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ASSESSING SUSTAINABILITY IN COASTAL TOURISM SECTORS OF ODISHA COAST, INDIA.

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Abstract

Balasore is famous for its long sea beach and pleasant natural beauty. This district is noted for the river Subarnarekha, Buhdabalanga and also the extended calm sea beach. It is also bestowed with the Chandipur, Talsari and Bichitrapur sea Beach. Balasore is appreciated for its salt, Brass utensils, stone and clay works. Ayodhya, Balaramgadi, Bardhanpur, Bhusandeswar, Chandaneswar, Chandipur, Kasaphal, Langaleswar, Laxmannath, Panchalingeswar, Raibania, Remuna, Sajanagarh, Talasari, Tripisagadia and Kupari are some of the places of tourist interest. The sustainable development as a strategic tool requires a process of planning and management that brings together a series of interests and indigenous people's concerns in the form of planning and development. The objective of this present research is to study the indigenous people's attitude in Coastal tract of Balasore district, Odisha- towards the impacts of coastal tourism as also to suggest the strategic interventions for current problems and future needs through intensive field survey and human perception survey with the help of some statistical methods and GIS tools. The study finding suggests that the residents' participation and co-operation is necessary to make the tourism development more sustainable.

Keywords: *sustainable tourism development, coastal tract, human perception, indigenous people*

1. INTRODUCTION

Our country has a long coastline of about 7500 km including that of its island territories. The coastal zone of India is under increasing pressure due to rapid urbanization, tourism development, discharge of waste effluents, municipal sewage, over exploitation of coastal resources and continued development in hazard prone areas. There are many studies on coastal tourism emphasize on the tourism system rather than on the interaction of the tourism and related environmental systems (Wong,P.P, 1993). Low-lying delta, low-elevation reef

islands and coral atolls are especially sensitive to sea level rise, as well as to changes in rainfall, storm frequency and intensity (Ehler, C.N., et al.,1997).

One of the impacts of coastal tourism are damages to coastal ecosystems such as beaches and wet lands, deforestation and erosion, excess use and increased pressure on limited energy and freshwater resources, ecological disruption and degradation of biological diversity, pollution and waste generation, resource use conflict and threats to local people for their culture and traditions (UNWTO-1994). Concentrated tourism development can also affect natural landscapes through process such as deforestation, loss of wetland and soil erosion (Neto, F., 2003). This is a major issue in coastal areas where large scale development occurs in clusters (Gossling, F., 2003; Mc Laren, D., 2003). Different studies also emphasise on coastal hazards (Kaiser, G., 2006) & their cause and effect on tourism like coastal erosion (Bird,E.C.F.,2000; Bryant, E.,2005; Leatherman,S.P., et. al,2000; Capobianco, M., et al, 1999;), storm & associated stromsurges (Harris,L.D., 1963; Nott, J., and Hayne,M., 2000), coastal flooding(Kaiser, G.,2006; Burston,J., 2007), sea level rise (Kaiser, G.,2006).Biodiversity loss due to urbanization in coastal areas also negatively affects the tourism. Coastal area of Odisha is characterized by sand dunes, long shore currents, high salinity, low turbidity and low vegetative coverage (Paul, A.K., 2002).

Sustainability requires attention to the domains that support or influence human health and well-being- economic, social and environmental. Inskeep, E., (1991), furthered this idea indicating that, if tourism development was planned improperly it could destroy the very resources (e.g. economic, environmental, and social) that are the foundation of tourism in a community. Due to heavy growth in the recent decades, those who manage tourism are aware that it is sustainability in coastal areas that is strongly dependent upon the quality of these particularly fragile environments (Coast Learn, 2009).

Social sustainability should be ensured by including community stakeholders while planning and managing tourism (Moseley, M.J., 2002). Environmental sustainability should be ensured by respecting the carrying capacity of ecosystem and reducing all type of the pollution (Durovic, M., and Lovrentjev,S., 2014). Economic sustainability should be achieved with high quality of tourist product (Durovic, M., and Lovrentjev,S., 2014). UNWTO, 1994 suggested plan for sustainable tourism development by environmental planning, community based tourism, quality tourism, long range comprehensive planning and strategic planning. The planning of coastal areas for sustainable development urgently needs to take into account all potential risks, e.g, floods, forest fires, loss of biodiversity, coastal erosion (EEA, 2006). The environmental impact assessment approach is essential to effective sustainable coastal management (Clark, J.R., 1992).

There is a need for research on how societal driving forces (social and demographic, political and institutional, economic and commercial, cultural and technological) affect the nature and distribution of human activities by different stakeholders like-tourists, local community and tourism companies on coastal zones of Odisha and its impacts on coastal environment and tourism sustainability associated with the prevailing and possible alternative patterns of human activity (TERI,2011). For sustainable tourism and development and a growing need for success, the integrated coastal planning and management(ICPM) and integrated coastal zone planning (ICZP) frameworks are necessary as ways of planning and managing coastal environments (Sorensen, J., 1993).

As tourism is an environmental phenomenon, it stands to be boosted and sustained by adhering to the tenets of ICPM and ICZP, which together are referred to as coastal zone management (UNEP, 2009). In order to mitigate some negative effects due to coastal tourism development, both governments and the private tourism sector can play an important role. It is therefore vital to develop a solution that balances environmental degradation with social

equity and economic growth, i.e. sustainable tourism (Kanji, F., 2006). Many authors and researchers have suggested integrated coastal zone management and application of different tools like- strategic environmental assessment (IESWM, 2010; Gazzola.P, et. al.,2009; Fischer. T. B, 2007), carrying capacity analysis (IL&FSIDC, 2012), environmental impact assessment (IESWM, 2010; Sadler. B, 2004), sustainability indicators (Atkisson, G., et. al., 1997; Hart, M., 1999), zoning(Miller, M., et. al., 2002) etc. as policy guideline & management of sustainable coastal tourism. As per the result of such research it was noticed a huge infrastructural gap at the coastal zone of Odisha. There is available capacity to hold the tourists at the destinations of priority circuit of Odisha till 2020apart from only Chandipur, Talsari and Bichitrapur beach which does not have capacity to hold the tourist even in 2010 and will be a major concern for sustainable tourism development in the coastal zone of Odisha.

2. MORPHO-ECOLOGICAL SETTINGS OF STUDIED COAST

A widespread coastal region is on the farthest east of the state. A part of the district of Balasore along the Bay of Bengal includes the coastal plain. This rising coastal plain is made up of sand and mud sedimented by fluvial and aeolian process which is also an extreme western division of Kanthi Coastal Plain, covers an area of about 142519.76 hectares stretching between 21°20′25″N. to 21°39′55″N. and 85°50′45″E. to 87°12′37″E (Fig 1). Colonies of sand dunes and marshy areas are in parallel way to the shoreline. The dune of this vicinity lies adjacent and parallel to the Bay of Bengal. In some regions dunes arises are at a distance of 5–6 km from the coast and 11–12 m high. The state has a shoreline of 510 km.

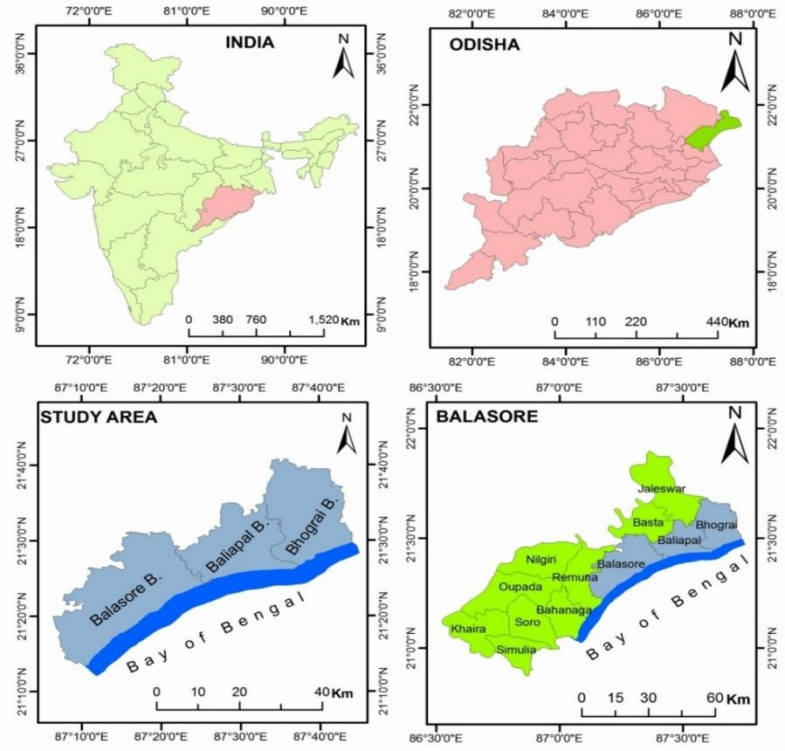

Figure 1. Study area stretching between 21°20′25″N. to 21°39′55″N. and 85°50′45″E. to 87°12′37″E

Balasore coastal tract is characterized by sand dunes, long shore currents, major river emancipations, less turbid but high saline sea water influence, cuspate delta of the Subarnarekha river and neo-tectonic depressions in the north. Bichitrapur Mangroves in

Balasore district has a complicated coastline, bunches of early growing deltas with interlinked tidal creeks, and estuary. Deltaic expanses are generally clayey due to high deposit of sediments through the Subarnarekha system. A clayey bedspread covering gravels of sandstone, siltstone and quartz designate quaternary era of the area. Consequently, Odisha does not acquire the fertile alluvium as before and the topography is not de-salinated by river floods. The wide beaches and intensive network of inlets and creeks, mangrove swamps, mudflats, frequent coastal dunes and sand flats are the major characteristics of this coastal region.

3. METHODS AND MATERIALS

The following techniques, tools and methods are projected to categorize the coastal area that is influenced the most and appraise the future condition of coast if such type of trend in coastal development occurs:

3.1 Data Collection, Questionnaires, Interviews and Analysis

To construct a methodical categorization of coastal zone, to achieve objective based study and to find most favorable solution, the integrated use of modern techniques and tools such as Geographic Information Systems (GIS), Image Processing Systems (IPS), Remote Sensing (RS) with Rapid Impact Assessment Matrix and SWOT analysis to be a talented implementation and would address in representing sustainable coastal tourism industries development in the coast of Balasore, Odisha.

SWOT analysis instigated in the 1960s (Dyson,R.G., 2004) and is generally used in the development of marketing plans and decision support (Bbernroider, E., 2002;Chang, H.H., and Huang, W.C., 2006;Houben, G., Lenie K., and Vanhoof, K., 1999) is hardly ever uses for any coastal morphological sustainability with few studies known (Nouri, J., Karbassi, A.R., and Mirkia, S., 2008; Sanò, M., and Fierro, G., 2003). In recent times the SWOT analysis has achieved wider fields of application and it is usually used to recognize features and to resolve divergence of the terrain.

The perception of the Rapid Impact Assessment Matrix (RIAM) to appraise the human cause and development to hurriedly changing coastal environment is a promising assessment tool to study the status of Balasore coast and its vulnerability. RIAM is developed by DHI Water, Environment & Health to support in the preparation of an Environmental Impact Assessment (EIA). RIAM permits full precision of the decisions made in an evaluation study (Pastakia, C.M.R., 1998). The RIAM system is based on straightforward perceptions and has been experienced in a number of diverse conditions. It is a very influential tool in connection with EIA's and was hardened on various project studies (Jensen, K., 1998) where a multidisciplinary squad approach is used (Morris, P., and Biggs, J., 1995). It receives in data from different environmental, social and economic segments connected with coastal zone to be analyzed against common significant criteria within a common matrix, thus providing a hurried, clear estimation of the major impacts on the coasts. It represents the scoring within a matrix that has been intended to allow subjective judgments to be quantitatively recorded for appraisal of coastal environmental changes of Balasore coast, Odisha in relation to a variety of developmental projects regarding the customary coastal resource uses along the coast. Coastal Landscape, Geomorphologic and coastline change may be understood through a comparative analysis of the spatial and temporal changes took place in the coast of Balasore through a long duration

of time through taking out information from remotely sensed data and combination of GIS.

4. PREMISES OF THE STUDY

The above mentioned techniques, tools and methods are projected for the study on the basis of the following hypotheses:

- Anthropogenic uses of coastal resources in the coastal stretches are the most important criteria that are causing coastal alteration of geomorphology or coastline apart from the natural process.
- Least managed, unscientific and nontechnical use of coastal resources will remain growing in the next decade if it's not switched correctly with sufficient scientific research based information. This puts in more pressure on Balasore's coastal area in general and aquatic resources in particular.
- If such kind of trend of development is going on in the coastal region, it is estimated in the near future there will not be any coastal region left untouched in Balasore.
- The techniques which are mentioned above can emphasize the problem, cause and clarification in a more persuasive approach in provisos of more reliable scientific information.

5. RESULTS AND DISCUSSION

Tourism Interfaces in Balasore Coast

It is clear that the "Tourism Sector" builds up much more job opportunities in comparison with any other sector in terms of per million rupees investment. The district Balasore is no exception. Because of sea side location and cultural heritage, there is a vast scope for the expansion of tourism in this district and to obtain this, the state government and the local administration have to set up mission and vision. The private agencies should be used as a part of this mission and vision. The district Balasore is a miniature form of the state Odisha in terms of culture, tourism, literature, architecture, heritage, natural wonders and religious momentum. So its popularity crosses the limits of the nation. From time immemorial the faunal and floral community, it's history, geographical location and culture has invited the people of nation and from the outside of its boundaries. The district Balasore is called "The Germany of Odisha" due to the sea facing situation in the north, the river network, blue hills and extensive meadow and for extraordinary beautiful beach. The name of the district 'Balasore' is chosen after the name of "Lord Baleswar". Its archaeological structure is excellent. Its temple, wild life, ruined monuments; quaint little hilly picnic spot helped her to be an ideal tourist spot.

In the whole district of Balasore there are 19 major tourist spots (Table 1). 10 among which are included in the present study area (Fig. 2).

Table 1. List of major tourist centers in Balasore District

Place	Importance
Ayodhya	Religious centre and archaeological site
Balaramgadi	Sea beach and fish trading centre
Balasore	Urban area
Bardhanpur	Religious centre
Bhusandeswar	Religious centre

Chandaneswar	Religious centre
Chandipur	Beautiful beach
Chasakhanda	Baghajatin memorial
ChoumukhDagra	Sea beach
Inchudi	Historical (Freedom movement)
Kasaphal	Sea beach
Kupari	Religious centre
Langaleswar	Religious centre
Laxmannath	Welcome point
Panchalingeswar	Religious centre and scenic spot
Raibania	Fort
Remuna	Religious centre
Sajanagar	Religious centre
Talsari	Sea beach
Tripisagadia	Religious centre

Source: Comprehensive district annual plan 2011-2012(Balasore)

Chandipur

The beach of Chandipur is very wide, golden and calm. The sea water advances towards the shore as much 5 km at the time of high tide and retreat the same during low ebb. In addition to this the huge sand banks, wild creepers, the rusting of the branches of casuarinas trees along with the rhythmic dance of both ebbs are enough to create obsession among the tourists.

Langaleswar

This place is situated by the river ‘Parbati’. The mythology and local belief said that Lord Shiva ploughed the land himself for cultivation and so the name “Langaleswar” is given. Daily worship is the feature of this area and so a large number of followers come here every day.

Kashafal

It is an ideal fishing harbor. Two rivers Dubdubi and Panchapali meet here and flow into the Bay of Bengal. There is the scope of boating in these two rivers. No nature lover cannot but fell in love of the calm, green village atmosphere and the deep forest of casuarinas of this place.

Chandaneswar and Talsari

The temple of Lord Chandaneswar is located here. It is a very sacred religious place. Many pilgrims from West Bengal come to visit this holy place apart from the peoples of Balasore. Daily worship and ‘Gajan’ at the end of the Bengali year are observed here. From here a road runs 5 km away towards the Bay of Bengal where the place Talsari is situated. It is mainly a fishing harbor but the big sand dunes, the confluence of the Jatranala and whispering of the enclaves of casuarinas are the points of attractions. The sea bath is very interesting along with

the boating. The planted casuarinas forest is an important picnic place. Now a days there are many hotels and lighting in the beach.

Bhusandeswar

According to the name of Lord Shiva this name is adopted. It is situated by the river Subarnarekha. It is the largest Shiva Linga in Asia. Many worshippers come and worship by pouring water and milk on the 'Linga' to get blessing. The Odisha Government has arranged adequate light here along with a rest shed for pilgrims.

Choumukh and Dogra

Name of the two fishing village is Choumukh and Dogra. These villages are located under Baliapal C.D Block. The pleasant atmosphere, pleasing breeze of the enclave, wide golden beach and red scorpions are the some points of attraction. Fish catching with the small design net is a unique scene. Many tourists come here for picnic in the New Year and the X-mass day. Light points can be found here at present.

Khirchora Gopinath

This temple is situated in the South-West of the town Balasore. It is said that Madhabendra Puri and his disciple Sri Chaitanna Dev visited this temple. Thousands of people come here and a special item made of milk is distributed among them as Prasad. It is called the 'Vrindaban of Odisha'.

Balaramguri

It is situated in the centre of the town Balasore and just by the river Burahbalang. Though it is mainly a fishing harbor, being the confluence and to watch the sea many tourists come here. In addition to deer park, there are very attractive picnic spots also.

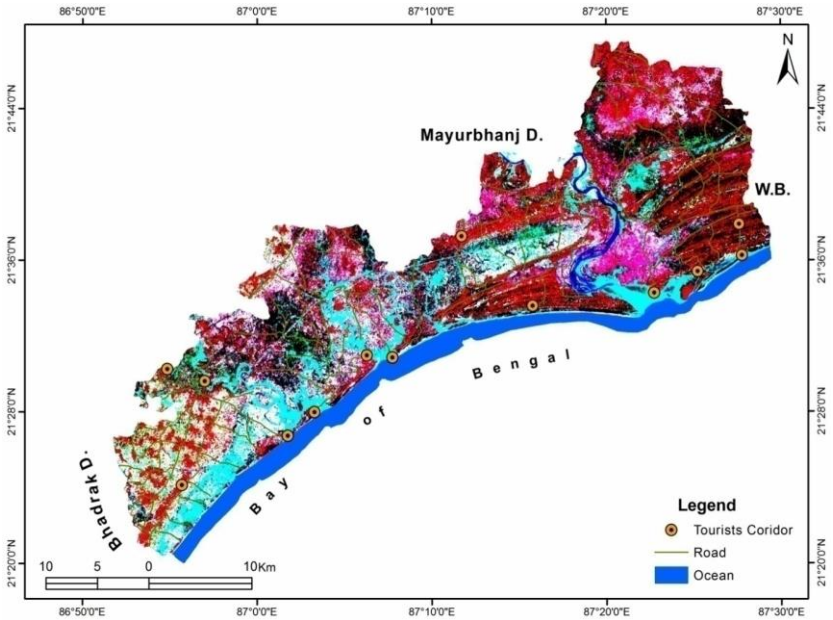

Figure 2. Point location of significant tourist corridors

Balasore

Dinamar Dinga and Farashi Dinga

- Balasore is a very important town in the middle age. Due to its situation by the river Buribalam its importance is very high to the foreign travelers and rulers. Some parts of this place were occupied by the French and the Dutches and till now they are known as Farashi Dinga and Dinamar Dinga. The foreign architectures increase the attraction of this place. In addition to this there are a numbers of temples in this town in which the followers come for worship and marriage. The names of the temples are as follows-Balasore Laxmi Narayan temple, Jhadeswar temple, Rameswar temple, Khirchora temple, Nilgiri Jagannath temple, Banthia Jagannath temple, Dudarchandi temple, Nimkali temple and Bahanga Laxmi Narayan temple. The stone work and brass was gets its excellence in this district and so has become so famous that a large number of tourists from U.S.A, Pakistan, Bangladesh, Russia etc. come here in every year.

Maninageswar

- The Maninageswar temple of Bardhanpur is the temple of Lord Shiva. It is said that during the exile the Pandavas visited the temple of Maninageswar after taking bath in the Pandava Ghat. This temple is possibly established in 1600 A.D and the sea beach is only 2km away from this temple.
- The present study area concentrates mainly around the sea shore where there is limitless natural beauty and many religious places are present. For this reason the eco-tourism, adventure, wild life tourism, religious tourism spots can be established with the help of Government, private agencies and also the local people. The help of the Government, all political parties and common people in all levels can build up bottle neck situation in all the tourist spots in recent future.
- The following table (Table 2) containing the tourist arrival statistics at Balasore in comparison to Odisha and it is clear that the tourist flow is gradually increased by the time (Fig. 3) which reflects the above conditions to flourish the tourism industry.

Table 2. Tourist inflow in Odisha as well as Balasore coastal district during 2000 – 2005

Year	2000	2001	2002	2003	2004	2005
No of tourist arrival in Orissa	29,12,115	31,23,170	34,36,270	37,26,270	41,54,353	46,66,286
No of tourist arrival in Balasore	7,28,028	7,80,792	8,59,067	9,31,567	10,38,588	11,66,571

Source: India Tourism Statistics, 2005 and State Tourism Department, Orissa

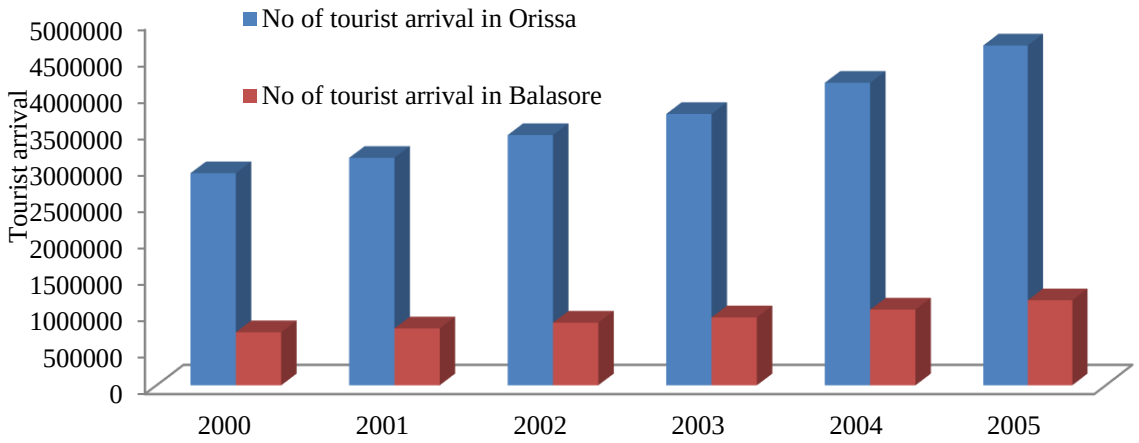

Figure 3. Tourist inflow in Odisha and Balasore during 2000 -2005

5.1 The Problems for Expansion/Construction of Tourism Industry in the Study Area

- Many problems arise during the implementation of sustainable development. The only one way out is to create awareness among the local people about tourism industry and availability of tourist in Balasore and Odisha.
- Deficiency of good road ways and road networking.
- The number of guest houses and bungalows are not enough as to the necessity.
- The coastal areas are highly dissected due to excessive rivers and cannel network.
- Lack of quality tourist map and tourist guide.
- Scarcity of participation of private tourism sector.
- Lack of maintenance of a particular tourist spot by the local community.
- The local community does not have complete knowledge of tourist spot and tourism industry.
- Lack of adequate capital.
- Lack of trained human resource those who can always canvass about the economic benefits of tourism industries.
- The cultural barrier between the tourist and the local people.
- There is almost no bank loan and subsidy in this sector.
- Problems for implementation of planning

5.2 Some of the Major Issues in the Study Area that Requires to be Addressed are-

- Assessment of renewable and non-renewable resource potential and coastal stability.
- Assessment of tourism potential, carrying capacity of the environment and plan for infrastructure development through energy generation potential by wave and wind.
- Assessment of vulnerability of the coast to cyclones, floods, typhoons, impact of human activity on the coast etc. with contingency and measuring planning.

5.3 Sustainable Tourism Approach

Sustainable tourism approach is challenging to make as low an contact on the environment and local culture as promising while helping to produce future employment for local people, in according to the UNWTO sustainable tourism is defined conceptually as

development guidelines and management practices are applicable to all forms of tourism in all types of destinations including mass tourism and the various niche tourism segments. (Sommez, S.F., and Graefe, A.R., 1998) (Fig. 4). The nature is ever changing. So there can be no unbending and fixed tourism policy. The authority has to espouse the policy considering this change. With the spread of tourism industry it must be careful that the area will be over crowed, noisy and above all the pressure of infrastructure will growing up. So we must keep in mind that the equilibrium of nature should not be violated for the next generations. For this we need to adopt sustainable tourism development. The rationale of sustainable development is to fulfill multi-dimensional necessities of the tourists and the local people will get employment which will cause development with one condition that nature should not be shattered. So awareness is indispensable and sustainable development will be executed according to the plan and guideline.

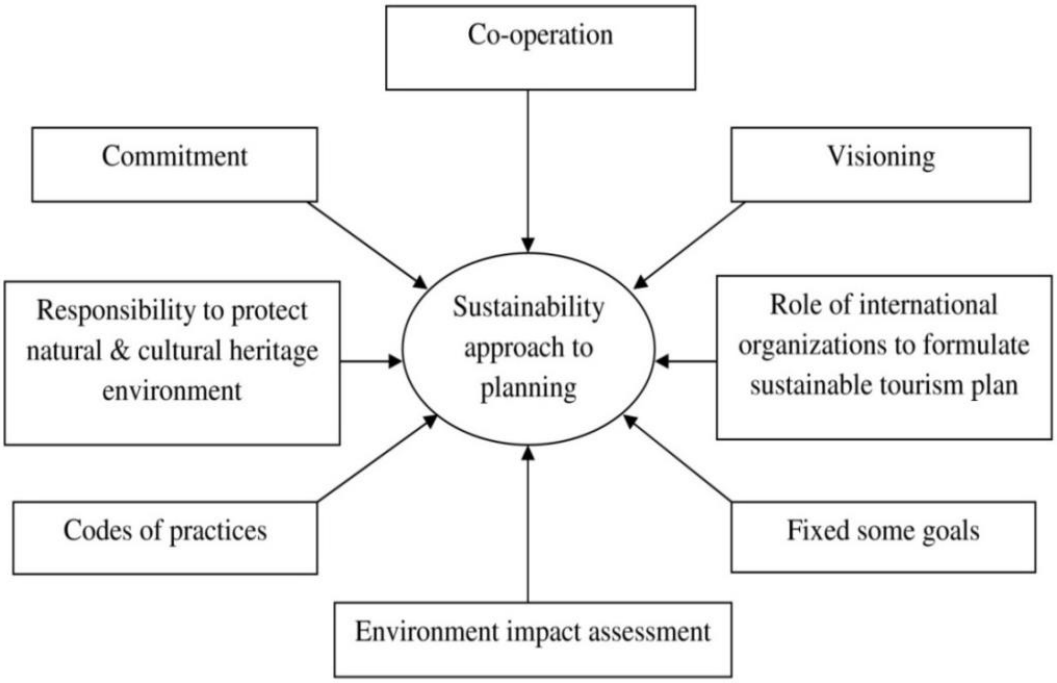

Figure 4. Replenishment of sustainable approach to tourist planning

"Tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities" (Making Tourism More Sustainable, 2005).

Sustainable tourist spot development necessitates the well-versed participation of all pertinent stakeholders as well as strong political leadership to make certain wide contribution and consensus building. Accomplishing sustainable tourism is an unremitting process and it requires invariable monitoring of impacts introducing the essential anticipatory and corrective measures whenever necessary. Sustainable tourism should also maintain a high level of tourist satisfaction and ensure a meaningful familiarity to the tourists raising their awareness about sustainability issues and promoting sustainable tourism practices amongst them (Fig. 5).

5.4. Characteristics of Sustainable Tourism Development

Characteristics of the sustainable development are as follows:

1. Nature must be treated in a sustainable approach in tourism planning.
2. The significance of the role of community in tourism planning must be found out.
3. Awareness must be gathered about the positive and negative sides of tourism development.

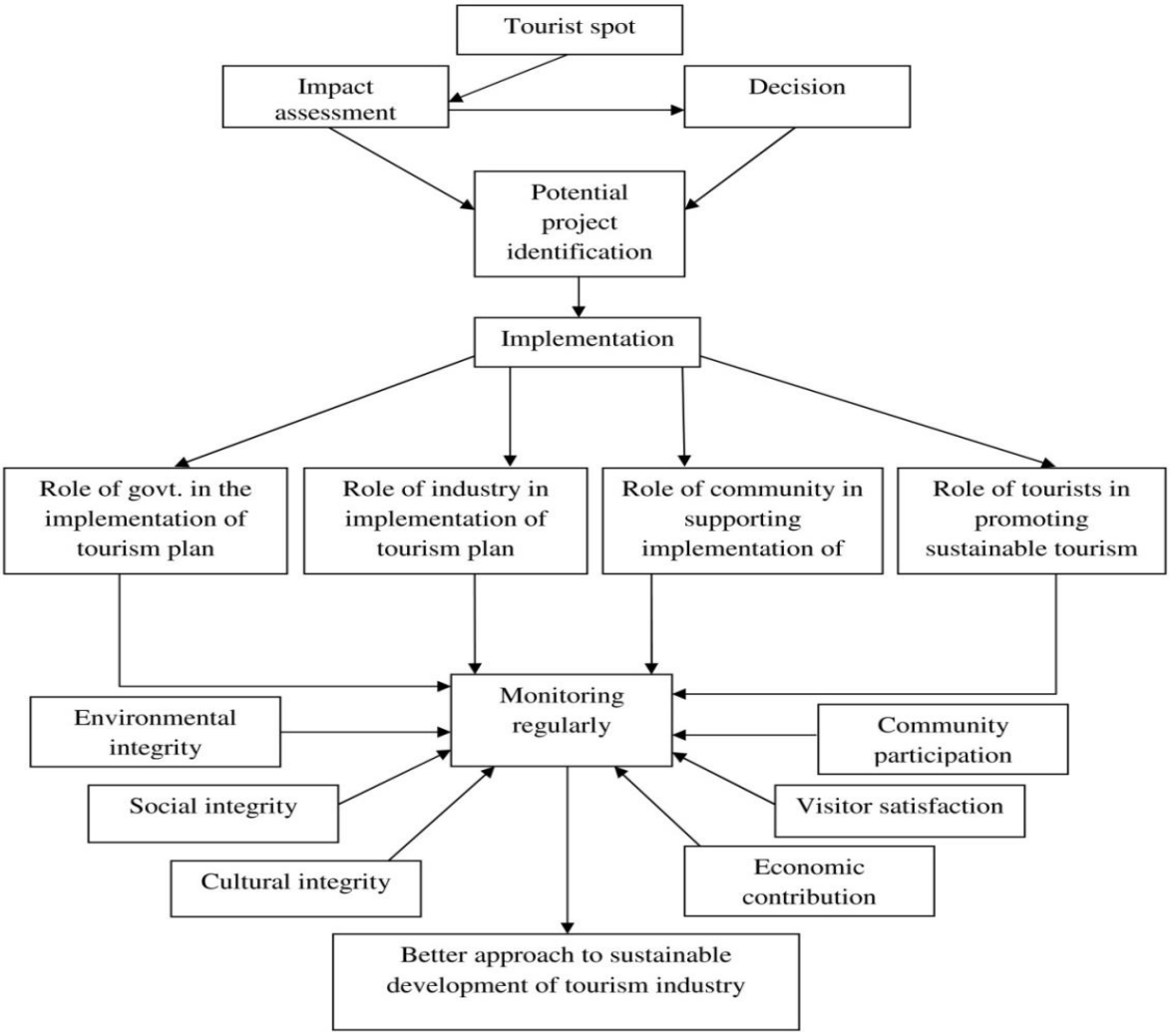

Figure 5. Factorial design of tourist spot development.

1. A linkage must be set up among the characteristics of development, destination and traveler with the impact of tourism.
2. Impact of tourism industry on economy, society and nature must be found out.
3. Every field must be evaluated timely to ensure sustainable development.

5.5 Project under Tourist Scheme

The Odisha Government has undertaken some tourist schemes to strengthen the tourism industries (Table 3). One of them is trekking base camp at Kuldiah, Balasore included in present study area. Other projects are as follows:

Table 3. Layout of proposed development plan for tourism sector in Balasore district.

Name of Tourist Centre	Details of Proposed Work	Amount (Rs. In lakh)
Chandipur	Stone packing from Chandipur to Balaramgudi, Illumination and pathway.	400.00
Balaramgudi	Creation of water sports and toilet block.	70.00
Chandeneswar	Furnishing of yatrinivas, Water supply to Pitha and Panthanivas.	12.00
Panchalingeswar	Development of picnic area, Renovation of steps and Renovation of pond at Khemkote.	100.00
Raibania	Preservation and conservation of old ruined fort.	30.00
Langaleswar	Construction of rest shed and Parking area Development, illumination and Drinking water facilities.	60.00
Takasari	Pathway, stone packing, street light on sea beach, sitting arrangement, landscaping for beautification of sea beach, development of road from Talasari to Udayapur, development of road from Chandaneswar temple to Talasari sea beach, Boundary wall of Pnthasala, Talasari restaurant near jetty.	2500.00
Kasaphal	Provision of accommodation facilities, approach road (Langaleswar to sea beach).	40.00
Laxmannath	Development of village road from NH-60 to the spot (8kms), toilet block, rest shed, parking place & drinking water facilities.	10.00
Balasore	Development of Shantiniketan park, renovation of ponds, boating facilities, preservation of Dutch used area i.e., Dinga-ma-dinga and Farashi-dinga, renovation of Landa Goswami Math.	5.00
Sajangarh	Provision of parking, toilet block and illumination.	15.00
Ayodha	Provision of toilet block, rest shed and drinking water facilities.	15.00
Bardhanpur	Provision of toilet block, rest shed and drinking water facilities.	10.00
Chasakhanda	Development of picnic area, provision of drinking water, toilet block, boundary wall of the Monument.	25.00

ChoumukhaDagra	Provision of accommodation, illumination, road from Kalipada to beach (8kms).	40.00
Tipisigadia	Development of road (3kms) from NH-5, parking, illumination, toilet block and drinking water facilities.	50.00
Kupari	Development of toilet block, rest shed and parking area.	25.00
Inchudi	Provision of toilet facilities.	5.00
Gud	Rest shed and parking area development, illumination and drinking water facilities.	25.00
Total		3482.00

Source: Comprehensive district annual plan 2011-2012 (Balasore).

5.6 Strategies for Tourism Industry Development

The beautiful natural setting, 64km long coastline exiting sand dune and the confluence of the rivers are ideal background to develop the tourism industry.

The strategies of building up tourism industries are as follows:

- Good quality road should be constructed up to all tourist spots.
- Enough scope of accommodation should be arranged in all tourist spots.
- Supply of electricity and drinking water should be ensured.
- Trained guide and public transportation should be ensured.
- All tourist spots of the present study area should be interconnected.
- The State Government should pay attention to tourism industry to collect more tax.
- The Government should find out new spots and develop them for the tourism.

CONCLUSION

Coastal zone, the transitional zone between land and sea, is one of the most fragile, complex and a productive ecosystem. It is bestowed with enormous resources both - living, non-living and is a potential area for recreation and harnessing non-conventional energy resources (wave and wind energy). Accelerated and unscientific developmental activities have induced catastrophic consequences. In order to optimally utilize and reap the benefits without hampering the balance, it is necessary to adopt integrated coastal management strategies based on solid scientific foundation that allow for multiple uses of the resources without causing serious damage to the environment.

Coastal ecosystems found along continental margins are regions of remarkable biological productivity and high accessibility. This has made them centers of human activity for millennia. Coastal ecosystems provide a wide array of goods and services: they host the world's primary ports of commerce; they are the primary producers of fish, shellfish, and seaweed for both human and animal consumption and they are also a considerable place of tourism industry development. The beauty of coastal ecosystems makes them a magnet for the world's population. People drift down to coastal regions to live as well as for leisure, recreational activities and tourism. For purposes of this analysis the coastal zone has been defined to include the intertidal and sub tidal areas on and above the continental shelf (to a depth of 200 meters) and immediately adjacent lands.

Recently Central Government has approved an ICZM (Integrated Coastal Zone Management) project at a cost of Rs.1156 crore to build up capacity and establishment to efficiently execute the Coastal Regulation Zone Notification (1991) aimed to control pollution of coastal waters and to increase livelihood options for coastal communities.

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