

DISCOVERY OF A POTENTIAL SITE FOR COMMUNITY-BASED SUSTAINABLE ECOTOURISM IN THE SUNDARBANS RESERVE FORESTS, BANGLADESH

Mohammad Zahirul HAQUE^{1,4,*}, Mohammad Imam Hasan REZA^{2,*},
Md. Mahmudul ALAM^{2,3}, Zahir Uddin AHMED⁴, Md. Wasiul ISLAM⁵

¹ School of Environmental and Natural Resources Sciences, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia

² Institute for Environment and Development (LESTARI), Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor, Malaysia.

³ School of Economics, Finance and Banking, College of Business, Universiti Utara Malaysia, 06010 UUM Sintok, Kedah, Malaysia.

⁴ Bangladesh Forest Department, Bono Bhaban, Agargaon, Dhaka 1207, Bangladesh.

⁵ Forestry and Wood Technology Discipline, Khulna University, Khulna, Bangladesh.

Abstract

Conservation of biological diversity is a pressing need and protected areas are the cornerstones for conserving remaining flora and fauna. However, forest dependent livelihood in countries like Bangladesh is making this task very critical. In the case of the poor and forest-dependent livelihood in the Sundarbans area of Bangladesh, an eco-friendly ecotourism may provide an alternative livelihood, which may reduce the overexploitation from the valuable Sundarbans forest ecosystems. Furthermore, this initiative may also serve to aware people on the value of these unique ecosystems. Therefore, this study discusses the scope, benefits and challenges for developing sustainable ecotourism within the protected area. It focuses on the development of a potential site having ecological and archaeological values for sustainable ecotourism inside the Sundarbans Reserve Forest. Developing sustainable tourism spots inside the wildlife hub has a high demand among tourists and it is also necessary for the socio-economic development of the local community, moreover, the approach of community-based ecotourism (CBEM) is a suitable strategy for the conservation of protected areas.

Keywords: Community Based Ecotourism (CBEM); Biodiversity conservation; Sustainability; Site development; Protected area

Introduction

The Sundarbans Reserve Forests (SRF), which is the largest mangrove ecosystem in the world, is one of the protected areas in Bangladesh [1-3]. Its beauty lies in its unique natural surroundings. Thousands of meandering streams, creeks, rivers and estuaries have enhanced its charm [4]. It is the natural habitat of the world famous royal Bengal tiger, spotted deer, crocodiles, jungle fowl, wild boar, lizards, monkeys and an innumerable variety of beautiful birds [5]. Flocks of flying migratory Siberian ducks, sail boats loaded with Golpata (*Nipa fruticans*), honey, shell and fish further add to the serene natural beauty of the SRF. There is an

* Correspondent author: zahirfd@yahoo.co.uk, rezamih@gmail.com

ample potential for ecotourism spots in the SRF and each one may have special significant characteristics.

The scenario of the mangrove plants, the basking of crocodiles along the margin of the creeks and inlets and transforming of the water body into a bird sanctuary by the thousands of migratory birds and colourful ducks in the winter, the sharp movements of the spotted deer at the waterholes and seashore, the soft bird calls, and the sudden meeting of flagship species- the Royal Bengal Tiger, will certainly touch the heart of both the native and overseas tourists [6, 7].

Tourism is a popular global leisure activity, which has large economic value for many countries, especially in the developing world. Tourism offers opportunities for substantial growth, although success depends on the effective marketplace value, quality of the developed products and the establishment of meaningful community-private-public partnerships [8]. Nowadays, environment friendly as well as knowledge-orientated tourism such as ecotourism, adventure tourism, and cultural tourism has excellent prospects worldwide with improving educational levels where the tourists are known for their modest expectations in terms of facilities, amenities, service and comfort [9]. Ecotourism is typically defined as travel to destinations where flora, fauna, and cultural heritage are the primary attractions [10, 11]. Protected areas are commonly utilized for the purpose of ecotourism where the natural capital (e.g., landscapes, flora, fauna, etc.) and associated traditional cultures of the protected areas are the major attractions for the tourists [12, 13].

Developing the ecotourism sites in the SRF will be a great opportunity for earning among the local community, especially for the pro-poor group who are dependent on the natural resources. That will also help to reduce the over exploitation of the natural resources by local community [14]. The resources of the SRF have great potential to encourage and develop community based ecotourism in the villages located at the vicinity of the forest that have direct interests on the forest [15]. In turn, the natural and environmental importance of this venue will attract many local and international tourists [16]. The local poor people can be engaged in different activities, which enable them to earn money and to build environmental awareness to promote the conservation of natural resources.

Community-based tourism (CBT) is a visitor-host interaction in a win-win situation that has meaningful participation by both the visitor and the host [17], and generates economic and conservation benefits for local communities and the environment [18]. CBT is an emerging activity that is generating a lot of interest among the local people, tour operators, government agencies, and the business sector [19]. Advocates of participatory conservation approaches insist that by denying local people access to protected areas [20] and by excluding them from decision-making processes, conservationists create tension between park managers and local residents, increase monitoring costs, and fail to benefit from the valuable local knowledge and resource management systems [7, 21-25]. Moreover, communities are now the locus of the conservationist thinking promoting tourism to existing protected areas [26] and sharing a part of the profit with communities is a popular community-based conservation strategy. This can be done by encouraging or facilitating local investment into tourism activities [27].

Further, promoting ecotourism has also been emphasized by the World Bank [28] for Strengthening Regional Cooperation for Wildlife Protection in Asia (SRCWP) Project [28]. Therefore, this study is an attempt to assess the feasibility of developing a community-based sustainable ecotourism in a potential site, locally known as the *Shekher Khal*, which is inside the protected area and has both ecological and archaeological values.

Methodology

Study Area

The site of the *Shekher Khal* (canal of Shekh) is situated near the Adachai Patrol Post under the Khulna Range of Sundarbans West Forest Division of Bangladesh. A few ancient

ruined buildings still exist which inspires the modern adventure-loving tourists to know more about the significance and mysterious past of the area. The *Shekher Bari* (house of Shekh), *Kalir Khal Mandir* (temple of Kali canal), *Beder Bari* (house of gipsy community), *Khutir Khal Iter Paza* (Khutir canal brick fields) are some of these ancient structures.

The geographical location of the temple is 22013.253' N, 89029.922' E and the *Shekher Bari* is located at 22013.662' N, 89028.790' E. The approximate distance from the Nalian Forest Range Headquarters and the Adachai Forest Office (Patrol Post) to the *Shekher Bari* is about 26km and 5km respectively, and the distance from the *Shekher Bari* to the *Kalir Khal Mandir* is about 2km within the site.

The total ecotourism centre has 2 units – one unit is the *Shekher Bari* with an area of 0.54km² and the other one is the *Kalir Khal Mandir* with an area of 0.67km². The natural features of the area consist of rivers and forests. The forests are of low storied forest (~54%) and high storied forests (~46%). The *Shekher Bari* is on the bank of the *Shekher Khal* which is close to the river Shibsra, and the *Kalir Khal Mandir* is on the bank of the Kalir Khal. The location of the full site is prepared by the authors using GIS tools (Fig. 1).

The source of the map is obtained from Google earth. It is then geo-referenced and digitized by ArcGIS 9.3 software. The map shows various features within the area of the site such as high and low storied forests, river, ancient building and local forest office stated in Table1. Each of the features is identified with different colours.

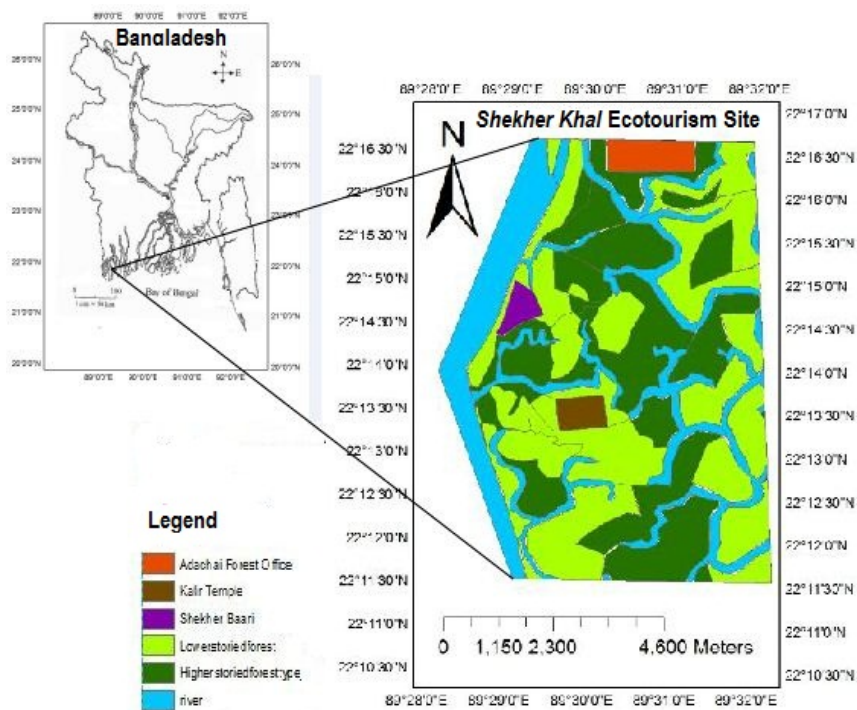


Fig. 1. Location of the Site - *Shekher Khal*

The environmental position of the site is low (below 20m) relief (difference in elevation) and upper and medium (30-40%) slope of the land. The soil type is clay, and the depth of top soil is shallow (< 20cm). Soil erosion is low. The land is dry on average for only five months per year. The climate is wet. There is no source of fresh surface water. The ground water is available by digging wells, but the quality of water is poor. The area is affected by natural disasters such as cyclones, tidal waves, storms, etc. and geological hazards such as landslides.

Table 1. Spatial and ecological features with the range of total area of the Study Area

Feature	Area (km ²)
River	13.35
High storied forest type	17.98
Low storied forest type	20.90
Shekher Bari	0.54
Kalir Mandir	0.67
Adachai Patrol Post	1.27
Total	54.71

Historical and archaeological values of the area

The *Sheikher Khal's* ancient ruined structures are historically and culturally interesting and appealing to the modern tourists. Thus, this is the only location inside the SRF of Bangladesh where man-made ancient structures have been discovered. The site consists of relics of temples, houses, ponds, etc.

According to the information derived from the local people, Muslim and Hindu communities populated the spot: the *Sheikh* community was Muslim in religion, so they lived separately beside the Shibsra river bank and the Hindu community lived near the temple and its surroundings beside the *Kalir Khal*. The destroyed residue of houses of the *Shekh* community are found on the east bank of the river Shibsra and visible from the river bank. Throughout the area people generally call the site *Shekher Mandir*, while in fact, the temple is *Kalir Mandir*. There are evidences which explain that a ruined building beside the *Kalir Mandir* has been identified and proclaimed as the *Hindu Zamindar Bari* (house of landlord), and the temple was constructed by that Zamindar.

The *Sheikh* community lived separately a little far away from the Hindu community. The *Shekher Bari* site lies on the forest floor adjacent to the river bank of Shibsra and the temple is approximately 1.0km away from the bank of the *Shekher Khal* canal. Both the sites are disconnected with trawler/boat stoppage points, fact that may make tourist access to the spot troublesome. There is neither a footpath or trail nor any other sign or indication to follow in order to reach the temple or the *Shekher Bari* at the moment.

It is assumed that some *Bede* (gipsy community) people lived near the *Beder Khal*. In this clutch of land on the other side (west bank) of the river Shibsra and near the *Khutir Khal*, a ruined relic of a brick field (locally known as the *Iter Paja*) had been discovered by the fishermen. It is believed that the building materials used for the construction of these ancient buildings were mainly supplied from this brick field and were used as the masonries of small thin bricks, lime and brick powder.

There is no specific record on the age of these structures, but it is assumed that these ancient structures were built about 400 years ago (Fig. 2) when Saint Hazrat Khan Jahan Ali came to Jessore and started clearing up the forest land and converted it into paddy fields and later proceeded up to the Khulna and Bagerhat district. It is also believed that these establishments might have existed before his arrival into this region.

However, there is no accurate evidence of settlement and construction period for these buildings and for the origins of the people who came to settle down there. Information received from the local people suggests that, based on an assumption, due to severe natural calamities near Java or Sumatra Island, the inhabitants of those areas were compelled to migrate to

Sundarbans. Some aboriginal people called the ‘*Kapali*’, living in Jorsing under the area of the Koyra police station of Khulna district are said to be their descendant. Another opinion of the local people is that the miscreants or pyrites inside these forests had been ransomed nearly 600 years ago.



Fig. 2. The entrance point of the ancient *Kalir Mandir* and the design of the ancient bricks

Ecological value of the area

The archaeological structures of the site are situated inside the dense virgin forests of mixed mangrove species dominated by Sundri (*Heritiera fomes*). The site is rich with a unique biodiversity. The major species of plants that keep these relics hidden inside the forests are Pasur (*Xylocarpus mekongensis*), Bain (*Avicennia officinalis*), Gewa (*Excoecaria agallocha*), Goran (*Ceriops decandra*), Golpatta (*Nypa fruticans*), etc. with some rarely found orchids and climbers. Both sides of the *Shekher khal* canal bank from the river Shibsra up to the temple side are fenced densely by natural Hental plants (*Phoenix paludosa*) that provide extra scenic beauty to this area (Fig. 3).



Fig. 3. *Shekher Bari* (Shekhs' home) on the bank of the river Shibsra and the *Shekher Khal* (Shekhs' canal).

Furthermore, the Royal Bengal Tiger is very frequently visible at this site. We found recent pugmarks of a number of tigers around the temple site (Fig. 4) combined with other animals such as the deer, wild boars, monkeys, monitor lizards, snakes and otters. Many arboreal species and birds such as the jungle fowl, brown-winged kingfishers, lesser adjutants (*Leptoptilos javanicus*), grey-headed fish eagles (*Ichthyophaga ichthyaetus*), open billed storks, coots, pheasant-tailed jacanas, Brahminy kites, gray herons, great

egrets, cormorants, common kingfishers, masked fin-foot and owls can be encountered. Approximately 13.35km² of water body in this location that include canals and creeks are abundant with many species of fishes and other aquatic species.



Fig. 4. Pugmarks of a couple of tigers at the Temple site and pug marks while chasing preys

Moreover, there are some non-mangrove species such as Gaab (*Diospyros sp.*), Bot (*Ficus sp.*) and *Bhui kumari* (local name of a climber), found at the site which evidences the descendant of the pioneer ones planted by the inhabitants. The answer to the questions of how these species are found at these sites is that the inhabitants’ livelihood was totally boat-based and there were no easy facilities to repair their boats from any nearby location. Perhaps they used this *Gab* fruits to repair the boats. Moreover, its fruit is also delicious to eat. Likewise, the *Bhui kumari* was also edible and they planted the *ficus religiosa* species probably for their worship rituals.

Tourism potential

According to the average of last 7 years records of the Bangladesh Forest Department, about 22,000 local and 294 foreign tourists have visited the Sundarbans west forest division every year. Within these 7 years this number was highest in the year 2011-2012 with the 42,805 local and 747 foreign tourists (Table 2 and Fig. 5).

Table 2. Number of visitors to the Sundarbans West Forest Division

Year	Total visitors	Revenue earned (BDT)
2007-2008	11653	561,520
2008-2009	17103	1,175,180
2009-2010	19477	1,781,780
2010-2011	31389	1,810,450
2011-2012	43452	3,379,710
2012-2013	29623	6,726,040
2013-2014	24797	2,176,650

(Source: Forest Department, Bangladesh)

The number of tourists increased from October to April/May due to the calm river conditions. The existing beautiful spots to visit in this division are Kalatali, Munshiganj, the Nilkamal world heritage site, and the Dublar Char. A majority of tourists use the route through the Sundarbans West Forest Division to visit that place mainly in November when the *Rash Purnimar Mela*– a worship festival of the Hindu community, occurs. The site of *Shekher Khal* is situated in the Sundarbans West Forest Division and halfway through the Nilkamal or Dublar char. Therefore, it is predicted that these tourists will visit this site. Besides, the intangible

environmental benefit, which the tourists enjoy, must be several times more valuable than this earning.

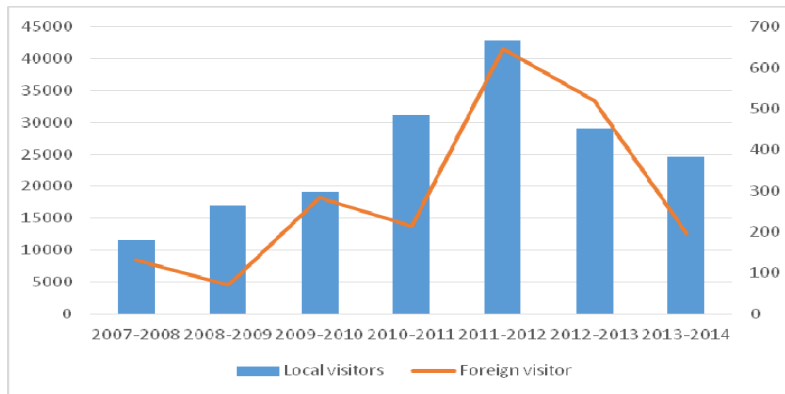


Fig. 5. Chart showing number of local and foreign visitors between 2007 and 2014

Ensuring Sustainable Ecotourism

Sustainable activities of tourists

The site is situated approximately 15km away from the nearest forest periphery and the participants need to pass through the forests for a long distance. Moreover, massive participation and sharing of local people and NGOs may disturb the serene habitat of the wildlife and frequent increase the pollution of the water body and land. It may also increase poaching activity on wildlife and other valuable natural resources [7, 29]. Therefore, hiring a minimum number of people to oversee this journey must be considered. Based on the interviews with the local people and conservation practitioners, some suggestions and recommendations are proposed, in order to develop a sustainable eco-tourism site in this spot.

It is proposed that tourists arrive at the Nalian Forest Range Headquarter and collect their permits before going for the site visiting. The journey starts by engine boat from Nalian Forest Range Headquarter to Shekher Bari with an eco-tourist-guide and forest guards for security purposes. After visiting the Shekher Bari, they will visit the temple site by *dingi* (small) boat through canals. A watch tower will support them to observe the total area of the site. The duration of visit will follow the high and low tide of the rivers and tourists will not be allowed to stay overnight there unless a well-managed safari camp is established.

Nalian and some nearby places such as Kashiabad, Hodda and Kalabogi will be developed with various permanent and temporary infrastructures such as eco-cottage, shopping markets consisting of local and traditional goods, museum, cultural centre, display centers and restaurants for local and traditional foods in participation with the local people and various government and non-governmental organizations. These attractive facilities will be available to the tourists while they wait for their destination. Management components such as eco-cottage proprietors, eco-guides, tour operators and trawler owners will perform their best to serve the tourists at this stage.

Archaeological and ecological sustainability

At present, the archaeological structures in the site are being destroyed. The preservation of these structures is urgent. The combined archaeological and ecological features create a strong tourism value in this site [30]. Moreover, preserving the archaeological structures or developing tourism in this site will also contribute towards the ecological sustainability in that area by turning the local people from direct dependency on the forest resources [31].

The introduction of ecotourism will not accelerate land disturbance in terms of site clearance because no new site will be included for development (Table 3). Therefore, the effects on rare (vulnerable), threatened or endangered species of flora or fauna or their habitat and on designated wetlands is negligible. The management operation in the site will ensure the minimum negative effects of invasive plants or animals spreading in the area, low disturbance of wildlife habitat, populations, corridors or movement, of locally important or valued ecosystems or vegetation, low trees and vegetation destruction and impact on fish migration and navigation.

Table 3. Potential impacts on site environment due to the development of ecotourism

Will the site development cause the following:	Yes/No	Scale of Impacts
- land disturbance or site clearance?	No	Low
- negative effects on rare (vulnerable), threatened or endangered species of flora or fauna or their habitat?	No	Low
- negative effects on designated wetlands?	No	Low
- spread of invasive plants or animals?	No	Low
- negative effects on wildlife habitat, populations, corridors or movement?	No	Low
- negative effects on locally important or valued ecosystems or vegetation?	No	Low
- destruction of trees and vegetation?	No	Low
- impact on fish migration and navigation?	No	Low
- obstruction of natural connection between river and wetlands inside project area or natural drainage system?	No	Low
- water logging due to inadequate drainage?	No	Low
- insufficient drainage leading to salinity intrusion?	No	Low
- negative effects on surface water quality, quantities or flow?	No	Low
- negative effects on groundwater quality, quantity or movement?	No	Low
- increased demand of water requirements leading to reduction of water supply for competing uses?	No	Low
- increase probability of spread of diseases and parasites?	No	Low
- significant sedimentation or soil erosion or shoreline or riverbank erosion on or off site?	No	Low
- loss of existing buildings, property, economic livelihood?	No	Low
- negative impact on soil stability and compactness?	No	Low
- impacts on sustainability of associated construction waste disposal?	No	Low
- changes to the land due to material extraction?	No	Low
- traffic disturbances due to construction material transport and wastes?	No	Low
- increased noise due to transportation of equipment and construction materials?	No	Low
- increased noise due to day-to-day construction activities?	No	Low
- increased wind-blown dust from material (e.g. fine aggregate) storage areas?	No	Low
- degradation or disturbance of historical or culturally important sites?	No	Low
- health and safety issues?	No	Low
Will the site development require the following:	Yes/No	Scale of Impacts
- setting up of ancillary production facilities?	No	Low
- significant demands on utilities and services?	Yes	High
- accommodation or service amenities to support the workforce during construction?	Yes	Medium

The project design reflects no impediment on the natural connections between rivers and wetlands inside the project area or the natural drainage system, water logging due to inadequate drainage, preventing salinity intrusion, surface water quality and quantities or flow, groundwater quality and quantity or movement and sedimentation or soil erosion or shoreline and riverbank erosion on or off site. The tourists' drinking water source is outside the

ecotourism area hence increased demand of water requirements leading to the reduction of water supply for competing uses is not considered an issue.

Observation is the main activity of the tourists; therefore, direct human contact with biodiversity will be negligible and will not result in spreading diseases and parasites in the wilderness. The archaeological aspect is the predominant condition to establish this complex and therefore - loss of existing settlements, economic livelihood, soil stability and compactness, impacts on sustainability of associated construction waste disposal and changes to the land due to material extraction will be kept to the minimum range.

Traffic disturbances and increased noise due to transportation of wastes and construction materials and day-to-day construction activities, increased wind-blown dust from material (e.g. fine aggregate) storage areas, degradation or disturbance of historical or culturally important sites and the risks of health and safety problems are temporary issues that will end after the site development activities have been completed. The impact of setting up the ancillary production facilities is low while the impact of significant demands: utilities and services, the accommodation to support the workforce during construction, is high and medium, respectively.

Socioeconomic Sustainability of Local Community

The prime challenge of the SRF is the conservation of its natural resources. SRF can be conserved based on various schools of thoughts [28]. Community based ecotourism (CBET) is such an option from a tourism point of view [32] which has an immense potential to facilitate the conservation initiatives of the Sundarbans [33]. This type of tourism is particularly important for the SRF and its surrounding landscape villages (within 5km from the boundary of the SRF), in order to reduce the anthropogenic pressure through the community engagement [34]. Key issues for the development of CBET are participation, markets and customers, capacity growth, impacts and monitoring, partnerships, collaborations and policies [19]. CBET matches the development of the *Shekher Khal* historic site ecotourism project through its different activities and operations.

The objectives of the CBT and ecotourism cover great potentialities that can be developed in order to emancipate the local people and improve their socio-economic status [35] through the enhancement of the building capacity of the forest department, concerned NGOs and local communities. This initiative will create the opportunities through the alternative income generating (AIG) schemes for the local inhabitants of the adjacent local communities to make them environmentally aware and educated, which enables them to assist in improving the conservation of natural (biodiversity) and cultural resources in and around the SRF.

Local people surrounding the villages of the SRF may play a strong and vital role in the conservation of the natural resources of SRF. They are the most vulnerable population due to different natural calamities like cyclones, tidal waves, storms, and landslides [36]. Due to lack of income generating opportunities, education and environmental consciousness, most of them are fully or partially dependent on the natural resources of the SRF which threatens the forest as a whole [37]. This scenario can provide a colossal alternative income generation (AIG) opportunities for the locals which can then alter the pattern of their dependency on the natural resources of the Sundarbans [38]. This modified dependency on the Sundarbans will contribute to reduce the extraction of natural resources of the forest and restrict their non-cooperation attitude to conserve the forest from destructions [34, 39].

Monitoring the issue of sustainability

Currently, due to the lack of manpower, financial, logistic and other supports of the forest department, forest officials remain under pressure to protect the forest from many destructing activities [37]. Participatory monitoring by the stakeholders on the implementation of the planned activities in relation to the allocated funds and time line and security situation

will be checked on from time to time [40], with the help of different indicators related to tourism and recreation in the proposed area. Participatory evaluation in different stages (pre-ante, ongoing and post-ante) of the project will also facilitate the monitoring and evaluation of the project activities. The overall status of the natural resources of the site will be assessed by participatory monitoring and evaluation (PME) by the government through the forest department [38].

Site Development Activities

Infrastructural development

In order to facilitate the tourism, local community and stakeholders suggested an initial infrastructural development which will consist of the construction of two jetties and the construction of two elevated wooden walkway from the riverbank to the *Shekher Bari* and *Kalir Mandir*. In addition, the construction of 4 resting places at the elevated wooden walk-way, an elevated wooden platform near the temple to take shelter during the high tide, construction of a canopy walk around the site, reconstruction and maintenance of the *Mandir* and *Shekher Bari*, different signage and directions at the site and other areas where necessary and the construction of 2 toilets and 2 wash rooms near the temple area would be carried out.

Expected costs for building up this eco-tourism site were made through a collective review from the suggestions and responses of the related stakeholders. Expected construction period for the above works might be 8 months, and total cost might be approximately BDT 15 million (USD \$0.187mil.). The initial investment for the site development can be recovered within 5-10 years and the project can be sustained with profits. For an example, if half of the current annual visitors visit this site at the rate of BDT 50 for local and BDT 1000 for foreign tourist, the investment will be recovered in less than 10 years. Further, the number of tourists will increase year by year.

Capacity building

It is the most important aspect next to the infrastructural development, to offer mobility to the investment. Capacity building includes activities such as development of a local training centre [41] (with existing infrastructure) at the adjacent village of the forest boundary with the aim to train concerned employees of the forest department and NGOs on different aspects of CBET development and promotion for the local communities.

The training will emphasize on the issues of tourism, ecotourism, community-based ecotourism, cultural and heritage tourism, environmental education, including formal and informal rules and regulations, and awareness with particular reference to the Sundarbans. It would also include host-guest relationship in community based ecotourism, planning and development of community-based ecotourism in the Sundarbans, volunteer services in community-based ecotourism, promoting local enterprises, establishing local tour operators in the project area. Participatory monitoring and evaluation and involvement of multi-stakeholders/actors, partnership and collaboration in community based ecotourism may also be included among the programs.

Several other aspects of building capacity are the preparation of training materials and educational and experience sharing tours (excursions) for the trainees and trainers at home and abroad. Development of educational and motivational materials (printed, documentary, electronic, etc.) for campaigns, regular discussions and meetings with different stakeholders to develop and promote CBET, development of a website focusing on the activities of this proposed CBET project as well as building awareness and motivation for potential tourists and support to establish a local tour operator would also be included.

Community involvement

One of the modern concepts that will help the smooth implementation of the project regarding job opportunity, interactions among all levels of population, social bindings, and cost benefit sharing and so on, is community involvement [42]. This parameter of site development

function is formed with awareness and motivation activities, involvement of local community members in different AIG activities [43], participatory monitoring and evaluation, redesigning or modification of this project based on lessons and learning from the participatory monitoring and evaluation, partnerships and collaborations between the local communities and different relevant stakeholders/actors. It would involve the arrangement of two annual cultural and heritage fairs at the adjacent villages and observations of Global Tiger Day (29 July), International Tourism Day (27 Sept), World Environmental Day (5 June), World Wetland Day (2 February), International Mangrove Day (26 July), and Sundarbans Day (14 Feb), to create awareness and motivation among the local community and other concerned people of different relevant organizations and the promotion and marketing of CBET and its various services and products.

Conclusions

This study attempted to assess the development of community-based sustainable ecotourism at the *Shekher Khal* area in the Sundarbans Reserve Forests. The ecological integrity of the Sundarbans Reserve Forests has been under tremendous pressure due to the increasing anthropogenic activities over the past few decades. Generally, a major proportion of the pressure on this reserve forest is due to the livelihood of the surrounding community as well as for income generating purposes. Therefore, an alternative income generating approach which will be eco-friendly would support the sustainability of this globally important mangrove reserve forests. Hence, an ecotourism place may be a good approach to reduce over exploitation of mangrove forest resources. Ecologically, this site is very important because of its location inside the reserve forest and its high natural beauty. Archeologically, these are the only man-made ancient structures found inside the SRF of Bangladesh, an area established by both the Hindus and Muslims. These amazing and attractive temples and other structures with ecological and archeological values will raise interests and curiosities among the tourists. Besides, the area would also be fascinating and intriguing for religious people. Therefore, the archaeological preservation of this site is very important. At the same time, the site has strong potential for development of ecotourism activities.

After considering the overall assessment and potentiality of this site, this study proposes to develop and promote the *Shekher Khal* area as an important tourist destination in the SRF through an innovative and alternative eco-friendly tourism approach. In one hand, these opportunities will generate money for the local people and on the other, these people or even the entire community will be aware and motivated to conserve the natural resources of the SRF. Using this way, is also expected to discourage illegal logging, poaching and encroaching of the SRF. By serving these diversified benefits through the CBET, particularly based on the concerned issues, this development will preserve the archaeological ancient structures and facilitate wildlife habitat restoration and protection of the Sundarbans mangrove forest as well. This study will help the respective agencies to take initiatives in the development of this site.

Acknowledgments

Two university research projects - DLP-2014-015 and GUP-2014-042 of University Kebangsaan Malaysia (UKM) are gratefully acknowledged for supporting this research. Forest Department, Bangladesh and Forestry and Wood Technology Discipline, Khulna University, Khulna, Bangladesh are also acknowledged for providing valuable information for this study.

References

- [1] S.R. Biswas, J.K. Choudhury, A. Nishat, M.M. Rahman, *Do invasive plants threaten the Sundarbans mangrove forest of Bangladesh?*, **Forest Ecology and Management**, **245**(1-3), 2007, pp. 1-9.
- [2] S. Das, N. Siddiqi, *The mangroves and mangrove forests of Bangladesh*, **Bulletin-Bangladesh Forest Research Institute**, Vol. 2, Mangrove Silviculture Division, Bangladesh, 1985.
- [3] B. Gopal, M. Chauhan, *Biodiversity and its conservation in the Sundarban Mangrove Ecosystem*, **Aquatic Sciences**, **68**(3), 2006, pp. 338-354.
- [4] S. Manna, K. Chaudhuri, S. Bhattacharyya, M. Bhattacharyya, *Dynamics of Sundarban estuarine ecosystem: eutrophication induced threat to mangroves*, **Saline Systems**, **6**, 2010, pp. 16, Article No. 8, doi: 10.1186/1746-1448-6-8.
- [5] M.S.N. Islam, A. Gnauck, *Threats to the Sundarbans mangrove wetland ecosystems from transboundary water allocation in the Ganges basin: A preliminary problem analysis*, **International Journal of Ecology, Economics and Statistics**, **13**(W09), 2009, pp. 64-78.
- [6] A. Folmer, T. Haartsen, P.P.P. Huigen, *The role of wildlife in emotional attachment to a nature-based tourism destination*, **Journal of Ecotourism**, **12**(3), 2013, pp. 131-145.
- [7] M.A. Salam, G.R. Lindsay, M.C. Beveridge, *Eco-tourism to protect the reserve mangrove forest the Sundarbans and its flora and fauna*, **Anatolia**, **11**(1), 2000, pp. 56-66.
- [8] UNWTO (United Nations World Tourism Organization), **Tourism and Poverty Alleviation. Recommendations for Action**, Madrid, Spain, 2004, <http://www.e-unwto.org/doi/book/10.18111/9789284407019> [accessed at 20.04.2015].
- [9] T. Nevard, G. Neverd, *The Mareeba wetlands- conservation through sustainable ecotourism*, **Journal of Ecotourism**, **13**(2-3), 2014, pp. 152-158.
- [10] M.G. Engeset, I. Elvekrok, *Authentic concepts: Effects on tourist satisfaction*, **Journal of Travel Research**, **54**(4), 2015, pp. 456-466.
- [11] S. Ross, G. Wall, *Ecotourism: towards congruence between theory and practice*, **Tourism Management**, **20**(1), 1999, pp. 123-132.
- [12] H. Ceballos-Lascurain, *Ecotourism as a worldwide phenomenon*, **Ecotourism: Guide for Planners and Managers** (Edited by: Lindberg, K. and Hawkins, D.), The Ecotourism Society, North Bennington, Vermont, 1993, pp. 12-14.
- [13] M.J. Walpole, H.J. Goodwin, *Local attitudes towards conservation and tourism around Komodo National Park, Indonesia*, **Environmental Conservation**, **28**(2), 2001, pp. 160-166.
- [14] M. Iftekhhar, M. Islam, *Managing mangroves in Bangladesh: A strategy analysis*, **Journal of Coastal Conservation**, **10**(1), 2004, pp. 139-146.
- [15] M. Banerjee, *ECO Tourism in Sunderbans: A Life Line for Local People and the Ecology*, **International Journal of Science and Research**, **3**(11), 2014, pp. 761-771.
- [16] G. Assaker, R. Hallak, V.E. Vinzi, P. O'Connor, *An empirical operationalization of countries destination comperativeness using Partial Least Squares Modeling*, **Journal of Travel Research**, **53**(1), 2014, pp. 26-43.
- [17] W. Wimalaratana, D. Silva, *Community Based Sustainable Tourism Potential in Sri Lanka: A Case Study of the Moneragala District*, **Sri Lanka Journal of Agrarian Studies**, **13**(1), 2009, pp. 23-44.

- [18] T. Vajirakachorn, *Determinants of Success for Community-based Tourism: The Case of Floating Markets in Thailand*, **PhD Thesis**, Texas, A&M University, 2011.
- [19] N. Jain, R. Triraganon, **Community-based tourism for conservation and development: A training manual**, Mountain Institute, Washington DC, 2003.
- [20] S. Shackleton, B. Campbell, E. Wollenberg, D. Edmunds, *Devolution and community-based natural resource management: creating space for local people to participate and benefit?* **Natural Resource Perspectives**, **76**, Overseas Development Institute, London, UK, 2002.
- [21] A. Agrawal, C.C. Gibson, *Enchantment and disenchantment: the role of community in natural resource conservation*, **World Development**, **27**(4), 1999, pp. 629-649.
- [22] F. Berkes, **Common Property Resources: Ecology and Community-Based Sustainable Development**, Belhaven Press, London, 1989.
- [23] L.E. Sponsel, T.N. Headland, R.C. Bailey, **Tropical Deforestation: the Human Dimension**, Columbia University Press, New York, 1996.
- [24] M. Wells, K. Bradon, **People and Parks: Linking Protected Area Management with Local Communities**, The World Bank, Washington DC, 1992.
- [25] D. Western, R. Wright, S. Strum, **Natural Connections: Perspectives in Community-Based Conservation**, Island Press, Washington, DC, 1994.
- [26] P.F. Eagles, S.F. McCool, C.D. Haynes, A. Phillips, U.N.E. Programme, **Sustainable Tourism in Protected Areas: Guidelines for Planning and Management**, IUCN, Gland, Switzerland and Cambridge, UK, 2002.
- [27] D. Western, *Defining ecotourism*, **Ecotourism: A Gguide for Planners and Managers** (Edited by: Lindberg K.; Hawkins D.), The Ecotourism Society, North Bennington, Vermont, pp. 7-11, 1993.
- [28] World Bank, **Bangladesh and Nepal - Strengthening Regional Cooperation for Wildlife Protection in Asia**, A World Bank Project, 2011.
- [29] M. Alam, Y. Furukawa, S. Akter, *Forest-based Tourism in Bangladesh: Status, Problems and Prospects*, **Tourismos: An International Multidisciplinary Journal of Tourism**, **5**(1), 2009, pp. 163-172.
- [30] G. Wallace, A. Russell, *Eco-cultural tourism as a means for the sustainable development of culturally marginal and environmentally sensitive regions*, **Tourist Studies**, **4**(3), 2004, pp. 235-254.
- [31] M. Iqball, M. Salequzzaman, S. Haque, M. Islam, M. Ahmed, *Ecotourism in the Sundarbans and its surrounding—a possible sustainable option for alternative livelihood development*, **Bangladesh Research Publications Journal**, **4**(3), 2010, pp. 244-253.
- [32] A. Kiss, *Is community-based ecotourism a good use of biodiversity conservation funds?*, **Trends in Ecology and Evolution**, **19**(5), 2004, pp. 232-237.
- [33] H. Chadha, P. Onkar, *Community Participation: An Approach towards Inclusive Tourism Development in India*, **Iscontour 2014 -Tourism Research Perspectives: Proceedings of the International Student Conference in Tourism Research**, BoD–Books on Demand, 2014.
- [34] M.W. Islam, *Community-based tourism and ecotourism are potential means to facilitate the conservation of natural resources of the Sundarbans – A Theoretical Perspective*, **Khulna University Studies**, SESB 2010, (S.I.), 2010, pp. 127-140.
- [35] RECOFTC (Regional Community Forestry Training Center for Asia and the Pacific), *Community-based Tourism for Conservation and Development*, <http://www.recoftc.org/site/index.php?id=355> [accessed at 27.04.2015].

- [36] M.A. Hossain, M.I. Reza, S. Rahman, I. Kayes, *Climate change and its impacts on the livelihoods of the vulnerable people in the southwestern coastal zone in Bangladesh*, **Climate Change and the Sustainable Use of Water Resources** (Editor: W.L. Filho), Springer, Berlin, Germany, 2012, pp. 237-259.
- [37] A. Singh, P. Bhattacharya, P. Vyas, S. Roy, *Contribution of NTFPs in the livelihood of mangrove forest dwellers of Sundarban*, **Journal of Human Ecology**, **29**(3), 2010, pp. 191-197.
- [38] M.W. Islam, M.M. Rahman, M.S. Iftekhar, M.G. Rakkibu, *Can community-based tourism facilitate conservation of the Bangladesh Sundarbans?*, **Journal of Ecotourism**, **12**(2), 2013, pp. 119-129.
- [39] I-C. Tang, W.C. Sullivan, C-Y. Chang, *Perceptual evaluation of natural landscapes: The role of the individual connection to nature*, **Environment and Behavior**, **47**(6), 2015, pp. 595-617.
- [40] N. Muhammed, M. Koike, M. Sajjaduzzaman, K. Sophanarith, *Reckoning social forestry in Bangladesh: policy and plan versus implementation*, **Forestry**, **78**(4), 2005, pp. 373-383.
- [41] D.C. Korten, *Community organization and rural development: A learning process approach*, **Public Administration Review**, **40**(5), 1980, pp. 480-511.
- [42] R. Scheyvens, *Ecotourism and the empowerment of local communities*, **Tourism Management**, **20**(2), 1999, pp. 245-249.
- [43] G. Galley, J. Clifton, *The motivational and demographic characteristics of research ecotourists: Operation Wallacea volunteers in Southeast Sulawesi, Indonesia*, **Journal of Ecotourism**, **3**(1), 2004, pp. 69-82.
-

Received: November, 23, 2015

Accepted: June, 03, 2016