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THE ENVIRONMENTAL IMPACT OF TOURISM INDUSTRY (THE SPECIAL REFERENCE TO NEGOMBO COASTAL AREA)

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ABSTRACT

This paper examines the environmental impact of tourism industry on coastal area. The tourism industry is mainly based on natural environment and it has been affected to occur the positive or negative environmental impacts. The main objective of this research was to study the environmental impact on coastal area with the growth of tourism industry. It was studied about how to affect local and foreign tourist activities, hotels and restaurants activities and other related human activities to grow the environmental impacts, changing of land use patterns with the tourism sector and provide the solutions to conserve the coastal ecosystem. The methodology of the research was the mixed method under the holistic approach. Data were collected from 30 of random selected sample of local and foreign tourists and 10 of random selected sample of managers of hotels and restaurants by using questioners, interviews and observations. The results of the data analysis have been given; the negative environmental impact has been increased more than the positive environmental impact in this research area. Coastal pollution, increasing hotels and restaurants, changing land use pattern are the major negative environmental impacts that could be identified. The land use pattern of study area has been changed from 1956 to 2018. The tourism industry must be carried on the sustainable

approach and the related authorities should pay their attention to tourist sector.

Key words: Tourism industry, Environmental impact, Land use change, Negombo coastal area

INTRODUCTION

Human activities and natural environmental process have caused to the changing of the environment. Specially, tourism activities have affected to the changing of coastal ecosystem in Sri Lanka. Accordingly, the degradation of the coastal zone has become a serious problem today. Some areas of Southwestern and Western province coastal zone are subjected to coastal erosion and on the other hand coastal zone expansion is much lower than the erosion rate. Sri Lanka is one of the best tourist destinations as an island. Yet the tourism industry has affected to the degradation of the coastal line.

This study has identified several environmental impacts of the tourism industry in the researched area as a tourist attraction area. This study has determined the environmental issues that have affected the Negombo coastal area and the interaction of environment and human activities which are related to tourism industry. In this way, all the processes related to the tourism industry have affected the coastal ecosystem and people

who live in that area. Accordingly, it is necessary to decrease the impacts that affect to coastal ecosystem. Further, tourism industry is a major source of income in the Sri Lankan economy. In fact, it is required as a means of the development of Sri Lanka. Therefore, the tourism industry must be conducted under sustainable methods.

Research Problem

The research problem of the study is centered on the environmental impact of tourism industry. This study expected to reach the objectives and take suggestions related to the research problem.

Further, this research was explored how the tourism industry affects the environment of coastal area in Sri Lanka, what are the environmental changes that occurred with tourism industry, how tourist related activities affect to the environment like local and foreign tourist activities, hotels and restaurants activities etc.

The Negombo lagoon and the surrounding coastal zone are important as an ecological sensitive zone and high value of environmental ecosystem. Today, there are many environmental issues that can be identified with the development of this area. These were environmental degradation of coastal areas, water pollution, coastal pollution, decreasing biodiversity, land use changes etc. These problems were discussed in this study.

In order to conduct this research, the following main research question was raised by me. How the tourism industry affects the environment of coastal area in Sri Lanka...?

Research Objective

The main objective of the research under the topic of environmental impact of tourism industry on Negombo coastal area is,

- To study the environmental impact on coastal area with the growth of tourism industry.

Tourist arrivals to coastal areas are increasing with the growth of tourism industry. Adaptation of the tourism industry and the spread of tourism based activities have resulted in changes in the environment. Consequently, environmental changes cause to change the human activities and increase the negative impacts on the environment. In addition to the main objective, there were several specific objectives.

- To study the direct and indirect environmental impact caused by tourist hotels and resorts and the local and foreign tourists who visited the study area.

- To identify the land use changes of the study area with the growth of the tourism industry.

- To provide the necessary solutions that has been taken and can be taken to conserve the coastal ecosystem and continue the tourism industry in sustainability manner.

LITERATURE REVIEW

Considering the tourism concept, it has more definitions. According to the United Nations World Tourism Organization (UNWTO), Tourism is a collection of activities services and industries that delivers a travel experience with transportation, accommodations, eating and drinking establishments, retail shops, entertainment businesses, activity facilities and other hospitality services provided for person or groups travelling away from their home or country. WTO claims that tourism is currently the world's largest industry with annual revenues of over \$3 trillion dollars.

There is a relationship between tourism and geography because tourism industry specially depends on human and natural environment. Then tourism geography

exposes how geographic perspectives can inform and illuminate with tourism. Tourism is the subject of a specific sub-discipline of geography. The field that related to tourism has grown significantly since the early 1970s and encompasses a range of different traditions and approaches in geography, including regional geography, spatial analysis, human geography, applied geography, behavioral geography and more recent concerns surrounding issues of identity, globalization, political economy and encounters with space (Hall C.M.,2004). Tourism is the activities of persons travelling and staying in places outside their usual environment for not more than one consecutive year for leisure, business, and other purposes. Tourism industry has been developed through travel and tourism. Today tourism industry is the world's largest and most diverse industry.

Since Sri Lanka is a developing country, the government of Sri Lanka has considered the development of tourism industry as a boost to the economy. During the colonial era Sri Lanka became an attraction of foreigners for her evergreen natural beauty and proud heritage. At the same time government of Sri Lanka involved in tourism around 1930 (Gunasekara I. 2014). After 1966, Sri Lankan tourism industry was increased rapidly. During 1967, 1992 and 2005 the government formulated master plans to develop tourism industry. Also several short term plans were made when required. Tourism zoning, infrastructure facility development, accommodation development, increasing tourism employment, develop tourism investments, formulation of rules and regulations, handling promotional activities were functioned under the government. Furthermore, tourism industry of Sri Lanka has been developed under the seven major tourism zones. According to that classification, coastal zone is special with other places, because

Sri Lanka has its long coastal line around the island. Coastal zone is one of the high sensitive ecosystems. Development of coastal tourism industry has affected to destroy that high sensitive ecosystem.

Tourism industry depends on the ecosystems and tourist activities impact directly and indirectly on ecosystems. Then it creates interaction between man and environment. Specially, ecosystems provide services essential for human beings, which in short can be described as supporting life, supplying materials and energy, absorbing waste products, and providing culturally valuable assets. Maintaining ecosystem integrity must thus be a primary human goal, which is nevertheless difficult to achieve because, little is known about the temporal and spatial scales over which ecosystems should be safeguarded, the limits to replace their functions, or the levels of stress they can endure as complex, interacting, and interdependent systems. How these activities might reduce the ecosystems' capacity to maintain a continuous flow of services (Gosling S. 2002). But, under the negative environmental impacts of tourism industry reduce these essentials from ecosystems. We have to continue tourism industry under the sustainable perspective.

Considering about physical background of Sri Lanka, island could be introduced the Pearl of the Indian ocean, is an island lying to the South East of India between latitudes 50 55'- 90 51' north and longitudes 790 41'- 810 54' east, between the tropic of cancer and the equator. The island has a land area of 65610 km². The country has a 1700 km long coastline and 30,000km² continental shelf area up to 120m depth. From the declaration of the Exclusive Economic Zone (EEZ) in 1978, Sri Lanka has sovereign rights over 517,000 km² of ocean; which is around 7.8 times than the land area of the country (Koralagama D., 2008).

Coastal zone in Sri Lanka is one of major part of bio diversity because; the coastal zone is habitat to the plants and animals. Sri Lanka's coastal zone is defined by statute as a 2 km wide band of ocean, and an adjoining strip of land extending 300m inland; except that where a water body connected to the sea occurs, the zone extends 2km inwards from the mouth of the water body. The coastline which is about 1585km in length supports highly products marine ecosystem such as fringing coral reefs and shallow beds of coastal and extensive seagrasses. Other coastal habitats comprise an extensive system of estuaries, lagoons, mangroves, salt marshes, sand dunes, beaches, coastal marshy wetlands and other water bodies (Biodiversity Conservation in Sri Lanka, 1998).

Table 1.1 Extents of Coastal Habitats

Habitat	Extent (ha)
Mangroves	6,083
Salt marshes	23,797
Dunes	15,546
Beaches, barrier beaches and spits	5,621
Lagoons	36,178
Estuaries	90,811
Coral reefs	68,000
Other water bodies	2,350
Fresh water marshes	6,555
Total	254941

Source: Sri Lanka report on coastal pollution loading and water quality criteria, 2013.

Negombo is a coastal area located in Gampaha administrative district. This area is in close proximity to Bandaranaike international airport, the first international airport in Sri Lanka. Further, the major specification of the area to attract tourists is the "beach". Besides it is located close to the airport. Negombo became a good first or last night stop for majority of the

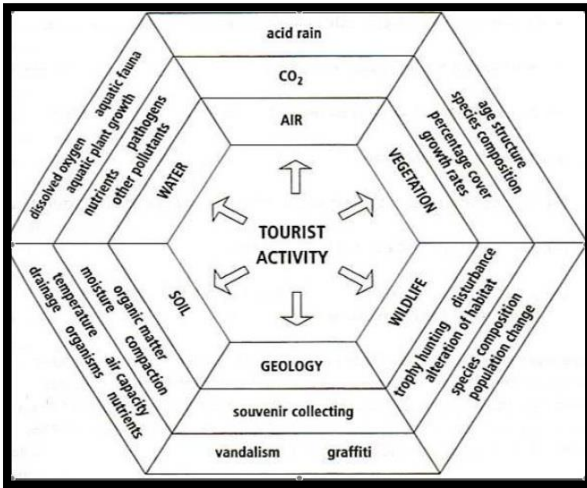
tourists. Also the government mentioned Negombo centered coastal belt as a beach resort. Due to the fact that Sri Lanka is an island, "Beach Tourism" concept was so popular and world has recognized it as a beach tourist destination (Gunasekara I., 2014).

Since early days of Sri Lankan tourism industry, Negombo became a beach tourist attraction as it has good access to the beach. The proximity to Colombo and the location of way side of Bandaranaike international airport to Colombo road became advantages to build up attraction to Negombo beach resort. The wide sandy beach in Negombo has become an attraction for water adventure seekers. Surfing, scuba diving, snorkeling, deep sea fishing, water scooting and many more water related activities are presently offering by the facilitators. It is possible to categorize the attractions in Negombo as natural attractions, archaeological attractions and religious attractions. Archaeological and religious attractions are taken to consideration at first. As most of the places in Negombo are related with colonial periods the Roman Catholic remarks can be identified than buddhist aspects in this city. Considering the above information, Negombo coastal zone is a main place of human activities related to tourism industry which cause environmental impact on the coastal region in this area. This research mainly focused on the environmental impact of tourism industry.

When considering literature relevant about environmental impact, we can identify literature reviews like below. According to Martha and Devid, tourism is dependent on a healthy environment, because tourists naturally seek out beautiful places to spend their holidays, many of the world's most precious landscapes have been or are being targeted for tourism development activities. This can be specially damaging for coastal because visitors come in search of the

same conditions which tend to support high levels of biodiversity, warm weather, sunshine, pristine nature, clear air, and clean water. When large numbers of tourists come to high-biodiversity areas, and the associated development is not well managed, then it has taken extremely negative effects on coastal ecosystem (Martha Honey and David Krantz,2007).

Chart 1.1 Multiple Impacts of Tourism Activities



Source: Godfrey K. and Clarke J.,The Tourism Development Handbook, 2000.

This chart has multi impacts of tourism industry. The environmental impacts occur on wildlife, vegetation, air, water, soil and geology sides. Then it represents several type of environmental issues on ecosystem.

Environmental Impact of Tourism on Coastal Area in Sri Lanka

Tourism in Sri Lanka involves mainly activities in the coastal area focused on scenic sandy beaches and coastal estuaries and lagoons. Most of tourist revenue comes from facilities in coastal areas supplemented by the diversity of attractions in the interior cultural triangle. Beach tourism directly makes social, cultural, economical and environmental both negative and positive impacts. It

should be highly considered that the impacts of tourism on natural environment, because the tourism industry is mainly based on environment. Both the natural sceneries and activities related to tourism are bounded with environment.

The environment has been changed due to human activities. Environment impacts can be increased with development of tourism industry. Especially on coastal zone is busy with tourists and then it creates some effects to the coastal environment in Sri Lanka. There are several types of environmental issues in coastal area of Sri Lanka.

Coastal erosion is one of major environmental impact along the West and Southwest coasts. It has been estimated that along the Western coastal segment, extending about 685 km from Kalpitiya to the Yala National Park Bay, about 175 000 to 285000m2 of coastal land are lost each year. Segment from the mouth of the Kelaniya River (North of Colombo) to Talawila (Kalpitiya Peninsula) are lost about 95 000 to 160 000m2 annually. The rate of retreat has increased due to human activities. Erosion rates vary greatly between different locations, and maximum local retreat rates of around 12 meters/year have been observed in some areas between Mahaoya and Lansigama. Available records indicate an average rate of coastal erosion of about 0.5 meters/year and an accretion rate of about 0.2 meters/year (Samaranayake R.A.D.B., 2003).

The growth of tourism industry may cause to marine water and ground water degradation. Solid waste and waste water are reasons to water pollution of tourism sites. Accordingly, the coastal districts of Colombo, Gampaha, Kalutara, Galle, Matara and Jaffna respectively recorded the highest population densities. Problems related to coastal pollution can be expected to increase further in the future as major social and economic development activities continue to take

place along the coastal belt specially tourism industry and tourism related activities in Sri Lanka on coastal area were caused to water quality degradation of that area (Sri Lanka Coastal Zone and Coastal Resource Management Plan – 2018).

STUDY AREA AND METHODOLOGY

This study was carried out in the coastal area of Negombo. This area represents the Negombo DSD in Gampaha district. Among the forty GNDs within this DSD, Specially Munnakkaraya South, Wella Weediya, Ettukala, kudapaduwa North and Palangathuraya GNDs have coastal area. This coastal zone has drastic destructions on coastal landforms and ecosystems due to the tourism industry. Hence, Negombo coastal area of Wella Weediya, Kudapaduwa North and Ettukala GNDs were selected as the study area covering these specific aspects.

Coastal areas are regions that provide invaluable ecosystem services for human direct and indirect way. These regions have precious environment, which represent a very important resource base for social, economic, and cultural activities. They have attracted huge movements of population and development activities that have imposed pressures on coastal environment, inducing wide-ranging and rapid changes and often conflicting land uses. In Negombo coastal zone continues to experience tremendous and rapid changes that were driven by various factors, including natural forces, human activities (specially tourism industry), and processes controlling the flow of material and energy within coastal ecosystems. The big pressure on coastal environment comes from both natural and anthropogenic driving forces that interact in various ways.

Negombo DSD is located in the administrative district of Gampaha, which is one of the three administrative districts of the Western province of Sri Lanka. Specific location of this area are 7.060-7.160 North latitude and 79.490 – 79.560 East longitude. Relative locations are,

- Northern- Maha Oya
- Eastern- Depa Cannel
- Southern- Diyahonda Cannel
- Eastern- Sea and Lagoon

This area is expended in 5220 hectares and Negombo lagoon comprises 1852.57 hectares of the total area and overland area is comprised 3367. 43 hectares. It belongs to 39 GNDs. Divisional administrative functions of this area which are handled by the DSD-Negombo, MC-Negombo and Pradeshiya Sabha-Negombo. (Resource Profile - Negombo DSD, 2017). Data collection of the study was done by selected methods relevant to the research question and gathered both qualitative and quantitative data.

Sampling

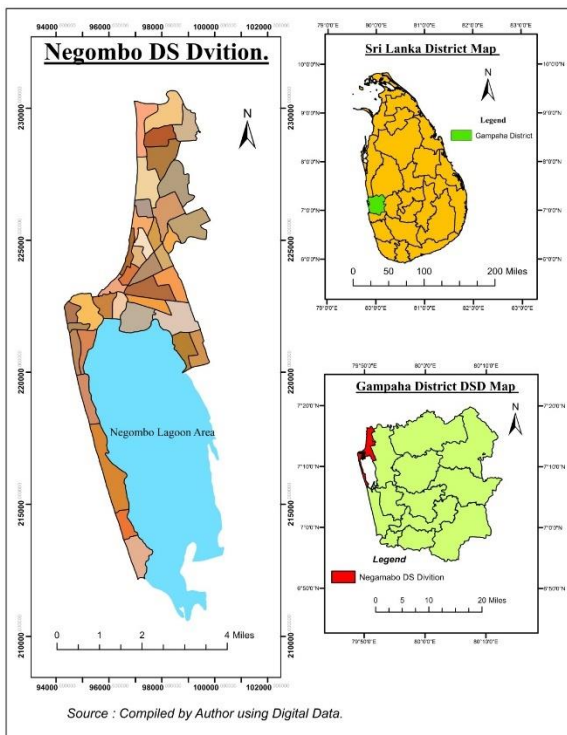
The study based on the environmental impact of tourism industry, the nature of the coastal landscape can be varied from place to place due to many reasons, it may be human or natural environmental conditions. The selected study area is a tourist attraction in Sri Lanka. Therefore, environmental impacts emerged due to the tourism industry are visible in this area. To fulfill the fair of the study, I assumed to select 15 foreign tourists and 15 local tourists who visited the selected area by using random sampling method. Further, 10 hotel managers were selected to collect data about hotels by using random sampling method.

The environmental impact of tourism industry may not limit to the tourist's sample. To achieve more realistic and correct results, interviewing officers and workers who are enrolled with government institutes and the private

sector related to this study was more essential for the study. The sample assumed was collected by observation method.

There were two samples to collect primary data. Sample was selected using random sampling method. Accordingly, one sample was selected using foreign and local tourists who visited the study area. Then the whole sample was 30 of tourists; 50% of local tourists and 50% of foreign tourists. In addition, a sample of 10 hotel managers was chosen to gain data about hotels and resorts.

Map 1.1 - Study Area – Negombo DSD

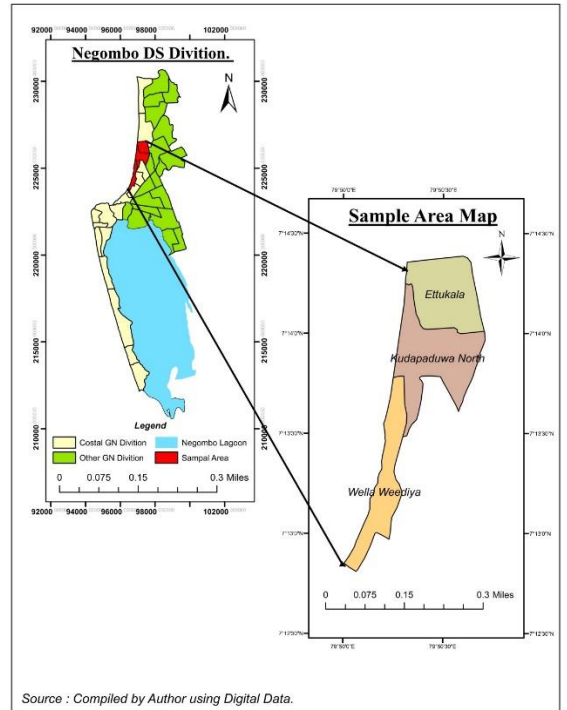


Source: Compiled by author, using Digital Data, Arc GIS.

The whole area related to research cannot be chosen as the setting of the study in any kind of research work. Usual method is to select a representative sample

of the selected study area. Accordingly, Negombo Divisional Secretariat Division (DSD) has a long coastal area. In this research, I have used coastal area of Wella Weediya, Kudapaduwa North and Ettukala Gama Niladhari Divisions (GND) out of twelve GNDs with coastal regions.

Map 1.2 – Sample Areas



Source: Compiled by author, using Digital Data, ArcGIS.

Data Collecting

Primary data was collected by using few techniques including formal and informal interviews and observations.

- Observation.

Observations was used to investigate environmental impacts and to confirm survey data. Furthermore, it is hoped to use aerial photographs to illustrate the state of the environment in which the observations were made.

□ Interviews.

Data on environmental impact was collected through interviews with officials and relevant agencies and relevant individuals.

Secondary Data Collection

Secondary data can be obtained from several sources, such as books, magazines, and reports. Aerial photographs and maps. Mainly secondary data are published documents. ARC MAP Software was used to analyze changes in coastal land use in the area and is expected to be analyzed. Information was verified through fieldwork. Google Earth Pro also uses images. Identify the changes that have taken place in the ecosystem of the field of study. For the Identifying the environmental impact of the study area, collecting secondary data Department of CCD, Negombo MC, Negombo DSD, MEPA and Sri Lanka.

DATA ANALYZING

Chart 1.2 – Data Analyzing

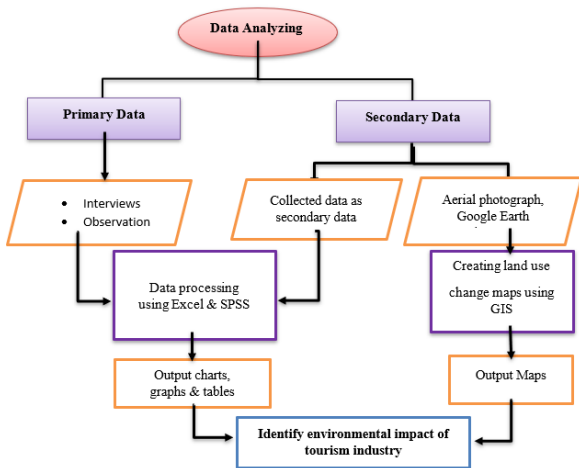
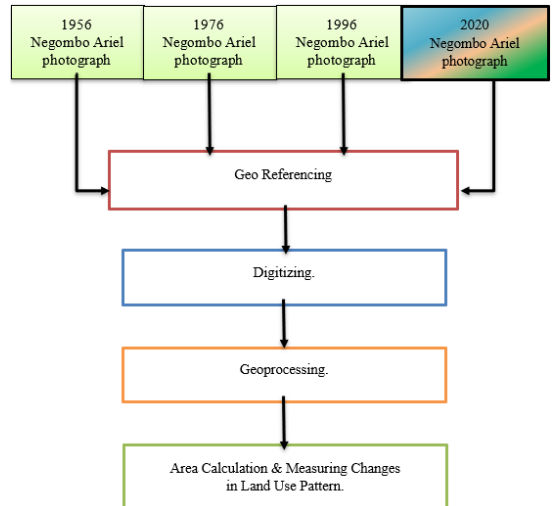


Chart 1.3 – Data Analyzing



Data analysis can be identified through the primary and secondary data. Qualitative and quantitative techniques were used for data analysis. Results of the primary and secondary data were statistically analyzed using MS Excel and SPSS. And also land use maps were obtained by using geo referencing, geo processing, digitizing based on Arc GIS software. Then results obtained through data analysis approaches were represented descriptively utilizing graphs, table, charts, maps and related statistical calculation methods. As the secondary data analysis, the data from Marine environmental protection authority could be used to verify the primary data. Aerial photographs were analyzed to understand the land use changing pattern in the study area. Then the quantitative measures (area calculation) of the land use changes taken from land use maps were analyzed to distinguish the differences in the land uses from 1956 to 2018 and calculate the land use changing percentage quantitatively. Finally, output was taken by using results of the both quantitative and qualitative data analyses.

Limitations of the Study

The study of the environmental impact of tourism industry was done under several limitations.

The tourism industry has affected the environment on most of the coastal zones of Sri Lanka, the study has focused on the coastal area of Wella Weediya, Kudapaduwa North and Ettukala GNDs coastal area on West coast of Sri Lanka. It can be identified as Negombo coastal area. Similarly, when gathering primary data for the study, was limited to a selected sample. Further, gathering secondary data was limited to few related institutes considering them as most relevant to the study. As well as, secondary data was limited with regard to rules and regulations of institutes. Similarly, the study had to be limit to available data source.

RESULTS

Sri Lanka has a growing tourism industry. Since gaining independence from the British in 1947 and tourism expanded rapidly after 1966. The beach resorts were the main attractions while the ancient cities such as Anuradhapura, the historic city of Kandy, and the mountainous region dominated by the tea plantations were the other attractions to visit. Sri Lanka could be identified as one of the best tourist destinations in the world.

Table 1.2 – Distribution of Tourism Projects and Number of Rooms by District

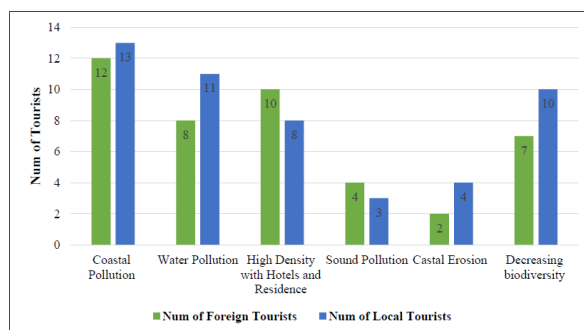
District	No. of projects	No. of rooms
Galle	54	3090
Colombo	41	3308
Hambantota	30	1600
Kalutara	26	1650
Gampaha	21	1171

Source: Annual Statistic Report-2017, Sri Lanka Tourism Development Authority.

Table 4.2 represents the final approval granted projects and number of rooms by district. Accordingly, Galle district has the highest number of projects and highest number of rooms. It has taken 54 of projects and 3090 of rooms.

By considering about these data, Gampaha district where situated study area is one of the main tourist attraction places and it can be identified as one of the developing tourist destinations in Sri Lanka.

Graph 1.1 – Environmental Issues on Coastal Area



Source: Field Survey-2020

Considering the tourists experience about environmental issues on coastal area, it seems like above. Twelve of foreign tourists and thirty of local tourists have identified coastal pollution in the Study area. Twenty of both tourists have seen water pollution and high density with hotels and restaurant were identified by eighteen of tourists. Further, seventeen of tourist idea was that tourism industry has decreased the biodiversity in that area. Few of them said about sound pollution and coastal erosion. Seventh of tourist said about sound pollution and sixth of tourists said that coastal erosion. Because, they had identified difference of coastal line

today than their first visit period with activities on coastal zone.

Picture 1.1 represents the coastal pollution of research area. Tourism industry of this study area has increased the coastal pollution. And also other human activities relate with tourism sector have caused to this situation.

Picture 1.1 Disposing Garbage on Negombo Coastal Zone



Source: Field Survey-2020

Tourism industry was caused to change land use pattern of study area spatially and temporarily. There were built buildings with growth of tourism industry gradually. Then it has become the land use pattern of that area today. Accordingly, number of hotels and resorts were increasing from past to present. We could identify some situations of hotels and resorts that affect to land use in that area by field survey.

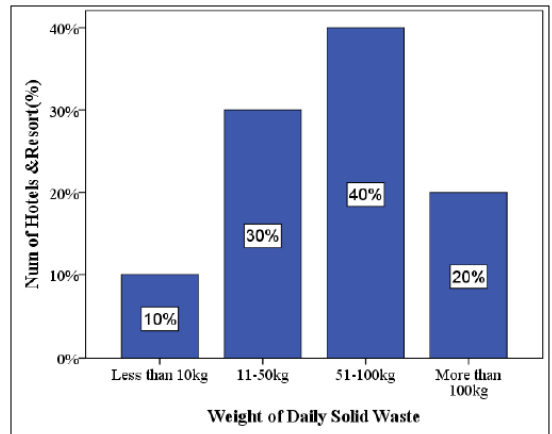
In the sample, 40% of tourist hotels and resorts were built up before 20 years ago. Then it means the tourism industry of the study area was started before a long time. And also 30% of hotels were built before 10 years ago and 20% of hotels were built before 5 years. 10% of hotels and resorts were built less than one year ago. According this chart, it seems Negombo coastal area was developed as a tourist destination from the colonial period in Sri Lanka. Then tourism sector in the study area has a long history. During this time

period, land use pattern of the area has changed with growth of tourism industry.

Land extent of selected ten hotels and resorts in study area shows that 40% of hotels and resorts were situated less than one acre. And 30% of hotels were situated 2-5 acres. Followed by 20% of hotels belong to 1acres area. There were 10% of hotels belong to more than 5 acres.

Some of hotels are situated in Negombo coastal area affected to increase environmental impact of that area. Especially, the daily activities of hotels, resorts and other small cafes could help to create some issues in environment.

Graph 1.2 – Amount of Daily Solid Waste Production From Hotels and Resorts

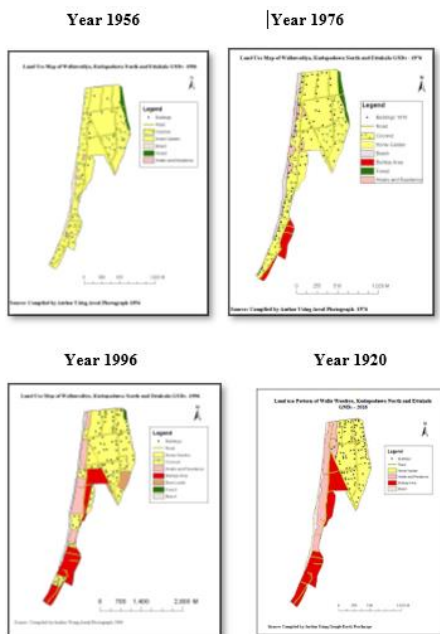


Source: Field Survey-2020

Graph 1.1 represents the amount of daily solid waste production from hotels and resorts. As seen in the chart, 40% of selected hotels had disposed 51-100kg of solid waste daily. Followed by, 30% of hotels and resorts had disposed 11-50kg of solid waste and 51-100kg of solid waste (20%) daily. There were few hotels dispose less than 10kg of solid waste. But the weight of dispose solid waste is changed with season. During peak season, daily solid waste is increased and during off season, it is decreased.

Accordingly, hotels, resorts, restaurant and other cafes that are situated in tourist area dispose significant value of solid waste daily. Some of the small restaurants of study area, they put garbage on bare lands and near coastal zone. Then it may cause to coastal environment pollution. Most of the hotels and resorts had disposed their solid waste to municipal council solid waste collection. It has taken 70% of hotels in sample. 20% of hotels had given their solid waste to piggery farms of that area. And another 10 of hotels had left solid waste to hotel association waste collection.

Map 1.3 Changing Land Use Pattern of Wella Weediya, Kudapaduwa North and Ettukala GNDs Coastal Area



Year 2020 Source: All the maps compiled by author, using Digital Data, Arc GIS.

From 1956 to 2020, Changing of land use pattern of study area was identified by using aerial photographs and Google Earth images. It used to study the nature of the

land use in Negombo coastal area. These maps analyzed by using the GIS tools. Especially, development of tourism industry has been affected to the changing of land use pattern in coastal area. In addition to human factors, natural factors are also affected to these changes. Maps can be analyzed for how the lands use has changed over various human and natural activities in each of the years.

From 1956 to 1976, when observing the Negombo coastal area land use changes, the total number of buildings have been built on coastal area where it was very low. Few hotels and residence area could be seen in that area in 1956 (Map 4.1). But the year of 1976, this land use has changed, comparing with the year 1956, the number of coastal buildings have increased in 1976. And also hotels and residence area have been increasing. (Map 4.2). Furthermore, buildup areas also could be seen in 1976. It could be seen in small area of Wella Weediya GND. Overall; study area was not developed area during that time period. There was home garden, coconut lands and small forest area until 1976.

From 1976 to 1996 the land use of study area has changed mostly. When observing aerial photograph in 1996, the number of buildings along the coastal area have been increased by more than 1976 (Map 4.3). There were increased coastal activities specially the activities that are related with tourism industry. Map has represented more hotels and residential area in 1996. Coconut lands and forest area were decreasing rapidly and buildup area was increasing in 1996.

From 1996 to 2020, during 22 years of time period, the land use pattern of the study area was changed rapidly. According map 4.4, it has been seen more hotels and residence area along coastal line. In present, the tourism industry was grown in study area. And also buildup area was increased. Tourism industry and

tourism related activities have strongly caused for these changes.

According to Google Earth images, I could identify some areas of study area was built hotels rapidly. By these two points could be explained that changing of that area with growth of tourism industry

Picture 4.3 Changing of Coastal Area from 2002 to 2020



Source: Google Earth Pro, 2020.

Considering these two points, in 2002, point one represents a hotel. But in 2012 they removed that building and came into 2020, there is a big hotel. This hotel may belong to more than 5 acres' area. Accordingly point two, there was a beach area in 2002. But in 2012, it was going to build a park in this place. Finally, there is a beach park in 2020. The coastline was complicated with growth of tourism industry. It could identify by these two special points on Negombo beach area. Accordingly, since 1956 to 2020, there have been seen several changes on the

coastal area. Beach park was built with development of tourism industry. And also all tourist based activities were increased on coastal area.

Considering about land use pattern, it was changing miscellaneous with tourist based activities. Specially, the natural environment has been changed to artificial environment. Accordingly, there were increased buildup areas in present. Then land use pattern was statistically changed like below.

Table 1.3 – Difference of Land Use Changes (1956-2020)

Land use type	1956		1976		1996		2018	
	Land Extent (sq.m)	Land Extent (%)	Land Extent (sq.m)	Land Extent (%)	Land Extent (sq.m)	Land Extent (%)	Land Extent (sq.m)	Land Extent (%)
Home Garden	479784.10	48.71%	434380.83	44.10%	525278.67	53.32%	433933.07	44.06%
Coconut	440274.01	44.70%	367824.55	37.34%	48919.25	4.97%	0	0%
Buildup Area	0	0%	59025.18	5.99%	198974.45	20.20%	268490.69	27.26%
Hotel and Residence	8177.26	0.84%	39695.06	4.03%	125260.94	12.71%	219754.46	22.31%
Forest	24682.35	2.50%	24590.34	2.49%	4798.76	0.49%	0	0%
Bare Land	0	0%	0	0%	33513.65	3.40%	0	0%
Beach	32052.63	3.25%	59454.39	6.03%	48224.63	4.91%	62792.13	6.37%

Source: Compiled by Author-2020

From above table, it can be clearly identified there is a gradual change among the 62 years of time period in Wella Weediya, Kudapaduwa North and Ettukala GNDs. All of land uses have been changed from 1956 to 2020. Home garden has been changed informally. From 1956 to 1996 it was increased and again it was decreased from 1996 to 2018. It has been taken 53.32% of the total land extent in 1996 and it was decreased to 44.06% in 2020. In order to coconut lands has been decreased gradually. In 2020 there was not a total coconut land. It has changed to home garden and hotels and residence lands. Considering about buildup area, it was increasing. In 1976, it has taken 5.99% of the total land but it was increasing to 20.20% in 1996 and 27.26% in 2018. The highlighted point of view is

the hotels and residence areas have been increased from 1996 rapidly. It has taken 12.71% out of total land in 1996 and 22.31% in 2020. Beach area was also increasing from 1956 to 2020. But in 1996 it was decreasing with hotels and residence. Few beach areas were filled with hotels and their gardens. Finally, Tourism industry has affected to change land use pattern of study area.

Table 1.4 Loosed and Gained Values of Land Uses (1956-2020)

Land use type	1956-1976	1976-1996	1996-2018	1956-2018
Home Garden	-45403.27	90897	-9145.6	-45851.03
Coconut	-72449.46	-318905.30	-48919.25	-440274.01
Buildup Area	59025.18	139949.27	69516.24	268490.69
Hotels and Residence	31517.8	85565.88	94493.52	211577.2
Forest	-92.01	-19791.58	-4798.76	-24682.35
Bare Land	0	33513.65	-33513.65	0
Beach	27401.76	-11229.76	14567.5	30739.5

Source: Compiled by Author-2020

The years of 1956, 1976, 1996 and 2020 that used to identify Land use changes of study area by using aerial photographs and Google Earth images. There has been identified many more changes of land in Wella Weediya, Kudapaduwa North and Ettukala GNDs. In this time period, there could be categorized few land use types. Such as home garden, coconut, build up area, hotels and residence, forest, bare land and beach area.

Associating years of 1956-1986 the twenty-year period, buildup area was increased by 59025.18m² from 1956 to 1996. And hotels and residence area were also increased by 31517.8m². Relative with that land use changes, home garden and coconut lands were decreased. By considering the twenty year from 1976 to 1996, here also the buildup area and hotels and residence were increased. Especially, hotels and buildup areas were increased with growth of tourism industry. Coconut

lands and home gardens were changed to the hotels and buildup areas. Then the extent of coconut land was gone down rapidly.

By considering the 22 years of time period from 1996 to 2020, home garden, coconut lands and forest area of Wella Weediya, Kudapaduwa North and Ettukala GNDs have decreased. Especially, coconut lands were not identified clearly in 2020. Because some coconut lands were build houses and that lands changed as home garden and also the coconut lands that situated near coastal area were built hotels. Finally, coconut land couldn't have clarified in 2020. Beach area also changed with constructions of that area. And also from 1983, coastal conservation actions have been taken to prevent coastal erosion. Further in 1984, CCD was created in Negombo beach area by pumping sand from the sea. Finally, present beach area could be seen as the results of conservation actions. Accordingly, above maps and loss and gain analysis, the land use pattern of study area was changed gradually from 1956 to 2020. Especially the human activities and tourism industry were affected to change land uses on coastal area.

CONCLUSION

Focal point of this study is identifying the environmental impact of tourism industry and giving recommendations for those impacts.

□ Local and foreign tourist activities had affected to coastal environment.

□ Foreign tourists were increasing during peak season (73.33%) and then environmental impact increasing during peak season like increasing the discharging waste water from hotels and it help to decrease water quality of study area and marine water pollution.

□ Most of local tourists had traveled during weekend and holidays. Coastal area was crowded by local tourists and then increasing waste collection of coastal area.

□ Most of foreign tourists of sample came for a vacation (53.33%) and they staying long time than tourists who came for other reasons. It was also reason to water pollution and coastal pollution.

□ 80% of foreign tourists of sample were recommended Negombo coastal area is favorite tourist destination. And the main reasons were good accommodations and transport system.

□ 60% of local tourists of sample who visited Negombo before and they have seen different between before visited time and today.

□ Negombo beach area was the favorite visit place of both local and foreign tourists.

□ 66.6% of foreign tourists were not satisfied with tidiness of Negombo coastal area.

□ Local tourists who came to Negombo coastal area had not awareness about coastal conservation acts and rules.

□ Disposing garbage on coastal area, discharge waste water to the sea and increasing hotels and residence were main reasons for environmental issues as view of local and foreign tourists and related secondary data.

□ 10% of selected hotels are situated near coastal line and these hotels were in setback area that referred by CCD.

□ Daily solid waste of hotels and other restaurants were increasing with tourism industry.

□ Most of hotels and other restaurants waste water discharge to the cannels and finally flow to the sea and it was created water pollution.

□ Land use pattern of study area was changing with tourism industry. Today, build up areas and hotels and

residence areas were increasing more than other areas.

□ Hotels and residence were 0.84% of total land use in 1956 and it has taken 22.31% of total land use in 2018.

□ Landscape of study area was changing from past to present. Land use changing affects to decreasing Biodiversity and climate changes.

□ Coastal erosion of study area was controlled due to the strategies that has taken from CCD.Ex: Groynes

□ Negombo municipal council programs have helped to maintain the beach area.

□ Environmental impact assessment can be reduced the development project that harmful for the coastal environment.

RECOMMENDATIONS

There are few recommendations for prevent environmental impacts on coastal area.

□ Awareness Program

It is very important to educate all the people such as tourists, living community of that area, and employees of tourism about negative impacts of tourism on the environment and the importance of preserving the environment. Notice boards, leaflets, handouts can be used as a method of creating awareness of people and it is very important to print these leaflets in several languages. Preservation of the environment caused to protection of tourism and it further protects the quality of the community.

□ Make Strategies for Prevent Water Pollution

Quality of water rapidly polluted due to tourist activities. This destruction is mainly occurred directly and indirectly due to tourist activities such as boat cruise, wind surfing and unlimited development of beach tourist facilities. Suitable measures can be preceded through these

regular observations. Regular observations are more important.

□ Prevent Illegal Construction

An illegal construction in the coastal area is prohibited according to the Coastal Conservation Act. There is a permit procedure to launch construction and development projects on coastal area. Regular monitoring and assessment should be done by responsible organizations such as CCD, MEPA and CEA etc.

□ Increase the Contribution of Government Sector and Private Sector

Government administrates coastal conservation projects, coastal resource management projects and water quality management projects and other related conservation projects were established by authorities. But these projects are not working well. Government should be succeeded these projects. Private sector also be combined with government sectors and work together. Specially, Hotel associations and other related agencies may take strategies to protect coastal environment.

□ Introduce Sustainable Tourism Strategies Sustainable tourism is the concept of visiting a place as a tourist and trying to make a positive impact on the environment, society, and economy. It is necessary to develop well-managed sustainable coastal tourism. ICZM is the best available approach for achieving this aim. Sustainable coastal tourism can be recognized as:

- Sustainable coastal management practices;
- Clean water, air and healthy coastal eco-systems;
- A safe and secure recreational environment through the management of coastal hazards, such as erosion, storms and floods. The provision of adequate levels of safety for boaters, swimmers and other water users;

- Beach restoration efforts that maintain the recreational and attractive values of beaches

- Sound policies for wildlife and habitat protection.

Concept of Ecotourism

Ecotourism is about uniting conservation, communities, and sustainable travel. This means that those who implement, participate in, and market ecotourism activities should adopt the following ecotourism principles:

□ Minimize physical, social, behavioral, and psychological impacts.

□ Provide positive experiences for both visitors and hosts.

□ Produce direct financial benefits for conservation.

□ Generate financial benefits for both local people and private industry.

□ Deliver memorable interpretative experiences to visitors that help raise sensitivity to host countries' political, environmental, and social climates.

□ Design, construct and operate low-impact facilities.

□ Recognize the rights and spiritual beliefs of the Indigenous People in your community and work in partnership with them to create empowerment.

According to this concept can be created some strategies for maintain the coastal environment. Especially Eco-friendly hotels will be built on coastal areas and tourism activities should be based on eco-tourism.

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