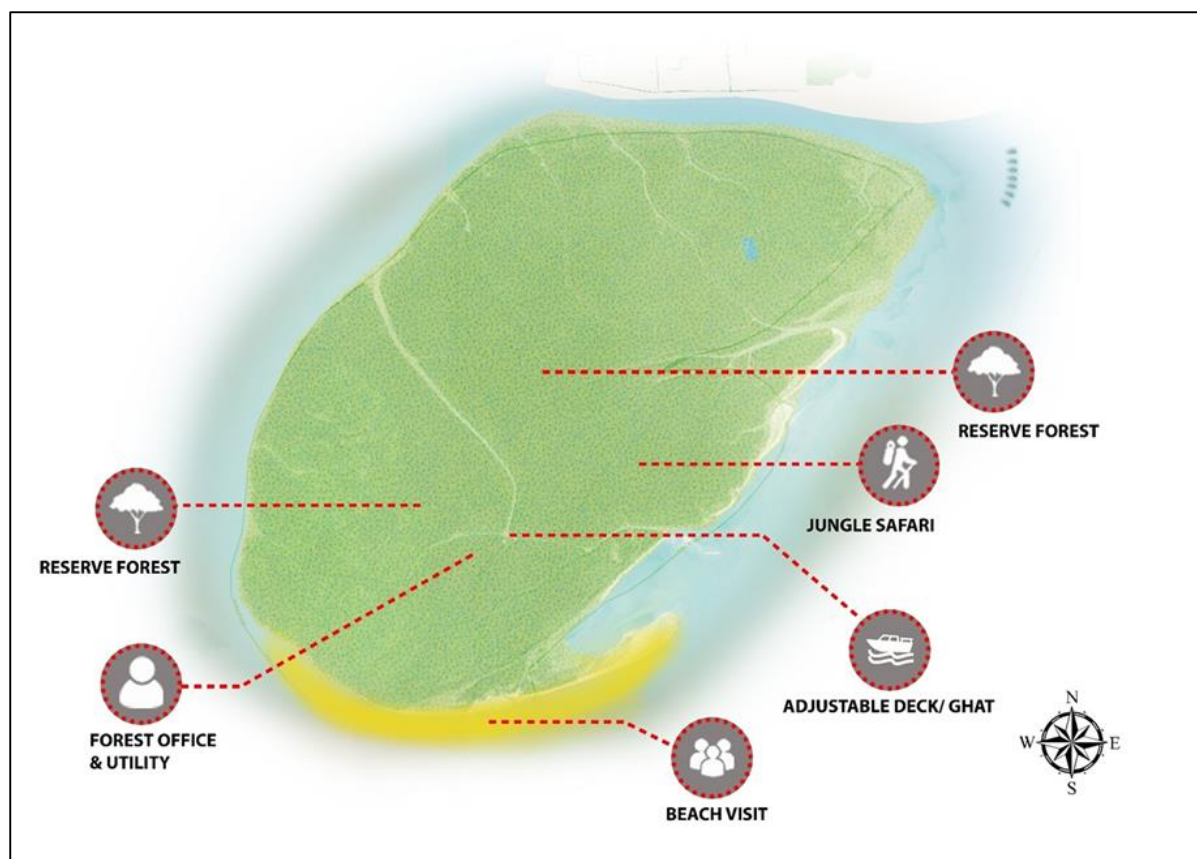
5.2 EXPLORATION OF ACTION AREA PLAN

For sustainable eco-tourism, infrastructure, and architectural proposal as well as the footprint of intervention should be minimum as possible accommodating optimum hospitality for tourists. Infrastructure, Architecture, and development proposal should be innovative respecting the context and landscape. AAP is suggesting 3 (three) different broad zoning model for Sonar char and its adjacent island.

5.2.1 SONAR CHAR AS WILDLIFE SANCTUARY

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 beautiful woodland because of these plants.

Many 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.



Source: PKCP Project, UDD, 2019

Map 21: Proposal for Sonar Char

A forest office is existing beside a canal. The sea beach is the most attractive point of the Sonar char. So, the planning strategy should be proposed to minimum intervention and remain the Eco-footprint less in limit. We suggest that most of the parts of Sonar char will be un-touch as reserve forest. Only permitted and limited visitors will be allowed for Jungle Safari. The most southern part of Sonar char has scope to accommodate few tourist facilities that shown by visual graphics.

With this option, night stay facility for the tourists may not allow on Sonar Char. Tourist will come and enjoy the natural landscape, forest, beach, and facilities till the evening or having the early dinner in moonlit night. After then, with a guided transport, they will back to their hotels that accommodate nearby island like Char Montaz, Andar char or Rangabali.

Various day-tourist facilities like boat safari, mud beach experience, scuba diving, deer spotting/ sighting and any other thrilling experiences for the paid tourists may be housed at Sonar Char. An eco-tourist complex with dining, landing dock, back house facility, security post, beach loungers, elevated forest path, watch tower, mud pool etc. will be designed and constructed following the principles of sustainable development. Forest office will be act as eco-tourist complex.



Relax with nature in day tour



Figure 19: Nature and the Day Tour (Walking through the Forest)

A dolphin sanctuary is located near the Sonar Char which may be possible to visit by boats. A designed jungle safari could be arranged for the tourist with prior reservation system.



Figure 20: Jungle Safari

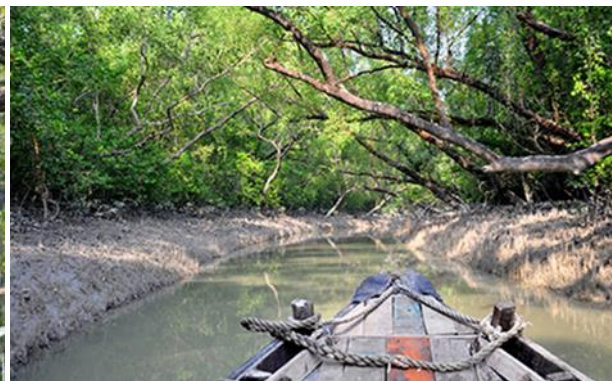


Figure 21: Canal Safari



Figure 22: Beach View



Figure 23: Jungle Safari

Several resting points may be provided for the tourist where drinkable water, dry food, first-aid box, walking sticks, and other necessary should be available.



Figure 24: Tourist Resting Points



Figure 25: Dolphin Watch

Plastic, polythene, and other non-degradable materials should be prohibited during the stay at Sonar char area. We will use Areca Leaf Plate (Supari Patar Plate), paper or cloth bags etc. as eco-sustainable materials.

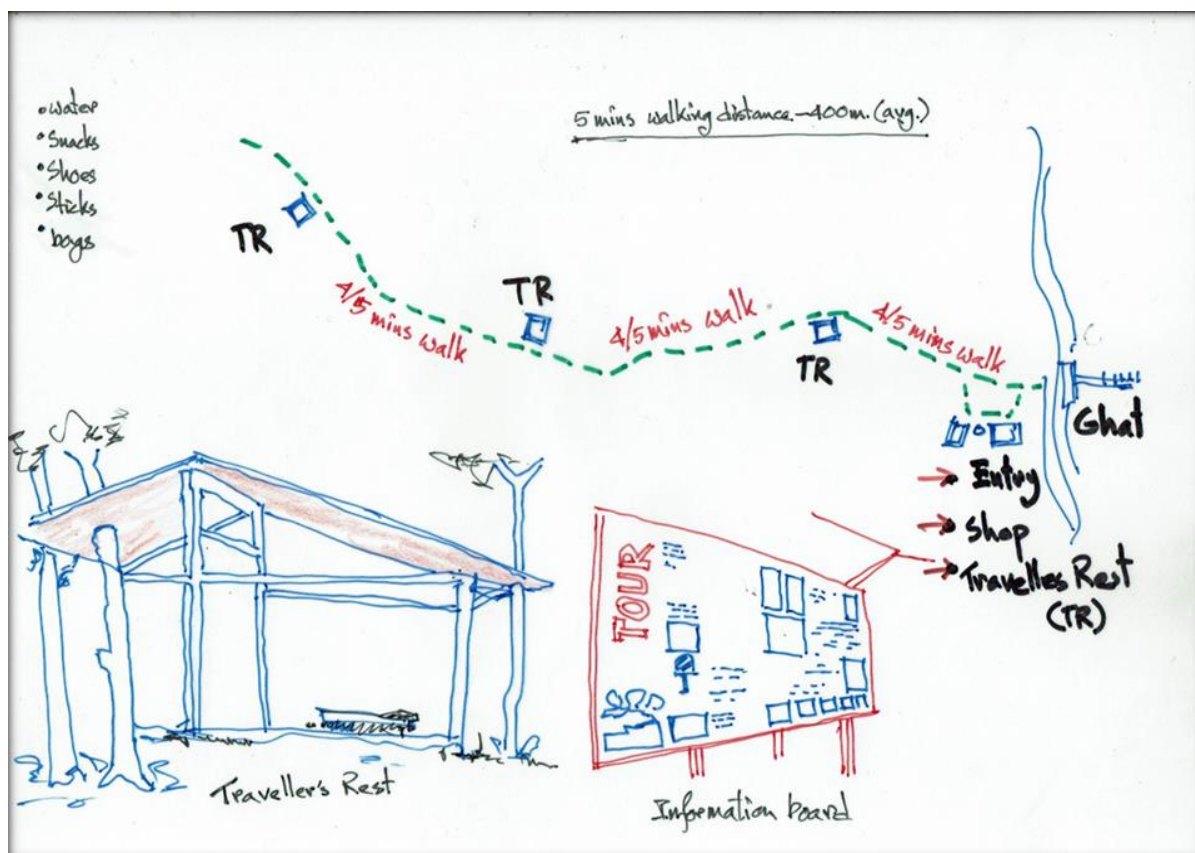












Figure 26: A Sketch Map of Leisure Activities

Table 13: Approximate Cost for Development of Sonar Char

Facilities/Items	Qty.	Area	Approx. Cost (Cr. Taka)	Tentative Theme
Jungle Safari (including program design, facility development, marketing, guide training and ancillary)	-	-	8.00	 Mangrove Jungle Safari
Dock (Adjustable) (construction and installation)	2	5000 sft	0.50	 Floating Dock China
Elevated Walkway or Foot Trail (including design, construction, facility development and environment assessment etc.)	2		8.5	
Tourist Resting Points or Intervals (including survey, design, construction, facility development and environment assessment etc.)	8	250 sft each	1.50	
Security Accommodation (construction and installation)	2	600 sft each	0.75	
Forest Bungalow Redevelopment (construction and installation)	1	2500 sft	0.75	
Power and Communication Center (survey, design, construction, and installation)	1	3000 sft	5.00	
Tourism Office and Info Center (International tourist information desk, Design, construction, service, furniture, materials, adjacent landscape etc.)	1		1.75	

Facilities/Items	Qty.	Area	Approx. Cost (Cr. Taka)	Tentative Theme
Tourist Police Station and Rescue Center (construction, interior, furniture etc. and surrounding landscape)	1	800 sft	1.50	
Recycling Measure for Eco-hazardous Goods (construction and installation)	1		1.50	
Beach loungers (Purchase and installation)	20		0.50	

5.2.2 LUXURY LEISURE TOURISM IN CHAR HARE

Adjacent Sonar char, Eco-tourism may be belonging to gated exclusive foreign tourists who are fond to enjoy their leisure in nature, forest and water at Char Hare and Andhar Char. This type of tourism is existing in Maldives, Indonesia, Philippines, island of Mediterranean Sea and Caribbean Sea. Generally international tourism facilitator chains have engaged to develop, construct, and operate the sites. They will explore the facilities like guest accommodation in individual private cottages, pavilions or tents, attraction, amusements, back hospitality functions etc. through a unique concept and context. The case of Aman-i-Khás in India, Amanwana in Indonesia, and Amanpulo in the Philippines are the good examples of this kind of tourism development.

For the option, tourism facilities will be expensive and gated accommodation where pavilions should be limited to 20 to 50 in numbers. Due to exclusive of nature, privacy and buffer zones in-between will be the prime challenge for the designers.

Char Hare will be a nest of exclusive foreign tourists. Eco-friendly resort with special architectural visual attitude may be proposed here with world top hospitalities similar in the case of Aman-i-Khás in India, Amanwana in Indonesia, and Amanpulo in the Philippines.

Justification of site Char Hare that is Located Choto Baisda, Rangabali Union, Patuakhali.

Total Area-1082 acre (44% forest), 3 km sea-beach. Presently 4-5 permanent houses are there. Occupation of the existing people are fishing and cultivation.

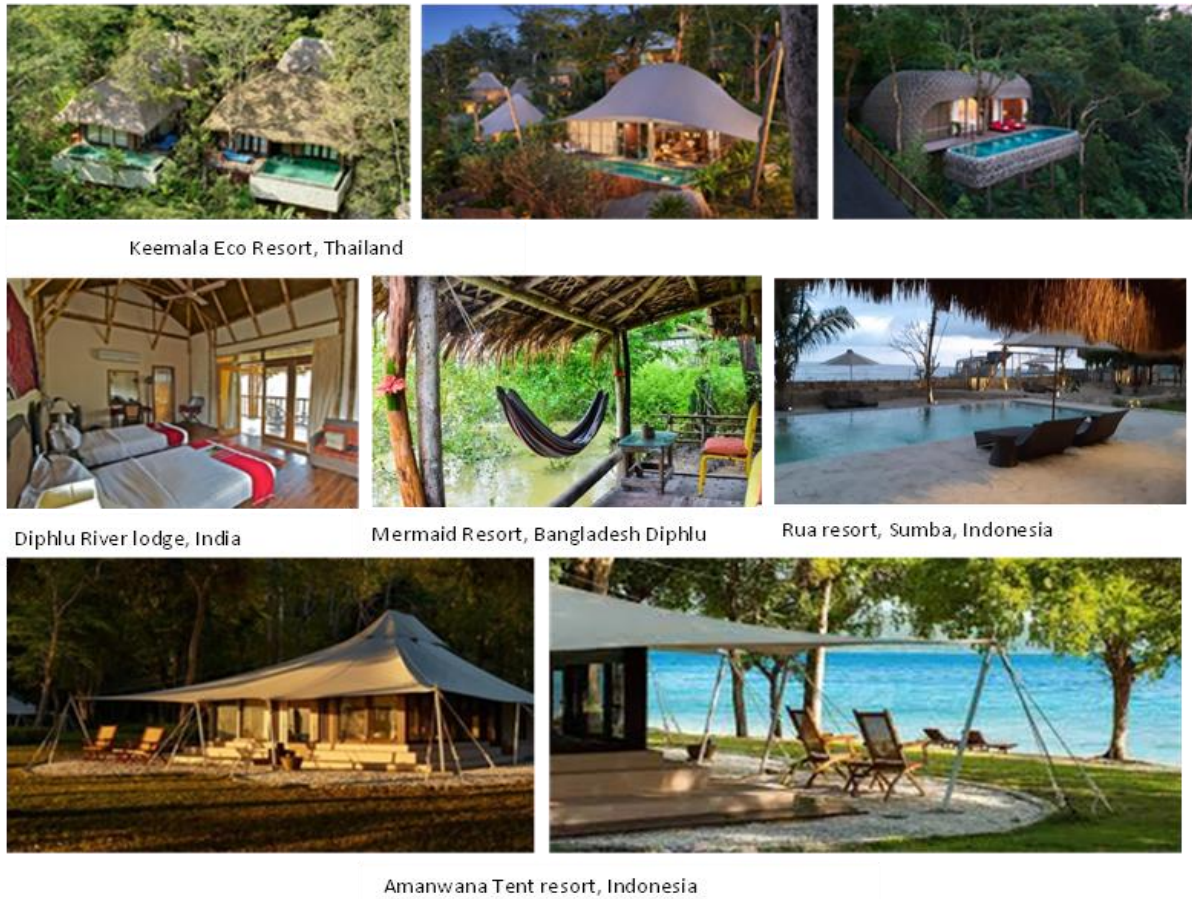
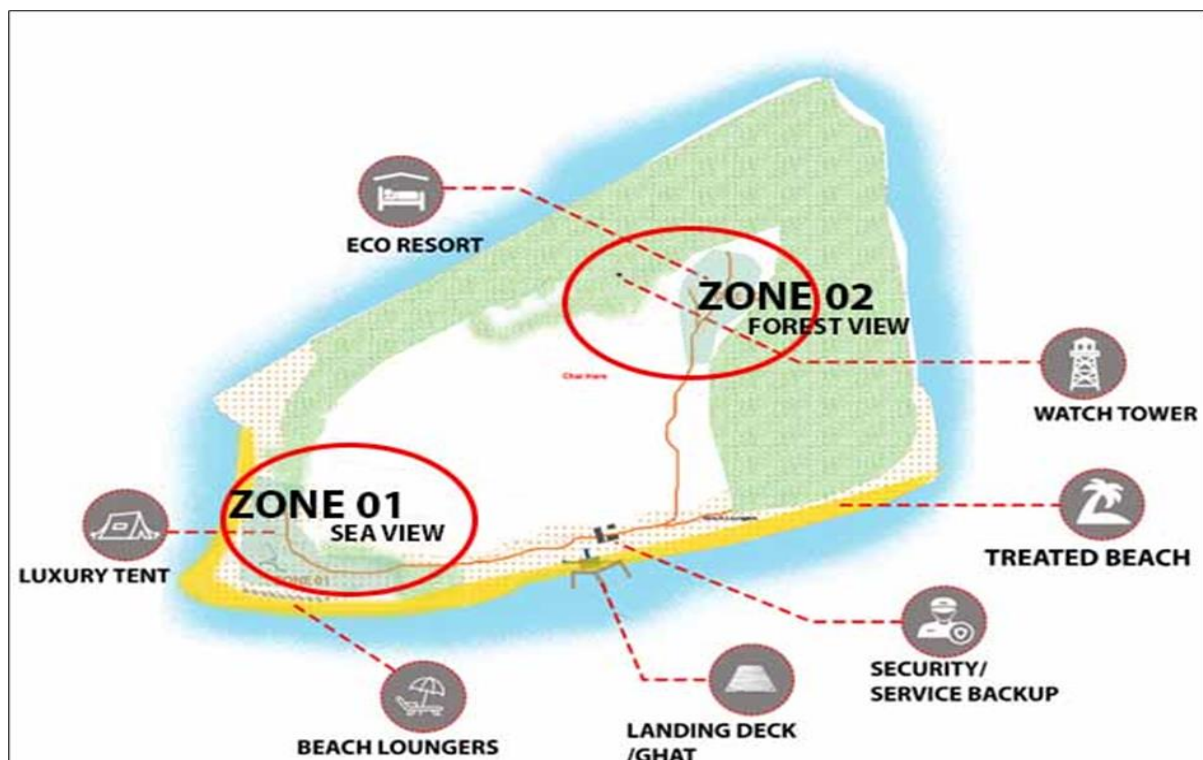


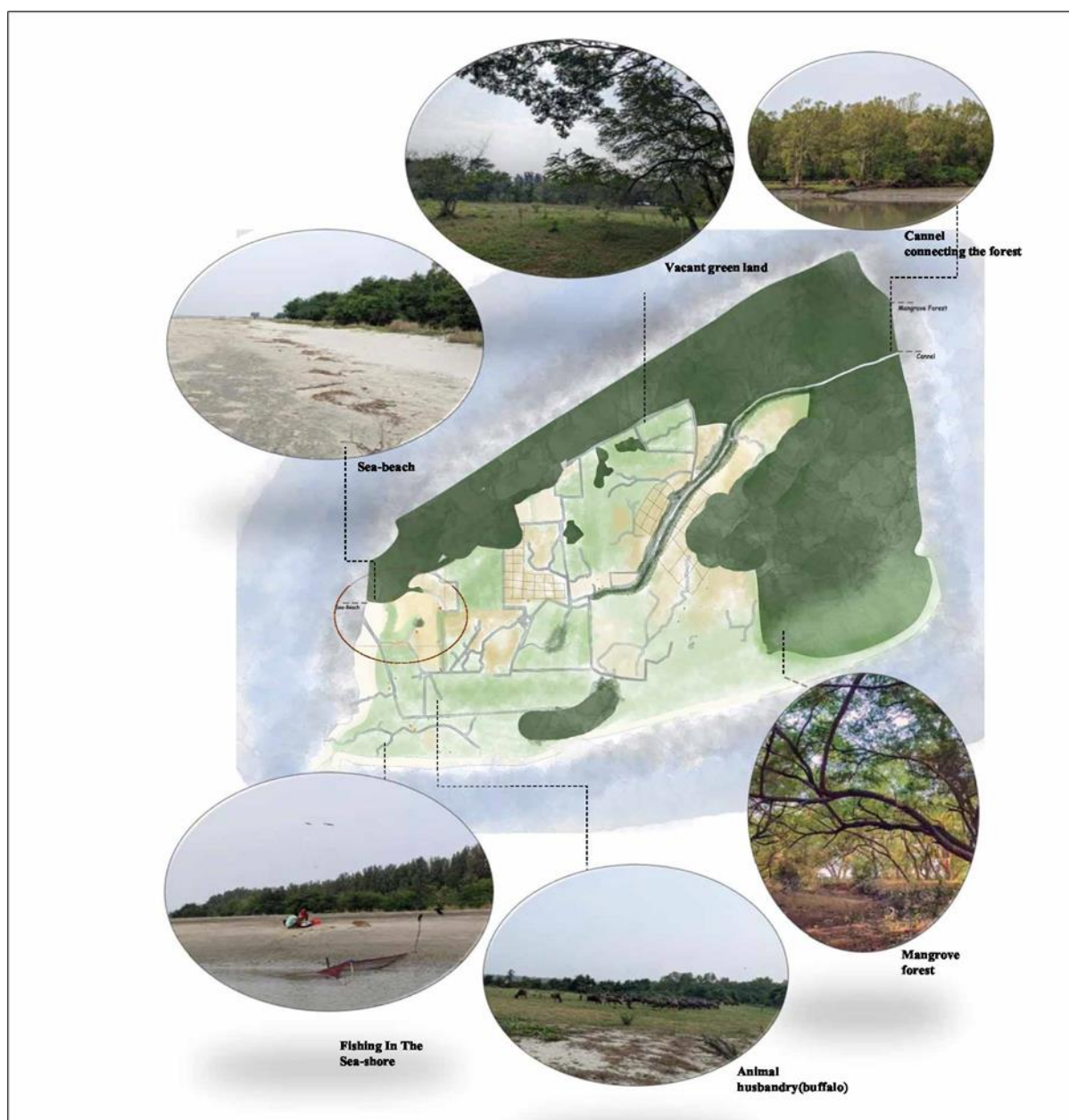
Figure 27: Luxury Eco-Tourism of Different Country



Source: PKCP Project, UDD, 2019

Map 22: Location of Tourism facilities for Char Hare

Besides that, Char Hare is home to a variety of wild animals, including deer, monkeys, and pigs, among others. Furthermore, around 500 hectares of mangrove forest have been set aside. The Patuakhali Coastal Forest Department subsequently reforested this char. Visitors can observe a variety of bird species here. A diverse nature of flora and fauna can be seen in the surround area. Several trees of the Sundarbans species can be found here too.

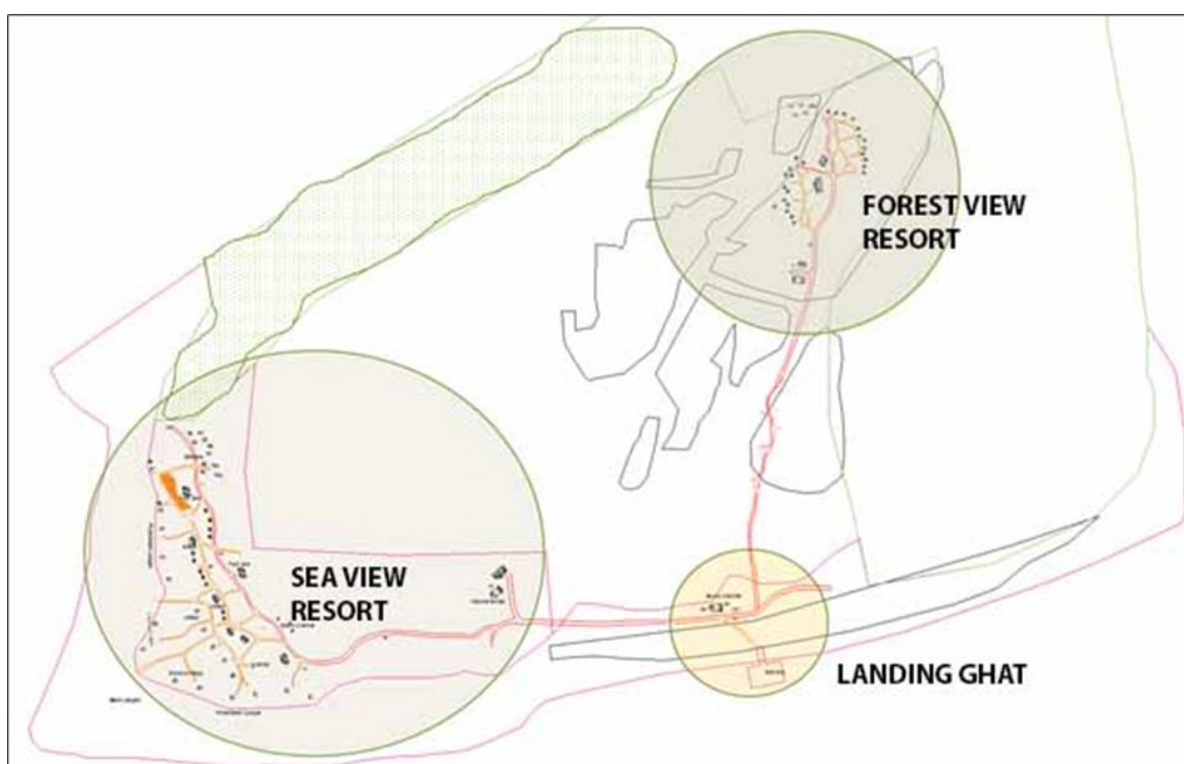


Source: PKCP Project, UDD, 2019

Map 23: Existing scenario of Char Hare

Above visual graphics shows that the Char hare has two different natural attractions. One is jungle environment another is sea beach. We propose two Luxury Leisure resorts for the international tourists.

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. Beach Loungers, Luxury Tent, Eco-hut, flotel (boat living) and Speed Boat Ghat have proposed here with all possible facilities for the foreigners.



Source: PKCP Project, UDD, 2019

Map 24: Proposal for Two Resorts of Char Hare

Table 14: A Short Summary for Facilities for Both Resorts

Sea View Resort	Forest View Resort
Total key - 27	Total key - 32
Area - 118 acre	Area - 98 acre
Restaurant - 3 nos	Restaurant -2 nos
Staff & security accommodation 65 pers	Staff & security accommodation 55 pers

Tree house lining and transformed local huts are the key attraction of the forest view resort. The concept for this resort is the privacy, Isolation, Security, Memory and Different from other resorts.



Figure 28: Forest View Resort

Tent living for Sea view resort may be belonging to gated exclusive foreign tourists. This type of tourism is existing in Maldives, Indonesia, Philippines, island of Mediterranean Sea and Caribbean Sea. The case of Aman-i-Khás in India, Amanwana in Indonesia, and Amanpulo in the Philippines.



Source: PKCP Project, UDD, 2019

Map 25: Overall View of Char Hare



Figure 29: Plan of Sea View Resort of Char Hare and Tent Living

Another attraction of this resort is the flotel or boat living. This may be called the Luxury on Water. Bangladesh is the land of rivers and the boats on the river are the niche of our riverine life. Similarly, sea going boats are the soul-beat of our costal life. We may have opportunity to transform those boats into ‘Flotel’ for the tourists like the example of Alappuzha in Kerala, India. The glory of Alappuzha sightseeing grabs the attention because of the beautiful Laccadive Sea that shares its borders with the palm-fringed lakes and lagoons. The Alappuzha houseboats were inspired by upgraded version of the old-age Kettuvallams and are well-equipped with all the luxuries of a good hotel room like air conditioners, modern toilets, cozy living rooms, etc. Those are widespread among the honeymooners, backpackers, foodies, families, solo travelers, or weekend vacationers. Thus, the Alappuzha tourism to gain recognition from across the globe.



Rin Beach Resort, Thailand



Alappuzha, Kerala, India

Figure 30: Examples of Houseboat (Flotel) Tourism Showing Environment and Facilities

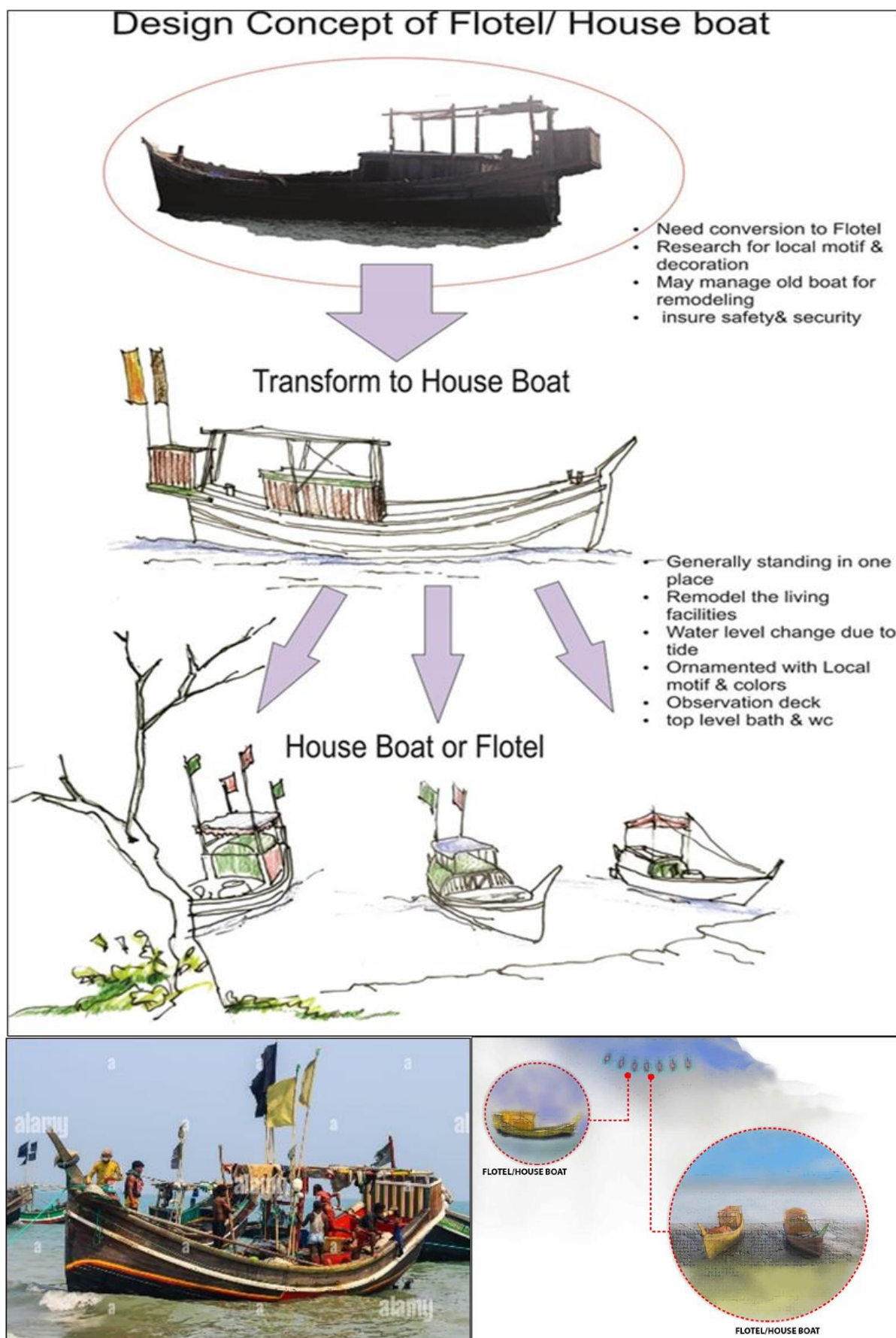


Figure 31: Design Concept of Flotel/Houseboat

Similar like that, we may convert the sea going fishing boats into houseboats and adapt the modern hotel room facilities within those. This transformation will be the main pull factor and attraction of the tourists. At the same time, we can make sure the less eco-footprint on the char. Only dining, landing dock, back house facility and security concern may be constructed on soil.



Figure 32: Converted Local Fishing Boat to Flotel

Following graphical presentation are the imaginary environment around the resort area of Char Hare



Figure 33: Imaginary 3D Views of Tent Living of Char Hare Resort

Flotel and tent accommodations are the key and unique attractions for foreign tourists visiting Bangladesh. These accommodations will also play a role in promoting the national branding of Bangladesh. Additionally, eco-concern tourism can be promoted by using recycled and converted local fishing boats. The changing water levels due to Jōyāra bhāṭā (low & high tide) will provide a unique experience to tourists who will eager to visit the coastal Bangladesh.



Figure 34: Imaginary 3D Views of Char Hare Resort

A good plantation of Sundarbans tree species will advise to grow around the resort area. Existing canals will be used for flotel placing.















Figure 35: Design Concept of Luxury Glamping Tent and its 3D View



















Figure 36: Close View of Flotel

Table 15: Approximate Cost for Development of Char Hare

Facilities /Items	Qty	Area	Approx. Cost (Cr. Taka)	Tentative Theme
Resort at Char Hare				
A) Sea View Resort				
TENT Resort (Survey, Design, construction, service, furniture, adjacent landscape, environmental assessment etc.)	27	800-1200 each	15.6	
Restaurant (Survey, Design, construction, backhouse services, furniture, interior, adjacent landscape, environmental assessment etc.)	3	1200	3.5	
Staff & security accommodation (construction and installation)	2	1000	1.5	
Forest Plantation (Environmental assessment & implementation)	-		6.5	
Ghats for Flotel (on the bank of canals transport link for Flotel guests)	4		0.75	

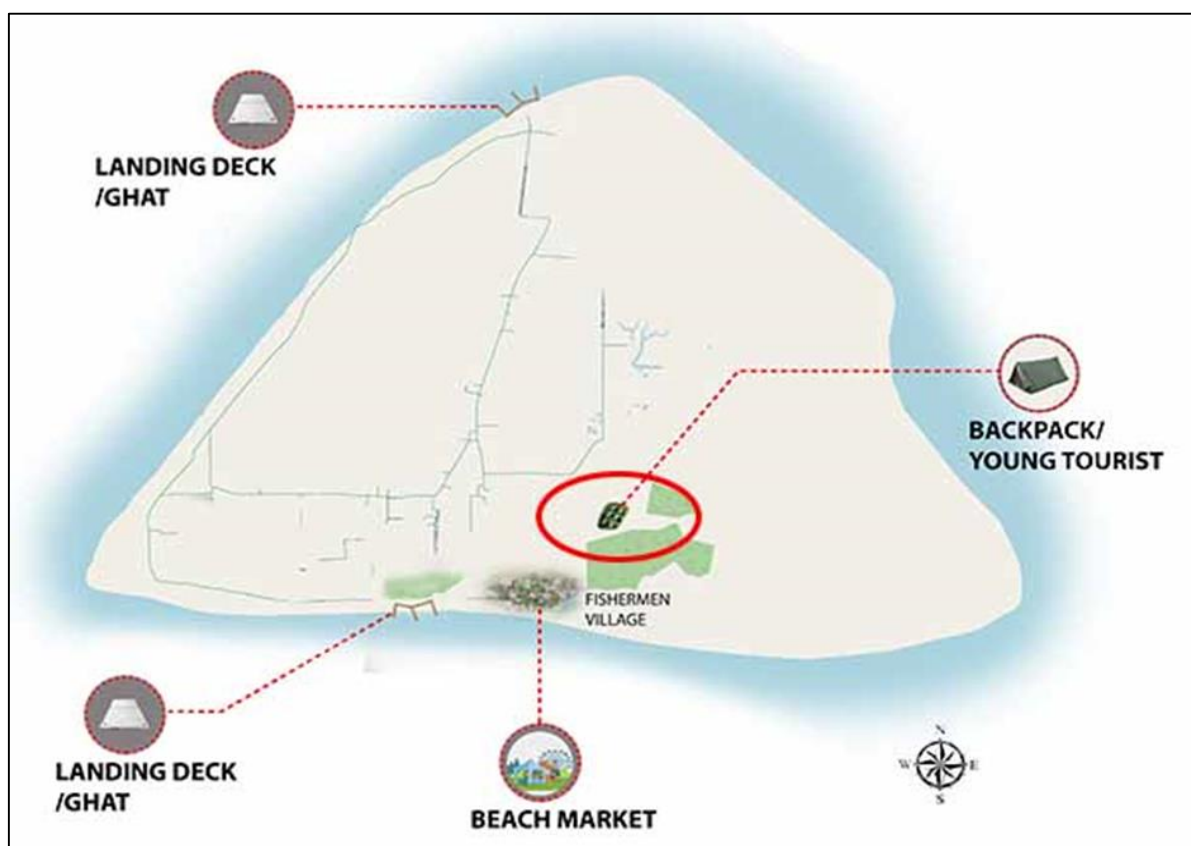
Facilities /Items	Qty	Area	Approx. Cost (Cr. Taka)	Tentative Theme
Local boat, tourist boats (transport for Flotel guests and canal safari)	15		0.75	
Flotel (Purchase local boats for reuse and renovate it with flotel facility, interior, furniture, power etc)	20		8.25	
Mud Pool (Excavation, design and implantation with ancillary functions)				 <small>Mud Bath Place Vietnam</small>
Beach Loungers (Purchase and installation)	25		0.5	
Bridge on canal (permanent RCC, temporary steel/ wood bridges, construction, and installation)	12	-	1.5	
Canal Excavation and Retrofit (Survey, design, excavation, retrofit existing canals with canal shore landscape)	-		3.25	
Security post & accommodation (construction and installation)			3	
Power & communication center (construction and installation)	1	3000	5	
B) Forest View Resort				
HUT type Resort (Survey, Design, construction, service, furniture, adjacent landscape, Local materials, environmental assessment etc.)	20		8.5	

Facilities /Items	Qty	Area	Approx. Cost (Cr. Taka)	Tentative Theme
Tree house (Survey, Design, construction, service, furniture, Local materials, adjacent landscape, environmental assessment etc.)	12		2.2	
Restaurant (Survey, Design, construction, backhouse services, furniture, interior, adjacent landscape, environmental assessment etc.)	2	1200	2.5	
Staff & security accommodation (construction and installation)	2	1000	1.5	
Forest Plantation (Environmental assessment & implementation)	-		0.8	
Bridge on canal (permanent RCC, temporary steel/ wood bridges, construction and installation)	2		0.15	
Security post & accommodation (construction and installation)			2.25	
Watch Tower (construction and installation)	1	50	0.8	
C) Other facilities of Char hare				
Tourism Office and Info Center (Accommodate International tourist information desk, Design, construction, service, furniture, materials, adjacent landscape etc.)	1		1.75	

Facilities /Items	Qty	Area	Approx. Cost (Cr. Taka)	Tentative Theme
Walkway, Road & node development (Primary, secondary and walkway construction, macadam fill, biodegradable blocks etc.)	1	14.5 km	9.0	
Speed Boat Ghat Dock (Adjustable) (construction and installation)	2	5000	0.50	 Floating Dock China
Tourist Police station (construction, interior, furniture etc. and surrounding landscape)	1		1.75	
Tourism Office and Info Center (Accommodate International tourist information desk, Design, construction, service, furniture, materials, adjacent landscape etc.)	1		1.75	
Medical Center (construction, interior, furniture etc. and surrounding landscape)	1		1.50	
Local Village development (Training of villagers, Community engagement program, facility development of local people etc.)			5.5	
Water pond (Water source for villagers)	3	4000	0.5	
Beach nourishment (placing additional sediment on a beach or in the near shore, protect the shore, etc.)	-	2.5 sqm	20	
Training of villagers and staff (Training program, facility development etc.)			1.5	
Jungle Safari (including program design, facility development, marketing, guide training and ancillary)			8	
Sum:				

5.2.3 BACKPACKER OR YOUNG TOURIST NEST AT CHAR ANDAR

Backpacker accommodations are usually cheaper than hotels and resorts, making them an ideal choice for travelers on a budget. Generally, they carry their own portable tents or hire the tents. A suitable ground will be required for this type of accommodation. Backpacker accommodations often have shared facilities such as kitchens, bathrooms, and living areas. This can be a great way to save money on food and accommodation costs. This type of accommodations is known for their social atmosphere in groups, which makes them a great place to meet other travelers and make new friends. Many backpacker accommodations offer activities such as tours, hikes, and other outdoor adventures. This can be a great way to explore the local area and meet new people.



Source: PKCP Project, UDD, 2019

Map 26: Conceptual location plan for Backpacker at Char Andar



Figure 37: Backpacker accommodation at Andar Char

A service block will be designed to provide tourist facilities. Some well-trained servicemen will help the young tourists for guide the eco-tourism amenities and simultaneously the provoke the cultural tourism. Camp fire, gala night festival, jungle safari, tree hiking, local food etc. will promote the Bangladesh to the young tourists. Besides that, low-cost dorm can be also accommodating the young tourists from local and abroad.



Figure 38: Backpacker Accommodation near Beach

At present, several young groups and entrepreneur operate similar type of tourist accommodation in different part of Bangladesh. So we can design such backpacker accommodation with world class facilities at Char Andar to promote and branding tourism in Bangladesh.
















Figure 39: Backpacker Accommodation and Facilities such as Gala Night, Mud Pool etc.



Figure 40: Foreign tourist at village activities. (Jafor Tuhin house)

Table 16: Approximate Cost for the Development of Char Andar

Facilities/Items	Qty	Area	Approx. Cost (Cr.Taka)	Tentative Theme
Ground development for Backpacker (Survey, planning , design of Backpacker's ground, landfill, facility development, landscape etc.)	1	1200 sqm	4	
Restaurant (Survey, Design, construction, backhouse services, furniture, interior, adjacent landscape, environmental assessment etc.)	2	1200	2.5	
Service block (Toilets, Baths, Suna, Lockers, rest facility, etc. construction and installation)	1			
Place for gala night festival (program development, Ground preparation, Landscape, Light, sound control, security etc.)	1	5000	1.5	
Mud pool (Excavation, design and implantation with ancillary functions)	1	2000	0.6	

Facilities/Items	Qty	Area	Approx. Cost (Cr.Taka)	Tentative Theme
Tourist Police station (construction and installation)	1		1.75	
Tourism Office and Info Center (International tourist information desk, Design, construction, service, furniture, materials, adjacent landscape etc.)	1		1.75	
Medical Center (construction, interior, furniture etc. and surrounding landscape)	1		1.50	
Tree Hiking Facilities (Facility development and installation)			0.8	
Jungle Safari (including program design, facility development, marketing, guide training and ancillary)	-	-	4	
Dock (Adjustable) (construction and installation)	2	5000	0.50	 Floating Dock China
Training of villagers and staff (Training program, facility development etc.)			1.25	
Security post & accommodation (construction and installation)			2.25	
Staff & security accommodation (construction and installation)	2	1000	1.5	
Forest Plantation (Environmental assessment & implementation)			1.5	
SUM				

5.2.4 TOURIST FACILITIES AT CHAR MONTAZ

Char Montaz is the perfect location to develop luxury and modern facilities for tourists from both local and abroad. 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 in budget saver way. This Char has only four thousand people. The government can easily engage these people for future tourist-related facilities and services.

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. Budget Eco Resort, Green Belt, Helipad, Hospital, Jungle Safari, Launch Ghat, Luxury Eco Resort, Road Proposal, Speed Boat Ghat, Tourist Police, Speed Boat Ghat, Walkway Base Station, Watch Tower, Water Sports, Wooden Walkway has proposed in action area plan.

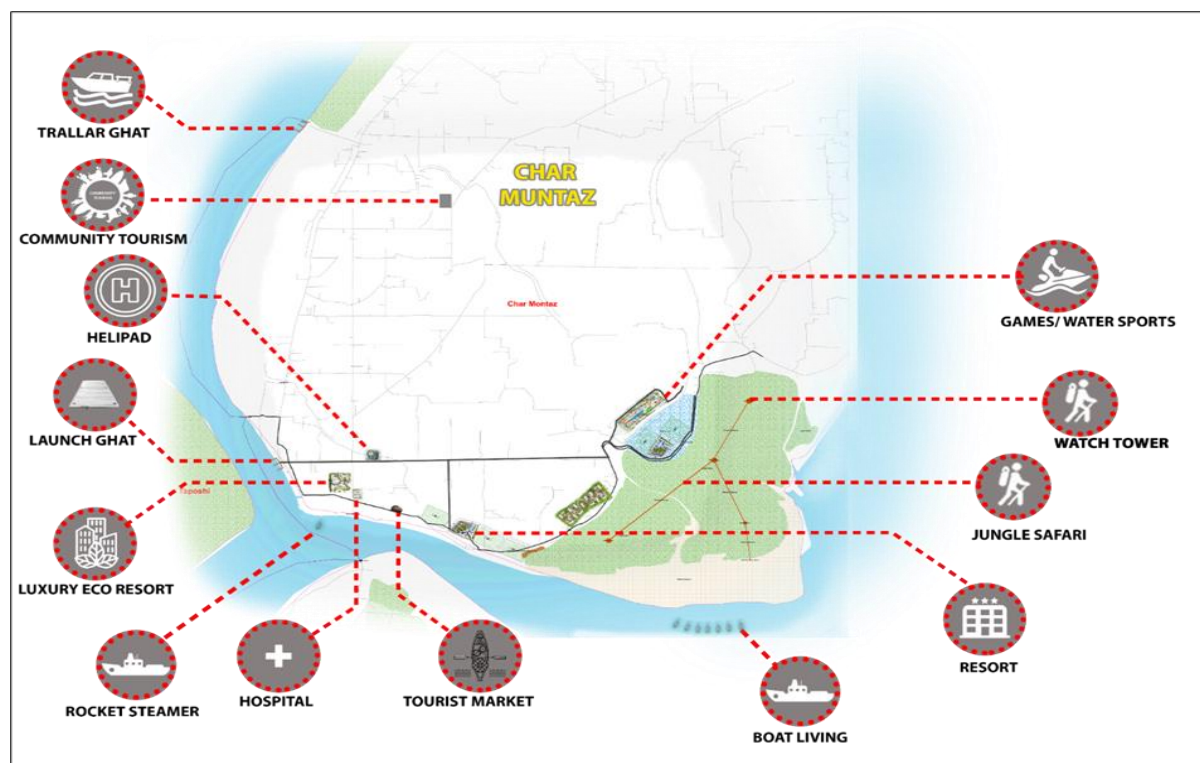
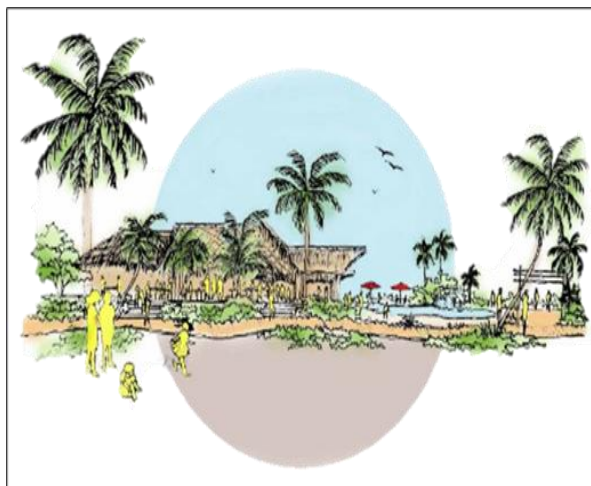


Figure 41: Conceptual Planning for Char Montaz with Tourist Facilities

Ancillary facilities for tourists like sports, convention hall, exhibition pavilion, water games etc. A good network of water transport may be provided to connect Sonar Char and other neighboring islands.



Figure 42: 3D view of a Village tea stall for tourist at Char Montaz

Some conceptual ideas are provided here for the facilities arrange at Char Montaz as below.



Figure 43: Local and Foreign Tourist Accommodation at Char Montaz

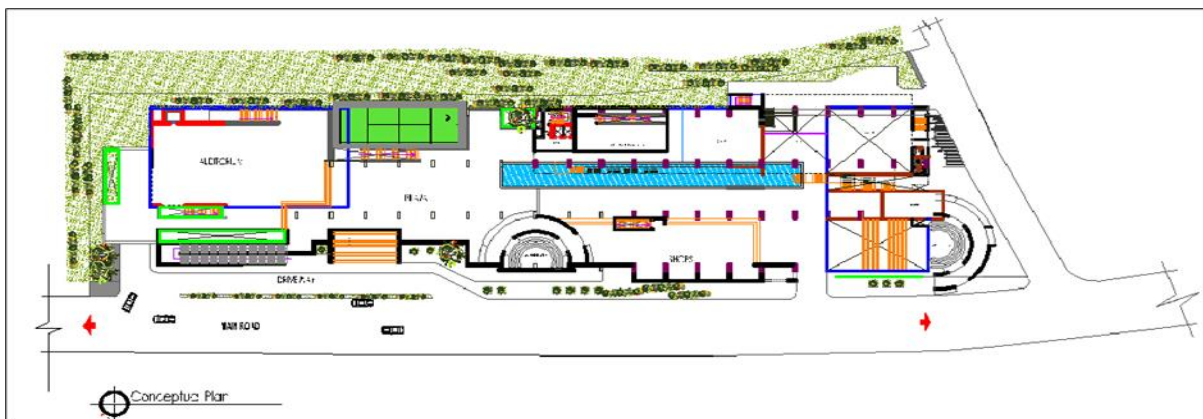


Figure 44: Proposed Layout Plan of Games zone at Char Montaz



Figure 45: Budget Resort and Market with Convention Facilities at Char Montaz



Figure 46: Resort plan and suggested build-form at Char Montaz

The Char Montaz has opportunity promote the community tourism with association to local people and they will be the prominent stakeholder of this project. Our female members of the society will be benefited. Beside that Local house form any act as inspiration for architectural form.

Community-based tourism (CBT) is a type of sustainable tourism that involves local communities in the planning, development, and management of tourism activities in their area. This approach to tourism can have a positive impact on both the local community and the environment. In Bangladesh, CBT is being promoted to promote economic development and preserve the country's rich cultural heritage.

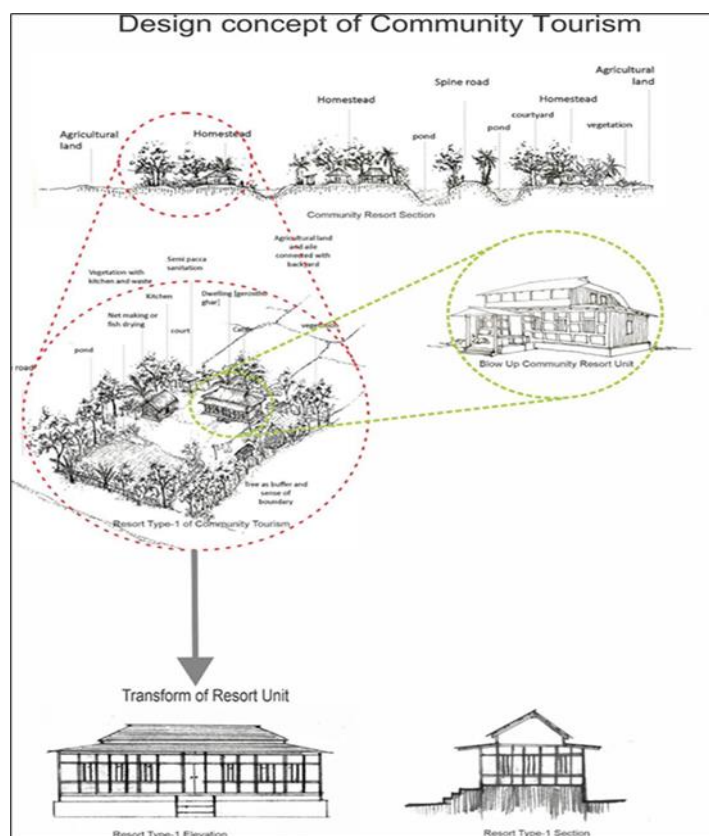


Figure 47: Community-based tourism (CBT)

Another benefit of CBT is that it can help to promote cultural understanding and tolerance. When tourists stay with local families and learn about their way of life, they are more likely to have a deeper understanding and appreciation of the culture and traditions of the community. This can help to promote mutual respect and understanding between different cultures, which is especially important in a country like Bangladesh where there are many different and variety of cultural phenomenon.

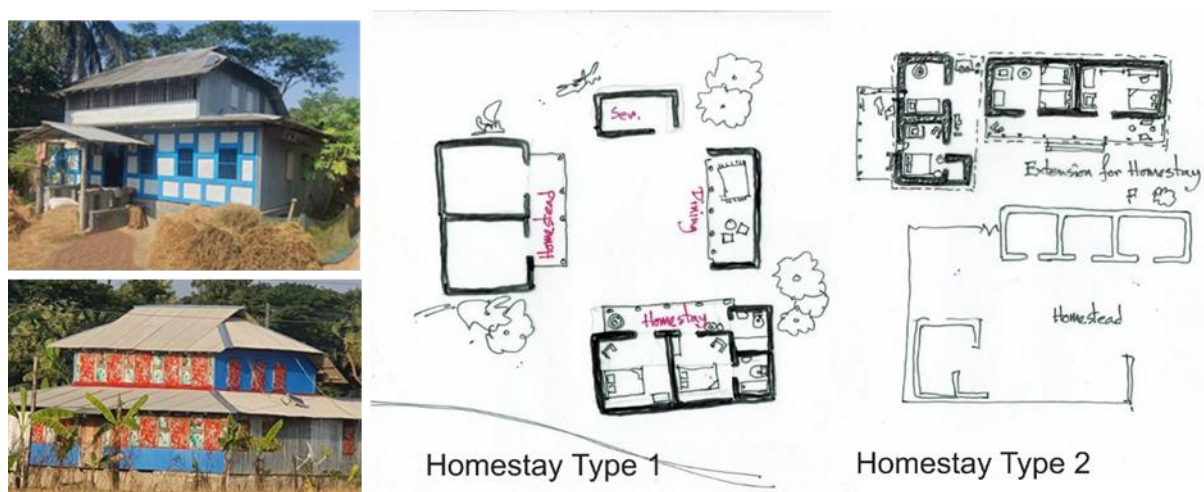









Figure 48: Community-based Tourism (CBT) and Build Form

A general idea of arrangement of house is shown here as sample. Thus, the community-based tourism (CBT) is a sustainable and responsible way to promote economic development and

cultural preservation in Bangladesh. By working with local communities to develop tourism products and services, CBT can help to improve the livelihoods of rural communities. It is a good way to empower the local communities and to promote a more responsible and sustainable tourism industry in our country.

Table 17: Approximate Cost for Development of Char Montaz

Facilities/Items	Qty.	Area	Approx. Cost (Cr. Taka)	Tentative Theme
Budget Eco Resort (Survey, Design, construction, service, furniture, adjacent landscape, Local materials, environmental assessment etc.)	1	45000	20	
Economic Class Hotel (Survey, Design, construction, service, furniture, adjacent landscape, etc.)	30 rooms	35000	20	
Business Class Hotel (Survey, Design, construction, service, furniture, adjacent landscape, etc.)	20 rooms	35000	35	
Luxurious Class Hotel (Survey, Design, construction, service, furniture, adjacent landscape, Local materials, environmental assessment etc.)	20 rooms	35000	48	
Tourist Market (construction and installation)	1	30000	25	
Multifunctional Sports Complex (Gym, Swimming Pool, Shelter) (construction and installation)	1	100000	50	
Police, Fire Service, Health, Utilities etc. (construction and installation)	1	60000	30	

Facilities/Items	Qty.	Area	Approx. Cost (Cr. Taka)	Tentative Theme
Infrastructure Development Cost (Roads, bridge, canals, street light, drainage, waste management etc.)	-	35000 sqm	150	
community tourism (CBT) facility development (Program development, community engagement, Training, workshop etc.)			4.5	
Training of villagers and staff (Training program, facility development etc.)			2.25	
Tourist Police station (construction and installation)	1		10.75	
Tourism Office and Info Center (construction, interior, furniture etc. and surrounding landscape)	1		10.75	
Medical Center (construction, interior, furniture etc. and surrounding landscape)	1		15.5	
Power station (construction and installation)	1		80	
Jungle Safari (including program design, facility development, marketing, guide training and ancillary)	-	-	5	
Dock (Adjustable) (construction and installation)	6	5000	2.50	 Floating Dock China
Forest Plantation (Environmental assessment & implementation)			4.0	

5.2.5 DEVELOPMENT OF CHAR TAPOSHI/KOLAGASI/TIGER DIP

Around the year 1995, a new Char was visible and that was Char Taposhi/Kolagasi. It is predicted that the soil conditions of these char are not stable. The areas of Chars change frequently over the year. This Char is located to the western side of the Char Andar and Sonar Char. There is a mangrove forest in this area. This Char is ideal for the jungle adventure. The Char is densely forested with mangroves. Water, plants, and fauna are available to local and foreign visitors.

There are several canals cover the larger parts of Char Taposhi. So, there is another opportunity to accommodate the 'Hotel barge' or aristocrat steamer living. A hotel barge is a type of ship/ boat that has been built or converted to serve as a hotel or other kind of lodging. Hotel barges are generally found on rivers and canals in Europe and may be used for river cruises or permanently moored in one place.

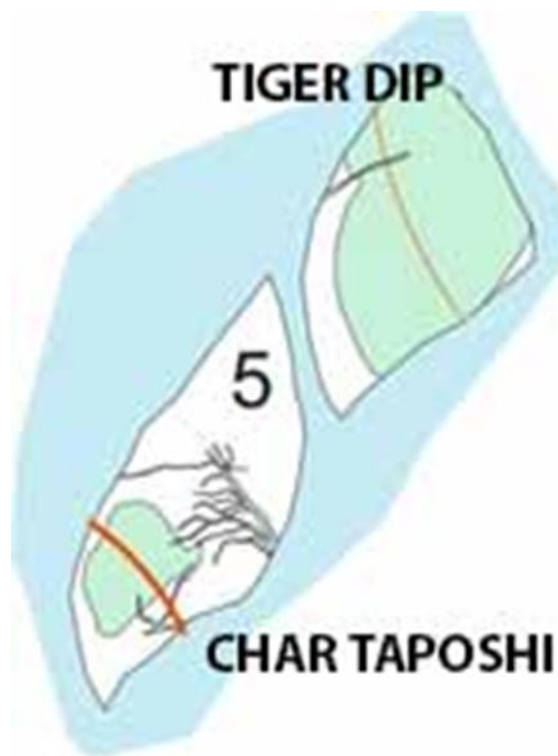


Figure 49: Examples of Barge Hotel of the World

Many working barges have been converted into hotels of varying degrees of luxury. This trend began in the 1960s and has now grown into a network of hotel barges operating on the canals and rivers of France, Belgium, the Netherlands, Germany, and the UK.

We can convert the century old rocket steamer to this kind of barge hotel. The aristocracy and significance of heritage living on water will attract the tourist as a special magnet of attractive feature for this region. Moreover, new establishment cost for resort may be minimized. This type of adaptive reuse of old ships will open a new scope to hotel living in Bangladesh.

If we can establish proper branding and advertise the aristocrat water living, it will attract plenty of local and foreign tourists.



Figure 50: Convert the Rocket Steamer into Hotel Barge

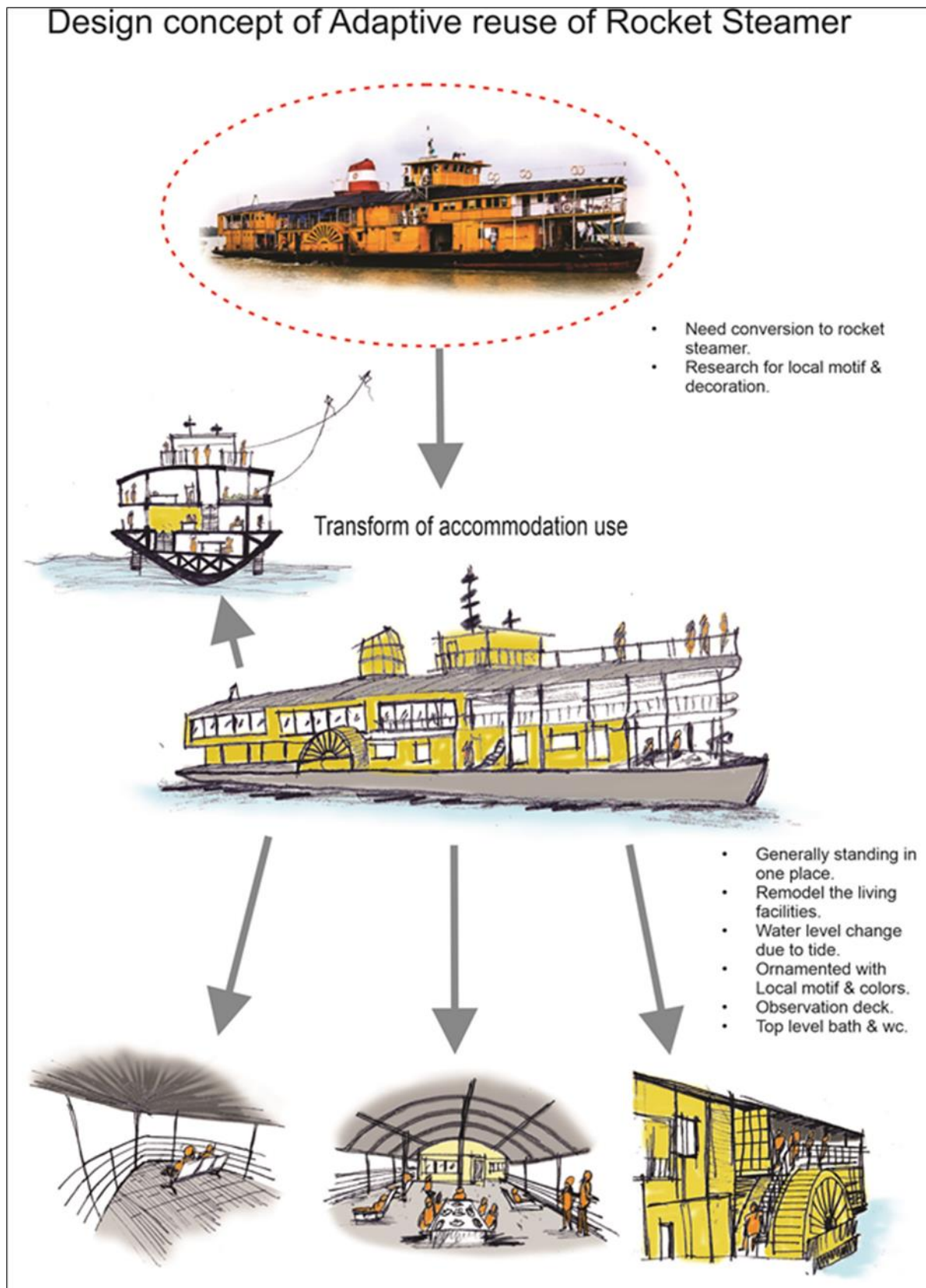






Figure 51: Design Concept of Adaptive Reuse of Rocket Steamer

Table 18: Approximate Cost for Development of Taposhi/Kolagasi/Tiger Dip

Facilities/Items	Qty	Area	Approx. Cost (Cr. Taka)	Tentative Theme
Watch Tower (construction and installation)	1	50	0.8	
Adaptive reuse of old ships & remodeling (convert the century old rocket steamer to this kind of barge hotel with all facilities)	2		80	
Local & tourist boat (transport for guests and canal safari)	20		0.5	
Jungle Safari (including program design, facility development, marketing, guide training and ancillary)	-	-	3	
Forest Plantation (Environmental assessment & implementation)			1.5	

5.3 DEVELOPMENT COST CALCULATION

The preceding section outlines the initial cost estimation for establishing the Exclusive Tourist Zone (ETZ). This cost is determined based on the intended functions and amenities. However, there is a significant concern regarding the use of eco-friendly design principles to promote tourism. Notably, Sonar Char is a protected area, which means that any construction or development is strictly prohibited.

Considering this, all facilities within Sonar Char and its surrounding region will adhere to environmentally friendly practices, emphasizing a low carbon footprint. During development, priority will be given to biodegradable products and easily transportable structures. Additionally, local raw materials will be utilized for constructing of tourist facilities.

By adopting these sustainable approaches, we aim to harmonize tourism development with the preservation of Sonar Char and its surround's natural beauty and ecological integrity.

5.4 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 optimize 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 centers 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. 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.

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.

Table 19: 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 20: Total Construction and Furnishing Cost

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

Table 21: Annual Maintenance Cost

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

5.5 BENEFIT OF TOURISM

Environmentally sensitive places in the Sonar Char and neighboring 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.

5.5.1 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.

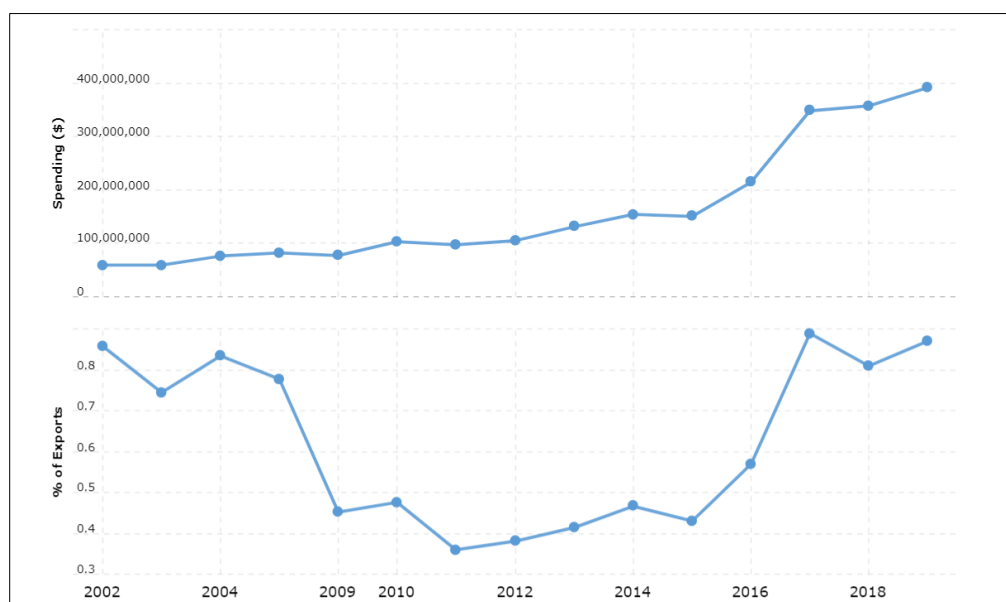
5.5.2 Employment Opportunity

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).

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).



Source: World Bank, 2022

Figure 52: Economic Potentiality of Foreign Tourist for Bangladesh

According to a World Bank study, international visitor spending has gradually increased from approximately \$80000000 in 2002 to \$400000000 in 2019. The tourism sector's share of exports is steadily increasing, rising from 0.6 percent to 0.9 percent by 2019.

Table 22: 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

Year	Tourists' Arrival
2018	267000
2019	323000

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 rises gradually. Therefore, the return of investment of Sonar Char will be achieved.

5.5.3 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).

5.6 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 SIX: IMPLEMENTATION OF THE PROJECT

6.1 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 23: 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 24: 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

Area of Concern		Step 1	Step 2	Step 3	Step 4
	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

6.2 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 25: Period of Action Area Plan

Task	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 Char 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 Char Eco-Tourism Development Committee																				
Formulation of Management Plan for the Sonar Char Eco-tourism Development																				

Table 26: 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

6.3 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.

6.4 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 27: Integration of Higher-level Plan

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

Existing Plan, Policies and Strategies	Tasks of Integration	Integration with Sonar Char Action Area Plan
<p>Strategy (2016-2031)</p> <p>❖ Coastal Development Strategy, 2006</p>	<ul style="list-style-type: none"> Ensure Sustainable Development Goals (SDG). Ensuring fresh and safe water availability Management of natural resources Improving people's livelihood conditions, particularly women Empowerment 	<ul style="list-style-type: none"> To maintain reserve forest To facilities for jungle safari To construct of forest office To build meditation spaces To facilitate water transport facility (boat, ferry etc.) To maintain reserve forest To facilities for jungle safari To build family gathering space
❖ Coastal Zone Policy 2005	<ul style="list-style-type: none"> Providing guidelines to all agencies and organizations confine harvesting, extraction, or usage of coastal resources 	<ul style="list-style-type: none"> To maintain reserve forest To facilities for jungle safari
❖ Coastal Environmental Management Plan for Bangladesh 1988	<ul style="list-style-type: none"> Socio-economic aspects into environmental challenges 	<ul style="list-style-type: none"> To facilitate water transport (boat, ferry etc.) To facilities for jungle safari To construct family gathering space
❖ The Environmental Court Act 2000	<ul style="list-style-type: none"> Jurisdiction, suitable punishments involving pollution in the Sonar Char 	<ul style="list-style-type: none"> To build boat dock in sonar char To build meditation spaces To build water transport facility (boat, ferry etc.) To construct family gathering space
❖ National Water Policy, 1999	<ul style="list-style-type: none"> Water management strategies at the local levels It addresses agricultural water usage with land use planning Advocates for utilization of surface water and groundwater 	<ul style="list-style-type: none"> To construct of forest office To construction of boat dock in sonar char To build meditation spaces To facilitate water transport (boat, ferry etc.) To maintain reserve forest To facilities for jungle safari To construct family gathering space
❖ National Environmental Management Plan, 1995	<ul style="list-style-type: none"> Advocate government agencies, NGOs, and the public for fishing and agriculture-related initiatives 	<ul style="list-style-type: none"> Basic guideline for taking development activities in coastal region

Existing Plan, Policies and Strategies	Tasks of Integration	Integration with Sonar Char Action Area Plan
❖ Environmental Conservation Act, 1995	<ul style="list-style-type: none"> Control through mitigation of pollutants Addresses pollution-causing processes and activities Identify operations and processes in ecologically critical zones 	<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"> To construct of forest office To build boat dock in sonar char To build meditation spaces To build water transport facility (boat, ferry etc.) To maintain reserve forest To facilities for jungle safari To construct family gathering space
❖ National Environmental Policy, 1992	<ul style="list-style-type: none"> Policy support to control polluting and environmentally degrading activities Policy support for ensuring environmentally sound development Policy support for ensuring environmentally sound use of all-natural resources 	<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"> To construct of forest office To construct boat dock in sonar char To build meditation spaces To arranging water transport facility (boat, ferry etc.) To maintain reserve forest To facilities for jungle safari To constructing family gathering space
❖ Bangladesh Delta Plan 2100	<ul style="list-style-type: none"> Ensure long-term water and food security, economic growth Resolving the Coastal Zone's difficulties and challenges Expansion, reclaiming additional land in the coastal zone 	<ul style="list-style-type: none"> To follow Basic guideline for taking development activities in coastal region
❖ Bangladesh Climate Change Strategy and Action Plan (BCCSAP) 2009	<ul style="list-style-type: none"> Ensure climate-resilient, and low-carbon development strategy 	<ul style="list-style-type: none"> To ensure low-carbon or ecofriendly concept during construction period
❖ National Adaptation Programmed of Action (NAPA) 20	<ul style="list-style-type: none"> Identified 15 priority activities in vulnerable regions, including general awareness-raising, 	<ul style="list-style-type: none"> To follow Basic guideline and for taking development activities in ecologically vulnerable region

Existing Plan, Policies and Strategies	Tasks of Integration	Integration with Sonar Char Action Area Plan
	capacity-building, and project implementation	
❖ Land Use Policy 2001	▪ It emphasized the need of coastal land zoning in particular	• To follow guideline for land zoning

CHAPTER SEVEN: SERVICES AND FACILITIES FOR FOREIGN TOURISTS

7.1 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.

Exclusive Gated Tourism: Exclusive Gated Tourism represents an innovative solution to address the adverse impacts of overtourism on local communities and the environment. This concept has been successfully piloted in natural areas such as Komodo National Park in Indonesia and the revered Uluru Mountain in Australia. By implementing carefully crafted regulations that restrict visitor numbers either by location or during specific timeframes, Gated Tourism not only manages tourist inflows but also appeals to discerning travelers who recognize the value of preserving natural beauty and cultural heritage. This tourism would not only limit tourist flows but would attract quality tourists, who are willing to spend money to access certain areas, or to visit them in specific periods of the year. These quality tourists contribute to more sustainable and mutually beneficial experiences for all stakeholders, striking a harmonious balance between conservation and unique travel opportunities.

7.2 CHAR BASED FACILITIES AND SERVICES

Char Montaz: For international tourists, the authorities plan to build economic, business, and budget as well as luxury hotels in this Char. A large dock will be developed by the authorities to transport people to another Chars. For air-based communication, an existing helipad is situated in char montaz union parisad beside Char Montaz Secondary School

Andar Char: For international tourists, this is the primary zone or "buffer zone." This Char will include Budget Eco Resort, Golf Course, Luxury Eco Resort, and Speed Boat Ghat. 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. Jungle safari, unique floating dock, speed boat ghat will include in the proposal.

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. Speed Boat Ghat has also proposed.

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. Beach Loungers, Budget Eco Resort, Luxury Tent, Speed Boat Ghat has proposed in action area plan.

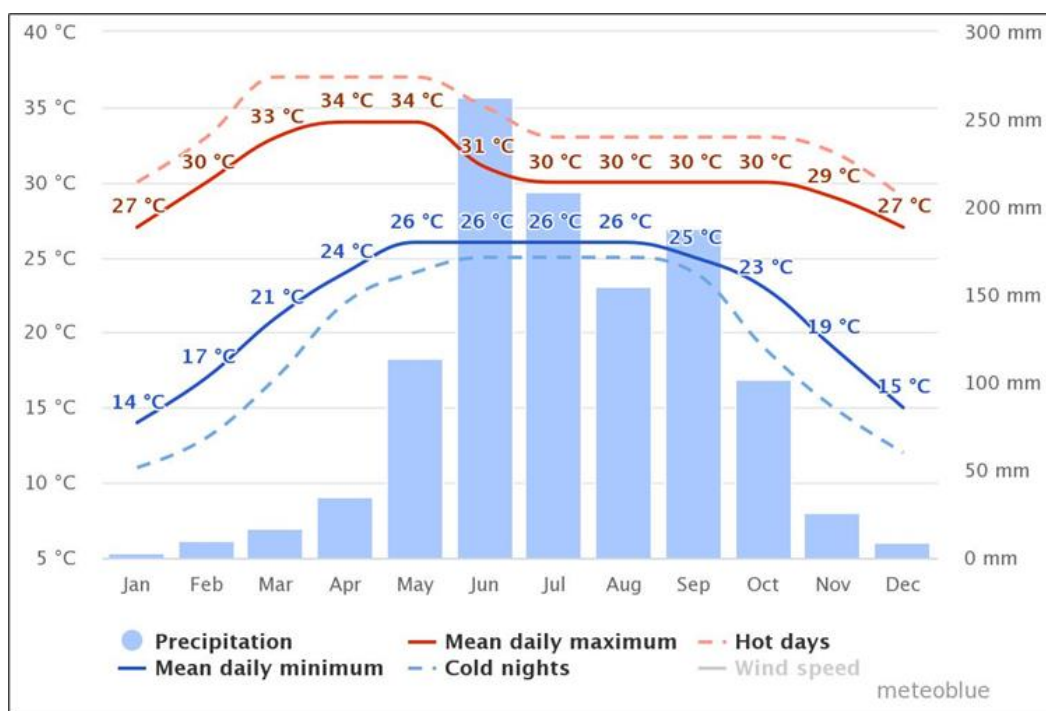
7.2.1 Tour Plan for Foreigners



- ✓ 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, from below figure 36, 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.



Source: Meteoblue, 2022

Figure 53: Weather of sonar Char and Surrounding Area

7.2.2 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 based on three key concerns. First, 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.

7.2.3 Transportation System

Tourists come to Char Montaz by helicopter. A well-functioned and well-equipped helipad already exists 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 Andar Char, which will be developed as an exclusive area for tourists. There is another welcoming dock located in Andar char for communication between tourists and Sonar Char. Tourists who are likely to visit Sonar Char, Andar 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.

7.2.4 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, this 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.

7.2.5 Suitable Time Period to visit 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.

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, Andar 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.

Table 28: Suitable Time Period to visit 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												

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. 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 programs 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.

7.2.6 Buffer Zone Concept for Foreign Tourist

The buffer zone concept is designed for foreign tourists. Andar 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.

CHAPTER EIGHT: CONCLUSION

Sonar Char is a new and emerging sea beach and tourism center in the south of Bangladesh, near Patuakhali district. It is a hidden gem that offers a unique and authentic sea beach tourism experience that is different from the crowded and commercialized Cox's Bazar or Kuakata. However, this gem is not yet polished and needs some care and attention to shine.

This Action Area Plan (AAP) has aimed to explore the potential of developing Sonar Char as a tourist location that benefits the local community and preserves the environment. Prior to drafting the AAP, a fundamental question arose: How can Sonar Char be developed into a tourist hotspot that appeals to both domestic and international visitors, fosters economic growth, creates employment opportunities for locals, and upholds the area's natural and cultural significances?

To answer this question, the research study adopted a mixed-methods approach that involved a literature review, a survey of potential tourists and tourism, interviews with local stakeholders, and a suitability analysis of the area. The main findings of the study were:

- There is a high demand for sea beach tourism among domestic and international tourists, especially those who seek authentic, immersive, and sustainable experiences. Sea beach tourism is like a magnet that draws people to the coast, where they can enjoy the beauty and diversity of nature and culture.
- Sonar Char has many strengths and opportunities for developing sea beach tourism, such as its golden sand, blue water, green forest, wildlife sanctuary, cultural diversity, agricultural products, and community participation. Sonar Char is like a canvas that has many colors and textures, where tourists can paint their own memories and stories.
- Sonar Char also faces many challenges and threats for developing sea beach tourism, such as its poor accessibility, lack of facilities and services, environmental degradation, and social conflicts. Sonar Char is like a flower that needs water and sunlight, where tourists and stakeholders need to nurture and protect it.

Based on these findings, the study proposed an action area plan (AAP) for developing sea beach tourism in Sonar Char, which consisted of four strategic objectives: (a) improving infrastructure and connectivity, (b) enhancing quality and diversity of tourism products, (c) promoting marketing and branding, and (d) fostering stakeholder collaboration and capacity building. The action area plan is like a roadmap that guides the way to the destination, where tourists and stakeholders need to follow and implement it.

The prior study contributes to the existing literature on sea beach tourism development by providing a comprehensive and context-specific analysis of Sonar Char, as well as a practical and participatory action area plan (AAP) that addresses the needs and aspirations of the local community and the tourists. The study also has several implications for policy and practice, such as:

- The need for a holistic and integrated approach to Sonar Char ETZ and sea beach tourism development that balances the economic, social, and environmental aspects of Sonar Char. Sea beach tourism development is like a puzzle that has many pieces, where tourists and stakeholders need to fit them together.
- The need for a bottom-up and inclusive approach to Sonar Char ETZ and sea beach tourism development that involves the active participation and empowerment of the local community and other stakeholders. Sea beach tourism development is like a team that has many players, where tourists and stakeholders need to cooperate and coordinate.
- The need for a continuous and adaptive approach to Sonar Char ETZ and sea beach tourism development that monitors and evaluates the impacts and outcomes of the action area plan and makes necessary adjustments and improvements. Sea beach tourism development is like a journey that has many twists and turns, where tourists and stakeholders need to learn and adapt.

The AAP also acknowledges some limitations and suggests some directions for future research, such as:

- The limited scope and scale of the tourist facility study, which derived from other tourist are of Bangladesh and used a small sample of tourists and tourist service providers and stakeholders. Future research could expand the study to the extended areas and use a larger and more representative sample of tourists and stakeholders before the implementation phase.
- The limited depth and breadth of the study, which relied on secondary data and self-reported data for the literature review and the onsite survey. Future research could collect more detail data and use more objective and diverse methods for the literature review and the survey, such as field observations, experiments, and content analysis. ETZ and sea beach tourism development is like research that has many methods, where tourists and stakeholders need to use and apply more.
- Future research could enhance the validity and reliability of the study by using more rigorous and robust data collection and analysis techniques, such as triangulation, cross-validation, and peer review. ETZ and Sea beach tourism development is like a science that has many standards, where tourists and stakeholders need to meet and exceed more.
- Sonar Char ETZ needs to foster the Public-Private Partnerships. Collaboration between the public and private sectors is crucial for the successful development of this costal ETZ. Public-private partnerships can leverage expertise, resources, and innovative ideas to accelerate the development while ensuring financial sustainability. By fostering partnerships with investors, developers, and businesses, the Sonar Char ETZ can attract investment, create job opportunities, and stimulate economic growth.

- Sonar Char ETZ needs to foster Community Engagement. Meaningful community engagement should be at the heart of this development. Establishing platforms for community participation, encouraging public consultations, and involving local residents in decision-making processes will help create a sense of ownership and ensure that the development aligns.
- Need to study and develop world-class Ecotourism Initiatives. Sonar Char ETZ has the potential to become a leading eco-tourism destination. Engage professional branding services to provide a road map of country branding and development of tourism industry as well as relationship between inter regional and world. Authority can hire country-branding experts from local and abroad.

In conclusion, this Action Area Plan (AAP) has demonstrated that Sonar Char has a great potential for developing sea beach tourism that benefits the local community and preserves the environment. However, this potential can only be realized if the action area plan is implemented effectively and efficiently, with the support and cooperation of all the stakeholders. Therefore, the AAP recommends that the action area plan should be adopted and executed as soon as possible, and that the progress and performance of the plan should be regularly assessed and improved. Sonar Char is like a dream that can come true, where tourists and stakeholders need to work hard and smart to make it happen.

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