Chapter 5

5.1 Concept of Ecotourism and the Need of Implementing Ecotourism Policies in The Sunderbans

5.2 Environmental Impact Assessment on Development of the Ecotourism Projects in The Sunderbans
Chapter 5.1
Concept of Ecotourism and the Need of Implementing Ecotourism Policies in The Sunderbans

Contents
5.1.1 Introduction
5.1.2 What is Tourism?
5.1.3 Types of Tourism
5.1.4 Alternative Tourism Types
5.1.5 Impact of Tourism
5.1.6 Ecotourism-Relatively New Dimension
5.1.7 Types of Ecotourism
5.1.8 Revenue Earnings from Ecotourism
5.1.9 Limitations of Ecotourism
5.1.10 Needs for Implementing Ecotourism Policies in The Sunderbans

End Notes and References
Chapter 5.1
Concept of Ecotourism and the Need of Implementing Ecotourism Policies in The Sunderbans

5.1.1 Introduction
Tourism has a wide perspective in terms of business, international relation, economic growth and tourist satisfaction. The concept of tourism is dynamic and diversified. It depends on the natural attributes, cultural base and socio-economic structure of a particular region. The application of a particular type of tourism is also need-based subject to certain reservations. In this chapter, the Ecotourism concept is to be coined with different dimensions and the possibilities of its application in The Sunderbans region is to be discussed.

5.1.2 What is Tourism?
The word ‘tour’ originated from the Latin word ‘Tornus’ which means ‘Describing a circle or a turner’s wheel’. From 17th century onwards the meaning changed to ‘Traveling from place to place’. The term ‘tourist’ is first used by Jose Ignacio De Arrillage. While describing the objectives of tourism he said “Tourism in its first period was considered as a sport or rather as a synthesis of automobiles, touring, cycling, camping, excursions and yachting”. The objectives approach multidimensional characteristics of tourism.
Before we enter the periphery of ecotourism, let us find out what tourism is. According to Fennel it is difficult to define tourism and any definition runs the visa of either overcasting or under casting economic activity. Despite the difficulties, various academicians and organization have defined tourism. World Tourism Organisation (WTO) has given a straightforward definition of tourism, which was accepted by the UN statistical organization.
According to this definition tourism consists of the activities of persons traveling to and staying in places outside their usual environment for not more than one consecutive year for leisure, business or other purposes.
It should be noted that most academic definitions of tourism exclude business activities out of the purview of tourism as, unlike all other tourists, business travelers earn money at the destination rather than enjoy leisure. According to the Dictionary of
According to Meddlick, 2003 Tourism is a temporary short-term movement of people in destinations outside their normal environment and their activities. In a way, tourism 'represents an instrument for preservation of various features of a material system (e.g. natural landscapes, wildlife, culture etc.). It can also transform landscapes and habitats. In this respect it is important to define 'tourist'. Professor Velene Smith in her book: Hosts and Guests: The Anthropology of Tourism - says that tourist is a temporarily leisured person who voluntarily visits a place away from home for the purpose of experiencing a change.

5.1.3 Types of Tourism

There are a number of dimensions to tourism in the natural, cultural and social environment. Travel to natural areas is categorized in a number of ways according to the relationship between specific tourist activities and nature. Taking into account the above-mentioned factors, tourism is grossly divided into two categories - i.e. Mass tourism and Alternative tourism.

- **Mass Tourism**

It is characterized by large number of people seeking replication of their own culture in institutionalized settings with little cultural or environmental interaction in authentic settings. Normally conventional or formal tourism industry is based on mass tourism. According to Weaver and Lawton 2002 mass tourism is defined as "the sum of the industrial and commercial activities that produce goods and services wholly or mainly for tourist consumption." There are various sectors, which comprise mass tourism like travel agencies, tour operators, transportation, food services, attractions, entertainments etc. Mass tourism holds the major state of global tourism and earns the major revenue for a country's total tourism activities. According to Weaver, mass tourism, moreover not only resists conversion into alternative tourism, but also is often the model that government and communities prefer to pursue because of the perceived economic benefits that are conferred by size.
Problems with Mass Tourism

Criticism against mass tourism is that it is not sustainable. It is described as world’s largest industry as well as largest polluter. Mass tourism generally not operates keeping in mind the interest of local people and the resource base. Sometimes it displaces local people from traditional livelihoods. Mass tourism has led to a new problem in the second half of the twentieth century, that of congestion, concentration of tourism products are too high resulting physical and psychological problems of the tourists, local communities and the region. The great increase of visitors to a particular region results in rapid, unplanned construction of hotels, there appears an environmental threat both aesthetic and ecological from over crowding.

Emergence of Alternative Tourism

Mainly due to the increasing problems with mass tourism throughout the world, the tourism researchers felt the need to develop alternative tourism services in 1980s which argued for a new, more socially and economically benign alternative to mass tourism development. Alternative tourism is opposite to mass conventional tourism which should no longer concentrate on economic and technical necessities alone, but rather emphasize the demand for an unspoiled environment and consideration of the needs of the local people.

Alternative tourism: is a generic term that encompasses a whole range of tourism strategies (e.g. appropriate, eco, soft, responsible, small scale, cottage and green tourism) one tourism expert Louis A Dernoi (1981) mentions that advantages of Alternative tourism(AT) may be felt in five ways:

1. There will be benefits for individual or family.
2. The local community will benefit.
3. For the host country, Alternative Tourism will help avoid the leakage or tourism revenue outside the country.
4. AT is ideal for cost conscious travelers or for people who prefer close contacts with locals.
5. AT may promote international - interregional - intercultural understanding via Tourism

Source: Adapted from Butler in Wearer (1998)
Therefore, Alternative tourism means alternative forms of tourism, which places emphasis on greater contact and understanding between hosts and guests as well as between tourists and the environment. It has various forms and types. A diagrammatic representation of various types of alternative tourism is given below:

**Figure 5.1**

Types of Alternative Tourism

Source: Weaver Pg. 40

5.1.4 Alternative Tourism types are discussed below:

- **Adventure Tourism**
  In adventure tourism the emphasis is on the activity, for example, white water rafting or scuba diving.

- **Nature based Tourism**
  It is more concerned with the viewing of nature. Here the focus is upon the study and/or observation of the biotic and abiotic components of the environment.
• **Ecotourism** - To be discussed latter on.

In a nutshell –

• Tourism in the environment - adventure tourism.
• Tourism about the environment - nature based tourism
• Tourism for the environment - ecotourism

**Source:** Wildlife Tourism, channel view publication Pg. 13

• **Farm-based Tourism**

It is one of the older forms of tourism having been in existence in Europe as a formal industry since the late 1800's. Farms, which are locally owned and most of the time engaged in agriculture, host the tourists for stay. It has been formed as an industry in Europe and earns considerable amount of revenue. Farm based tourism is attractive economically as it diversify rural economics in peripheral areas and acts as an avenue of earning extra revenue.

• **Volunteer Tourism**

When volunteers of any scientific group or NGO / NGOs or members of any philanthropic organization or trust etc. visit any destination for organizing social and/or environmental work without receiving any financial compensation, it is called volunteer tourism. It is explicitly associated with enhancement sustainability, notably not just from the destination perspective, but also in terms of personal development of the participating tourist.

• **Guesthouse Tourism**

It is like home stay and farm based tourism, primarily by accommodation type. Normally specialized tourist facilities with small number of accommodation units are provided by the local owner.

• **Backpacking**

This type is generally practiced by relatively young and budget-minded tourists traveling for extended period of time. The back packers prefer to interact with local residents, like to stay in small-scale, locally owned accommodations. This type of tourism is rapidly found in Australia.

• **Urban Cultural Heritage Tours**

This type of tourism is conducted in big cities enriched with multidimensional cultural heritage attributes the world migrated at different time scale inherits their own culture and traditions which are often been reflected in their lifestyles, festivals and social
functions. Their colonies represent a specific brand of culture, which attracts international tourists. For example, Singapore tourism conducts free cultural tours for transit passengers within the city showing different colonies and sub towns resided by different communities.

- **Education Tourism**

This relates to the tourism activities followed by international students visiting and staying in a particular country for their education. Their main purpose is to pursue education but side-by-side they travel various parts of the region / country resulting generation of tourism revenue, and interpersonal interactions. This causes considerable business within the tourism circuit.

### 5.1.5 Impact of Tourism

Impacts of tourism on a particular destination or destinations are varied and have multiplying effect. The impact depends mainly on the following factors:

- The volume of tourists arrival
- The structure of the host economy
- The types of tourism activity.
- The fragility of the local environment
- The difference in socio-cultural characteristics between the hosts and the tourists.

These factors influence tourism and local atmosphere positively or negatively. Some of these factors motivate the tourism development process together with its implications in specific manner. We can discuss impacts of tourism under the following broad spectrum:

1. Socio-cultural Impact of Tourism
2. Tourism costs and benefits
3. Environmental impact
4. Tourism revenue generation

#### 1. Socio Cultural Impact

The magnitude of socio-cultural impact related to tourism is influenced by the difference in sociocultural characteristics between hosts and guest, their beliefs, traditions, customs, lifestyles etc. Tourism can act as a catalyst in the exchange of
cultural information, and can help to create interest about the host country’s cultural heritage amongst the visitors. If tourists appreciate the cultural heritage of the countries they visit, it will induce the local government to preserve their cultural attributes and heritage icons and may develop a sense of pride and self-esteem amongst the local people, which may foster local crafts, traditions and customs. Considering the negative side, interaction with the host community by the outsiders may create social unrest due to various reasons, human and ethical values of the locals may be deteriorated and social evils like drinking and prostituting may increase. The policy makers have to look after these problems while developing new tourism circuits and plans.

2. Tourism Costs and Benefits
Like most of the commercial ventures, tourism also involves different costs and benefits. Tourism is a mixed blessing for a particular destination and demands a careful accounting of the complex pattern of costs and benefits involved. The positive side of tourism is that the local inhabitants demands the local government to preserve their cultural attributes and heritage icons and may develop a sense of pride and self-esteem amongst the local people, which may foster local crafts, traditions and customs. Considering the negative side, interaction with the host community by the outsiders may create social unrest due to various reasons, human and ethical values of the locales may be deteriorated and social evils like drinking and prostituting may increase. The policy makers have to look after these problems while developing new tourism circuits and plans. Some costs and benefits arising from tourism may be indicated below:
### Figure 5.2

**Tourism Costs and Benefits**

<table>
<thead>
<tr>
<th>Benefits</th>
<th>Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Increases Knowledge of host culture by visitors</td>
<td>1. Damage to cultural resources of the host community</td>
</tr>
<tr>
<td>2. Increased social contacts, new ideas, new values etc.</td>
<td>2. Pressure to change social values and behavioral values from traditional norms to modern due to social contacts</td>
</tr>
<tr>
<td>3. Economic development of the region by tourism - revenue earning</td>
<td>3. Environmental degradation due to mass unsustainable tourism, introduction of social vices.</td>
</tr>
<tr>
<td>4. Infrastructure development by means of tourism which are enjoyed by the local community</td>
<td>4. Infrastructural development cost may not match with the revenue earnings or may not facilitate adequate provisions to the locals</td>
</tr>
<tr>
<td>5. Education and learning is aided for heritage protection</td>
<td>5. Increasingly mass entry of visitors makes the relationship meaningless and may spoil the development plan of the destination.</td>
</tr>
</tbody>
</table>

#### 3. Environmental Impact

Tourism development has direct relationship with natural environmental protection and preservation. In most of the cases, mass tourism destroys natural environment of a place. That is why; mass tourism is called unsustainable by most of the environmentalists [Fennell D (1999):04, Singh (2004):05]. If tourism is planned in a sustainable manner, environmental degradation may be controlled and a considerable portion of the revenue earned from tourism may be utilized for protection, preservation and up gradation of the natural environment. Whatever may be the case, tourism development has a definite impact on environment.

#### 4. Tourism Revenue Generation

According to World Tourism Organization (WTO), tourism is now the World’s largest industry. Amongst the most remarkable socio economic phenomena of the post World War II era has been the expansion of the global tourism industry. There has been a 30-fold increase in recorded international stay over tourists (i.e. those staying one or more nights in another country for reasons that qualify as tourism) between
1950 and 2004. During this period, number of international tourists has been increased from 25 millions to 750 millions. During this period, international tourism receipts are estimated to have increased from approximately US $ 2 billion to US $ 474 billion. [Weaver (2006):1-3]

As of 2003, global tourism has generated 67 million direct jobs and a direct US $ 1.28 trillion contribution or 3.7 % to global cumulative GDP (gross domestic product or the value of all goods and services produced within a given country in a given year). WTO has made a long-term forecast of one billion international stay over tourists by 2010 and 1.5 billion by 2020. [ibid pg2] All these indicate a considerable sharing of tourism sector or a strong economic factor in the world economy.

5.1.6 Ecotourism – Relatively New Dimension

5.1.6.1 Introduction

Consensus is emerging globally for ecologically sustainable production and consumption. Consumers are changing their preferences and habits by switching to products and services that are ecologically sustainable. As due to change in demand, the suppliers are compelled to provide ecologically friendly products and services. This shift has introduced a new concept in the tourism sector, called ‘ecotourism’. An increasing number of destinations and businesses are aggressively pursuing ecotourism as a specialized part of their tourism development strategies throughout the world. According to David Fennell [Fennell 2006:18] ecotourism has grown as a consequence of the dissatisfaction with conventional forms of tourism, which have, in a general sense, ignored social and ecological elements of foreign regions in favour of a more anthropocentric and strictly profit centered approach to the delivery of tourism products. Therefore one of the preconditions of ecotourism is that it should be nature based with least negative impact on environment. Hetzer [Fennell 2006:18] identified four fundamental pillars that needed to be followed for a more responsible form of tourism. These included (1) Minimum environmental impact (2) Minimum impact on and maximum respect for host cultures. (3) Maximum economic benefits to the host country in grass root level and (4) Maximum recreational satisfaction to participating tourists.

The concept of ecotourism has grown on these pillars and at present, increasingly, ecotourism is necessarily becoming a managed tourism. The concept has become popular probably due to the increasing interest in the natural environment and the
corresponding recognition of the importance of conserving natural environmental quality. As Sagar Singh says “The idea of visiting and experiencing high quality natural environment and also protecting them from harmful impacts is now an acceptable and marketable one. As a result, a suitable term that evokes the positive images associated with the term ‘eco’ (such as ecology, ecosystem, ecolabelling) with the activity of tourism has been combined to create a term that expresses a concept that has become very popular in the past two decades.” [Singh 2004:10]

5.1.6.2 Origin and Definition
Ceballos - Lascurain was the first person to coin the phrase in the early 1980’s. He defined ecotourism as “traveling to relatively undisturbed or uncontaminated natural areas with the specific objective of studying admiring and enjoying the scenery and it wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these areas” [Singh 2004:11]

The Ecotourism Society of the United States maintains that ecotourism is ‘responsible tourism that conserves the environment and sustains the well being of local people.” According to David Fennell[Weaver 2004:192] “Ecotourism is a sustainable form of natural resources - based tourism that focuses primarily on experiencing and learning about nature, and which is ethically managed to be low impact, non-consumptive, and locally oriented (control, benefits and scale), It typically occurs in natural areas, and should contribute to the conservation or preservation of such areas”

The variability of approaches used to define ecotourism is note worthy. This tourism involves natural travel, adventure travel and cultural travel and ‘ecotourist visits’ relatively undeveloped areas to the spirit of appreciation, participation and sensitivity. The ecotourist practices a non consumptive use of wild life and natural resources and contributes to the visited area through labour or financial means aimed at directly benefiting the conservation of the site and the economic well being of the local residents.

5.1.6.3 Principles of Ecotourism
Wallace and Pierce [Fennell 2006:24] suggests that this tourism may be said to be true ecotourism if it addresses six principles:
1. It entails a type of use that minimises negative impacts to the environment and to the local people.
2. It increases the awareness and understanding of an area's natural and cultural system and the subsequent involvement of visitors issue affecting those systems.

3. It contributes to the conservation and management of legally protected and other natural areas.

4. It minimizes the early and long-term participation of local people in the decision making process that determining the kind and amount of tourism that should occur.

5. It directs economic and other benefits to local people that complement rather than overwhelm or replace traditional practices.

6. It provides special opportunities for local people and nature tourism employees to utilize and visit natural areas and teach more about the wonders those other visitors come to see.

5.1.6.4 Nine Characteristics of Ecotourism

According to Sagar Singh,[Singh 2004:30] if any activity is to be classified as ecotourism, it must have the following nine characteristics:

1. It promotes positive environmental ethics and fosters 'preferred' behavior in its participants.

2. It does not degrade the resource. In other words, it does not entail consumptive erosion of nature and natural resources.

3. It concentrates on intrinsic rather than extensive values. Thus, facilities may help access the resource but never become attractions in themselves.

4. It is oriented around the environment in question and not around humane. Ecotourists accept the environment as it is, neither expecting it to change or be modified for the convenience.

5. It must benefit the wildlife and environment. The question of whether the environment has received benefits can be answered in social, scientific, managerial or political terms. At the very least, the environment must attain a net benefit contributing to its sustainability and ecological integrity.

6. It provides a first hand encounter with the natural environment (and any accompanying cultural elements found in undeveloped areas.) Zoological parts do not constitute an ecotourism experience, although they may contribute to the development of a person's interest in ecotourism.
7. It actively involves the local communities in the tourism process so that they may benefit from it, thereby contributing to a better valuation of the natural resources in that locality.

8. Its level of gratification is measured in terms of education and/or appreciation rather than in thrill seeking or physical achievement, the latter is more characteristic of adventure tourism.

9. It involves considerable preparation and demands in depth knowledge on the part of both leaders and participants. The satisfaction derived from the experience is felt and expressed strongly in emotional and inspirational ways.

5.1.7 Various Types of Ecotourism

- **Hard and Soft Ecotourism**
  Hard ecotourism is a form of alternative tourism involving small groups of ecotourists who take relatively small specialized trips into relatively undisturbed settings where opportunities for physically and mentally challenging experiences are available. Hard ecotourists typically do not rely on facilitating sectors such as travel agencies or tour operators, or services at the destination. Hard ecotourists often show strong ethical considerations and a desire to improve the world. On the other hand, soft ecotourism is associated with a more conventional tourist market that engages in mentally and physically unchallenging ecotourism experiences as a short duration component of a multipurpose trip. They generally prefer a high level of comfort and facilitation during these experiences.

- **Mass Ecotourism**
  When ecotourism can occur as a form of mass tourism, it is called mass ecotourism. For example, a nature based tourism site that can accommodate millions of visitors in an apparently sustainable manner - exhibits the concept of mass ecotourism. Here demonstrates a close association between ecotourism and mass tourism, which may provide opportunities as well as threats to the tourism industry.

- **Urban Ecotourism**
  The concept of urban committee is now receiving considerable attention. According to Weaver, ecotourism settings can be framed in reclaimed sites manicured green spaces such as municipal parks and golf courses and built sites. The preserved forests in the center of densely urbanized Singapore are an illustration of urban ecotourism. The city of Austin, Texas, is noted for a colony of 1.5 million Mexican free-tailed bats
that roasts beneath the Congress Avenue Bridge. The bridge attracts an estimated 100,000 visitors per year and approximately $8 million in revenue. This is a glaring example of urban ecotourism. [Weaver (2006):201]

5.1.8 Revenue Earnings from Ecotourism

According to many researchers ecotourism is the fastest growing segment of the international tourism market and its growth is faster than for the industry as a whole. In fact, the WTO Secretary General, Francesco Frangialli, puts the market for ecotourism as upward of 20% of the international travel market. Ecotourism accounts for 40 – 60% of all international holidays. Australia with a population of 17 million, records nearly 38 million visitors a year to its major parts and natural sites; 25 billion US dollars flow from the developed northern to the less developed southern countries through nature tourism. A large portion of the revenue from ecotourism is generated from touristy use of protected areas, including national parks. There is no concrete data which reveals the global scenario of revenue generation by ecotourism. Undoubtedly the sector is expanding at faster rate to the conventional tourism industry.

5.1.9 Limitations of Ecotourism

Though ecotourism is being manifested as sustainable means of economic development in a limited sense, it cannot replace mass tourism in terms of importance, acceptability and market share due to various reasons. Several studies have revealed that “While ecotourism has been presented as a negotiated response to the imperatives of ecological preservation and community development, the profit hungry tourism industry has focused on ecotourism, primarily to use it as a marketing ploy without regard for environmental and social justice issues”. [Tourism Management(2004):160]

5.1.10 Needs for Implementing Ecotourism Policies in The Sunderbans

David Fenell has defined ecotourism as a sustainable form of nature based tourism. The question of sustainability is all round development of a country or a region is important. The concept of sustainability was shaped by the Brundtland report – ‘Our Common Future’ - in 1987. [Singh(2004):19] This concept emerged as an antithesis
against the conventional concept of 'development', which was considered as steady and complex economic growth that can alleviate poverty. This concept of development did not include the environmental factor at all. This concept was challenged by many environmental groups which was documented in 1972 Stockholm conference. According to the Brundtland report, sustainable development was considered to be development that meets the needs of the current generation without compromising the needs of future generation. Essentially, sustainable development advocates the wise use and conservation of resources in order to maintain their long-term viability. Therefore, the principles of ecology are essential prerequisites to the process of sustainable development with the aim of increasing the material standards of people living in the world who are impoverished. This concept became popularized amongst the policy makers of the developing and developed countries and many business sectors have included this report in their social commitments. Though Brundtland Report has made no mention of tourism but tourism's international importance as an engine for economic growth, as well as its potential for growth, makes it particularly relevant to sustainable development. In this perspective, the concept of 'sustainable tourism' emerged from Globe '90 conference in British Columbia, Canada. It says that 'Sustainable tourism is the management of tourism resources in such a way that fulfills economic, social and aesthetic needs while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems. The conference delegates suggested that the goals of sustainable tourism are:

(1) To develop greater awareness and understanding of the significant contributions that tourism can make to environment and the economy.
(2) To promote equity and development
(3) To improve the quality of life of the host community
(4) To provide a high quality of experience for the visitor
(5) To maintain the quality of the environment on which the foregoing objectives depend.

To be precise, sustainable tourism is an extension of the new emphasis on sustainable development. Today, the need for introducing sustainable tourism in any new destination is common and to some extent mandatory globally. It is also a new fashion even followed by the tourism companies to promote their tourism services and
products in the purview of ecotourism conjecture. Of late, a consensus has been
developed that ecotourism and the concept of sustainability go together. Practitioners
and scholars consider ecotourism to be a good sign of the times as environment
sustainability is a matter of necessity. It is no more a luxury. If the hospitality and
tourism industries realize it and follows ecotourism / sustainable tourism guidelines,
the best option is attained.

Many consider ecotourism to be ideal for conservation and preservation of
biodiversity. Many countries including India have developed specific ecotourism
policies, which will commensurate to the needs and objectives of the tourism
development. Therefore, in principle, ecotourism policies should be implemented in
Sunderbans, which is a world heritage site with a fragile and unique ecosystem.

---

**Endnotes and References**

1 Ref: Sanghrasala O Loksilpa—Dr. Bijan Kumar Mondal
2 Fennell D(1999):01
3 Singh Sagar(2004):02
4 Weaver and Lawton, 2002a, pg 471 in Weaver 2006, pg 59
5 Weaver(2006):38
6 Weaver(2006):44
7 Personal experience in November 2006
8 Ecotourism in India – University Press Pg 26
9 Ibid pg 26
10 Ref: Ecotourism : David Fennell Pg 8
Chapter 5.2

Environmental Impact Assessment on Development of Eco-tourism Projects in The Sunderbans

Contents

5.2.1 Purpose of Conducting EIA in The Sunderbans
5.2.2 Nature of Environmental Impact Assessment
5.2.3 Definitions of EIA
5.2.4 Objectives
5.2.5 Significance of EIA
5.2.6 EIA Process
5.2.7 EIA in Asian Countries
5.2.8 EIA in India
5.2.9 Factors affecting the implementation of EIA in developing countries
5.2.10 EIA on Eco-tourism Development in the Indian part of Sunderbans
5.2.11 Conclusion
Chapter 5.2

Environmental Impact Assessment on Development of Eco-tourism Projects in The Sunderbans

5.2.1 Purpose of conducting EIA in The Sunderbans
The Sunderbans - containing unique mangrove ecosystem and tiger land of the East, is gradually being considered as an alternative tourist destination. Though tourism potentiality is largely unexploited here and tourism is highly seasonal at present, still around 40,000 - 50,000 tourists visit Sunderbans sanctuary every year and number of foreign tourists visiting the place is uprising (see data in chapter 3) Tourism infrastructure is inadequate and underdeveloped in terms of international tourism standard but smelling the future tourism opportunities and expansion possibilities, private tour operators, hoteliers, entrepreneurs at various capacities have started constructing resorts, hotels, lodges, rest shades and holiday homes in and around Sunderbans. Since 2004, these construction activities are being accelerated at rapid pace and during seasons, the Pakhiralaya village near Sajnekhali Sanctuary where most of the resorts are placed seems to be congested. Though tourism is prohibited in the core area and in most of the buffer zones of the forest region, the permitted areas for tourist destinations are rapidly inflated by tourism constructions. Already a multinational company has proposed an Rs 500 crores tourism project, offers from other companies are in the pipeline. Taking into consideration this upcoming trend, it is essential to conduct an EIA on Sunderbans in order to estimate the impact of tourism development on natural ingredients, mangrove vegetation, natural habitats and society. In country like India, where monitoring system on any commercial activities is weak and mostly ineffective, it is important to judge the viability of tourism development and expansion projects at large in order to save the ecology and biodiversity of the region. In this respect EIA is an important tool, which enables to examine the necessity of tourism development in the region as a whole.

5.2.2 Nature of Environmental Impact Assessment
EIA refers to the evaluation of the effects likely to arise from a major project significantly affecting the natural and man-made environment. The concept was first
developed in the United States as a result of the National Environmental Policy Act 1969 (NEPA), for considering possible impacts prior to a decision being taken on whether or not a proposal should be given approval to proceed. It is described (Sadler 1996) as a key technique for incorporating concepts such as the precautionary principle and the avoidance of net loss of natural capital, central to the achievement of sustainable development, into decision-making. EIA should lead to the abandonment of environmentally unacceptable actions and to the mitigation to the point of acceptability of the environmental effects of the proposals that are approved. It is thus an anticipatory, participatory environmental management tool, of which the EIA report is only one part.

5.2.3 Definitions of EIA

Munn (1979): EIA refers to the need to identify and predict the impact on the environment and on man’s health and well being of legislative proposals, policies, programmes, projects and operational procedures and to interpret and communicate information about the impacts.

UK DOE (1989): [United Kingdom, Department of Environment] The term EIA describes a technique and a process by which information about the environmental effects of a project is collected, both by the developer and from other sources and taken into account by the planning authority in forming their judgments on whether the development should go ahead.


5.2.4 Objectives

The objectives of EIA system may be:

(a) To disclose to decision makers and the public, the significant environmental effects of proposed activities.

(b) To identify ways to avoid or reduce environmental damage.

(c) To prevent environmental damage by requiring implementation of feasible alternatives or mitigation measures.

(d) To disclose to the public reasons for agency approvals of projects with significant environmental effects.

(e) To foster interagency coordination in the review of projects.
(f) To enhance public participation in the planning process.

Ref. (Bass et al, 1999, P – 1)

5.2.5 Significance of EIA

Caldwell (1982, P – 9) has summarized the significance of EIA as follows: -

1. Beyond preparation of technical reports, EIA is a means to a larger end – the protection and improvement of the environmental quality of life.
2. It is a procedure to discover and evaluate the effects of activities (chiefly human) on the environment – natural and social. It is not a single specific analytic method or technique, but uses many approaches as appropriate to a problem.
3. It is not a science, but uses many sciences (and engineering) in an integrated interdisciplinary manner, evaluating relationships as they occur in the real world.
4. It would not be treated as an appendage, or add – on, to a project, but regarded as an integral part of project planning. Its cost should be calculated as a part of adequate planning and not regarded as something extra.
5. EIA does not “make” decisions, but its findings should be considered in policy and decision-making and should be reflected in final choices. Thus, it should be part of decision-making processes.
6. The findings of EIA should focus on the important or critical issues, explaining why they are important and estimating probabilities in language that affords a basis for policy decisions.

5.2.6 EIA process

EIA process at present are diversified, need based or be tailored to individual national circumstances. Not all EIA systems contain every element; the EIA process emanating from NEPA and subsequently diffused around the world can be represented as a series of iterative steps:

1. Consideration of alternative means of achieving objectives.
2. Designing the selected proposal.
3. Determining whether an EIA is necessary in a particular case (screening)
4. Deciding on the topics to be covered in the EIA (scooping)
5. Preparing the EIA report (i.e. describing the proposal and the environment affected by it and assessing the magnitude and significance of impacts).
6. Reviewing the EIA report to check its adequacy.
7. Making a decision on the proposal, using the EIA report and opinions expressed about it.

8. Monitoring the impacts of the proposal if it is implemented.

Based on the steps, a diagram of EIA process is shown:

**Figure 5.3**

Introduction

- Consultation & Participation
- Consideration of alternatives
- Action design
- Determining whether an EIA is necessary (Screening)
- Deciding on the coverage of the EIA (scoping)
- Preparation of the EIA report
  - Description of action & Environment
  - Impact prediction
  - Impact significance
- Reviewing the EIA report
- Decision making
- Monitoring action impacts
- Mitigation
5.2.7 EIA in Asian Countries

EIA in Asia also varies widely from no legislation (e.g. Cambodia) to the extensive experience with robust EIA regulation set within the context of SEA (strategic environmental assessment) [e.g. Hong Kong]. EIA regulations were established in many Asian countries in the late 1980s and EIA is practiced in all countries of the region through the requirements of donor institutions. On the other hand, Briffett (1999) suggests that many Asian EIAs are of poor quality with poor scooping and impact prediction and limited public participation. This is due in part of the perception that EIA may retard economic growth - symbolized by the wish in some countries to expose large buildings and infrastructure projects to show off the country’s wealth.

**Figure 5.4**

Existing EIA systems in Asia

<table>
<thead>
<tr>
<th>Country</th>
<th>Guideline (G)</th>
<th>Or Regulation (R)</th>
<th>Date of Implementation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>R</td>
<td></td>
<td>1995</td>
</tr>
<tr>
<td>Bhutan</td>
<td>G</td>
<td></td>
<td>1993</td>
</tr>
<tr>
<td>China</td>
<td>R</td>
<td></td>
<td>1981</td>
</tr>
<tr>
<td>Hongkong</td>
<td>R</td>
<td></td>
<td>1990</td>
</tr>
<tr>
<td>India</td>
<td>G</td>
<td></td>
<td>1989</td>
</tr>
<tr>
<td>Indonesia</td>
<td>R</td>
<td></td>
<td>1987</td>
</tr>
<tr>
<td>Japan</td>
<td>R</td>
<td></td>
<td>1997</td>
</tr>
<tr>
<td>Korea</td>
<td>R</td>
<td></td>
<td>1981</td>
</tr>
<tr>
<td>Malaysia</td>
<td>R</td>
<td></td>
<td>1987</td>
</tr>
<tr>
<td>Nepal</td>
<td>G</td>
<td></td>
<td>1992</td>
</tr>
<tr>
<td>Pakistan</td>
<td>R</td>
<td></td>
<td>1997</td>
</tr>
<tr>
<td>Sri Lanka</td>
<td>R</td>
<td></td>
<td>1980</td>
</tr>
<tr>
<td>Thailand</td>
<td>R</td>
<td></td>
<td>1978</td>
</tr>
<tr>
<td>Vietnam</td>
<td>R</td>
<td></td>
<td>1993</td>
</tr>
</tbody>
</table>

* Till 2003

Source: Introduction to EIA - John Glasson, Riki Therivel and and Andrew Chadwik, Published by Routledge, 2005.

5.2.8 EIA IN INDIA

In India, the ministry of Environment and Forests makes EIA mandatory for most development projects that can potentially be harmful to the natural environment. Properly applied EIA can minimise the depletion of natural resources and
environmental degradation on social disruption that so often accompanies development. An EIA programme should comply with existing environmental standards of the country. Such standards have been set in India in detail for coastal environments, which are highly sensitive to development. However the implementation of EIA is not common in India as in the developed countries in Europe and in USA. One of the worst affected pristine areas is the Indian Himalayas where tourism has reached unprecedented levels after the development of roads. No EIA effort is visible in any project of natural habitat protection and preservation. Most EIAs are in the field of industrial projects funded by the government and UNDP. If eco-tourism has to be developed in the Himalayas, EIAs and carrying capacity assessments have to be made mandatory.

5.2.9 Factors affecting the implementation of EIA in developing countries

• While following a model EIA programme of advanced country in a particular country / project in developing country, socio – cultural conditions, traditions, data requirements, standards and social network may be very different causing failure of procuring effective results through EIA.

• The technologies used may be of different scale, vintage and / or obsolete, bringing greater risks of accidents and higher waste coefficients.

• The institutional structures within which EIA is carried out may be weak and disjointed and there may be problems of understaffing, insufficient training and know – how, low – status and a poor coordination between agencies.

• EIA reports may be confidential and few people may be aware of their existence.

• Public participation may be weak, perhaps as a result of government’s authoritarian character and the public role in EIA may be poorly defined.

• EIA may be poorly integrated with the development plan.

• Implementation and regularly compliance may be poor and environmental monitoring is limited or non - existent.
5.2.10 EIA on Eco-tourism Development in the Indian part of Sunderbans

5.2.10.1 Introduction
Tourism is the world’s largest industry, it is growing apace, and it contains within itself the seeds of its own destruction. ‘Tourism can destroy tourism’ - this verdict has become increasingly recognized over the last 30 years or so, with a focus of concern widening from initially large economic impacts to social and biophysical arrays. Tourism in Indian Himalayas was not planned and has largely destructive. This is due to unplanned construction in the hill, inviting excessive tourist without capacity, lack of tourist awareness towards environmental protection and political power play for so called job creation and economic development of the region. Now tourism is spreading to hitherto inaccessible wildness as well as sparsely inhabited areas, therefore the development should take place without EIA. In fact, EIA should be carried out for all new tourism developments and any existing developments. If an EIA is to be truly effective it is essential that a broad sample of the affected public is aware of and understands the concept of EIA. If necessary, an EIA should be analysed and debated in open sessions. It will surely help to judge the project viability in the right manner.

While considering the EIA, this researcher concentrated on identification and evaluation of potential environmental impacts that are consequent to the tourism development construction on various environmental components. The environmental components considered for the purpose of the impact assessment are (1) Air quality (2) Water quality (3) Noise and odor (4) Topography (5) Vegetation (6) Infrastructure (7) Aquatic life (8) Agriculture (9) Wildlife (10) Employment (11) Health and Education (12) Displacement (13) Socio-economic profile.

This is to be noted that a simple EIA mechanism has been adopted without using any scientific tools or instruments. This researcher neither possesses any technical knowledge nor have any sophisticated instruments to conduct a full-fledged scientific EIA. The motive is to investigate broadly the implication of tourism development projects on the natural environment on The Sunderbans.
5.2.10.2 Methodologies Adopted

1. The base line data collection and field survey programme was undertaken during the period of April 2006 to June 2006.
2. The records and data regarding air quality, water quality and noise level at different locations of The Sunderbans are collected from West Bengal Pollution Control Board, Salt Lake.
3. Consultation was made with different statutory bodies and institutes, civil groups, NGOs and local people about future tourism expansion projects.
4. Collection of information on environmental profile on Sunderbans from Secondary sources.
6. Analysis of data through simple mechanism without using statistical data analysis techniques.

5.2.10.3 Description of the Impact Assessment on various Environmental, Physical and Social Components due to Tourism Development

(1) Air Quality
At present in Sunderbans region the suspended Particulate matter (SPM) level varies from 71 to 178 Kg/Cu.m i.e. within the permissible limit of residential area. The RPM, SO$_2$, NO$_x$ levels are also fairly low i.e. almost coinciding with standard or sensitive locations. Due to the construction process, a short term and localised adverse impact is expected due to dust emission. But due to increase in number of tourists, smoke emission from transport vehicles, motor launches and mechanised boat and from domestic activities may affect the air quality to some extent. The concentration of smoke will be dispersed with strong wind. Therefore, overall impact is expected to be negligible and short term.

(2) Noise Environment
The noise level during daytime ranging from 48 to 78 dB(A) and at night ranging from 42 to 62 dB (A). It appears that due to night traffic at some places noise is bit higher. During peak tourist season time, noise from mechanised boats and launches are
tremendous in terms of calmness of the forests. During this time, considerable number of boats and launches enter the sanctuary and ply through different parts of the forests and causes disturbances to the animals and birds. The core area and buffer zones are protected due to prohibition of entry of the tourist boats.

(3) Water Quality

As expected, the surface of and estuarine rivers is saline with high chloride and hardness. At some places coli form load is noticed. However, the ground water level is fairly good but not available everywhere (for example, the drinking water has to be transported every day at Sajnekhalil tourist lodge from other islands as there is no ground water sources). The oil spillage from motorboats at regular level is a threat to the water conservation and purity. Though Sunderbans sanctuary is declared plastic free zone, but in reality it cannot be stopped due to lack of supervision and awareness, which may increase in future. The storage of ground water level at Sunderbans is limited in comparison to other areas and the sweet water source is inadequate. The salinity of the water is gradually increasing due to soil erosion, pollution and other factors. So construction for tourism purpose at large scale will create disaster in ground water management if preventive measures are not adopted. During the operation phase, due to increase of tourists in numbers, there is an apprehension of enhancement of water pollution in the rivers and lands.

(4) Topographic Changes

The soil quality indicates that soil is sandy clay to loamy type with fairly low nutrient value. The organic carbon content is moderate. The salinity of soil is prominent. Land use classification was made using IRS – IC data of January 2002 by Ministry of Environment (Govt. of W.B). The major land use classes are water bodies followed by agricultural land. Only due to construction of tourism set ups there will be insignificant change of topography of Sunderbans. Only changes in visual quality may occur. Indirect effects of tourism development on topography may be observed, as residential units will definitely increase due to concentration of population. Water bodies and agricultural lands will be encroached and will be converted to colonies. Flourishing of tourism will enable migration of people, which surely change the topography in future.
(5) Vegetation
Mangrove vegetation will not be hampered within the sanctuary as tourism projects are prohibited there. But around Sunderbans there are mangrove vegetations in various pockets, which may be destroyed due to construction.

(6) Aquatic Life
Already the aquatic life of Sunderbans along with the coastal zone is at stake. It is due to over fishing, using fine nets and unauthorized fishing. Oil spillage due to the enhanced tourism in the Sunderbans Rivers may affect the aquatic life quality but further research is to be done in this area. Tourism will obviously create solid hydro wastes, which if thrown away into the rivers will pollute the water bodies.

(7) Wildlife
Apparently there is no threat to the wildlife due to tourism development. Moreover, funds may be siphoned from tourism for protection and preservation of wild life.

(8) Agriculture
There is fairly good crop diversity in the study area. Most of the crops are rain fed, however, the yield rate is poor in comparison to other parts of the state. Due to tourism development, the decrease of agricultural land is insignificant, unless lands have been taken away for creating golf course, helipads or Airports. There is no direct impact on the changes of agricultural pattern due to tourism; only agriculture may be developed employing a considerable portion of revenue earned from tourism.

(9) Employment Scenario
Due to tourism expansion, there will be scope of employment generation but the current scenario is not encouraging. At present, whatever tourism infrastructure is prevalent does not create employment opportunities to the local people even at a bottom line. Already explained in Chapter 4.2 (Religious tourism) that directs employment generation amongst the local people at Bakkhal and Frezerganj is ridiculous though considerable amount of revenue is being earned from there. Tourism will surely create employment opportunities but there should be a clear-cut policy of employing local people at various levels unless benefits will be enjoyed by the outsiders only. Although possibilities of indirect employment generation is always there.

(10) Health and Education
Due to tourism development, there is a chance of improvement of health scenario in the Sunderbans region, as entrepreneurs will be enforced to conduct health camps and
create medical infrastructural facilities for the locals, as they will do it for the tourists. Second, there may be social presence from the tourist group and media on the government in order to improve the health conditions of the inhabitants. The local groups may create pressures to spend on health measures from the revenue earned from tourism. In terms of education, due to exchange of culture and views with the outside educated tourists, the local people will be motivated to be educated. If they feel, it will be helpful for getting jobs, they will be more interested.

(11) Displacement

In socio economic and political scenario of Sunderbans there is very little scope of displacement of people due to tourism projects. There is lot of empty spaces available at Sunderbans where tourism infrastructure can be framed and there is no question of displacement in the forest area or remote places, as human settlement is not there.

(12) Infrastructure and Service Facilities

In order to create tourism infrastructure in the Sunderbans region, the ancillary sectors like road conditions, electricity, and telecommunication services have to be developed. These facilities are being enjoyed by the local authorities and people, which will enable to the economic development of the region. Already infrastructural development has started keeping in mind the tourism expansion and it will be accelerated as tourist's visits the region in bulk numbers. To be precise, local economy will be best benefited through this permanent infrastructural development due to tourism.

(13) Socio-economic Impact

The social impact will be mixed. The local people will be enriched by meeting multidimensional people from different parts of the country and the world. It will broaden their conception about life, cultural attributes and may motivate them for better living. On the contrary, social mixing with strangers may create or enhance social problems like drug and alcohol addictions, corruptions, loss of simplicity and own identity, craze for urbanization and cultural disbalance. On economic viewpoint, tourism will help the local people through infrastructural development and creating additional employment. It can be stated that that the overall impact of tourism development on socio - economic environment will be positive.

Taking into account all these components EIA Matrix is prepared on two phases.

(1) Construction phase
(2) Operation phase
This matrix will qualitatively indicate the positive and negative implications of different commercial activities related to tourism development on various environmental factors. Physical, biological and social ingredients of a particular environment are affected by construction and other commercial operations in order to develop a particular region for tourism. Environmental impact matrix will indicate the impact of such activities on the natural environment of that place. It is not possible to give accurate mathematical results of impact but will enable to understand broadly to what extent a project is influencing the environment.

**Figure 5.5**

**Environmental Impact Matrix (operation Phase) on Sunderbans Tourism**

<table>
<thead>
<tr>
<th>Environmental Parameters</th>
<th>Physical</th>
<th>Biological</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Topography</td>
<td>Hydrology</td>
<td>Water Quality</td>
</tr>
<tr>
<td>Transport Network</td>
<td></td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Water supply</td>
<td></td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Waste Water treatment</td>
<td></td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Solid Waste Disposal</td>
<td></td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Air Pollutant for household</td>
<td></td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Oil Spillage from Water Vessels</td>
<td></td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Social Contacts</td>
<td></td>
<td>N</td>
<td>N</td>
</tr>
</tbody>
</table>

P = Positive Impact  N = Negative Impact
## Environmental Impact Matrix (Construction Phase) on Sunderbans Tourism

<table>
<thead>
<tr>
<th>Environmental Parameters</th>
<th>Physical</th>
<th>Biological</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Topography</td>
<td>Water Quality</td>
<td>Air Quality</td>
</tr>
<tr>
<td>Possession of Land</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Site Development</td>
<td>L S S S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excavation and Landfilling</td>
<td>S S S</td>
<td>S S S</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>S S S S</td>
<td>S S S</td>
<td></td>
</tr>
<tr>
<td>Transport of Equipment</td>
<td>S S</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workers Colony</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rehabilitation</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*S = Short Term Impact  
*L = Long Term Impact

### 5.2.10.4 Recommendations

**The Eco-Environment Measures**

The following terms of reference shall be considered for eco-environment friendly development and operation of tourism facilities under The Sunderbans region.

- Built – up area to land area to be less than 10%
- Strict adherence to the coastal regulation zone (CRZ) norms.
- Strict adherence to all the forest and wildlife conservation norms.
- Ecology / environment norms – influence zone to have more than adequate green cover through enriched plantation and groves.
- Tourist visitation load to core and wildlife areas to limited to norms of forest and wildlife conservation rules.
- Density of vessels, boats and floating platforms not to exceed 6 to 8 per sq. kms.
- All boats and motor vessels should have inboard engines, silent generators to avoid noise pollution.
• The lighting system on vessels, boats and floating activity centers will be diffused type and window blinds will be used in night for minimum disturbance of forest and wildlife.

• The main deck of all the boats and floating platforms will be kept at same level for ease of embarkation and disembarkation.

• Supply source for fresh water, fuel and provisions will comprise of both mobile and anchored for better flexibility and logistic control and with suitable filling gears.

• The boats to anchor alongside the floating platforms at night.

• Loud speakers shall not be used.

• Effluent and solid waste disposal shall be treated and processed for zero residual pollution.

• All disposable, carry bags and containers will be made out of organic material like clay, leaf, jute etc.

• The noise pollution will be kept to minimum by tourists / service personnel through awareness creation through briefings, info kiosks, circulation of guidelines etc, strict monitoring and implementation of proper management plan.

• Eco friendly power and energy source through silent generator, solar photo voltaic, solar thermal and wind turbo generator.

Recommendation for

(1) Air Environment Improvement

Only lead free petrol or low sulphur content diesel will be used to minimise the pollutant emission.

(2) Noise environment improvement

The sound power level (La) of Diesel generator sets shall be less than 94 and 10 log 10 (KVA) dB (A) at the manufacturing stage. Noise from DG sets shall be controlled by providing acoustic enclosure to DG sets area. The enclosure shall be designed for minimum 25 dB (A) insertion loss. The performance of acoustic enclosure is checked by measuring noise levels in different directions at 0.5 m from the enclosure. The DG sets shall be provided with proper exhaust muffler with insertion loss of minimum 25dB (A).
(3) Water Environment Improvement
1) Rainwater harvesting programmes to be implemented.
2) Water treatment plant to be installed for potable sweet water
3) ETP (Effluent Treatment plant) would be installed.

(4) Soil environment improvement and land use pattern
• The shoreline near the activity areas will be lined with bricks and other shore protection method to make water clean and also for soil protection.
• Compensatory afforestation will be done for the vegetation removal unsigned during construction operations.
• Proper green belt development plan should be followed.
• Minimum use of ground water and strict adherence to rainwater harvesting programmes and actions for groundwater recharging should be chalked out.

(5) Biological environment improvement
• Detailed afforestation programme.

(6) Solid Waste Management
• Banning of plastic bags, pet bottles Bio medical waste to be treated as per Bio medical waste rules – 1998.

Preventive Maintenance
Disaster Management Plan
Disaster management planning is a very essential and integral part of the entire tourism industry for protection against loss of lives and property of any project site. The coastal areas are prone to natural calamities like storms and cyclones. Effective measures, which are pre–planned, are to be practiced in dealing with such events. In addition, there are risks of fire hazards too. Two categories of actions planned to combat these disasters:
• On-site arrangement for rescue operations
• Centrally controlled operation system.

One of the most important aspects to be considered for safety of the tourists for protection against loss of lives, consequent to natural calamities like storms and cyclones and the following effective measures are provided to deal with such events:
(1) Rescue center for tourists
(2) Arrangement for hovercrafts and high speed rescue boats.
(3) Adequate advance information about disaster should be obtained through VSAT /INMARSAT device and the command office will communicate promptly to all the moving vessels for report to nearest rescue station.

Emergency preparation and contingency plan will be formulated for each project site depending on predicted disaster or accident. The emergency planning will constitute:
   a) Organisation and responsibilities
   b) Communication system
   c) Transport
   d) Resource requirement
   e) Control center
   f) Medical / first aid
   g) Fire protection system
   h) Coordination with external agencies for emergency support through SDO office, Block office, police etc.
   i) Safety and security – manned by service men
   j) Evacuation plan

5.2.11 CONCLUSION
All the recommendations arising from this EIA could potentially be codified and detailed in the environment management plan, which will define the action needed to implement the recommendations. At a later phase, the project proponents could consider the implementation of Environmental Management systems as per IS / ISO 14001 standards as a part of the overall management policy. Several other international standards applicable for any eco-tourism project e.g. Ecotel certification may be adopted.