

COASTAL TOURISM IN ODISHA AND ITS IMPACT ON BEACH DEGRADATION

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Keywords: Abstract: Coastal resources throughout the Odisha Coast are the famous attraction for the tourists. At the same time mass tourism in this region is a major contributor to sewage and solid waste pollution, deforestation, coastal erosion and sedimentation from construction activities. Beach degradation from tourism depends on the number of tourists inflow, the rate of growth of the tourism industry, improper planning and lack of control. Tourism-related physical changes are also widespread for expanding tourism infrastructure projects. The present study is an effort to examine the role of Coastal tourism in Odisha, especially in Puri, Konark, Gopalpur and Chandipur which affect the socio-economic life of the local communities and environmental degradation of the quality of beaches. In the study area, development was based on a rapid growth of tourist demand and chaotic development of tourist facilities. Erosion is very common in Odisha coast. Solutions like sand re-nourishment have not stopped the erosion process. The rising number of tourists exerts a strong pressure on these beaches. Key objective of this paper is to find out how to maintain balance between positive and negative impacts of beach tourism to get optimum benefits and maintain sustainability by protecting it from the environmental catastrophe, manmade hazards followed by beach degradation.

Keywords: Coastal Tourism, Recreation, Beach-Dune System, Ecotourism, Snorkeling, Environmental Degradation, Catastrophe, Sustainability, Erosion

INTRODUCTION

Attempts have been made in this study to examine the catalytic role of Coastal tourism for the development of beaches in Odisha that affects the socio-economic life of the local people, at the same time creates environmental degradation of the quality of beaches. This article begins with the meaning and importance of Coastal Tourism and its impact on the local societies and environment of the coastal zone of Odisha. Key issue of this paper is to find out how to maintain balance between developments of beach tourism and maintain sustainability by protecting it from the environmental catastrophe and manmade hazards. "... merging tourism and conservation effectively is a tricky task, but one which may prove necessary for the survival of both" (Mariana Stockley, *NEXUS*, 1984, pp 1-7). Coastal tourism and recreation are important parts of the most rapidly growing activity in the international tourism. Tourism and recreation-related development is one of the major factors shaping development patterns in the coastal zones.

Government at all levels must assume appropriate proactive roles to shape and guide coastal tourism development because Coastal tourism which is developed and maintained in an area (community, environment) in such a manner and at such a scale that it remains viable over an indefinite period and does not degrade or alter the environment (human and physical) in which it exists to such a degree that it prohibits

the successful development and well being of other activities and processes" (Butler, 1993, p. 29).

Situated on the eastern coastline of the country, Odisha beaches like Puri, Konark, Gopalpur and Chandipur have wonderful wide white sand, fishing farms and superb resorts making these attractive tourist destinations. Puri is also a part of the famous 'Golden Triangle' of tourism destinations in Odisha along with Bhubaneswar and Konark.

Coastal areas of Odisha State in the north-eastern part of the Indian peninsula are potentially vulnerable to accelerated erosion hazard. Along the 480-km coastline, most of the coastal areas, including tourist resorts, hotels, fishing villages, and towns, are already threatened by recurring storm flood events and severe coastal erosion (Kumar *et al.* 2010). The development of tourism in Coastal Odisha, especially in Puri, Konark, Gopalpur and Chandipur, has led to its economy being based on this sector. Here, mass tourism has great impact on the economy and environment. Here the development was based on a rapid growth of tourist demand and on a chaotic development of tourist facilities. This has had severe consequences for the coastal region specially, insufficiently controlled urban planning, overcrowded beaches, and erosion of the beach-dune system caused by massive construction on the coastal zone. Many beaches have been transformed into urban beaches and their coastline has retreated. Solutions like sand re-nourishment have not stopped the erosion process. The increasing number

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of residents and visitors exerts a strong pressure on these beaches. This indicates that tourism in Odisha beaches is becoming unsustainable and coastal management policy is urgently required if sustainability is to be achieved.

In this study the main objective is to understand the environmental and ecological aspects and issues which have affected the Odisha coasts and beaches either by tourists or which are faced by tourists. Crossing carrying capacity for tourists' inflow especially at Puri beach and development of various urban setups has badly affected the ecology of Odisha Coast.

OBJECTIVES

The main objectives of the Research paper include the following: -

- To understand the importance of Coastal Tourism in India especially in Odisha.
- To study the present scenario of Odisha coast and its impact on tourist inflow in the state.
- To study, analyze and evaluate the effect of Coastal Tourism on beach degradation.
- To find out some solution for maintaining sustainability of Coastal tourism in Odisha.

METHODOLOGY

To gain insights into the general structure and some of the issues of Coastal tourism, extended conversations were held with the local people, service providers and tourists. These types of experiences were chosen because they represent a diversity of issues and attractions. This study was conducted using self-administered questionnaires. For collecting the data from the primary sources, two sets of structured questionnaire made both for tourists and local people including local service providers. Apart from that, observation, schedules and interview methods were followed for the above said purpose.

COASTAL TOURISM

Coastal Tourism is basically a leisure based activity and more popular among the people of temperate, warm temperate and cold countries. The term 'coastal tourism' means the full range of tourism, leisure, and recreationally oriented activities that take place in the coastal zone and the offshore coastal waters. These include coastal tourism development (hotels, resorts, restaurants, food industry, etc.), and the infrastructure supporting coastal development (retail businesses, marinas, fishing stores, dive shops, beaches, etc.). Also included are ecotourism and recreational activities such as recreational boating, cruises,

swimming, recreational fishing, surfing, water-scooting, para-sailing, snorkelling and scuba diving. Coastal area provides aesthetic and environmental value like beautiful natural scenery with golden sands, lush green vegetation and blue sky. Besides attractions Coastal tourism has led to overall development of tourism in many parts of the world. It has become main source of income in many islands and coastal regions. Coastal tourism is becoming a highly competitive business as country actively seeks to draw increased numbers of visitors to their sea shores.

There is a greater tendency for people to live in coastal areas than inland. The ratio of people living in coastal zones compared with available coastal lands further indicates the same. According to the United Nations Environment Programme (UNEP) report, the average population density in the coastal zone was 77 people/km² in 1990 and 87 people/km² in 2000, and 99 people/km² in 2010 (*Kumar et al. 2010*).

Beach resort have to be developed as an integrated complex to function as a self-contained community. To maintain its ecosystem, management should ensure the availability of necessary infrastructure in the immediate hinterland to the coastal region. Clean water, healthy coastal habitats, free of currents and underwater rocks and a safe, secure, and enjoyable environment are essential for successful coastal tourism. Similarly, abundant of living marine resources are of critical importance to most recreational experiences. Security from risks associated with natural coastal hazards such as storms, cyclones, tsunamis, are requisite for coastal tourism to be sustainable over the long term. Moreover, in today's rapid pace of communications, the existence of poor water quality or degraded or eroding beaches is quickly communicated among networks of travel agents, tour operators and others in the tourism marketing business. Ecotourism in association with marine and estuarine protected areas, especially the National Marine Sanctuary Program and National Estuarine Research Reserve Program, has a great potential (*Koss, 1995*).

In tourism, especially in the case of Coastal Tourism, the lack of attention by public agencies is problematic and coordination between programs that promote and market tourism and those that manage coastal and marine areas is not up to the mark. On the other hand, agencies dealing with the promotion of tourism are not involved with the evaluation of its effects or with advance planning and management of the adverse impacts of tourism through avoidance, mitigation, and compensation strategies (*Cicin-Sain, 1993*).

Along its vast coastline, India has number of beautiful beaches. The calm and peaceful environment with abundant greenery around is just perfect to relax and refresh the exhausted mind and body. Beaches in India provide the most appealing combination of sun, sand, sea and surf that

Some of the popular beaches for tourists are *Puri*, *Konark*, *Gopalpur* and *Chandipur*. Other beaches are: *Paradeep Beach*, *Aryapalli Beach*, *Astaranga Beach*, *Balaramgadi Beach*, *Balighai Beach*, *Ramchandi Beach*, *Talasari Beach* etc.

Locations of Coastal Villages in Odisha:

There are 220 marine villages present in the Odisha coasts. Among these 220 marine villages 30 villages are in remote areas, 181 in rural areas and only 9 villages are in urban patches. The following table gives the detail information about the location of marine villages in different coastal districts.

District	Remote	Rural	Urban	Total
Balasore	12	66	0	78
Bhadrak	2	19	3	24
Kendrapada	5	17	0	22
Jagatsingpur	9	32	2	43
Puri	1	24	3	28
Ganjam	1	23	1	25
Total	30	181	9	220

Source: People's Report on Status of Marine Fisher Community in Orissa

Puri beach is situated on the eastern coastline of the country is famous for its golden sands, gentle sun-bath and the colourful sunrise and sunset overlooking the Bay of Bengal. *Puri* is one of the three major spots of the Odisha Golden Triangle and one of the four major holy places in India. Located on the shores of Bay of Bengal, it has one of the finest beaches in the world. The annual *Rath Yatra* (Car Festival) held at *Puri* is probably one of the largest religious gathering of people attracting several lakh visitors at a time. *Puri* beach offers a unique opportunity to witness the outstanding sunrise and the sunset on the same beach. It is often crowded with tourists bathing in the sea and enjoying waves, and liking the kiosks on the beach in the night with food stalls and selling souvenirs and artefacts. A comparatively clean and quite place for sunbathing and a relaxed swim can be found at the eastern end. Local fishermen serve as lifeguards on the

beach, and take visitors out to sea in their boats to watch the sunsets. It is exciting to visit a fishing village along the coast. The best time to visit is around dawn, when the fishermen start out from the village and row the fleet towards the rising sun over the sea.

Konark beach in Odisha is rated one of the most excellent beach on the east coast. The long stretch of sparkling sands and a divine tranquillity make this one of the perfect beaches to enjoy. It is one of the best places to watch the sunrise and take a bath. Just 3 Km away from the Sun Temple, *Konark* Beach in Odisha is a paradise for a beach lover since a beach lover can simultaneously bath in the warmth of the sun and witness the beauty of sunrise or sunset. Another beautiful sight is that of the spotting fishermen, grossly involved in their daily chores with the fish. Clear blue sea a warm bright sunny atmosphere, the sanctimonious ambience and coconut trees. *Konark* beach symbolize by silvery sand, bracing water, shops with shell crafts and religious associations.

Chandipur beach is situated about 16 kilometres away from *Balasore* in Odisha and two kilometres away from *Balaramgadi* where river *Budhabalanga* falls into the sea. It is one of the calm and cool seashore resort having a rare phenomenon of sea water here recede and proceed 5km everyday i.e. it go back and come out again. *Chandipur* beach is backed by the magnificent swing of casuarinas trees and brushed sand dunes, make the beach a beautiful place for tourists.

The *Gopalpur* beach is situated on the Bay of Bengal and is about 16 km away from *Berhampur* is famous for one of the most untouched beaches of Odisha. It is famous for its coconut trees, and sand dunes which separate the beach from the blue waters and act as the perfect setting for peace and tranquillity. Here, the old lighthouse blinking still today to show directions to the ships in deep sea. Cool breeze of the sea of *Gopalpur* gives freshness to the intense hit of the summer. Its clean blue water encourages the sea lover to take deep bath, enjoy the sea food and the coconut water to give full package to the beautiful sea resort.

Following table shows that tourists visit at different beaches of Odisha are increasing year to year.

Table : Tourist Arrivals in Major Beaches of Odisha

Beach	2006			2011			Av. annual increase in total- 2006-11 (%)
	Domestic	Foreign	Total	Domestic	Foreign	Total	
Chandipur	478930	189	479119	554550	125	554675	3.2
Puri	1759626	14627	1774253	2616760	19250	2636010	9.7
Konark	1196500	7883	1204383	1923470	8100	1931570	12.1
Gopalpur	279747	980	280727	299750	1150	300900	1.4

Source: Department of Tourism, Govt. of Odisha

TOURISM ACTIVITY, URBANAISATION AND POLLUTION OF BEACHES

It is disgraceful that Odisha is also vulnerable to multiple disasters such as tropical cyclones, storm surges, and tsunamis. The threat of the coastal vulnerability to such hazards has increased manifold with the growing population. Most of the environmental damage caused by tourism development is often due to poor planning of individual tourism schemes and lack of coordination with other departments of various ministries (Kumar B.R. 1995). Many of the attractive beaches of Odisha are near urban concentrations. Urban settlements of these beaches continue to dump sewage and other effluents directly into coastal waters. Stretches and creeks of beaches are contaminated by sludge and sewage of tourist area. Besides these many industrial effluents including dangerous chemicals are also thrown into the sea. All these waste materials contaminate sea water making it unfit for bathing and harming aquatic life. These human factors destroy the beauty of the beaches.

Each and every tourist places have a limited carrying capacity which can be increased to certain level by implementing proper management and technological skill. An environment can absorb a certain number of visitors without any problem. But beyond the optimum level of tourists the environmental degradation begins which leads to erosion of beaches, crushing of trees, wear and tear of roads etc. The environmental damage is aggravated by frequency of visitor or by crossing carrying capacity. Proper measuring of Carrying capacity is very important. As pointed out by Paul Wilkinson (1990):

“It seems clear that tourism carrying capacity-as defined by the question ‘how many is too many’? -is neither appropriate nor heuristic. Using the concept in this sense results in the false impression that a given situation is static and can be reduced to a measurable equation ...”

The ecological balance used to get disturbed. Soil erosion increases and water supply becomes inadequate and polluted. Especially in pick season when large number of tourists visit beaches, they leave waste materials like faeces, plastic materials, food wastage, bottles, and other unwanted materials. These are accumulated on beaches and gradually become unsuitable for recreation, if proper cleaning mechanism is not applied.

Especially in the pick season when tourist activity increases on coastal area, affect the aquatic life and quality of water. A large portion of aquatic life like fishes, coral and some endangered species like estuarine crocodile; Olive Ridley sea turtle etc. around the boat jetties and hotel beaches is killed. The discharge of waste materials into the sea causes damage to marine life and degrades the quality of beaches.

Coastal tourism is having both the positive and negative impact. It has positive effect upon the physical and psychological environment of the destination. It provides economic help for conservation and preservation of natural coastal area and marine life. The unspoiled environment is one of the basic elements of coastal tourism resources. So the conservation and preservation of these resources must be seen as an economic investment. At the same time negative effect is also there. There are many reasons of beach degradations, like population pressure and crossing carrying capacity on existing resources, lack of consciousness about environmental issues, illiteracy, poverty, natural catastrophe, improper implementation of planning and lack of controlling measures etc. It is necessary to assess the carrying capacity of tourist development and activity to prevent environmental damage in the coastal area.

Table : Accommodation available in Major Beaches of Odisha:

Beach	No of Hotels	No of Rooms	No of Beds
Chandipur	14	256	605
Puri	340	6979	14946
Konark	16	180	398
Gopalpur	17	211	466

Source: Department of Tourism, Govt. of Odisha

COASTAL EROSION

Coastline forms the most active interface between land and sea. Basically sandy beaches are always in a state of change since every wave lifts and moves quantities of sand to different locations. Waves approach from offshore finally breaking and surging up the foreshore. Sometimes increased water levels or wave heights the sand above the low water mark is eroded, carried offshore and deposited in a block. Eventually enough sand is collected to effectively decrease the depths and cause the storm waves to break further offshore. This reduces wave action on the beach and helps to re-establish equilibrium. At open coast sites the process eventually reverses, and within short period waves return the sand to the beach, after storms. At sheltered sites where no exposure to oceanic swells exist, the recovery does not occur and storm caused erosion becomes permanent.

Natural Causes: the most obvious cause for coastal erosion is the result of increased wave action and increased wave energy at the beach zone.

Man Made Causes: the principle cause of beach erosion is reef death, destroying plants and vegetation, as a result of near shore pollution and physical clearing. Other causes are construction of roads and buildings, lack of planning and awareness etc.

EFFECTS OF EROSION

There are two obvious and noticeable effects of beach erosion:

1. The loss of previously available beach area, and
2. The damage to beach property.

THE ROLE OF THE GOVERNMENT IN COASTAL TOURISM MANAGEMENT:

For economic activity, tourism is difficult to influence and manage directly, because tourism-related development is driven largely by the private sector and its assessment of economic opportunities. However the Government may take active role for providing following infrastructure for Coastal Tourism Management:

1. Good coastal management practices mainly tourism infrastructure and the provision of public access.
2. Availability of clean water and air, and healthy coastal ecosystems.
3. Maintaining a safe and secure recreational environment through the management of coastal hazards like erosion, storms, floods etc. and the provision of adequate levels of safety for boaters, swimmers, and other water users.
4. Beach restoration efforts that maintain the recreational values of beaches.
5. Sound policies for wildlife and habitat protection.

COASTAL MANAGEMENT AND PLANNING:

For ensuring sustainable tourism development three management practices under the Coastal Zone Management (CZM) program are especially important, these are:

1. Provisions for the management of coastal development,
2. Provisions to improve public access to the beaches, and
3. Provisions to protect coastal environments.

PROTECTION OF COASTAL HABITATS:

For management of coastal tourism and recreation, healthy coastal habitats like wetlands, beaches, dunes, sea grass, mangroves, and estuaries are important. Within specified coastal tourism zone, states and the local governments regulate activities which could adversely impact these habitats.

MANAGEMENT OF CLEAN WATER AND HEALTHY ECOSYSTEMS:

Clean water and healthy coastal ecosystems are essential to the maintenance of coastal tourism. Special planning and management efforts are crucial to improve water quality and habitats. These include goals related with resource and water-quality and the action plans necessary to meet these. The direct contribution to coastal economies made by cleaning up coastal waters is to be recognized.

MANAGEMENT OF COASTAL HAZARDS:

Hazards are more prone to the vulnerable group. People who are staying in the coastal region should have some responsibility. While government cannot be expected to protect individuals from their own irresponsibility, it does have a responsibility to provide the information necessary to take decisions regarding degrees of risk associated with living in various parts of the coastal zone. Furthermore, coastal areas that are clearly hazardous as building sites should be reserved for other uses. Government also has the responsibility to provide adequate warnings of impending storms or other hazardous conditions, and to develop plans for coping with such emergencies. Increasing numbers of people who are attached with recreational boating, fishing requires rescue services, e.g., life jackets and other emergency equipment and monitoring and enforcement of boating operations.

MANAGEMENT OF COASTAL RECREATION ACTIVITIES:

Recreational activities and adventure sports are common in coastal areas. Recreational uses of a consumptive nature include hunting, fishing, shell collection etc., and non-consumptive nature include swimming, surfing, sun-bathing, boating, wind-surfing, snorkelling, diving, etc. As coastal recreation activities have flourished in Odisha coast, the need for active management has increased as well.

SURVEY ANALYSIS:

Coverage and Sample size: For collecting data from the primary sources, two sets of structured questionnaire made both for local people including local service providers and tourists. Sample sizes for Local people were 150 and for Tourists were 100. As regards to sampling, random selection procedure was adopted for picking up respondents. While selecting the samples, efforts were also made to have a fair representation of all four selected beaches of Odisha like: Chandipur, Puri, Konark and Gopalpur.

Data Analysis: The analysis is based on the collected data from selected beaches of Odisha. Majority of the respondents have given their view towards positive Economic Impact but at the same time they have given their negative feedback towards the Environmental of the coastal zone. From these data it is clear that Coastal Tourism is very useful

in terms of income and Job creation and proper planning and implementation of the plan is extremely essential to maintain sustainability and protect environment especially for the benefit of vulnerable Local residents and Biosphere of the area.

Table- : Perception of Local People on Economic and Infrastructural Impacts of Tourism (In %)

Impacts	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Tourism has created Job in the Beach area	62	14	08	12	04
Incomes of the Local people have increased	44	20	16	14	06
Nos. of Tourist are increasing in the Beach	48	20	20	08	04
Roads have been developed for Tourists	45	21	19	10	05
Recreational facilities have come up	37	27	18	11	07
Toilets have been developed for Tourists	46	20	16	12	06

Table- : Perception of Local People on Environmental Impacts of Tourism (In %)

Impacts	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Beach is becoming crowded	56	22	15	06	01
Garbage has increased	52	20	17	08	03
Cleanliness is maintained properly	22	21	15	23	19
Vehicular Pollution has increased	27	19	22	17	15
Water quality has deteriorate because of sewage and Solid waste	41	27	14	11	07
Beach is degrading because of more numbers of Tourists	47	27	15	06	05

Table- : Perception of Tourists on Economic and Infrastructural Impacts of Tourism (In %)

Impacts	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Accommodation facility is good	33	24	23	12	08
Roads have been developed	38	20	16	20	06
Recreational facilities have come up	30	21	37	10	02
Toilets have been developed for Tourists	36	25	07	22	10
Entertainment & Restaurant Facilities are good	27	31	22	13	07

Table- : Perception of Tourists on Environmental Impacts of Tourism (In %)

Impacts	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Beach is becoming crowded	45	18	21	07	09
Garbage has increased	53	22	11	08	06
Cleanliness is maintained properly	40	26	17	11	06
Vehicular Pollution has increased	38	25	21	09	07
Water quality has deteriorate because of sewage and Solid waste	39	26	20	08	07
Beach is degrading because of more numbers of Tourists	27	21	31	11	10

Table- : Cost-Benefit Analysis Framework Proposed for Tourism Facilities of Coastal Odisha

COASTAL TOURISM Facilities in the Coastal Zone	BENEFITS		COSTS	
	Coastal Plain	Beach and Shoreline	Coastal Plain	Beach and Shoreline
Tourism Complexes and Large Resorts	Income Jobs Investment Infrastructure	Income Jobs Invest- ment Infrastructure	Water Supply/Quality. Sewage, Solid Waste. More Social Tension. Stimulate Imports and less use of local products Increased Density.	Water Supply/Quality. Sewage, Solid Waste. Loss of Non-Renewable Stimulate Imports. More Social Tension.
Small Hotels and Resorts	Income Jobs	Income Jobs	Water Supply/Quality. Sewage, Solid Waste. Loss of Non-Renewable Stimulate Imports. Increased Density. Stimulate Imports and less use of local products	Sewage and Solid Waste Creating Social Tension Increased Density More Stressful Use and beach degradation
Entertainment & Restaurant Facilities	Income Jobs Infrastructure	Income Jobs	Water Supply/Quality Sewage and Solid Waste Creating Social Tension Stimulate Imports and less use of local products Increased Density	Water Supply/Quality Sewage and Solid Waste Creating Social Tension Stimulate Imports Increased Density
Shore side Recreational Facilities	Income Jobs Infrastructure	Income Jobs Support for Environ- ment	Sewage, Solid Waste Social Tension Increased Density More Stressful Use and beach degradation	Sewage, Solid Waste Creating Social Tension Increased Density More Stressful Use and beach degradation

1. Analysis of Environmental Degradation from Tourism Facilities in the Coastal area of Odisha:**Table- : Environmental Degradation Analysis Framework Proposed for
Tourism Facilities of Coastal Odisha**

Facilities in the Coastal Zone	Coastal Plain	Beach and Shoreline
Tourism Complexes and Large Resorts	Physical Change of land Groundwater Pollution Solid Waste Visual Impacts Harmful for Biosphere	Physical Change Groundwater Pollution Pollution on coastline Solid Waste Degrading water quality
Small Hotels and Resorts	Physical Change Groundwater Pollution Solid Waste Displacement Harmful for Biosphere	Physical Change Groundwater Pollution Toxicity Solid Waste Displacement
Entertainment & Restaurant Facilities	Physical Change Groundwater Pollution Solid Waste Noise Disturbance to Biosphere	Physical Change Groundwater Pollution Toxicity Solid Waste Disturbance to Biosphere
Shore side Recreational Facilities	Physical Change Solid Waste Displacement Disturbance to Biosphere	Physical Change Toxicity Solid Waste Displacement Disturbance to Biosphere

Findings and Recommendations have been given based on the Data Analysis

FINDINGS:

Coastal tourism involves major economic activity in seashore of India, especially in Odisha therefore it must be planned and managed with special care to ensure that the environmental qualities on which coastal tourism depend is maintained and improved. Major findings and areas of future work are concise below:

1. Coastal tourism provides a huge economic benefit in Odisha, both in terms of jobs and earnings and in terms of balance of payments and governmental revenues. Values of Coastal Tourism and its impact should be recognised by the State Government and other local policymakers.
2. The attractability of Odisha coast is beyond doubt and it can attract the sensitive eco-tourists. The strengths of beaches are relatively easy accessibility and abundance of natural resources.
3. Availability of systematic collection of data and information on the magnitude, nature, and economic and environmental impacts of tourism in Coastal Odisha are not up to the mark. This information is vital while planning for Coastal Tourism.
4. Tourism policies and programs related with coastal planning and management, clean water, beach nourishment, management of coastal hazards & safety and maintaining carrying capacity are interrelated and should be treated as a whole.
5. One third of the state's 480 km coastline is under the threat of erosion. The trend is more pronounced at *Gopalpur, Puri beach, Konark-Chandrabhaga-Ramchandi beach and Paradip-Jatadhar mouth*.
6. Due to the negligence, natural vegetation is disappearing because of cutting of trees, for tents, poles and fireworks. Pedestrian and vehicular traffic also affects vegetation.
7. Dumping of garbage increases population of fungi and algae which affects the local vegetation. Many waste material like plastic and glasses are not decomposed and create permanent pollution.
8. *Swargadwar* at Puri beach is the open funeral cremation ground uses firewood which creates environmental pollution.

RECOMMENDATIONS:

- Considering the peculiarity of the resource structure of *Puri, Gopalpur and Chandipur* beach, along with the

beach tour, other nature-related tourist activities like health tourism, water based adventure sports etc. can be planned on a sustained basis.

- As a part of the nature tour, the spots where there are chances of seeing wild animals, adequate arrangements should be made so that such animals can be seen in its natural settings without disturbing them.
- Tourist's interpretation centre should be established in every beaches of Odisha. The interpretation centre should act as a 'life-enrichment centre' where the link between the nature and human life are established. There should be provisions for briefing by experienced Guide with audio-visual systems.
- Regular, controlled beach profile survey must be done to know the real conditions of the beaches and accordingly decisions can be taken for protection.
- The dustbins should be installed at major stop-over points and tourists should be discouraged in carrying the plastic and polythene bags in the beach. As an alternative, bio-degradable carry bags can be allowed with the instructions to take it back.
- To control erosion, the Geo synthetic tube technology i.e. geo-tubes which are made up of high grade rexin material and filled with sand can be used and put on the bank of the sea. Use of geo-tube would be a better erosion-proof mechanism, as it would reduce striking force of the sea waves.
- Assigning a competent authority to review all erosion control plans to assure that protection of one area does not result in damage to another.
- Local government must prohibit sand removal from beaches.
- Provide proper solid waste disposal containers and adequate collection services in highly used areas.
- Plantation on the seashore must be done seriously. Ensure that vegetation or re-vegetation programmes are used and monitored to ensure that beach stability is maintained.

CONCLUSION:

Coastal tourism is one of the major forms of recreational tourism and an important part of the most rapidly growing activity in the world. Tourism and recreation-related development is one of the major factors shaping development patterns in the coastal zones. Water conditions of Coastal areas must be of a sufficiently high quality to allow people full use of these resources for water based recreation. There should be proper study of water quality, temperature, heights of waves and tides, speed of currents, occurrence of natural catastrophe, manmade pollution,

and erosion etc. Maintaining carrying capacity is the prerequisites for sustainable tourism development in the coastal region.

India has very long coastline and numerous islands. It has ample scope to develop coastal tourism here. The calm and peaceful environment with abundant greenery around is just perfect to relax and refresh the exhausted mind and body. Beaches in India provide the most appealing combination of sun, sand, sea and surf that is too hard to resist for any beach lover and water sport adventurer. Odisha is situated on the eastern coastline. The state of Odisha has a coastline of 480 km., and one of the most vibrant coastal environments in India due to its location, and physical factors especially its rivers with their delta, estuarine systems, and variety of flora and fauna. Some of the popular beaches of Odisha for tourists are *Puri*, *Konark*, *Gopalpur* and *Chandipur*. *Puri* is also one of the most well known and important Hindu pilgrimage centres. The *Jagannath* Temple, one of the four most important Hindu pilgrimage sites is located here.

Beaches, apart from their aesthetic and recreational qualities, are of vital importance to the coastal zone simply because they act as a buffer zone against erosion. There are several contributory factors which can influence beach erosion. The effects of erosion operating on a beach, over a period of time can be monitored. Also with the remedial measures to prevent erosion, should be analysed for their effectiveness. Government at all levels must assume appropriate proactive roles to shape and guide coastal tourism development.

Many of the attractive beaches of Odisha are vulnerable for degradation. Urban settlements of these beaches continue to dump sewage and other effluents directly into coastal waters. Stretches and creeks of beaches are contaminated by sludge and sewage of tourist area. All these waste materials contaminate sea water making it unfit for bathing and harming aquatic life. These human factors destroy the beauty of the beaches. Along with these, erosion is also a problem for Odisha coastline. Useful mechanisms like beach profile monitoring, the use of structural measures together with effective strategies are the most reasonable ways to fight with erosion problems in coastal areas of Odisha, which depends heavily on its beach resources.

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Following Photographs showing erosion, have taken from Konark, Odisha near Lotus Resort:

