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“A Geographical Analysis On The Relationship Between Coastal Ecotourism And Environmental Issues Of Concern And Sustainability: A Case Study Conducted In Digha, West Bengal, India”

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Abstract:

Coastal tourism is always an attractive tourist destination and has increased the economic growth. However, the coastal areas are now exposed to deterioration due to lack of balance between tourism activities and natural environmental actions. Development of sustainable ecotourism practices is the only way to solve the problem. Creating public awareness regarding the adverse consequences of unplanned mass tourism activities in the region is the paramount step toward achieving sustainability. This study explores the environmental impacts of unplanned tourism activities in a very popular coastal tourism destination, Digha in West Bengal, India. SWOT analysis is performed to analyse the various effects of tourism. The study evaluates the existing mass tourism pressure and ways to implement sustainable ecotourism practices, to enhance tourism in Digha.

Keywords: Tourism, coastal tourism, environment, Digha, ecotourism, SWOT analysis

I. INTRODUCTION

Tourism is nowadays recognized as an industry that generates both social and economic benefits. It has a high potential for both economic development and employment generation. Coastal tourism is a very popular natural tourism destination and is considered as the fastest growing industry in the world. This is mostly due to the fact that 20% of the earth's surface contains

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coastlines and more than 70% of the world's mega-cities are located in coastal areas [1]. Hence it provides unique combinations of resources which are a combination of land and sea activities, making those areas more attractive to tourists and travelers. However, the development of the tourism industry is not properly planned and managed and

produces a myriad of negative impacts on every tourist destination. Any human activity could cause a dramatic change in the ecology of that area [2]. Anthropological interference contributes to habitat loss, destruction of wetlands, erosion, siltation, dune migration and water pollution [3]. The coastal areas are fragile and vulnerable, thus, the need for protecting coastal zones has been increased in order to preserve their natural beauty and consequently to ensure them about long-term viability and profitability as a tourism destination. Tourism industry is highly dependent on natural environments; hence a balance should be created between the coastal environment and tourism activities which can be done through the sustainable development [4–8]. The act of sustainable development is impossible without environmental protection and sustainable utilization of natural resources [9]. The present work is a case study to observe the effect of coastal tourism on the environment. Digha is a popular sea resort in WB, India. Digha is adorned by the virtue of its natural beauty with broad vast blue sea and intoxicating rows of Casurina trees. The salt marches, mangrove swamps, estuaries, sand dunes and its geomorphological structure provides a unique set of environmental conditions for the organisms inhabiting there. It is a very popular tourist destination; every year

masses of tourists visit Digha for recreational exploitation of the coast. A huge human interference has hence intervened with this ecological balance. In this work an attempt has been made to study the effect and impact of tourism on coastal environment of Digha and to explore ways of sustainable ecotourism practices.

AIMS AND OBJECTIVES

The present work is intended to assess the linkage between the tourism pressure and behaviour and its impact on the coastal ecology and ways to enhance ecotourism practices in a better way to promote tourism without affecting the ecology of the area. Location of Study Area Digha is situated in district East Midnapore, State W.B., India. Its geographical location ranges from 21°36'50"N, 87°29'E to 21°39'N, 87°37'E (Figure 1). With an average elevation of 6 m, Digha's climate is classified as tropical. According to the Köppen-Geiger climate classification, it is classified as in summer, the maximum temperature reaches 37°C while winter sets a temperature of 24°C. July to March is considered as the best time to visit Digha as weather stays most pleasant in these times. The average temperature in Digha is 26.6°C. Digha generally experiences an average rainfall with high humidity in the monsoon season. The rainfall here averages 1519 mm (Figure 2).

METHODOLOGY

In order to achieve the objective of the

current study, a qualitative case study is set to identify and describe the negative environmental impacts of tourism development. A case study method has been adopted for this study to identify the existing adverse environmental consequences of tourism expansion which

are accounted as a barrier for success of sustainable tourism development. The study is based on the survey of the local inhabitants, tourists, entrepreneurs and hotel owners, based on a well prepared questionnaire.



Fig. 1: Location Map of the Study Area.

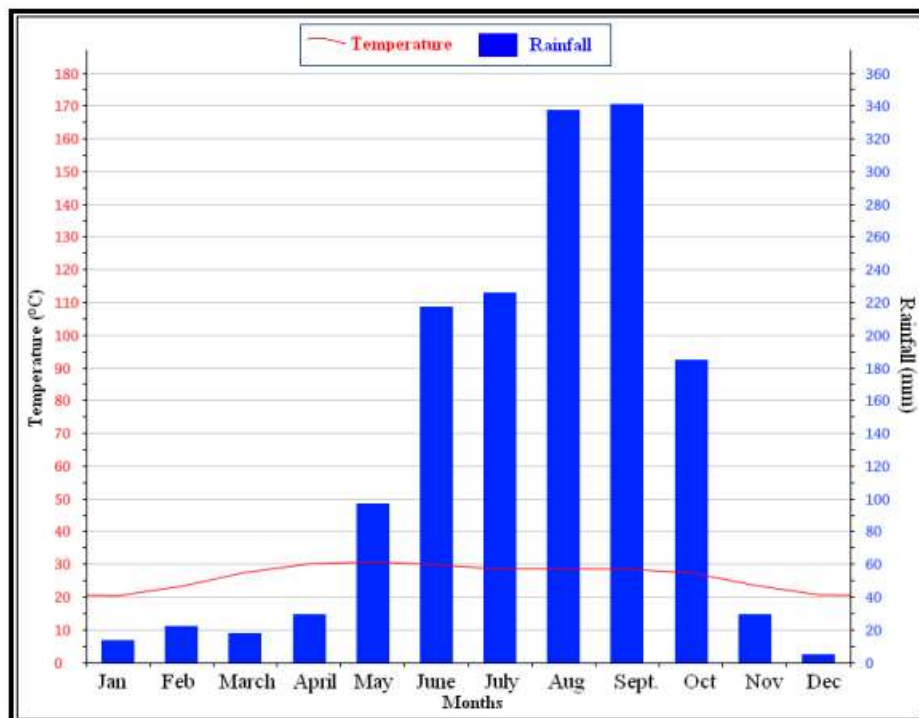


Fig. 2: Climate Graph of Digha.

The beach profile is mostly flattened coast which is characterized by different lines of beach ridges, beach dunes, beach-belts and marine terraces. Aeolian dunes of low heights are more common in this region. On the basis of erosion and accretion, the entire coast can be divided into two parts, i.e., erosional regime and accretional regime. The unplanned tourism has led to severe deterioration of the environment. The study area is largely inundated by a large number

Place	Discovery	Impact of Tourism
Old Digha	Late 1950s	Change in shore line and water table flooding and inundation and anthropogenic pollution
New Digha	Mid 1980s	Built up dune surface, wind erosion of sand dunes and anthropogenic pollution

of tourists every year. The main adverse impacts of tourism on the coastal environment of Digha are tabulated as (Table1).

Table 1: Environmental Impact of Tourism on Digha.

Based on the questionnaire survey conducted among the tourists and the hotel owners, it was found that the majority of tourist arrives during the winter season. The

most favourable transport is arrival by train; buses are also preferred mode of transport. The travellers mostly complain regarding the environmental damage and pollution. The hotels are mostly constructed on sand dunes and the majority of them have an accommodation capacity of 20 to 30 rooms. The underground water is used by boring method to fulfil the water demand, which creates huge pressure on the underground water supply (Figure 3).

Sea Level Rise and Erosion

Due to the huge sedimentation load of the suspended sediment, the sea level is being considerably raised and it is expected to be 3.14mm/year. Frequent storm surges have been identified as another causative factor for the abrupt sea level rise associated with considerable erosion. It is been observed from historical records that the shoreline of Digha has been retreated increasingly at the rate 17.5 m/year. As a result, the backwash returns with more power causing severe beach erosion and also affects stability. The following factors have been found responsible for coastal erosion of Digha-Junput coast. These are:

1. Wave actions.
2. Storms.
3. Removal of sand for construction of

roads and hotels.

4. Diminishing sand dunes.

5. Exploitation of the casuarina’s plantation on the dune tops.

Coastal Pollution

Urbanization has resulted into loads of sewage discharge and industrial waste into water which is the major pollutant factor of the deterioration of water. The indiscriminate installation of tube wells on the dune bank and excessive withdrawal of ground water by the large number of hotels has led to the collapse of sub-soil layers

which results into seepage of saline water in to drinking water (Table 2).

CRZ and Tourism

The land within the NDZ areas is highly vulnerable and no construction is permitted in this area according to CRZ notification, 2011. However many beach resorts and hotels are found in the NDZ area violating the CRZ norms. Several hotels and beach resorts constructions are continuously going on by digging, flattening and stabilizing sand dunes.

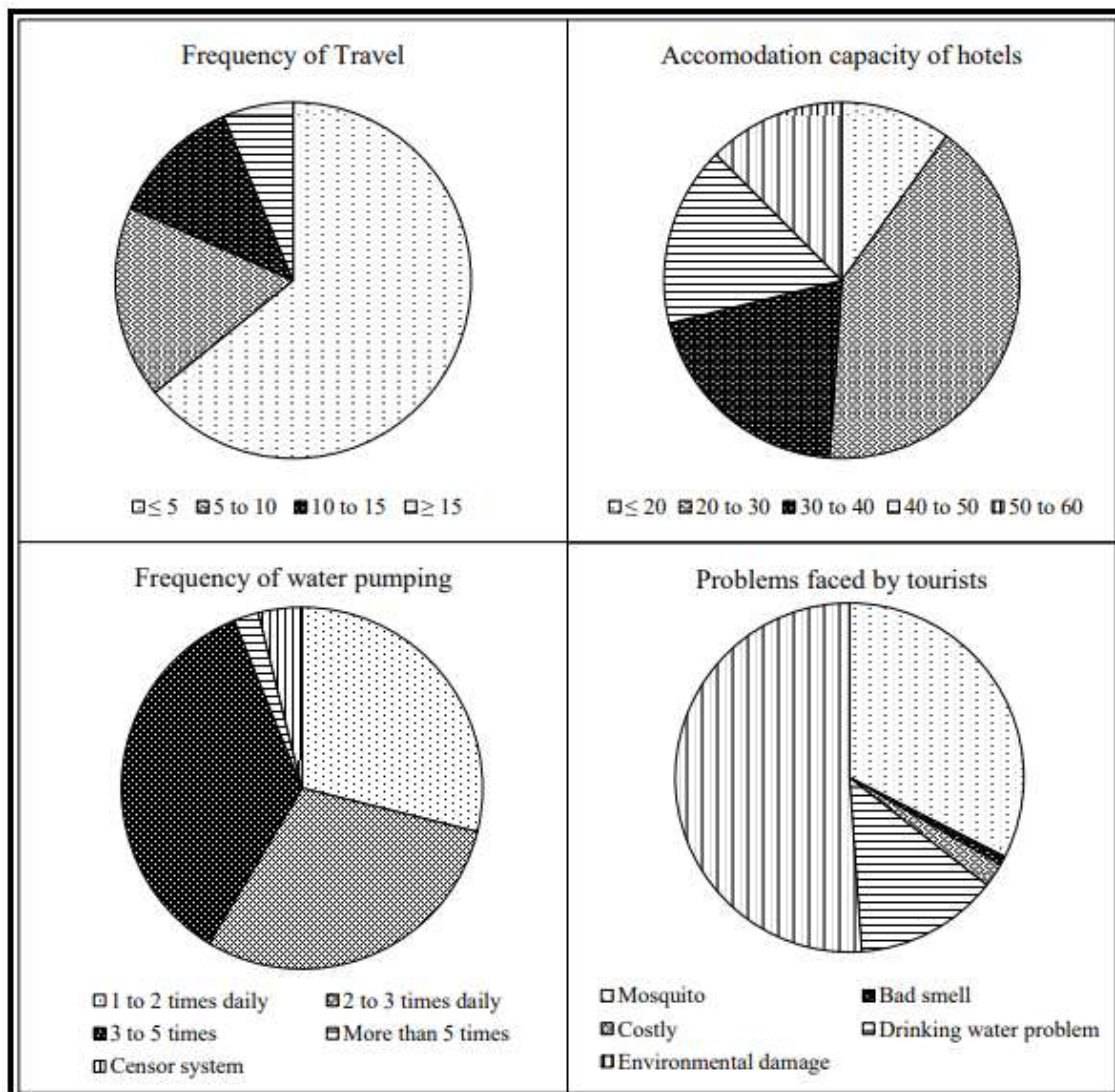


Fig. 3: Effect of Tourism on the Coastal Environment.

Table 2: Effect of Tourism and its Impacts on Environments

Basic Infrastructure and Resource Demand	Tourism Operation	Impacts
Water Pollution	Release of garbage and sewage, leak of oil from cruise ships	Contamination, health hazards, loss of aquatic plant and animals
Water Consumption	Excessive tourism pressure on particular seasons and withdrawal of huge amounts of ground water	Depletion of ground water resources
Transport	Increase in petrol and diesel driven transports	Air and noise pollution have adverse impact on flora and fauna
Hospitality and Accommodation	Violation of the Coastal Regulation Zone (CRZ)notification of 1991, Cutting of huge number of trees, Destruction of shifting dunes for expansion and construction of resorts, hotels, shops etc.	Loss of forest, displacement of people, traffic congestion, land use change and pollution

Sand dunes act as a structural barriers to protect the coast from tides, wind and wave actions as well as to protect the environment of the coast, the flattening and stabilizing of which would result in severe coastal hazards. Climate Change An unplanned mass tourism activity contributes to climate change, which in turn results in severe weather and meteorological events such as storms, drought, epidemic diseases. This will in turn reduce the number of tourist;

hence climate change and tourism are related to each other in both ways, maintaining the one will in turn benefit the other.

INDUSTRIES AND TOURISM

The unplanned growth of industries in the fragile coastal regions often seriously affects the environment of the area and impacts tourism. Oil spills, agricultural and industrial runoffs cause marine pollution and have adverse effects on the aquatic life

[10]. Some practices such as blast fishing, fishing with poisonous chemicals etc. also directly destroy corals [11].

Financial Contributions

Tourism industry is a high revenue earning industry; it contributes towards the economic growth of the country through both direct (for example park entrance fees) and indirect contributions (such as income taxes, sales tax, license fees for recreational activities). These funds can be in turn used for overall conservation programs and activities and maintenance [12].

SWOT ANALYSIS

SWOT (Strength, Weakness, Opportunity and Threat) analysis is a very effective tool to analyse the advantages and disadvantages of tourism activities and to understand the overall impact. SWOT analysis is calculated based on the survey among the local people, tourists, shop owners and other entrepreneurs based on the questionnaire. There are four factors among which strength and opportunity are considered to be the positive factors, whereas weakness and threat are considered as negative factors

[13]. SWOT analysis is conducted to evaluate the impact of tourism activities on environment. The results of SWOT analysis are summarized in Table3. The overall positive and negative impacts of tourism activities in Digha are summarized in Table4.

CONCLUSIONS AND RECOMMENDATIONS

Sustainable tourism development provides the needs of present tourists while preserving and protecting the resources for future generations. Sustainable tourism development is considered as a guideline for management of all resources. The purpose of this study has been to evaluate the negative environmental impacts of tourism activities. Since the region is still in growth phase, hence it has potential for further tourism development. Environmental management of tourism facilities can increase benefits, but this requires careful planning for controlled and sustainable development, based on analysis of the environmental resources of the area.

Table 3: SWOT (Strength, Weakness, Opportunity and Threat) Analysis

Strength	Weakness	Opportunity	Threat
1. Popularity	1. Unsustainable recreational facilities	1. Locational advantage	1. Coastal erosion
2. Standard of living has increased	2. Unsustainable waste management system	2. Availability of unexplored virgin beaches	2. Natural habitat loss

3. Higher tourists arrival	3. Unplanned development of hotels and shops	3. Potentiality to introduce ecotourism	3. Loss of biodiversity
4. Increase in transportation facilities	4. Tourism has increased crime rates	4. Funds generated from tourism activities can be used to promote better infrastructure	4. Land degradation
5. Tourism has encouraged variety of cultural activities	5. Tourism has changed traditional culture	5. Employment opportunities have increased	5. Depletion of water resources
6. Tourism has increased the level of awareness	6. Overcrowded beaches	6. Economic development	6. Pollution

Table 4: Summary of the Positive and Negative Effects of Tourism [14]

	Positive Results	Negative Results
Economic	Increase in income and employment, Foreign investments, Infrastructural investments, and Generation of revenue	Inflation, Seasonal unemployment, Increase in land of price, and Rural-Urban drift.
Socioeconomic	Better life quality, Increasing of recreation possibilities, and Cultural and social development.	Instituting of a wrong local culture, Inspiring a sense of undeveloped cultural and financial to residents causing high crime rate
Environmental	Conservation of environment, natural protected areas and landscape; and Increasing of public participation with nature	Natural resources destruction; Land cover and wild life destruction; Air, water, soil and noise pollution; and Overcrowding.

Mas tourism must be avoided to minimize the negative impacts of tourism activities. Proper planning of sustainable ecotourism practices should be implemented. Such as shifting to nonconventional and renewable modes of energy sources, adopting cleaner and less polluting technologies and minimizing and treatment of wastes from industries. Tourism agencies should be properly trained with newer ecotourism

practices involving local people of the area. Tourism brings people into closer contact with nature and has the potential to increase public appreciation of the environment and to spread awareness of environmental problems. The tourism industry can play a key role in raising awareness among tourists of the environmental consequences of their actions. Proper enforcement of regulatory measures is also essential to further mitigate

and reduce the negative impacts of tourism activities in the area. The opportunities must be explored and weaknesses should be overawed by strengths to facilitate sustainable ecotourism practices in the area.

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