



Resident's Awareness Towards Sustainable Tourism for Ecotourism Destination in Sundarban Forest, Bangladesh

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Nowadays consumers are highly interested in the quality of the products they eat, especially when this refers to meat. Consumption of meat from ruminant animals and its derivatives is on the increase, particularly in Pakistan. Current analysis is a review of the different factors that affect meat quality in ruminants. Some factors throughout the entire meat chain are analyzed, or rather, from those producers underscore to improve the quality of their products to those related with consumers' habits and beliefs. Most of the papers reviewed have been developed by researchers involved in the meat quality in collaboration with Pakistani or international groups.

Nature based tourism is increasing throughout the world. Most is based in national parks and restricted areas. UNESCO has declared 28% of the world's largest continuous mangrove forest, the Sundarban, as a world heritage site in 1987. Sundarban is the largest mangrove forest in the world, which is facing various kinds of threats. More than millions of people depend on cutting tree, hunting animal other sources that are related with Sundarban. Negative natural and anthropogenic impacts and over exploitation of natural resources have caused severe harm to the ecosystem. Growing human population with few different support opportunities poses a significant threat to the mangrove forest.

There is an illegal increase in the reducing of trees and woods in the Sundarban. Deforestation is taking an increase in most of the areas of Sundarban which will ultimately lead into the loss of the diversity. The problem of overfishing has placed the surroundings below great pressure. The stock of the fish is decreasing due to the combination of overexploitation and environmental condition changes. The density of the fish in shallow waters reduced enormously. Because of the excessive demand for the prawn product, the native people dropped the normal fishing practices and adopted the prawn seed culture. Earlier traditional agricultural strategies were practiced. But today, people are adopting the techniques of using pesticide and chemicals that are affecting the flora and fauna of the region. The dumping of various industrial and domestic wastes into the river systems also possesses a threat to the environment. This forest ecosystem conjointly has become at risk of pollution, which can have modified the ecosystem.

This paper suggests that nature-oriented tourism destination Sundarban can achieve sustainability through public awareness. Well-planned sustainable tourism and residence awareness could provide economic and long-term incentives conservation and could bring additional benefit to local communities and regional economies. The paper focuses on how to increase residence awareness.

Keywords: Sundarban tourism Eco tourism destination Sustainable tourism, Local awareness, social media activities

Introduction

Tourism sector is one of the developing foreign currency earning sectors in Bangladesh. The country was listed by Lonely Planet in 2011 as the "best value destination". Bangladesh is full of beautiful coasts and beaches, archeological sites, historical and along with religious places, hills, islands, forests, jungles and attractive countryside with innumerable water bodies and green agricultural fields. These wealthy natural and cultural attractions are valuable elements of development sector in Bangladesh. Almost every year, a huge number of tourists visit these beautiful places, which has a significant contribution in the national economy. According

to World Tourism and Travel Council, 2015, in 2014 the direct contribution from Travel and Tourism sector to GDP was USD, \$3.80 billion, which is 1.9% of total GDP. USD, \$4.03 billion is expecting by the year 2015. However, the number of foreign visitors 'arrivals is expecting around 463,000 by the year of 2015. This current growth rate forecast to raise USD, \$16.08 billion by the year of 2025 which will be the 4.4% of total GDP [1].

Bangladesh has lots of natural tourism sites. However, because of proper sustainable planning and lack of public awareness this destination's earning growth rate is not satisfactory. While Sundarban is the world largest mangrove



forest declared by UNESCO Natural Heritage Site. It covers 4.2% of total land area and 44% of total country's forest land. Mangrove forests are one of most wonderful attraction among the world. However, day by day it could be disappear faster than inland forest as the experts' fears due to lack of sustainable management. The Sundarban is also not excluding from this threat. It is one of the important tourist attractions for Bangladesh. Every year Bangladesh government earns lots of foreign and local currency from the destination. According to tourism department of Bangladesh USD, \$ 0.12 million earned from Sundarban tourism in 2010-2012. However in 2012 Sundarban have earned USD, \$ 0.06 million from 42,613 tourists including 640 foreign tourists^[2].

Literature Review

2.1 Sustainable Tourism

Sustainable tourism is the concept of traveling a place as a tourist and trying to make only a affirmative impact on the environment, as well as society and economy^[5]. Tourism can involve primary transportation to the general spot, local transportation, accommodations, entertainment, recreation, nourishment and shopping. It can be related to travel for leisure, business and anything which is related with short time migration^[6]. There is now broad consent that tourism development should be sustainable; however, the question of how to achieve this remains an object of debate^[7]. Tourism that takes full account of its current and future economic, social and environmental impacts, identifying the demands of visitors, the industry, the environment and host communities^[8]. According to (Svensson, 2013), tourism is a form which can maintain its viability in an area for an infinity period of time. Sustainable tourism is applicable in all types of tourism destination including mass tourism and different types of niche tourism segments^[9]. Sustainability refers to the environmental, social and socio-economic aspects of tourism development. And also it keeps a balance between these three dimensions to ensure its long-term sustainability. Sustainable tourism is about supervision tourisms impact on the environment, communities and the future economy to make sure that effects are positive rather than unenthusiastic for the advantage of future generations^[10]. According to English Tourism Council, It is a management movetoward that is relevant to all types of tourism, regardless of whether it takes place in cities, towns, countryside or the coast. Sustainable tourism mainly focuses on three aspects which are environment, socio-culture and economic. As environmental aspects it makes optimal use of environmental resources that constitute a key element in tourism development and maintaining essential ecological process and helping to conserve natural resources and biodiversity. On the other side the socio-cultural aspects consist of authenticity of host communities, conserve their built and living cultural heritage and traditional values and participate to intercultural understanding and tolerance^[3]. Economic side consist the

long term economic operation including stable employment and contributing to poverty alleviation. Tourism that takes account of its current and future economic social and environmental impacts addressing the needs of visitors, the diligence, the environment and host communities. Sustainable tourism is not a discrete or special form of tourism. Rather, all forms of tourism should endeavor to be more sustainable. Making tourism more sustainable is not just about controlling and managing the negative impacts of the industry. Tourism is in a very special position to benefit local communities, economically and socially, and to elevate awareness and carry for conservation of the environment. There is also an increasing positive reception of the potential role of tourism in addressing world poverty, by bringing sources of income to the heart of some of the poorest communities^[4].

2.2 Sustainable Tourism Planning

Planning for sustainable tourism actually refers to environmental preservation planning and as such contains a diversity of research activities and analysis prior to the decision for determining the direction of the development. All these activities are agreed to in order to prevent from the intensive use of resources in some detailed areas, without preceding care for the preservation of the resources. According to Hall, sustainable development as well as the previously used term 'conservation' obviously attempts to review the conflicting value positions in terms of the environment. Sustainable development as an 'essentially disputed concept'^[11]. Sustainable development (and its follow-up sustainable tourism) could be understood differently from everyone, and is easily accepted by any group^[12] According to some authors, this concept is seen as the development and intensification of tourism, while others understand this concept as an alternative tourism and counteract to the development of mass tourism.

2.2.1 The logical process sustainable planning

The sustainable planning process is divided into different, stages. According some authors from their research they suggest some steps for sustainable planning^[13]. The first stage, getting started, clarifies the background of the planning process and also how "the team" should be organizing. The second stage identifies the key stakeholders who will participate. In third the baseline information needed to make decisions about the potential tourism development, has to be piled up. This information acts as a basis for the development of the tourism management vision (stage 4). To make this vision reality, the main goals and objectives have to be agreed upon and a work plan should be produced stating how these goals and objectives will be achieved (stage 5). To make sure that the tourism management plan will monitor and manage potential impacts carefully, impact management strategies should be elaborated (stage 6). To find out whether the goals of the management plan are being fulfilled and whether the stakeholders are being involved properly, a feedback and

review process needs to be designed (stage 7). The last step (step 8) concerns the plan approval.

2.2.2 Sustainable Tourism Management

Indicators The indicators of sustainable tourism are variables that could be measured and observed for finding the changing status of a specific phenomenon, and represent tools for collecting new information through which existing information can be measured. This new body of reduced necessary information facilitates the identification of trends and threats and allows for undertaking the appropriate actions. According to World Tourism Organization (WTO, 1996):

tourism that emerged in the early 90s of last century, dealt with some problems and complications in relation to assessment of the current levels of relevant knowledge about sustainability. So, it is necessary to reveal the problems and to try to identify appropriate solutions and strategies for their resolving, against the reflexive monitoring of the situations. Also, the need for increasing the interests should be emphasized which would estimate the increased demand for products of the alternative and predictable tourism that support the principle of sustainability. It is true that the indicator is actually a marker of the condition and it is not

Table 1: Friedman Sustainable benefits list:

Serves a target market with long-term viability.	Typically, this market characterized by low volume, higher priced, high value-added goods and services.
Is integrated with culture and people of a place.	Sustainable tourism does not over run the community or detracts from its "soul", it improve it by increasing local awareness and pride in what makes each place and its people special.
Generates localized economic development benefits.	There are diverse opportunities for local jobs, local entrepreneurs, and many locally owned businesses that grow and reinvest in the community.
Generates development that has a balanced and good impact on the environment and community.	In support of this principle, the community chooses techniques for constructing and operating buildings, service condition and infrastructure in a way that has a net-zero.
Increase revenue that is re-invested in conserving and enhancing the unique characteristics of the community.	Sustainable tourism creatively generates revenue to support efforts such as open space conservation, conservation efforts and schools.
Encourages working together to create new opportunities and to discuss challenges that emerge.	Communities that are successful with sustainable tourism have created organized ways to leverage and organize the efforts of many diverse people and entities.

What Tourism Managers need to Know: A Practical Guide to the Development and Use of signs of Sustainable Tourism. The indicators examine the information and through which decisions body could diminish the possibility of making the wrong decisions. Although in theory it sounds elegant, the approach for sustainable tourism based upon the indicators is complicated due to the selection process, the measurement, monitoring and evaluation of the set of relevant variables. Planning and sustainable development can be analyzed from two aspects, namely (Magaš, 2003) • In terms of the local community • In terms of the concept of the quality of tourism The local residents must be participated in the planning process and the progress of tourism, especially when it comes to the management of those segments of the tourist community which will bring advantages for the community. Such planning approach should be applied locally^[14].

2.2.3 Sustainable Tourism Monitoring

Implementing the sustainable management and sustainable tourism promotes numerous challenges that make it impossible to identify whether a destination or product is definitely sustainable. Dynamic monitoring of sustainability is desired compared to the inactivity which increases the likelihood of unsustainable results in the life cycle of the destination^[15]. It is very important to make an analysis from a historical view as well. The formal observation of sustainable

always specific estimation and as such should be more appreciated. There are still existing trends that are moving towards unsustainable condition, thus managers should make appropriate decisions besides the speculative nature of the values of these significant thresholds of certain indicators. At the end, it should be pointed out that the minimalist model of sustainable tourism could simplify the parameters of its application and thus will become attractive for destinations and companies, that otherwise would not encourage the implementation of the comprehensive model.

2.2.4 Benefits of Sustainable Management

Through national and international research of best practices commission has developed a set of rules of sustainable tourism to help shape regional tourism plans. These principles capture characteristics of tourism hat can be used as a screen for promising and refining potential strategies. There are six main benefits of sustainable management^[16].

2.3 Ecotourism Concept

Ceballos-Lascurain, in the early 1980s, was one of the first writers to use the term 'ecotourism'. It was subsequently popularized in Boo's seminal work, Ecotourism: ^[17]. He defined ecotourism as: tourism that consists in traveling to

relatively undisturbed or unadulterated natural areas with the specific objective of studying, admiring, and enjoying the scenery and its wild plants and animals, as well as any existing cultural manifestations (both past and present) found in these

economic benefit for the host country, local business and communities, predominantly peoples living in and adjacent to natural and protected areas. Seek to ensure that tourism development does not exceed the social and environmental

Table 2: The frequently associated benefits of Ecotourism

❖	It's ability to provide high quality tourism experience.
1.	It's ability to stimulate national and/or local economic development.
2.	It's ability to diversify/complement the economic base.
3.	It's ability to create social benefits and infrastructure improvements.
4.	It's ability to generate funds for the management and conservation of natural areas.
5.	It's ability to provide economic explanation for safeguard of natural resources.
6.	It's ability to foster environmental awareness/values and support for preservation, among both local residents and tourists, through on-site educational opportunities.
7.	It's ability to promote cultural preservation.

areas. In these terms, nature-oriented tourism implies a scientific, aesthetic or philosophical approach to travel. The main point is that the person who practices ecotourism has the opportunity of immersing himself/herself in nature in a manner generally not available in the urban environment ^[18]. Ecotourism is a variety of tourism involving visiting fragile, pristine, and comparatively undisturbed natural areas, supposed as a low-impact and infrequently little scale different to plain business (mass) tourism (Vivanco, 2002). Its purpose is also to coach the individual, to produce funds for ecological conservation, to directly benefit the economic development and political authorization of native communities, or to foster respect for various cultures and for human rights. Since the 1980s tourism has been thought of a essential endeavor by environmentalists, so future generations might enjoy destinations comparatively untouched by human intervention ^[19]. Arsenijevic and Bohanec (2011) found that the term ecotourism must be understood in involvement with five criteria: nature conservation, low impact, sustainability, significant community involvement and environmental education.

2.3.1 Principle of Ecotourism

Minimize the negative impact on nature and culture that can damage a destination. It also educates the traveler on the importance of conservation. Stress the importance of responsible business, which works courteously with local authorities and people to meet local needs and deliver conservation benefits. Ecotourism direct revenues to the preservation and management of natural and protected areas^[10]. Emphasize the need for local tourism zoning and for visitor management plans designed for either regions or natural areas that are slated to become eco-destinations. Ecotourism emphasize use of environmental and social base-line studies as well as long-term monitoring programs, to evaluate and minimize impacts. It strives to maximize

limits of acceptable change as decided by researchers in cooperation with local residents. Ecotourism rely on infrastructure that has been developed in synchronization with the environment, minimizing use of fossil fuels, conserving local plants and wildlife, and merger with the natural and cultural environment.

2.3.2 Benefits of Ecotourism

Behind a comprehensive definition of ecotourism, like the one adopted in this study, lay high expectations (objectives) for the generation of a wide variety of benefits ^[20].

2.3.3 Planning and Management

Successful ecotourism will not materialize on its own. Numerous authors have stressed the significance of suspicious planning and management if ecotourism is to develop in a beneficial manner at a destination ^[21]. The failure of many countries to fully exploit the potential benefits of nature-based tourism, to a large amount, has resulted from the low priority consigned to planning and ineffective management. Boo (1991) highlights the importance of 'preplanning', where various government representatives, with input from the private sector, international donating agencies, host communities and preservation groups, assess whether or not ecotourism is compatible with a nation's development goals. If deemed appropriate, can be established further investigate potential sites, draft an ecotourism strategy, and oversee planning and development. Agarwal in 2012 has recognized the importance of tourism management in protected areas and identifies five main issues:

1. Defining appropriate types of tourism for protected areas.
2. Defining suitable dealings between park managers and tour operators.
3. Establishing partnerships between tourism, protected areas and local communities.

4. Monitoring and decreasing the impacts of tourism on protected areas.
5. Establishing the appropriate carrying capacity levels.

2.4 Resident's Participation for Sustainable Tourism

Social exchange theory has been used to evaluate the support of residents for tourism development. The residents of a community decide whether to become reliant on the reimbursement and costs of tourism by weighting economic, social, cultural, and environmental concerns ^[21,22,23,24]. Based on this theory, if the host residents see that they are likely to benefit from such exchanges without incurring unendurable costs, then these residents are likely to support and participate in exchanges with visitors and to support additional community-based tourism development. However, if the host residents perceive that community-based tourism development would acquire more costs than reimbursement, they are likely to oppose this development ^[25].

2.4.1 Resident's Behavior and Awareness

There are a number of factors that influence residents' approaches towards tourism. Some of them engage the distance of residents' homes from the main tourist destination ^[25], the type of tourism (Dogan, 1989), the length of residents' stay in the community and residents' demographic uniqueness. Generally, a positive attitude towards tourism is associated with gender (female), employment, level of income, level of education, and the place where people live (e.g. urban or rural areas) ^[26,27]. In a study by Inbakaran and Jackson (2006, pp. 70-71), resident clusters were found to vary only in their pessimistic attitudes towards tourism development with age; life cycle stage of residents themselves, and of tourism development; and distance from a major attraction. There was, however, a correlation between levels of tourism and pessimistic host attitudes such that "residents of host communities perceived tourism to create a number of socio-cultural changes". Canosa et al, 2001, suggest this could include a decrease in honesty, friendliness and honesty, and an amplify in theft and alcoholism and greater sexual permissiveness. Eraqi (2006) stressed the importance of employee involvement to foster commercial commitment and thus improvement across the tourism sector. Whilst, Eraqi (2006), recognized the need to improve service offerings by determining the needs of their target groups, it is also important to recognize that employees are local residents and that they have a stake in the types of and style of product and service supply thus, to make sure commitment of employees, their needs as residents should be considered at the sect verbal level. Hence, it is essential to understand local opinion upon which to build regional relevance and opulence, therefore residents should be regard as stakeholders. 2.4.2 Resident's Involvements Resident's involvement describes the extent to which residents are involved in sharing issues about their lives with their communities. A number of studies have assessed the support of the host residents for tourism improvement with a focus on the coverage to which these

residents are involved in tourism ^[26,27,28,29] Community involvement can be regarded as a critical factor in the development of community based tourism. Arnstein (1969) developed a ladder of citizen participation as a model to clarify the natural evolutionary steps of this process. According to this model, three levels of gradual evolution, consisting of refraining, degrees of tokenism, and degrees of citizen power, are used to assess various levels of community participation and contribution in community-based tourism ^[30]. Tourism studies specify that engaging the local community in administration and decision-making can convince the community of the need to incorporate tourism into the local economy (Aas, Ladkin, & Fletcher, 2005; Simmons, 1994; Wager, 1995). The involvement of the community in tourism supplies more opportunities for the host residents to benefit from tourism development. Several tourism scholars have used distinguished benefits and costs as the mediating variables between the support for tourism development and community attachment and environmental attitude and as a means of assessing their theoretical models ^[31, 32,33]. Unfortunately, the mediating effects of perceived benefits and costs on community participation and support for tourism development check up this linear relationship. Although the scope to have rarely been observed. Therefore, it is worthwhile to examine this linear relationship. Although the extent to which the host residents are involved in their communities has been frequently addressed as a means of assessing sustain for tourism development (Simmons, 1994; Tosun, 1998), few studies have examined the linear association among community involvement and support for sustainable tourism development. Nicholas et al. (2009) used two ideas (management and decision-making processes) to examine the precedent of support for tourism development. On the other hand, these authors accounted that community involvement did not have significant effect on the level of support for sustainable tourism development. Based on their descriptive analysis, Nicholas et al. found that most of the congregation residents were not engaged in the decision-making or management processes of tourism development ^[30].

3. Description of Sundarban Forest

3.1 Bangladesh Tourism Resources

Bangladesh is gifted with tremendous variety of tourism products both natural and artificial. From the time immemorial this land has had its own Geo and Bio-diversity. That is why this featured landscape with lush green ground, seashore with long beach, hills with scenic beauty, forests with flora and fauna, inheritance and archeological sites, hundreds of years of long practice of norms and values have supported its specialty.

From tourism point of view all these are the cherished products and saleable to the tourists either domestic or international. Sundarban is situated at the southern coastal part of Khulna, Bagerhat and Satkhira district of Bangladesh.

Total area is almost 6,017 sq. km with Land 4,143 sq. km and Water 1,874 sq. km. There are 450 rivers, creeks, estuaries and canals in the Sundarban 330 species of plants, 400 species of fishes, at least 52 Species of reptiles, over 270 species of birds, 8 species of Amphibians and 42 species of mammals. The most Common animals are Royal Bangle Tiger and their amount is almost 350-400; and Deer is almost 0.1-0.15 million; Crocodile: 150-200, Monkey: 40,000-50,000. Bangladesh's tourist destination includes, historical and monuments, resorts, beaches, picnic spots, forests and tribal people, wildlife of a variety of species^[31].

Bangladesh offers ample opportunities to tourists for angling, waterskiing, river cruising, hiking, sea bath as well as bringing one in close touch with pristine nature^[34]. The northern part of the country name Rajshahi division is the sites of archeological attraction. The temple city Puthia in Rajshahi, the largest and most prehistoric archaeological site, Mahasthanagarh the single biggest Buddhist monastery, Paharpur in Naogaon; the most ornamentalterracottaHindu temple, Kantaji Temple, and many palaces of old landlord. The southern part is he hilly and sandy sea beaches part. The most notable part of Bangladesh tourism sector. The world longest unbroken sea beach of the world^[35].The southern part is in Khulna division and there another remarkable tourism spot name Sundarban. The world largest mangrove forest with Royal Bengal tiger along with spotted deer. There are some historical and architecturally important sixty domed mosque in Bagerhat. (Majumdar, 2005).In the north-eastern site, is in Sylhet division, is a green carpet of tea plants on small

number of tourists by 15 percent in recent years. The present size of domestic tourism is also increasing, reaching about 5 million. According to World Travel and Tourism Council, 2013 that year about 1.5 million tourists (5 percent global tourists) visited Cox's Bazar With gradual development of the industry,(WTTC, 2013) a modest tangible benefit cascades down to the local people. 1.8 percent of the country's total employment, which ranked Bangladesh 157 out of 178 countries worldwide (WTTC, 2013). Local communities are coming forward with their products and are now able to produce some money for their employment. Private sectors enterprises are also coming up with hotels, motels and restaurants, benefitting locals with jobs. According to WTTC, 2015 report the foreign and domestic tourists generate income of about BDT 296.6 billion, inclusive of direct and indirect support services like hotels, resorts, restaurants, transportation and entertainment. The government also has plans to create more facilities in different areas so that the locals get priority. Following table shows the revenue collection form Sundarban tourism sector from last few years.

3.3 Sundarban Forest

The Sundarban is southern part of Bangladesh. It is the largest single block of mangrove forest in the world. The Sundarban covers almost 10,000 square kilometers (3,900 sq mi) most of which is in Bangladesh and also some part in in India.(2014)The Sundarban is a UNESCO World Heritage Site.(UNESCO, IUCN Technical Evaluation,2014) It is famous for the Royal Bengal Tiger; there are about 400 Royal Bengal Tiger in this forest. You can also find beautiful spotted

Table 3: Revenue collection from Sundarban Tourism Sector (Source: Khulna forest office 2016)

Name of Division	Year	Amount of Revenue (USD)
Sundarban West Division, Khulna.	2010-2011	1,55,8339
	2011-2012	10,116,950
	2012-2013	15,63,137
	2013-2014	9,34,088
Sundarban east Division, Bagerhat.	2010-2011	8,52,410
	2011-2012	25,68,650
	2012-2013	26,31,780
	2013-2014	35,69,105

hillocks. Natural forests are great attractions for this place. Migratory birds in winter, particularly in the lake areas, are also very attractive in this area(Pasha, Mostafa Kamal; Siddiqui, Neaz Ahmad , 2003).

3.2 Current Status of Tourism Sector

Bangladesh is a young destination in the world tourism map. Despite slow growth, the Bangladesh tourism sector is currently balanced to be moderately sized. At present, the potential of tourism has been renowned and efforts are underway to reflect that in the development policies and programs. Bangladesh witnessed an average growth in the

deer in this forest as well as crocodiles, diversities of birds, monkey and many other wild animals. Sundari tree a type of mangrove that is extensively found here. The foremost place of Sundarban is Harbaria, Katka,Kachikhali, Hiron point. The main attraction of Sundarban is wildlife photography together with photography of the famous Royal Bengal Tiger. Here you will enjoy wildlife viewing, nature study, gathering fishermen, wood-cutters and honey-collectors as well as peace and tranquility in the wilderness. Every year thousands of locals and foreigners come to Bangladesh to visit this unique mangrove forest and they enjoy its dazzling beauty

very much. The name Sundarban translated as "beautiful forest" in the Bengali language (Shundor, "beautiful" and bon, "forest"). It may have been named from the Sundari trees which ones scientific name is *Heritiera fomes* that are found in Sundarban in huge numbers. Alternatively, it is also say that the name is a corruption of Samudraban, Shomudrobôn ("Sea Forest"), or Chandra-bandhe (name of a primitive tribe). However, the normally acknowledged view is the one related with Sundari trees. (Pasha, Mostafa Kamal; Siddiqui, Neaz Ahmad, 2003).

3.4 Sundarban Mangrove

The Sundarban Mangroves area on the coastal side and is the world's largest mangrove ecosystem, with 20,400 square kilometers of total area. The main mangrove species *Heritiera fomes* is locally known as sundri or sundari. Mangrove forests are not a place for a great variety of plants. They have a thick canopy, and the undergrowth is mostly seedlings of the mangrove trees. There are some other species that make up the forest include *Avicennia* spp., *Xylocarpus mekongensis*, *Xylocarpus granatum*, *Sonneratia apetala*, *Bruguiera gymnorhiza*, *Ceriops decandra*, *Aegiceras corniculatum*, *Rhizophora mucronata* and *Nypa fruticans* palms. Twenty-six of the fifty broad angiospermous tree sorts found in the world grow well within the Sundarban. The usually distinctive vegetation that grow in the dense mangrove forests at the Sundarban are salt water mixed forest, mangrove scrub, salt water mixed forest, littoral forest, wet forest and wet deposit grass forests. The Bangladesh mangrove plants of the Sundarban differs significantly from different non-deltaic coastal angiosperms tree forests and upland forests associations. Unlike the previous, the mangrove family is of minor importance.

3.5 Ecological Process of Sundarban

Ecological succession is the successive occupation of a site by different types of plant communities (Chow, 2010). In an accreting mudflats the outer community along the sequence represents the pioneer community which is gradually replaced by the next community representing the serial stages and finally by a climax community typical of the climatic zone. (Watson, 1928) The succession began in the newly accreted land created by fresh deposits of eroded soil (Troup, 1921). As the ground is high-minded as a result of soil declaration, other trees make their appearance. The most prevalent, though one of the late species to showed up is *Excoecaria*. As the level of land rises through accretion and the land is only occasionally flooded by tides, *Heritiera fomes* begins to appear.

3.6 Plants and Trees

David Prain, recorded total 245 genera and 334 plant species were in the forest on that time While most of the mangroves in other parts of the world are categorized by members of the *Rhizophoraceae*, *Avicenniaceae* or *Combretaceae* (Prain, 1903). But the mangroves of Bangladesh are dominated by the *Malvaceae* and *Euphorbiaceae* (2014). The varieties of the

forests that exist in Sundarban include mangrove scrub, littoral forest, brine mixed forest, brackish water mixed forest and swamp forest. Besides the forest, there are widespread areas of brackishwater and freshwater marshes, intertidal mudflats, sand flats, sand dunes with distinctive dune plants, open grassland on sandy soils and raised areas supporting a variety of terrestrial shrubs and trees. Since Prain's report there have been substantial changes in the status of various mangrove species and taxonomic revision of the mangrove flora^[36].

3.7 Wildlife of Sundarban

The Sundarban has a unique ecosystem and a rich wildlife environment. According to the 2015 tiger census, the Sundarban have about almost 300 tigers. The 2011 census provided the first ever scientific approximate of tigers from the area (Bforest.gov.bd, 2012). Tiger attacks are frequent in the Sundarban. A 1991 study has shown that the Sundarban supports diverse biological resources including at least 150 species of commercially significant fish, 270 species of birds, 42 species of mammals, 35 reptiles and 8 amphibian species. This represents a important part of the species present in Bangladesh (i.e. about 30% of the reptiles, 37% the birds and 34% of the mammals) and comprises a large number of species which are now destroyed elsewhere in the country^[35] Two amphibians, fourteen reptiles, twenty five avian and five mammals are endangered (Muqsudur, 2010). The Sundarban is an important area for migrant water birds. It is an area suitable for watching and studying avifauna^[36] The management of wildlife is recommended to, firstly, the protection of fauna from poaching, and, secondly, designation of some areas as wildlife shelters where no taking out of forest produce is allowed and where the wildlife face few disturbances. The fauna of Bangladesh have diminished in recent times^[37]. There are some vulnerable amounts of animals is now living in this area and their statuses and management are strong indicators of the condition of forest. Some of the species are protected by countries wildlife preservation committee^[38].

3.8 Hazards

According to a report created by UNESCO, 21 February 2015, the landfall of Cyclone Sidr damaged around 40% of Sundarban in 2007. In August 2010, a Memorandum of Understanding was signed between Bangladesh Power Development Board (BPDB) and India's state-owned National Thermal Power Corporation (NTPC) where they designated to implement the coal-fired Rampal power station by 2016 (India Environment Portal, 2014) The proposed project almost 1,834 acres of land, which is situated 14 kilometers north of the Sundarban. Environmental activists challenge that the projected location of the Rampal Station would violate provisions of the Ramsar Convention^[39]. The government of Bangladesh rejected the that the coal-based power plant would adversely affect the world's biggest mangrove forest. On 9 December 2014 an oil-tanker named

Southern Star VII(Krishnendu Mukherjee, Rakhi Chakrabarty, 2014) carrying 358,000 liters of furnace oil was sunk in the Seal river of Sundarban after it had been hit by a cargo vessel(Siddique, Abu Bakar, 2014). The oil spread over 350 km² area after the clash, as of December 17. The slick widen to a second river and a network of canals in the Sundarban and blackened the shoreline. The event was very frightening to trees, plankton, vast populations of small fishes and dolphins ^[40]. Unplanned escalation of shrimp culture in coastal regions of Khulna, Satkhira and Bagerhat districts has a serious effect on alteration of coastal ecosystem. Vast area of tidal land formerly used for rice cultivation in Khulna and Bagerhat districts has been changed into shrimp farm. Barrage of arable lands by saline water to cultivate shrimp has become a common occurrence. High rate of economic revisit has resulted in over exploitation of shrimp juvenile from the wild leading to ecological imbalance, change in cropping pattern, awareness conflict, leasing of land of small farmers, depriving them of their privileges to own land and other socio-economic and environmental consequences ^[41].

3.9 Economical Support from Sundarban

The Sundarban plays an important role in the economy of the south-west part of Bangladesh and also in the national economy. It is the largest source of forest product in the country. The raw materials for wood based industries like timber, fuel wood, pulpwood etc., large scale harvest of non-wood forest products such as thatching equipments, honey, bees-wax, fish, and crustacean and mollusk resources of the forest takes place regularly. The forest also has enormous protective and useful functions. Constituting 51% of the total reserved forest estate of Bangladesh, it put in about 41% of total forest income and accounts for about 45% of all timber and fuel wood output of the country ^[41]. A number of industries like newsprint mill, match factory, hardboard, boat building, equipment making are based on the raw materials attained from the Sundarban forest. Forest products and plantations help generate considerable service and income invention opportunities for at least half a million of coastal people. It also supplies natural safeguard to life and properties of the coastal people from the cyclone and other natural disaster in Bangladesh.

Research Methodology

4.1 Methodology

Research methodology is one of the important sections for any kind of research. Methodology is the speculative and systematical analysis of any methods which will be applied for the field. It consists of two main processes qualitative and quantitative. Among these two main methods are appropriate for different field. Most of the case in social science or related field use qualitative research method and most of the epidemiology or economy related field where need some statistical data use the quantitative method. Qualitative research method is being used for this study.

4.2 Qualitative research

Qualitative research based on concepts, insights, and the understanding about the problem and its solution. Basically it does explain the nature or quality of the particular phenomenon. Hence, qualitative research seeks to understand a given research problem from the perspective of the local population it involves. However qualitative research is flexible, for addition, exclusion or wording of particular interview questions and also respondent's response affect how and which questions researcher ask next. Qualitative method is an exploratory research which uses open-ended questions and gives respondents the prospect to respond in their individual words. For understanding the local resident's insights about the forest area as a tourism destination and keeping its long-term value what necessary steps or plan could be taken, qualitative method is helpful. The people who are closely related with Sundarban forest for their living and any kind of tourism activities related with the area will be participant for the study.

4.3 Sampling

According to (Iqbal,Parvin,shamim, 2010), there are almost 305 household in Dacope village which is situated at the northern side of the forest and preselected study area for sampling. In order to get the proper concept about the local awareness for the sustainable tourism minimum 10% of the household was under survey, which was almost 32 household, was under interview. Hence, a good maximum sample size is usually around 10% of the residents, only if this does not exceed 1000. If population is less than 100 then need to survey all of them ^[42]. Sampling method was purposive and snowballing method. Hence purposive method refers to some specific characteristics such as profession, place of residents and so on. However for this research the people who are related with tourism activities are the main participants. Snowballing method is known as chain referral sampling. In this method, the respondents with whom, pre-contact has already been made, use their social associations to refer the investigator to other people who could probably participate in or take part to the study^[42]. The local residents are directly or not directly engage with the Sundarban forest for their livelihood such as tourist guide or tourist's product sellers and other professions is being taken as a interview participant. The local residents who are living more than 15 years on study area will be asked open question for the study. Because from last 15 years the study area's tourism activities growing up and the people who living in that area are mostly involved in tourism activities for their living, and also they can give proper information about the sustainability from their personal experience. Any irrelevant and illegal question which is could make the participant embarrassed is not asked.

4.4 Data collection Tools

Secondary data collection

The necessary secondary information such as maps, reports and other materials is collected from various governments and other organization, such as Khulna Forest office, Bangladesh

Parjatan Corporation (BPC), Bangladesh Ministry of Tourism. The tourist trip information of tourist and duration is being collected from private tour association and Bangladesh forest department correspondingly. Relevant papers and reports of the international Organizations through internet search, Journals and papers related to the study from NGO's, Seminar library of Urban and Rural Planning Discipline and Tourism discipline reports and data is being collected as a secondary data.

Primary data collection

In order to get a complete view about the nature of the study area and for data collection, interview was initiated to acquire some basic ideas which is regarding to local awareness for sustainable planning with local people of the study area. The interview was helpful to realize the condition of their awareness about the forest. To obtain information a set of open-ended questions was prepared to communicate all the features. Interviewing process was applied to collect information. Randomness ensured for superior output. The people who are engage with tourism and related with the forest resources in study area was main participant.

4.5 Interview questions structure

However, the data was collected by interview procedure with open-ended questions about the sustainability for the destination, current tourist amount form recent years, the cost of tourism product, the waste management process, amount of forest living and no-living elements, manmade hazard's effect on destination, tourist behavior, tourism promotional activities, destination protection actions form government and non-government associations, local residents attitude about the destination. Some other relevant information such as occupation, age, name, how long living on this area, main tourism activities, about destination, souvenir, main time of year for tourist, average income, tourist comments about the destination, compliments about its sustainability and so on can be added as sub questions. And some question about local government steps for its sustainability.

4.6 Interview Guidelines

The primary data was collected through contributor inspection, in-depth interviews and focus group discussion. Hence, form participant observation process the participant explained from their own observation and own decision about the problem. However, from in-depth interview was for collecting data on individual's personal histories, perspectives and their experiences^[43]. Focus groups explained the broad overview about the problem from respondents group. First their contact details were collected from the local sources, such as, the community, local government authority or non-government organizations. Then, after making an appointment with them a personal interview was taken. 4.6 Questions Preparation and testing Considering the objectives of the study the questions set was tested to fulfill objectives of the study area and collect the information about the area.

Some of the questions set were modified by cutting or adding with some other sub questions.

4.7 Data Processing and analysis

For data processing field notes, audio recording and transcript procedure was followed. After the collection of audio data, it is being converted into text this process is named as transcription(Dvidson, 2009), Then data was analyzed and interpreted to find the result of the study. For interpreter extra tools or institute is not being used. Furthermore, after collecting the data from interview it was transfer and organized in academic way by which the author can handle and analyze this data in effective manner to facilitate the analyzing process to come up finally with a valuable and accurate results and recommendations. However, the analyzed data was represented through a tabular form. The data is being summarized to make a expressive analysis and to show those respondent's insights on the topic. Firstly, the draft report was prepared and then the final report of the study is being written.

5. Data Analysis and Discussion

5.1 Local resident's interaction with the forest

People in Dacop village, living close to the Sundarban reserve forest are mostly depending on its resources to fill-up their daily need. Around 60% of the total samples of village are directly dependent on forest resources. Most of the resource collectors, mainly forest fisher, honey collectors depend on resources whole year and practicing mostly unsustainable way. Unsustainable practice of resource extraction of the people of peripheral villages of Sundarban leads to resources reduction. This study detected that due to population and change in occupation, the rate of dependency of the forest resources is increasing. Here sustainability of resource extraction is considered from the view point of natural regeneration rate of forest resources. To maintain the long term productivity of these resources, the residents of the study area have to decrease their rate of dependency on the forest resources. The residents depend on ecosystem of Sundarban in two ways. First, earn cash income by selling ecosystem products for examples fish, honey and nipa palm, at local markets. Secondly the use of natural resources provides significant subsistence such as food, fresh water and timber. For this reason need to make them aware about the sustainability of the forest and the occupational group, who are mostly dependent on forest resources, need to involve alternative jobs which are not related to the degradation of forest resources. Here, it is noteworthy that around 40% forest resources. Hence it is not difficulties to take alternative

people of the study area are not directly dependent on the jobs for their sustainable livelihood.

Many residents do not catch fish or crab only a limited time during the year to earn cash income by harvesting and selling of ecosystem products. Sometimes they switch their occupation in a certain period of time such as many honey collectors engage in fishing during the rest of the year in order to increase family income. Based on some interview of local NGOs and residents responds found that , around 1.4 metric tons of fish and about 1.1 tons of crab catch every year hence

includes drama, song and different types of game. Maximum song and drama and are related to the Sundarban. They also show in the drama how the people of this community survive during big cyclone. Their accompanied guide translates it from Bangle to English. After finishing cultural show visitors give tips to these organizations. The average income from tourist activities of Dacop Village:

Sometimes tourist boat hires them for Sundarban trip for two days, three days or four days trip. They can earn minimum

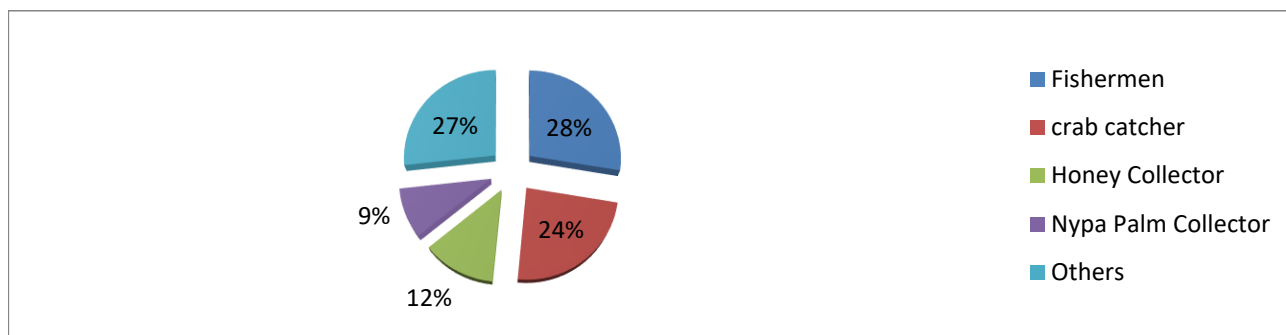


Figure 9:Percentage of Sundarban Occupation Dependents (Source :Khulna Forest Office)

Table 4: Average Dacop village people's income from tourism sector (Source: local NGO).

Occupation	Av. Income (2014-2015)taka (1USD=78taka)
Handicraft	76000
Cultural Activity	56000
Guiding	83000
Others	45000

residents own consumption amount is around 68 to 10 kilograms per year .This means except 1-4% of total consumption is used for selling local market or to traders. As well as honey collector collects around 0.7 tons per year and 1% being used for personal consumption in addition with nipa palm tree harvested rate is 27.8 tons per year and consumed rate is 4%, rest of amount goes to local market or to traders. The village is situated in the entrance of the Sundarban. Tourist went to the Sundarban from Khulna and Mongla through the Passure River and this village located at the right side just back of the Dhangmari forest camp. They also built two organizations for tourism one is Sundarban handicraft organization and Sundarban cultural organization. There are around ten people involve in Sundarban cultural organization. They make cultural show when tourist came. Before tourist came the authority of the tourist company inform them so that they can prepare them. They make cultural show which

one thousand to maximum ten thousand taka (1USD=78taka) per show. When tourist boat hires them for three or four day trip they also give more money. It's also their source of income and entertainment for them. Most of the foreign tourists have a curiosity about the village people to see their lifestyle, socio-economic condition. They want to visit any village around the Sundarban so that they can see the Sundarban dependent people. They want to take something from the Sundarban as souvenirs like different types of handicraft work which show the picture of the Sundarban. Sundarban handicraft organization around twenty-two women involves in this profession some of them also work for cultural organization.

They also made Sewing, Wall mat, String design in cloths, Nakshl katha and so on. The design materials show the picture of the Sundarban. Foreigner tourist brought them very high rate. They gave minimum one thousand to maximum three thousand taka (1USD=78taka). Actually there is no price limit. It was found as the alternative livelihood strategy. For this purpose, needs support from the tourist company. If they inform their tourist about this village, and invite them just for a short trip into this village, before entering the forest that will be a good support for the residents. If proper financial and technical support can be provided they can easily do this job and be able to meet their living last. Average income for different occupational group:

Department, divided into 20 sections each harvested in turn on a twenty year cycle, with the three secondary wildlife sanctuaries on the coast. A wildlife conservation plan prepared controlled by the joint fund of the World Wildlife Fund and the U.S. National Zoological Park emphasized protection of the tiger and other wildlife as an integral part of sustainable forest and coastal management for both timber and the needs of the local population [43,44,45]. Now, it is completely controlled by the Forest Department of Bangladesh and there are no options to enter in the forest to collect forest resources without permission from Forest Department. The responsible Department also issues hunting licenses under the Bangladesh Wildlife (Preservation)

Table 5: Different occupational people's average income (source: field survey)

Occupation	Number of Household	% of Household	Ave. Household income Tk/Year(1USD=78taka)
Fishermen	9	27.3	93000
Day Labor	7	21.1	65000
Wood Cutter	5	15.1	73000
farmer	4	12.1	58000
Trader	3	9.1	70000
Boatman	2	6.1	56000
Others	2	6.1	46000

Majority of the local people (46%) had no education and (30%) can sign. Among the rest only 15% have class one to five level of education and 9% have class six to ten education. As majority of the local people are illiterate, so they have lack of sufficient knowledge about laws and regulations with respect to nature and environmental philosophy of the Sundarban. So, education is needed to build awareness among people to develop facilities in the area. They don't have sufficient knowledge about sustainability and they aren't concern about its long-term benefits.

5.2 Current Sustainable Management

The Sundarban is the only large mangrove forest in the world managed for commercial timber production and has had a long historical background since between 321-226 BC when the Muryan Empire created a Department of Forest Products forwarded by an official named "kupyadhyaksta" (Barlaw, 2009). However, this forest has had a history of scientific management since 1879. At the same time, this mangrove was declared a reserve forest during the British Empire. An Integrated Sundarban Management Plan is under preparation by the Sundarbans Biodiversity Conservation Project funded by the Asian Development Bank. After liberation in 1971, Bangladesh is now managed by the Sundarban West Forest Division and Sundarban East Forest Division of the Forest

(Amendment) Act, 1974. The Sundarban is now effectively closed to legal hunting. Under the provision of this Act, activities prohibited within the wildlife sanctuaries, include residence, cultivation of land, damage to vegetation, hunting, introduction of domestic animals and setting of fires. Government has been taken many plans to increase the sustainability of Sundarban. Rules have made for fishing around the forest area. Fishing has been banned in some restricted areas which are the harvesting zone for the aqua life. It covers 23% of the total area in other hand rest of the area is open for fishing except some small lakes where fishing is strictly forbidden on every year. The forest department regulates the type of resources that can be harvested. In the forest area which are not privately owned by residents, tree extraction or the use of other resources is prohibited. Extraction of resources is regulated by assigning specific areas to be used for harvesting and the amount of resources used is limited on the basis of monthly and annual quantity thresholds for different user groups. Fishing and crab catching is permitted year-round, while honey and palm can be composed for three and five moths per year, respectively. These plans are directly relevant to the reduction of impact to wildlife and environment, and that are: tourism policy and strategy. Promotion of river view tourism, establishment of

restricted area for eco-tourism and waste collection, disposal system, and noise pollution. Making local people aware about the importance of the area to tigers and nesting sea turtles. Forest Department personnel in nighttime monitoring efforts, provided overnight accommodations are provided offshore on tour boats. Monitoring teams work without lights to avoid frightening or disorienting turtles. Many projects have been developed based on the current resources status and management situation with specified goals and objectives, targeted outcomes with provable success criterion, framework activities, and appropriate guidelines for sustainably managing the Sundarban and its interface landscape. All Sundarban has been approved by the MoEF (Ministry of Environment and Forest) for effective management of forest. Conclusion and Recommendation

6.1 Conclusion

Sundarban, is one of the natural beauty of the world, we take pride of that though it has much complexity attract on it. So we should take steps instantly to care for Sundarban and hope it will be great step to give something for our beloved world for its sustainable survival with green nature. A conscious effort has been initiated over the last few years to enhance people's awareness on various issues of social importance like environment protection, protection of biodiversity, conservation of cultural heritage, observance of Sundarban Day have also been involved in the overall activities of the board to optimize the output. Here comes the importance of conservation aspects, which include the conservation of the existing portfolio of development assets like natural resources, social and physical assets including human resources necessary to manage the resources. Sundarban Development Board strongly believes that conservation is people based, as nature responds to human behavior. The rightful target of conservation plans is, therefore, the subset of human behaviors that need to be supported. As such conservation targets not the resources but does target the inappropriate human behaviors towards resources. Considering this important issue, government has since been taking up different programs to generate awareness amongst the people to conserve and save Sundarban. There are socio-economic threats due to lack of education, unemployment and limited opportunities for other sources of income generation. The economic, political and institutional frameworks are weak in terms of property rights as well as in supporting basic security. Sometimes disaster relief arrived in slow process to help residents after natural catastrophes. Dependency on middlemen for marketing and transporting local products to the markets are also significant problems. Threats to mangrove forests thus may rather be endorsed to distinguished causes such as urban expansion, aquaculture, and mining, which are not trailed by the local residents.

6.2 Recommendation

Sundarban is resources of the world not only for Bangladesh. For saving Sundarban from illegal and unconscious activities,

it is impossible to provide all people proper education over night. But it immediately needs to arrange "social awareness campaign" and also take "performance development training program for the adjacent area of Sundarban forest" Because it's possible shifting another occupation providing enough training to the people who are more dependent and have no another earning source. Compared with the quantities of harvested resources indicated by respondents in the survey, it can be understand that households would broadly follow harvesting rules. Illegal payments to water hijackers and forest department personnel should not be substantial and point to weaknesses in the legal and regulatory structure and the need for strengthening the powers of institutions amendable property rights, such as access and use of natural resources. There are some unlawful practices, for example illegal fees to water hijackers, bribing forest staff department, and usury regarding interest of loan are major threats to rising income of local residents. Their income may be radically greater than before by improved resource management together with reducing local authority corruption and by betterment in law enforcement. Women empowerment to support their potential role for family income generation such as establishment of small trade and handicrafts might further increase income security. Proper education can increase the scope for more efficient use of resources. Alternative energy sources such as bio gas, solar or other renewable technology could reduce the consumption of forest timber as fuel from ecosystem.

6.2.1 Public campaign

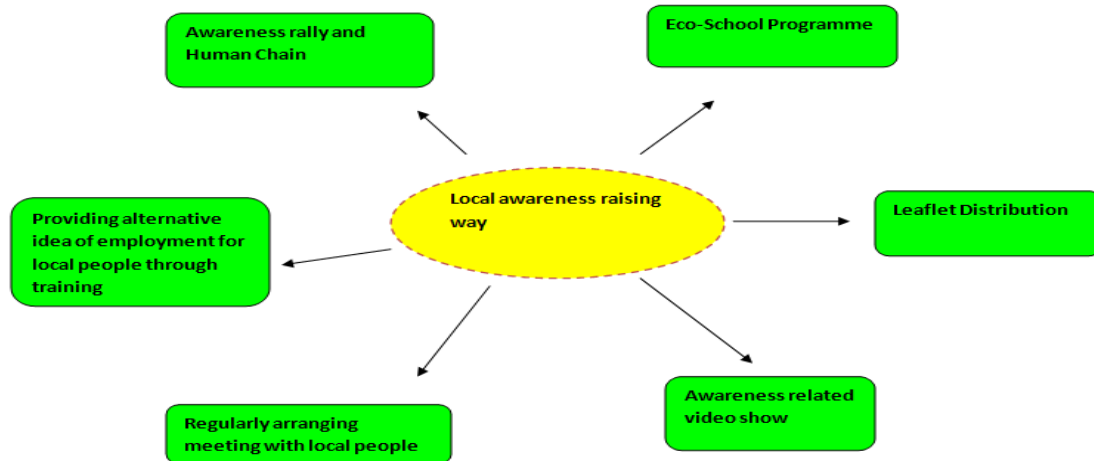
Public campaign should be communicated through complex media-mix to a general public as the widest target group, therefore general information about the benefits of sustainability and protection of forest resources should be determined and key messages should be carried out through all media. The local people could be informed through communication media, and those have to be produced (television advertisements, print-advertisements, radio, billboard advertisements and web-banners) and present in media in accordance to precisely coordinated media-plan.

6.2.2 Print & media

Besides advertising in media should be published and broadcasted educational articles with wider explanation about the forest benefits and need to advertise people's responsibility with more information. Also, very strong co-operation, co-production with media should be established in order to develop specialized shows and columns to resident's awareness.

6.2.3 Web-site

Awareness building plan according to the people's interviews and personal observation: Figure 2:



More detailed information should be permanently available to citizens through web-site as articles, presentations, FAQ and instructions and implementation of various measures with information and contacts to all relevant services. Here is a suggestion for increasing resident's awareness for sustainability of Sundarban forest. Local Awareness Rising Plan For improving resident's awareness and securing sustainability for Sundarban forest, I give my recommends in the followings

- Government should be execute strong law enforcement for protect forest animals.
- Ensure good governance for eliminating corruption of forest staffs for extra money collection from illegal way.
- Encourage people to make own cooperative society for their unity and save forest resources.
- GOs and NGOs can support for extra income generating for household by creating scope for alternative income generating so they will not be depended on forest resources.
- Empowerment of women and support aid for their income generating i.e. establishment of small trade, tailoring and handcraft business
- Develop sustainable eco-tourism and ensure the local community involvement and benefit from eco-tourism.
- Local people can make product market for direct selling their product for their benefit.
- Government should support for educating the forest dependency family through free education and set up

programs for community education to aware about the future benefits.

- Government or NGOs can support for development of livestock for forest dependency communities.
- Government and NGOs should support for Setup bio gas plant and solar energy reducing pressure on forest wood consumption and availability of energy use.
- Government should ensure proper distribution of the donation (government, national and international Agencies) for developing the tourism sectors.
- It should be ensuring effective management system of Sundarban resources management that will be well-being of local communities of Sundarban and community participation approach and involving them in decision making process. • Government can arrange seasonal tourism fair to encourage local residents to improve tourism benefits and this way they will be interested to keep the sustainability for long-term outcome.

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