

Ecotourism in wetland environment: a case study of Deepar Beel Wildlife Sanctuary (Ramsar site) of Assam (India)

Ecoturismo em ambiente de pantanal: um estudo de caso no Deepar Beel Wildlife Sanctuary (sítio Ramsar), Assam (Índia)

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ABSTRACT

Ecotourism in simple words means management of tourism and conservation of nature in a way so as to maintain a fine balance between the requirements of tourism and ecology on one hand. Well-planned ecotourism can benefit both protected areas and residents of surrounding communities by linking long term biodiversity conservation with local social and economic development. Assam in fact is a global biodiversity hot spot and has a rich cultural heritage. It also forms part of two endemic bird areas, the Eastern Himalaya and Assam plain. Assam plain comprises a good number of wetlands in the Brahmaputra valley abounds in biodiversity and productivity. These wetlands maintain ecosystem diversity, as they are the natural storehouse of valuable flora and fauna of an area. Besides these, they are also used for various economic purposes by the people living in and around it through ecotourism activities like bird watching, angling, boating etc. The wetlands are of a great value for both man and environment and for long term financial benefit by the surrounding communities as well as conservation of nature. Empirical-descriptive method of analysis has been used to prepare this paper. Through the paper the author tries to highlight such possibilities on the basis of assessment of potential ecotourism resources of the Deepar Beel (Wetland) nearby Guwahati through field experience gained in the area.

KEYWORDS: Wetland; Tourist Resources; Community and Ecotourism for Sustainability.

RESUMO

O Ecoturismo, em poucas palavras, significa a gestão do turismo e a conservação da natureza de modo a manter um bom equilíbrio entre as exigências do turismo de um lado e as da ecologia de outro. Se for bem planejado, o Ecoturismo pode beneficiar tanto as áreas protegidas como os moradores das comunidades vizinhas, unindo a conservação da biodiversidade em longo prazo com o desenvolvimento social e econômico local. Assam (Índia), na verdade é um *hot spot* de biodiversidade global e tem uma rica herança cultural. Ele também compreende duas áreas de ocorrência de aves endêmicas, o Himalaia Oriental e a planície de Assam. A Planície de Assam dispõe de um bom número de zonas úmidas no vale Brahmaputra, que abunda em biodiversidade e produtividade. Estas zonas úmidas mantêm a diversidade do ecossistema, pois são o depósito natural da flora e fauna valiosos de uma área, além de serem utilizados, também, para diversos fins econômicos pelas pessoas que vivem dentro e ao seu redor, por meio de atividades de ecoturismo, como observação de pássaros, pesca, passeios de barco etc. As zonas úmidas são de grande valor, tanto para o homem como para o ambiente, gerando benefícios financeiros de longo prazo para as comunidades do entorno, bem como a conservação da natureza. Um método empírico-descritivo de análise foi usado para preparar este artigo, no qual procura-se destacar tais possibilidades com base na avaliação do potencial dos recursos para o ecoturismo do *Deepar Beel* (Pantanal) nas proximidades Guwahati (Índia), através da experiência adquirida na área.

PALAVRAS-CHAVE: Pantanal; Recursos Turísticos, Comunidades e Ecoturismo para Sustentabilidade.

Introduction

Tourism is currently the world's largest industry (\$ 3.4 trillion annually) and ecotourism represents the fastest growing segments of this market. With advances in the transportation and information technology, even more remote areas of the earth are coming within reach to travelers. In fact, tourism is now the world's largest industry, with nature tourism is the fastest growing segment (YADAV, 2002).

The term 'Ecotourism' was coined by 'Hector Ceballos Lascurain' in 1983, and was initially used to describe the nature based travel to relatively undisturbed area with an emphasis on education. The concept of ecotourism is a recent approach, and the state has tremendous potentiality for ecotourism development of its potential nature based tourist resources (SEACE *et al.*, 1992). The United Nations General Assembly recognized the global importance of ecotourism and its benefits as well as its impact with the launching of the year 2002 as the International Year of Ecotourism (IYE).

Ecotourism involves education and interpretation of natural environment and to manage it in an ecologically sustainable way. Here 'Natural Environmental' includes cultural components and the term 'Ecologically Sustainable' involves an appropriate returnees to the local community and long term conservation of resources (GRANT, 1995). Through such ventures a person (ecotourist/ecotourist operators) has the opportunity to associate people with nature in a different way that most of the people cannot enjoy in their day to day life (WEIGHT, 1993). Such a person eventually acquires a consciousness and knowledge of the natural environment, together with cultural aspects, that will convert people keenly involved in conservation issues (CEBALLOS, 1998).

Assam has tremendous potentiality for growth and development of ecotourism (Table 1). In fact, Assam forms a part of global biodiversity hot spot, with varieties of flora and fauna, which can provide a sound base to start with ecotourism venture. In fact, such ventures can be used for advocating environmental awareness, long term conservation measures and economic benefit of the local people (BHATTACHARYA, 2002).

Wetlands of Assam

Brahmaputra valley in Assam, a part of Eastern Himalayas Global Hotspot of biodiversity harbors a no of globally important wetland ecosystems. Wetland ecosystems are integral part of the valley supporting the major portion of life forms in the state (ABBASI, 1997). Most of the permanent natural Beels (wetlands) are situated about 10 kilometers from both the bank of river Brahmaputra (BARUAH, *et al.*, 1998). Wetlands in the valley have two distinct phases in two season's winter and monsoon. In monsoon season during flood period, most of the wetlands are swamped by floodwaters being continuous with the major tributaries. But during winter the feeding channels get cut-off and water bodies remain as ecotonal wetlands (CHATRATH, 1992).

Table 1: Ecotourism Elements in Deepar Beel Wildlife Sanctuary.

SL. No	Ecotourism Elements
1.	Scenery and natural landscape
2.	Wild life viewing
3.	Bird watching (both migratory and resident bird)
4.	Water sports
5.	Trekking nearby the area (in Rani-Garbhanga Reserve forest)
6.	Regulated angling (Catch and release basis)
7.	Ethno-botanical study

Source: Authors Field Observations (2011).

The state of Assam holds around 430 registered Beels, 1192 swamps and low lying areas and 185,825 tanks covering about 134,134.12 hector (Anon, 1993) other than lotic system involving rivers. According to Assam Remote Sensing Application Center (ARSAC) report, about 10,123 km² areas in Assam has been occupied by wetland out 78,438 km², which is the total area of the state. As per the survey conducted by Assam remote sensing application center, there are about 5213 numbers of wetlands in Assam distributed in its 23 districts (DEKA, *et al.*, 1993). The overview distribution of the wetlands has shown in the Table 2 (next page).

The wetlands of Brahmaputra valley are considered as an internationally important wetland habitat for wetland bird (CHOUDHURY, 2000). Some of the internationally recognized wetlands from the state are Sareswar Beel (Dhubri District), Deepar Beel (Kamrup District), wetlands of Kaziranga National Park, Wetlands of Manas National Park (Barpeta District). These wetlands according to report are the repository of biodiversity, being rich in flora and fauna (BORA, 1998).

Deepar Beel Wetlands (Wildlife Sanctuary): a Ramsar site

Deepar Beel, a riverine wetland ecosystem is a highly valued ecosystem situated about 5 kilometers from Guwahati, the capital city of Assam. It is the largest wetland in the Kamrup District of Guwahati covering an area of 40.14 km². Because of its rich biodiversity, Ramsar Committee has declared this wetland as Ramsar site (SARMA, *et al.*, 1993). Since the wetland has fulfilled the three out of four Important Bird Area (IBA) criteria, Important Bird Area Programme of Bird Life International has selected the wetland as an important IBA site. Because of rich biodiversity value and other ecological value the Government of Assam has proposed this wetland ecosystem as wildlife sanctuary through a notice dated 12th January 1989 under wildlife protection Act, 1972 (FOREST REPORTS, GOVT. OF ASSAM, 1992). Deepar Beel provides home to a good population of endangered rare residential as well migratory avi

Table 2: District wise Distribution of Wetlands in Assam.

District	Number	Area	% of area
Barpeta	97	3301.00	2.93
Bongaigaon	100	3158.50	3.12
Cachar	340	7188.00	7.10
Darrang	103	3515.50	3.47
Dhemaji	139	3960.00	3.91
Dhubri	233	6459.70	6.38
Dibrugarh	86	2752.50	2.71
Goalpara	165	3832.50	3.78
Golaghat	330	5467.50	5.40
Hailakandi	47	840.00	0.08
Jorhat	109	2108.50	2.08
Kamrup	352	11407.00	11.26
Karbianglong	77	897.00	0.08
Karimgang	70	5719.50	5.64
Kokrajar	85	1578.40	7.55
Lakhimpur	151	3033.50	2.99
Morigaon	183	11658.00	11.51
Nagaon	379	11295.50	11.15
N.C.Hills	10	2552.50	2.52
Nalbari	68	1988.00	1.96
Sibsagar	109	2135.00	2.10
Sonitpur	206	3651.00	3.60
Tinsukia	74	2732.50	2.69
Total	3513	101231.60	100.00

Source: Assam Remote Sensing Application Center, Wetland of Assam, March, 2010.

fauna. Three globally important birds namely Greater Adjutant Stork (*Leptoptilos dubius*), Lesser Adjutant Stork (*Leptoptilos javanicus*) and Spotted Billed Pelican (*Pelecanus philippensis*) find this wetland as one of the major habitat. Graylag Goose (*Branta ruficollis*), White Eyed Pochard or Ferruginous Duck (*Aythya nyroca*), Bar Headed Goose (*Aythya basri*), Asiatic Golden Plover (*Vanellus cinereus*) etc are the globally important migratory flyways which congregates in this wetland. This wetland also serves as an additional habitat of a good population of endangered Mega-fauna

like Asiatic elephant (*Elephas maximus*) residing in the adjoining Rani-Garbhanga Hill Reserve (CHOUDHURY, 1998). A number of aquatic vegetation forms the habitat as a biodiversity rich wetland. The ecosystem is also a major fish breeding ground.

The wetland is also home to a number of globally threatened birds including Spot Billed Pelican (*Pelicanus philippensis*), Lesser Adjutant (*Leptoptilos javanicus*) and Baer's Pochard (*Aythya baeri*), Ruddy Shelduck (*Tadoma ferrugine*, Bar-Keaded Goose (*Anser indicus*), Spot Billed Duck (*Anas peocilorhyncha*, Common Merganser (*Mergus merganser*), Pintall (*Anas acuta*), Silver Breasted Broadbill (*Serilophus lunatus*) Blue Eared Kingfisher (*Alcedo meninting*), Ruddy Kingfisher (*Halcyon coromanda*), Black-Backed Kingfisher (*Ceyx erithacus*) etc. Because of the richness of birds in this wetland, the Birdlife International has selected Deepar Beel as one of the IBA (Important Bird Area) site. Because of the bird richness of the Beel, in the year 2002 it has got the prestigious designation of Ramsar Site, declared by Ramsar Convention (GOPAL, 2000). Other than fish and bird a large number of wetland vegetables, fruits and medicinal plants have identified in this wetland, which are directly or indirectly involved with the surrounding human communities (SARMA, 1993). Deepar Beel is also a source of water for the number of endangered wild animals from the nearby Reserve Forests and particularly elephant is noteworthy among them.

Objectives

1. defining the role of ecotourism in sustainable development strategy for Deepar Beel wildlife sanctuary;
2. identifying the best practices of ecotourism in Deepar Beel and developing a source of long term financial benefit for the conservation of wetland.

Methodology

Ecotourism in Wetland - A Case Study of Deepar Beel Wildlife Sanctuary (Ramsar Site) of Assam (India) - is a simple descriptive case study; data and information were obtained on the spot observation of ecotourism resources by the author supported by secondary information sources like books, papers, reports, maps and information from local people. For this study, data related with tourist flow from govt. tourist Dept. of Forest, field survey for primary information and different tourism promotion organization is used.

Location of the study area

Deepar Beel (26°05'26"N to 26°09'26"N and 90°36'39"E to 91°41'25"E), a riverine wetland ecosystem situated 5 kilometers from the river Brahmaputra, is one of the most biodiversity rich ecosystem of the valley. The Beel (wetland) is located on the 3 kilometers south of river Brahmaputra and surrounded by Bharalu basin on the east,

Kalmani River on the west, Jalukbari Hills on the North and Rani and Garbhanga Reserve forest on the South. It is a permanent freshwater lake in a former channel of the Brahmaputra River, with great biological importance and also essential as the only major storm water storage basin for the city of Guwahati (Figure 1). The Beel is a major fish breeding ground for a large number of fish and supply fish stocks to other nearby wetlands and rivers (SAHARIA, 1999). So far about 50 species of fish has been identified in this wetland. The Beel is a staging site on migratory flyways of the migratory birds and some of the largest concentrations of aquatic birds in Assam that can be seen in winter (COLLAR, *et al.*, 1994) (Figure 2, Table 3).

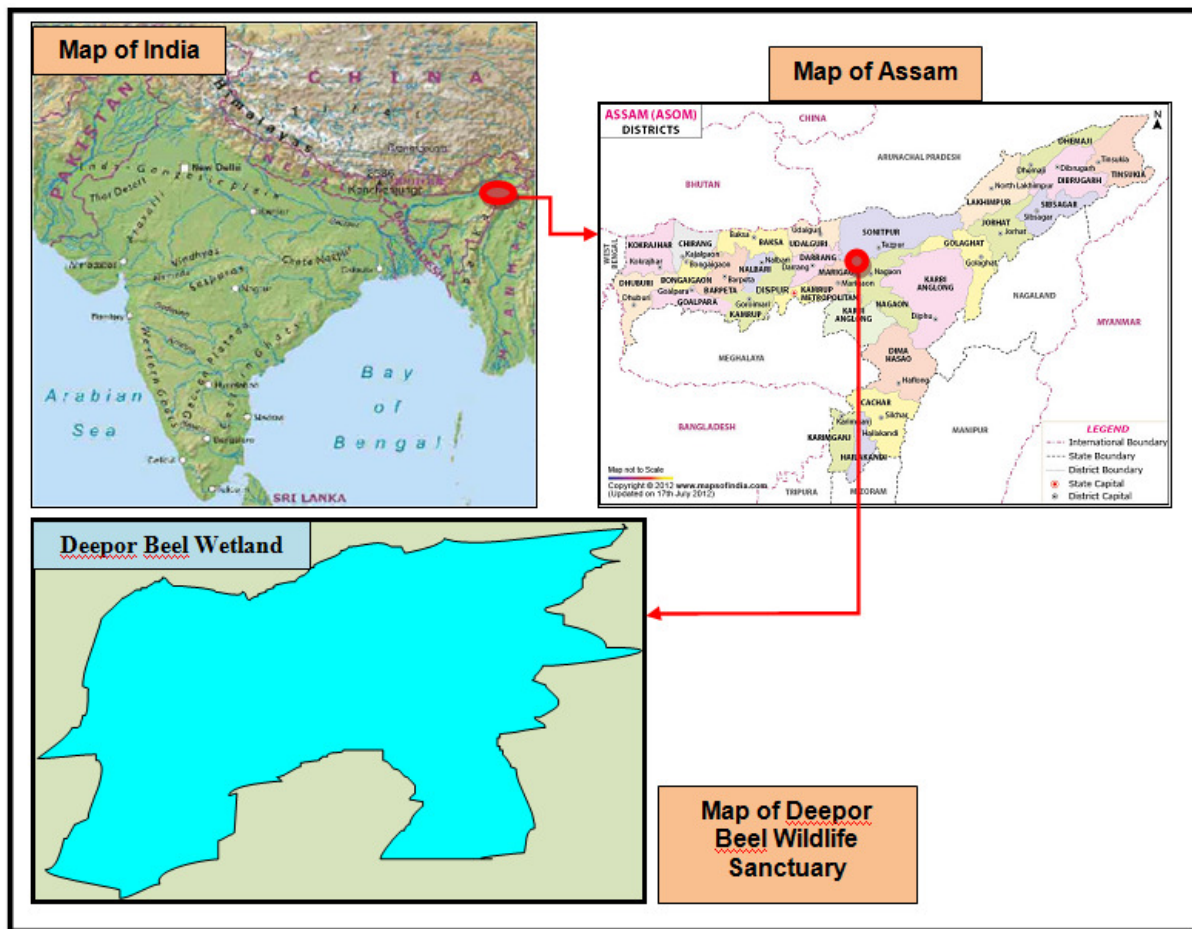


Figure 1: Location Map of Deepar Beel Wetland.
Source: Assam Remote Sensing Application Center (ARSAC), 2010.

Apart from the above mentioned ecological value, the wetland shows its importance from geographical point of view. This ecosystem serves as storm water reservoir of the Guwahati city. According to reports, it can hold up to 42 million cubic meter of storm water during peak monsoon (GOGOI, *et al.*, 1998).

Table 3: Some of the Important Birds species of Deepar Beel Wild Life Sanctuary.

Sl. No	Common Name	Scientific Name	Status
1.	Greater Adjutant Stork	<i>Leptoptilos dubius</i>	Resident
2.	Lesser Adjutant Stork	<i>Leptoptilos javanieus</i>	Resident
3.	Spotted Billed Pelican	<i>Pelecanus philippensis</i>	Resident
4.	Graylag Goose	<i>Branta ruficollis</i>	Resident
5.	White Eyed Pochard	<i>Aythya nyroca</i>	Resident
6.	Bar Headed Goose	<i>Aythya basri</i>	Resident
7.	Asiatic Golden Plover	<i>Vanellus cinereus</i>	Resident
8.	Lesser Tree Duck	<i>Dendrocygna javanica</i>	Resident
9.	Spot billed Duck	<i>Anas peocilorhyncha</i>	Local migrant
10.	Common Merganser	<i>Mergus merganser</i>	Local migrant
11.	Great Barbet	<i>Megalaima virens</i>	Resident
12.	Lineated Barbet	<i>Megalaima lineate</i>	Resident
13.	Crested kingfisher	<i>Cerly lugubris</i>	Resident
14.	Pied kingfisher	<i>Ceryle rudis</i>	Resident
15.	Common kingfisher	<i>Lcedo atthis</i>	Local migrant
16.	White- Throated kingfisher	<i>Halcyon smymensis</i>	Local migrant
17.	Brown Fish owl	<i>Ketupa zeylonensis</i>	Resident
18.	Blue- tailed Bee eater	<i>Merops philippinus</i>	Resident
19.	Spot-bellied Eagle owl	<i>Bubo nipalensis</i>	Resident
20.	Barred Cuckoo Dove	<i>Macropygia unchall</i>	Resident
Migratory Avian Species			
21.	Silver backed Needle tail	<i>Hirundapus cochinchinensis</i>	Migratory
22.	Ibisbill	<i>Ibidorhyncha struthersii</i>	Migratory
23.	Northern Lapwing	<i>Vanellus vanellus</i>	Migratory
24.	Oriental Pratincole	<i>Glsreola maldivarum</i>	Migratory
25.	Little Ringed Plover	<i>Charadrius dubius</i>	Migratory
26.	Redshank	<i>Tringa totanus</i>	Migratory
27.	Common Hawk Cuckoo	<i>Hierococcyx varius</i>	Migratory
28.	Brown headed Gull	<i>Larus brunnicephalus</i>	Migratory
29.	Northern Sparrow hawk	<i>Accipiter nisus</i>	Migratory
30.	Grey Heron	<i>Ardea cinerea</i>	Migratory
31.	Grey backed shrike	<i>Lanius tephronotus</i>	Migratory
32.	Mallard	<i>Anas platyrhynchos</i>	Migratory
33.	Common Merganser	<i>Mergus merganser</i>	Migratory

Source: Choudhury, A., (2000): *The Birds of Assam* and Authors field observation.



Figure 2: Photograph of the Deepar Beel Wildlife Sanctuary.
Source: Authors Observation-2012.

The value of bio-diversity that has been supported by Deepar Beel is enormous. For conservation of this bio-diversity conservation of Deepar Beel is must (CHOUDHURY, 2000). Conservation process should initiate activities to uplift the economics of the villagers through various developmental processes to reduce their dependency on this wetland and should follow a sustainable process of conservation (MEHLHOP, *et al.*, 1994).

Deepar Beel wild life sanctuary has been considered as bird sanctuaries because of habitability of both local and migratory avian species. Birdlife International recognizes this sanctuary as the Important Bird Area sites. In terms of productivity, species diversity, breeding ground, food chain supporter it has immense importance in this regards. Deepar Beel harbors a good no of commercially important plant species (Figure 3).

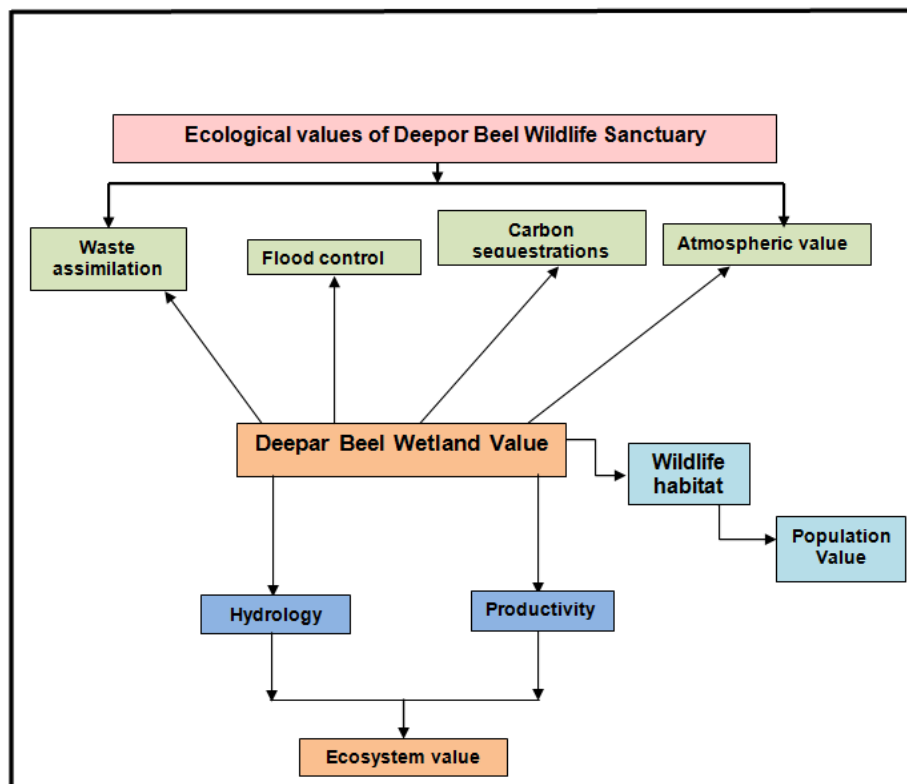


Figure 3: Ecological values of Deepor Beel Wildlife Sanctuary.

Source: Odum, 2008: Wildlife, Environmental and Socioeconomic values of Wetland: Deepar Beel as the Ecotourism Destination.

Being a major source of fish resource it has become the backbone of income source of a huge population residing nearby areas. There is a tremendous scope for special areas of ecotourism like bird watching, trekking, and boating ventures. Deepar Beel wild life sanctuaries are the habitat of both aquatic and migratory bird in western Assam. The sanctuaries can also offer ideal site of its scenic beauty to the tourist as it is located near by the foothills of Meghalaya (Rani-Garbhanga reserve forest) (DEPARTMENT OF TOURISM, 1994).

Conventional tourism always offers diverse effect to environment increasing vehicular and garbage pollution both air and sound, hence priority should be given to ecotourism ventures like elephant safari, trekking, walking, boating etc. at the initiative of the nature tour operators or by forest department. Alternative eco-friendly accommodations like tented accommodation; thatch bamboo houses, etc. may go a long way, especially in exploiting ecotourism resources in the natural, wilderness area of the state (BHATTACHARYA, 2002). In last few years initiative has taken by govt. and private agencies to organize Tea tourism festival, Brahmaputra beach festival, Kaziranga elephant festival, Pani-Dihing bird festival, Dihing-Patkai festival. These offer a new dimension towards ecotourism venture of the state (DAS, 2003). Ecotourism ventures in potential areas can make the local people aware of the objective of conservation and give economic benefit through job opportunities. Due to the lack of conscious effort of both the govt. and private

agencies, ecotourism resource base of the state is yet to be properly projected to meet the demand of tourist. However with the help of ecotourism ventures people can aware sustainable use and conservation of ecotourism resources/sites which will give long term economic gain to local populace.

Conclusion

Ecotourism is a field of human activity where observation and development can wisely effectively be balanced to achieve a mutual goal to the benefit of the people in the community. It can be developed effectively only when there is consent and active involvement of the local people, who should become partner in this process. Ecotourism is possibly is one of the meaningful sources of revenue generation of the host community and job creation for poor. Cross country evidence demonstrates that tourism is labour Intensive and offers a variety of small scale opportunities creating jobs for poor, women, and young people, and jobs for indigenous community.

So, community based ecotourism is the best option in such areas which is owned an managed by a community and takes care of their natural resources in order to gain income through operating a tourism enterprise and using that income to better their lives (BHATTACHARYA, 2003). It involves conservation, business enterprise and community development and there will be direct and indirect participants and direct and indirect beneficiaries (DAS, 2003).

An ecotourist always love to get the first hand experience by staying in the rural areas and closer to the nature, so there is very possibility to get a chance to know the life of the people in the community about their culture, food habit, etc. to help tourist to know more and more about a place and community within short time and period a comfortable stay, community guest house can be constructed in the style of the local buildings where dormitory or private room facility is necessary. Communities can arrange traditional dance and music for the entertainment of the tourist. Facilities for showing the traditional cooking procedures to the tourist and serving traditional food to the tourists will be more attractive. The local youth can serve as the tour guide with proper knowledge of the village area, the history of the concerned tribe and the available of the local resources. Encouraging local women's craft centers in the village where tourists or visitors can buy their local handi-crafts and it will certainly help the economic upliftment of the women. In addition, the community has to maintain local natural area particularly the places, of scenic beauty and the places where rich bio-diversity always prevails. This way the natural resources which other wise is destroyed by the people can be conserved. The department of tourism and the department of forest have enough scope to encourage this in the local area. Local youth from the different communities should be encouraged, trained up to undertake the conducted tour for the tourist with proper publicity. Such groups can take the tourist for a guided walk around villages, watching local crafts centre, boat trip on the river, visit to protected area site, a ride on elephant, a visit to tree garden, cultural events (local music / dance). Adequate safety should be provided to the tourist which is a most important aspect in encouraging such activities. The relationship between conservation of natural area and job opportunities from tourism to the natural area is what community- based ecotourism is all about.

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