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Water Front Tourism Development in Ethiopia: A GIS Approach. The Case of Gorgora Town, North Gondar, Ethiopia

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Abstract:
Water front tourism is one of the recent trends in tourism development as a result of advancement of technology in relevance to leisure equipment, environmental and personal safety concern. The major problem identified in the study area was the accommodation, to solve the problem with eco-sense the buffering technique in GIS is used to identify the lodges which would serve better way in accessibility, personal safety and eco-friendly. The descriptive qualitative survey research approach was used with data collection tools such as literature review, focus group discussion (FGD), structured interviews with local community and other stakeholders to understand the local pulse about the issue. Tourism industry in Ethiopia in general and Gogora in particular is growing; however accommodation problem in Gorgora remained a serious concern to the tourist industry.

Keywords: waterfront tourism, buffering technique, community development, value for nature

1. Introduction

Waterfront is the result of the spatial evolution of cities and a symbol of progress for port cities in developing countries (AndiErham and AmranHamzah: 2014). Many cities have developed from, and are located near, the waterside. The four ancient civilizations originated at riversides, because of the convenient water supply for drinking and irrigation, transport, and many other benefits. Around a third to half of the world's population lives near coastal areas. Even nland, people prefer to live near streams, rivers, lakes or other water resources (Liu, 2005).cited in (Shang Weijia: 2011)

Africa's un parallel natural resource endowment and consumer market of around one billion people provide a wide range of investment and trading opportunities that are being increasingly explored by the private sector, both foreign and local. However, most countries in Africa continue lacking the required infrastructure and services, including sufficient hotel accommodation of adequate quality to support growing levels of business activity and help unlock their full economic potential.

Ethiopia is known as the water tower of North East Africa. Surface water resources in Ethiopia flow in 12 major river basins. It is estimated that an average of 122.19 billion m3 of water is annually discharged from these basins. The country's total ground water resources are estimated to be around 2.6 billion m3. Much of the discharge of Ethiopia's rivers flows into neighboring countries. The amount that remains in the country is not more than 9 percent. (Environmental Authority, 2001)

Ethiopia has numerous water-based tourist attractions. Major among these are the rift valley lakes, the Tis Isat and other waterfalls. Lakes Langano, Abijata and Shalla, Lake Tana, Lake Awassa, Zeway and Chamo. The Tis Isat falls, the hot springs of Sodere and Wondo Genet are also among the other tourist attractions currently being used (Environmental protection authority :2003).

However, in terms of accommodation provision Ethiopia is characterized by a relatively small number of hotels and the industry has recorded very high occupancy rates. This indicates a need to augment the supply of quality hotel accommodation in a number of cities so as to improve the tourism sector's competitiveness. Addis Ababa, the capital city as well as a major political centre for Africa as a whole, has high room occupancy rates, particularly at the top-end of the market, where quality hotel accommodation is in short supply. As the report by the Environmental Protection Authority (2003), indicate Ethiopia has a big, under-exposed tourist potential; as some research results have indicated, out of the total revenue generated from tourism activities in Africa, Ethiopia earns less than 0.5 percent. (Ministry of Economic Development and Cooperation, 1999) For example, in 1995, Kenya earned USD 411 million from tourism, while Ethiopia's earnings in the same year was not more than USD 36 million. (MEDaC) This reveals that, compared to other African countries with tourist attractions, the Ethiopian tourism industry is yet in its infancy.

One of the problems that become visible as a result of the increasing tourism arrivals is the shortage of quality tourist accommodations. Ethiopian tour operators face big difficulties in getting accommodation for their clients, let alone modern accommodation.

1.1. Study Area

Gorgora is a town and peninsula in northwestern Ethiopia. Located south of Gondar on the north shore of Lake Tana, in the Semien Gondar Zone of the Amhara Region, it has a latitude and longitude of12°14'N 37°18'E.respectively. Gorgora town situated at 64 kilometers from Gondar and about 95 kilometers from Bahir Dar, on the northern shore of Lake Tana, Gorgora is a town of affinity; that is, the most rewarding site especially for bird watchers. The town refers to a small peninsula jutting into Lake Tana as well as to a small village hosting a harbor. The peninsula was important in the past as the site of an important Jesuit residence: "Old" Gorgora was located 5 km northeast, inlandfrom Maryam Gimb, which was called [New] Gorgora, and 5 km west of DebreSina and its churches (usually not considered a town in its own right)

According to the data from the Central Statistical Agency in 2005, Gorgora has an estimated total population of 4783, of whom 2283 are men and 2500 are women. The 1994 census reported this town had a total population of 2,768 of whom 1,201 were men and 1,567 were women. (Retrieved from: http://en.wikipedia.org/wiki/Gorgora)
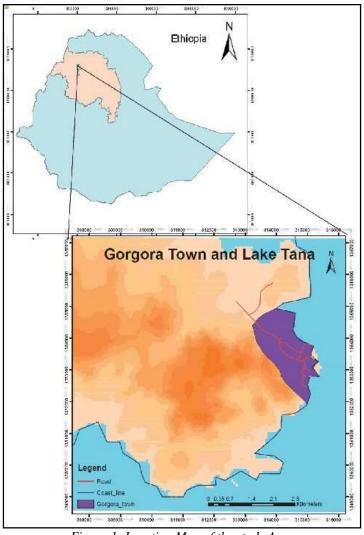

Figure 1: Location Map of the study Area
Source: Prepared from Ethio GIS and Google data (2015)

The Gorgora town has two hotels Gorgora Hotel and Tim & Kim, the former hotel is run by the maritime Authority constructed during Mengistu Hailemariam ,the former leader of Ethiopia and the later one is by a private party with a very limited accommodation facility. The importance of constructing lodge in Gorgora port is very crucial to promote tourism activity in the region.

Hence this study is conducted with the objectives of assessing the current condition of Gorgora town in terms of accessibility and accommodation service, identifying a better location where lodge will be constructing alongside the Gorgora lake shore and analyzing the perceptions of the tourists and stakeholders towards tourism development in Gorgora.

2. Review of Literature

2.1. Impacts of Tourism on Water Front

Water is one of the world's most precious natural resources. In tourism, it is both a critical resource and asset for most destinations. Clean, accessible water is an integral resource, running most of the tourism sector's businesses, from hotels and restaurants, to leisure facilities and transportation. Wetland tourism is a growing segment, with many of the world's coastlines and lakes being some of the most popular tourist destinations today. Many of those natural attractions where water is an essential element, key to the tourism sector and thus a source of tourism- related employment and income in countries worldwide. Yet freshwater reserves are being threatened by a growing world population, excessive water consumption, weak water management, poor sanitation and global climate change. Increased water demand by tourists and local communities has an impact not only on human needs but also on flora and fauna. Without good planning and adaptation, development opportunities are missed and millions of lives are put at risk (WTO, 2013). According to Infrastructure Development Corporation Karnataka (2009), waterfronts are settlements, civilizations or commercial developments that come up along water bodies like rivers, coastal regions or lakes, acting as lifelines for development of cities. The construction of tourist facilities and infrastructure also increases the amount of impervious surfaces, which in turn increases the amount of polluted runoff reaching water bodies(Davies, Cahill 2000).

Water issues are now receiving significant attention from governments, the private sector, and civil society. Ever-increasing demand for water coupled with the effects of climate change, is escalating pressure on water resources in most parts of the world, including in many coastal and island tourism destinations. These effects are compounded where poorer groups lack sufficient economic resources to be able to obtain sufficient water for their needs. There are often also significant spatial and temporal variations in water scarcity, for example, where water is only scarce during certain periods of each year (Jenkinson etal.,2011).

2.2. Geographic Information System in Tourism

Geographic information systems were first introduced in to china(excluding Taiwan, Hong Kong, and Macau) at the end of the 1970.the early applications of GISs in 1980s were either "technology pushed" or "system driven". A GIS was treated as a tool for geo-special data processing, and was used mainly for the automation of existing manual map-based operations, such as computer-assisted mapping, land suitability evaluation, environmental assessment, map data storage and retrieved (Chen etal.,n.d).

The geographic information system (GIS) have been fully developed in recent years as information tools with a distinct capacity to capture, cover, model and present geographically referenced data. They canals provide various different solutions to compilation, organizations, systemization and exploitation problems or large quantities of data. There are numerous experience from different countries of GIS applications that can provide extremely useful training with regards to tourism (Duran, n.d).

Tourism is one of the world's largest industries and has historically been an early adopter of new technology. If the contribution of tourism to economy and its development potential are taken into consideration, traditional methods of tourism-related information dissemination are inadequate. Tourism is a composite of activities, facilities, services and industries that deliver a travel experience, that is, transportation, accommodation, hotel, bar, restaurants, entertainment, recreation, historical and cultural experiences, destination attractions, shopping and other services available to travelers away from home. While searching for information about all of these activities we may have to look at maps, tables, charts, lists, graphs or reports, and sometimes it is rather difficult or nearly impossible to pull all these sources of information together and make sense of them(as cited in Hasone Al qaidh, Bazazo 2010, Bloch ,1996). The development of tourism industry is closely related to the information technology. The information system has greatly enhanced the efficiency of tourism operations and improve productivity and performance of the industry, but also intensifies the fierce competition among tourism enterprises. Particularly the internet is offering visitors amount of information and changing the means that people access to travel information (Yan ,and Wang 2012).

For the sustainable development of a region, it is important to consider the interest of its local population. In terms of tourism development recently, researchers have begun to examine how local residents can be involved in tourism activities and get benefits from these. Due to the development of alternative forms of tourism these activities have begun attracting the interest of governments, communities and researchers. However, environmental conservation plays an important role in ecotourism development. 'Many scholars now agree that ecotourism should require a two-way link between tourism and environmental conservation' (Ryngnga, 2008, p.50). So, tourism needs to be developed in a planned way and Geographical Information System (GIS) can assist as a decision support system with this planning process.

GIS also can be a valuable tool for investigating specific questions that pertain to tourism development including location, condition of the area, trends and changes, routing to and through the site, and patterns associated with resource use (Dye & Shaw, 2007). However, 'currently no tourism research has taken a GIS approach to address land use and land use change at the parcel level' (Allen and Potts, 2002, p. 288). Nevertheless, it has a strong relationship between tourism development and land use change.

The benefits of using GIS can be summarized in three ways i) GIS helps to portray characteristics of the earth and monitor changes of the environment in space and time; ii) GIS helps to deeply understand the meaning of spatial information and how that information can more faithfully reflect the true nature of spatially distributed processes; iii) GIS helps to model alternatives of actions and process operating in the environment to anticipate possible results of planning decisions and to aid in making better decisions.Moreover, by using this technology it is also possible to service management, visitor flow management, facility inventory and resource use management and assessing impacts of tourism development(Wang and Staufer, 1996).

2.3. General Principles for Waterfront Development

Waterfront development planning is often guided by four priorities: balanced land use; respect for limited resources; improved public access; and safeguards for environmental quality. According to Infrastructure Development Department, Govt. of Karnataka (2009), the general principles for waterfront development are i) Interconnected, linear waterfront development with broad public access that include Encouraging the use of the riverfront greenway as a daily commuter path and recreational amenity, demonstrating the connection between access, greenway development and market demand and creating a coherent, visually pleasing order to the water's edge ii) Protection and enhancement of the natural riverfront environment which include documenting the ecological state of the waterfronts in order to preserve the environmentally diverse natural habitat, preventing and, where possible, eliminating inappropriate uses and practices from the rivers' edge and protecting existing natural areas from development. iii) Reclaim the city's identity as one of the best water cities including raising public expectations of what the city's waterfront offers. Attracting people, investment and the best aspects of urban living to the waterfront.

2.4. Sustainable Tourism Development on Water Front

According to the International Institute for Sustainable Development (1992), Sustainable development is good business in itself. It creates opportunities for suppliers of 'green consumers', developers of environmentally safer materials and processes, firms that invest in eco-efficiency and those that engage themselves in social well-being. These enterprises will generally have a competitive advantage. They will earn their local community's goodwill and see their efforts reflected in the bottom line.

Tourist lodge is a commercial establishment that provides lodging and other services to the tourist. The tourist lodge is usually located within tourist sites specially parks and caters to tourists traveling for park visiting, sport hunting, biodiversity researches, wild life exploration, etc. It provides sleeping accommodations, including maid services, radio and television, parking space for automobiles, recreational facilities, and others.

2.5. Environmental and Economic Impact of Tourism Development

Waterfront projects have been developed as a concept of new advanced construction. Due to major increasing number in waterfront project, the impact from its implementation will be a concern. Possible impact can come into two forms namely; the positive impact of waterfront project is possible in generating more job opportunities as well as the negative ones, the natural beach can be destroyed and the eco-system can be affected resulted from the land reclamation activity (Omran ,Wah 2012).

Tourism has identified major sources of environmental stress due to tourists' generated activities. The permanent restructuring of the environment brought about by a variety of construction activities and replacement of a natural environment by a new built environment has a variety of far reaching and long lasting result, in term of existing biological species and physical conditions in the area. It may also cause significant changes in the visual amenity. The important environmental impact concern recreational activities, the effect of these activities include soil compaction and erosion, change in plant cover the species diversity (Bhadulaetal, 2014). Tourism is one of the world's fastest growing industries as well as the major source of foreign exchange earnings and employment for many developing countries. It has the potential to contribute in a positive manner to socio-economic achievements but, at the same time, its fast and sometimes uncontrolled growth can be the major cause of degradation of the environment and loss of biodiversity. Biological and physical resources are in fact the assets that attract tourists. Dwelling the remote areas in and around the tourist attraction places people have shifted for the unproductive agricultural and pastoral practices to small business related to tourism e.g. small huts stalls have been opened at places where no one could have imagined these facilities(Bhadula etal.,2014).

Twenty of the twenty seven fish species of Lake Tana are endemics to the Lake Tana catchment. Despite the unique fish biodiversity and its high economic value for Lake Tana, fish resources are under pressure from several threats. The major threats are illegal fishing and habitat destruction (wetlands, rivers and the lake itself) due to human intervention. The Lake Tana Region is endowed with a large number of wetlands that are among the largest and ecologically most important ones of the country and the Horn of Africa.

Lake Tana has 37 islands and 16 peninsulas with 21 churches and monasteries, dating back to 14th century. They are important cultural and religious heritages as well as tourist destinations. Out of nine world heritages in Ethiopia, which are located in the Amhara Region: Lalibela, Gondar and Simien Mountains National Park. Despite its unique cultural and natural resources, Lake Tana has not yet become a world heritage site,(cited in Friedrich zur Heide:2012).

The tourism sector plays a key role in Ethiopia and the Lake Tana Region particularly for providing job opportunities and generating revenues for the region. The Amhara Region receives 70 % of the international and 80 % of the domestic tourist flows of Ethiopia. Between 2005 and 2008, the average annual tourist arrivals were 324,664 with average annual revenues of 167 million dollars. Within this period the sector had an annual growth rate of about 21 percent tourists and 19.5 percent of revenues (Marye et al. 2011) (Ibid)

2.6. Main Attractions of Gorgora

1. MandabaMedhanealem monastery: The monastery was founded by AtseAmdeTsion in 1317. It is 5 km away from Gorgora and it is rich both in cultural and natural attractions. Tourist can experience and visit the living style of the monastic communities in the Mendaba monastery.

2. The palace of Susenyos: The palace is very shining and astonishingly ornamented; perhaps it was only here that the Portuguese masons invested their art of building. Ruins of the structures the Jesuits built can still be seen, although most of the buildings fell following an earthquake in the 1950s. Their construction is credited to the missionary Pedro Paez, who also succeeded in converting Emperor Susenyos to Catholicism.

3. DebreSina Mariam: Near Gorgora are impressive monasteries of the 14th of which is the most important to visit it.

4. The monument of Mussolini: Standing on a commanding hill, the monument of Mussolini offers an excellent look at Lake Tana and the fertile plains of Dembya. It is believed that it was built as a beacon for motorboats from the Lake

5. Bird watching: In addition to its cultural richness, Gorgora also allows a crazy bird's view for bird watchers. it is a best place for nature and bird watching lovers for example tourists can see birds like: Goliath, Herons, Woolly-necked Storks, Spurwinged Geese, Crowned Cranes, Ruff, White winged Black Terns. African Darters, and Fulvous and White-faced Whistling, Ducks, Egyptian Geese, Yellow billed Ducks, Garganey, African Fish Eagles, Red-knobbed Coot, Eurasian Cranes, Great Black headed Gulls. Hippopotamuses Cattle Egrets, African Spoonbills, Common Teal and Shovelers, Pallid Harriers, Common Pratincoles and waders plus, Glossy Ibis and Pintail which are found Gorgora/Seraba extending up to Dirma River on the North.
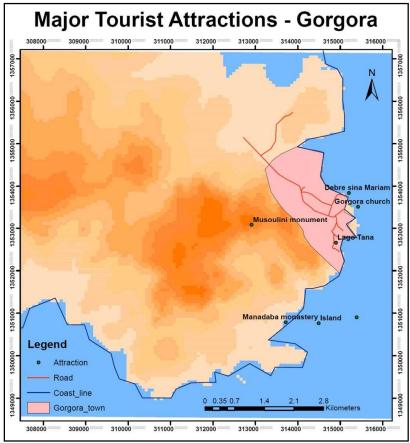

Figure 2: Major Tourist attractions in Gorgora Town
Source: Prepared from Ethio GIS and Google data (2015)

Gorgora also were formed part of the defenses of the Italian last stand, under General GuglielmoNasi, around Gondar. In October 1941, the Italians had one battalion at Gorgora; within a month the garrison was 1500 strong. In 1960 the public health service set up a center in this town, one of the first four in the countryside of Ethiopia. Gorgora was selected due to its proximity to the Public Health College of Gondar, in Gondar City.

2.7. Accessibility

Waterfronts require accessibility for them to be considered attractive or vibrant public destinations. Most studies highlight the importance of transport. Several studies define access both physically, and visually. In related to this, not so long ago it took a four-wheel drive some two hours of driving to reach Gorgora, from the airport of Gondar in Azezo. But after some years of preparation the glory is near: the beautiful asphalted road is almost ready constructed through Gondar, Azezo,Deresgie, Kola Diba, Genda, Chwahit and then Gorgora town. What a blessing for all. No dust anymore! This can serve as a base for further rural and urban economic development. Moreover, So far there was only a weekly connection by ferry between Gorgora and Bahir Dar, where the Blue Nile begins. Currently Lake Tana Transport have introduced with their initiative to acquire a luxurious yacht for the transport of big groups and to support events which is considered to be a big step forwards in the development of tourism sector in Gorgora (Newsletter Gorgora Nova Rock Resort Lake Tana, Ethiopia). As a result the tourist flow for the future time to the historical old town of Gorgora will be high due to the easiness of accessibility through road and water transport.

3. Methods and Materials

3.1. Study Design
The main purpose of this study is to select a suitable place in water front area to develop as tourist facilities particularly hotels using geographic information system (GIS) at Gorgora town in order to propose further recommendations for the efficient development and economic benefit to the local community from tourism.
The descriptive survey research used to see the present location and status of the tourist accommodation in which the GPS is used to collect the primary data sources (GPS Spots of the location of the tourist attractions and geographic elements in the study area.)

3.2. Sampling Technique
A simple random as well as purposive technique samplings were used to collect the information from the respondents. The type of the tool used to get the information is interview as tourism is an activity which involves an aesthetic value which could be very difficult to measure in traditional questionnaire and likert scale method.

3.3. Instrumentation and Measurement Procedures
The following instruments were used for data collection
- Documents and observation: This involved collecting information and data from existing reports and documents related to research.
- Spatial data set of DEM and shape files of kebeles.
- GPS points from filed
- Tourists interview
- Key informant interview

The booklet of questions prepared to address the research objectives. This was administered by the researchers,
- Interview(key informants)- the researchers selected small number (10) research participants who highly involved in managing the tourist activities and administration such as regional officers of tourism development , worada tourist organization leader, town/kebeleofficials, senior citizens of the town, hotel management staff and tour guides etc.
- Interview (tourists) **-** the researchers' selected 50 tourists who visit on Sunday, five consecutive Sundays,and each Sunday randomly selected 10 tourists to interview for the homogeneity of the population.

3.4. Analysis: Site Selection for Hotels
The ArcGIS and global Mapper software used to select a best site for the site selection of the hotels.
The concept development of the hotel selection is based on the distance from the water front as for the safety from flooding and to avoid any immediate environmental pollution by the hotel development the buffer zone distance from the coast of the lake Tana was taken, the buffer distance to construct the hotel is about 200 meters form the cost.
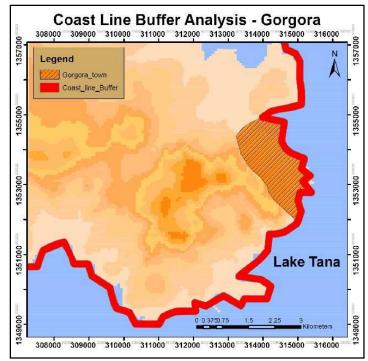

Figure 3: Coast line buffer from lake Tanaand Gorgora Town
Source : Google maps and GPS field data analysis by GIS (2015)

Accessibility (proximity) is very important factor in the hotel construction, the hotel should not very far from the center of the city in to make it possible a buffer of 2km was drawn with the help of the arcGIS using a center buffer point.
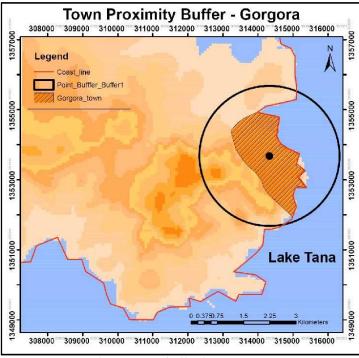

Figure 4: Proximity buffer from Gorgora Town
Source : Google maps and GPS field data analysis by GIS (2015)

Then the view toward the lake will be a great pleasurable asset in the Gorgora, in order to identify the best view points onDgital Elevation Model(DEM) used and prepared a classified elevation map.
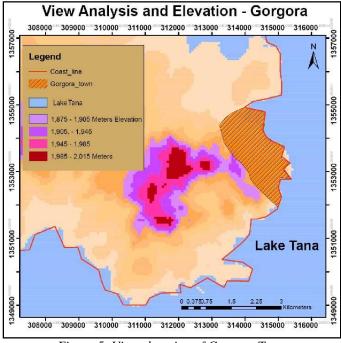

Figure 5: View elevation of Gorgora Town
Source : Google maps and GPS field data analysis by GIS (2015)

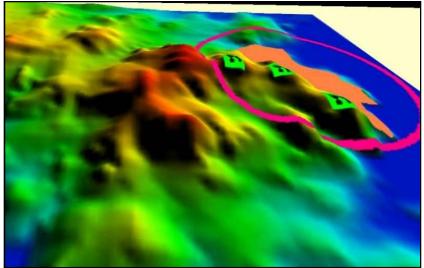Then the highest spots identified with the 2km zone of proximity from the Gorgora town.

Figure 6: View elevation overlay within buffer of Gorgora Town
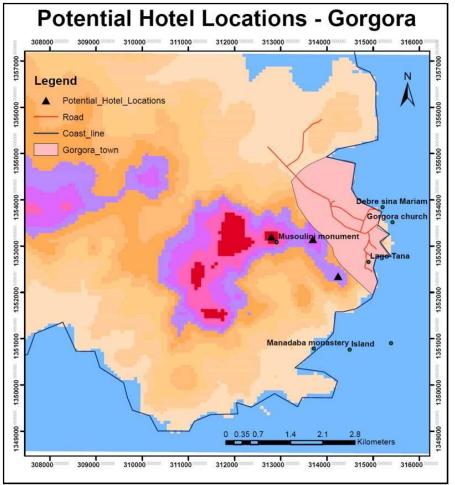*Source : Google maps and GPS field data analysis by GIS (2015)*

Figure 7: Potential hotel locations identified in Gorgora Town
Source :Google maps and GPS field data analysis by GIS (2015)

Finally using the distance buffer of 200 meters for the safety from the flooding and to avoid immediate environmental pollution to LakeTana, 2 km proximity from the Gorgora town and identifying highest spots for better scenic view total 3 potential hotel spots identified.

3.5. Qualitative Analysis

The tourists said that It is very nice place but the only problem is accommodation, at present the there is a serious problem of transport that takes about 4 hr once if can be solved then many would like to visit this place as it is very near to one of the important tourist spot of Gondar. The tourists emphasized that If the accommodation is good and other faculties are developed this is the best place as at present this is a small town. It is calm and can see the waterfront in more natural setting.

They shared the idea of developing the waterfront tourism activities such as Fenced natural swimming sites, pedal boating, water biking, floating hotel, leisure fishing and other with friendly environment.

The key informants and stockholder interview summary represent that the potential is high but yet to be explored and utilized. Theyalso insist the organization to develop facilities such as road, communication and accommodation in Gorgora to develop tourism so that the local communities would get benefit out of it.

In their opening the responsible tourism and ecotourism activities campaign should be given priority in order to keep the natural environment intact with sustainable development.

They also suggest that the hotel construction should be undertaken with some optimal distance from the waterfront in order to avoid the pollution of the lakeTana.

Finally, they suggested that Incentive based and Accountability to the local community could be helpful strategy to protect the environment from deterioration of this waterfront tourist attraction site. Through promoting participatory tourism development actives in which the local community shares major benefits of the activity.

4. Results and Discussion

The GIS analysis shows that places which are identified as hotel spots would server better way without disturbing the natural environment of the Lake Tana and the same time the tourists can also enjoy the natural beauty, safety environment if there is accessibility of the town with accessibility.

The qualitative interview questions summery show that the Gorgora is one of the best places, its geographical accessibility from one of the famous historical site Gondar is another advantage in addition to its natural beauty. The tourist prefer to be here in Gorgora as it is least disturbed and located in a natural setting when compared to other waterfront tourist sites of Ethiopia.

The only problem is the transportation and accommodation, once these problems are solved, many tourists Said that it is going to be a good picnic spot for Gondar residents in addition to tourist.

The tourists are interested in waterfront activities to generate an attractive tourist flow Fenced natural swimming sites, pedal boating, water biking, floating hotel, leisure fishing etc are suggested.

As per the stakeholder interview they also confirm the problems raised by the tourists and they are suggesting that the responsible ecofriendly tourism would provide livelihood improvement for the local community.

5. Conclusion and Recommendation

Generally as available information indicates that tourism is a big and internationally growing industry. Many countries around the world have already become beneficiaries of the tourism industry. In relative terms, African countries are also benefiting from this sector. Although in Ethiopia the role of tourism as an economic sector was negligible in the past, its contribution to the economic development of the country is now well recognized. At this time Gorgora is becoming one of the focal point of tourist site by attracting many international and domestic tourists in every year, however there is a problem of accommodation including the lodges. This could also cause the problem to natural environmentin solving the bottle necks of tourism is a critical issue that the researchers to underline in research. In addition to this, based on the findings of this research is forwarding the following main recommendations

- ➢ The Federal Tourism commission of Ethiopia and the local tourism offices are responsible toDevelopwater front tourism development
- ➢ The government of Ethiopia should ensure that water development tourism promotes economic development with equal opportunities for the local community.
- ➢ The regional Tourism beauraushould Providelivelihood training to promotecultural products for economic generation in the local community with self-financing and cost-recovery, as much as is practice.
- ➢ The FDRE should Apply the "subsidiary" principle to ensure that water front management is conducted at the lowest, and most efficient, institutional level.Conserving, protecting and enhancing water resources and the general aquatic environment on sustainable basis at Gorgora.
- ➢ The tourism berau need to Promote water front tourismactivities such as swimming sites, pedal boating, water biking, floating hotel, leisure fishing etcto attract the tourists.
- ➢ Creating awareness and appreciation for the value of nature and biodiversity of both tourists and localsthorugh participatory development campaign among the community and investors
- ➢ Creating job opportunities not only in hotels, for tour operators and guides, but also for local communities (employment perspective); and thereby Creating economic incentives for the conservation of natural (and cultural) assets by monetary valorization (conservation aspect)
- ➢ The government should allow to import tourism related goods with out tax.

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