



Coastal tourism and beach sustainability – An assessment of community perceptions in Kovalam, India

Proshanta Kumar Ghosh¹, Debajit Datta²

¹Satberia High School, Satberia 713314, West Bengal, India, ²Department of Geography, Taki Government College 743429, West Bengal, India

Correspondence: Debajit Datta (email: debajit.geo@gmail.com)

Abstract

Coastal areas are among the most densely populated zones worldwide and at the same time subjected to rapid environmental changes due to their land-sea interface locations. The phenomenal growth of coastal tourism in the last few decades, especially in the tropical countries, has created environmental havocs by drastically altering the local ecological milieu in which the indigenous communities have thrived for generations. Kovalam, a coastal village of Kerala, India, has been studied to assess the status of beach dependent tourism and its impact on the sustainability of beaches in the long run through participatory community appraisals. It was found that standing on the thin line between survival and destruction, the coastal village of Kovalam needs more such initiatives from all corners of the society to protect itself from the havocs created by the consumerist urban-industrial culture. In this context several development oriented guidelines were forwarded to initiate eco-friendly tourism, primarily based on local community endeavors, which will in turn enhance the local resource pool.

Keywords: beach tourism, coastal indigenous community, Coastal Regulation Zone, community development, participatory appraisal, sustainability

Introduction

The rapid growth of coastal tourism in the last 40 years is one of the major reasons for the urban-infrastructure development of these coastal areas and consequent coastal environmental problems (Hall, 2001). The question of sustainability is particularly important in the context of coastal tourism, which is an activity at the interface of humankind, land and water (Ramachandran *et al.*, 2005). Coastal tourism, therefore, is facing the challenge of balancing tourism's economic advantages with maintaining environmental sustainability and the inevitable change of its own character with the progress of time. The sea beaches perform, in this context, a fundamental role where the issues related to planning and management are increasingly more important when it comes to the implementation of sustainable development strategies (Silva *et al.*, 2007).

Kovalam, a renowned beach resort of Kerala, has been purposively chosen for the present study to enumerate the impact of unplanned development of tourism on its physical as well as socio-economic infrastructure. The main focus of this study is to establish baseline information on the type and nature of impact of tourism activities through a people-centric approach. The objectives of the study, therefore, have been established as:

1. Determination of primary causes of alteration of physical and socio-economic condition of the area.
2. Assessment of present environmental status of all the beaches of Kovalam under the unprecedented surge of coastal tourism in the last decade.

3. Identification of present constraints and bottlenecks of sustainable tourism development in Kovalam.
4. Evaluation of present tourism management plans and formulation of sustainable management strategies to protect the beach ecosystem.

Study area

Kovalam is a small fishing village on the south-western segment of the complex coastline of western India and is situated in the Thiruvananthapuram district of the state of Kerala (Figure 1). The study area is comprised of four distinct beaches of Kovalam extending from 8°04' N to 8°22' N and 76°59' E to 77°31' E. Administratively, the beaches of Kovalam are part of two *gram-panchayats* (Decentralized village level governing institutions in rural India) mainly, i.e. Vizhinjam and Venganoor. These beaches are among the most popular places for coastal tourism in India and in very high demand during the winter and spring seasons. Although the study area is not large (approximately 16 km long), it is possible to find a sharp diversity of situations throughout the existing beaches. The total beach area within the two *panchayats* is 22.74 sq. km and the total population was 28746 in 2001. The general characteristics of these beaches are given in Table 1.

Table 1. General beach characteristics of Kovalam

Name of the beach	Characteristics
1. Samudra	i. One km long sandy shore ii. Water depth is 2-5 m iii. Extensive sand stretch iv. Owned by KTDC v. Gentle surfing condition
2. Kovalam	i. 400 m long ii. Water depth is 1-2 m iii. Location of promontories
3. Guest House	i. 450 m long ii. Extensive sand stretch iii. Algae and mussel covered rock
4. Light House/ Eve's beach	i. 550 m long ii. 5-7 m deep iii. Location of granitic (1-2 m in diameter) promontory iv. Extensive sandy beach

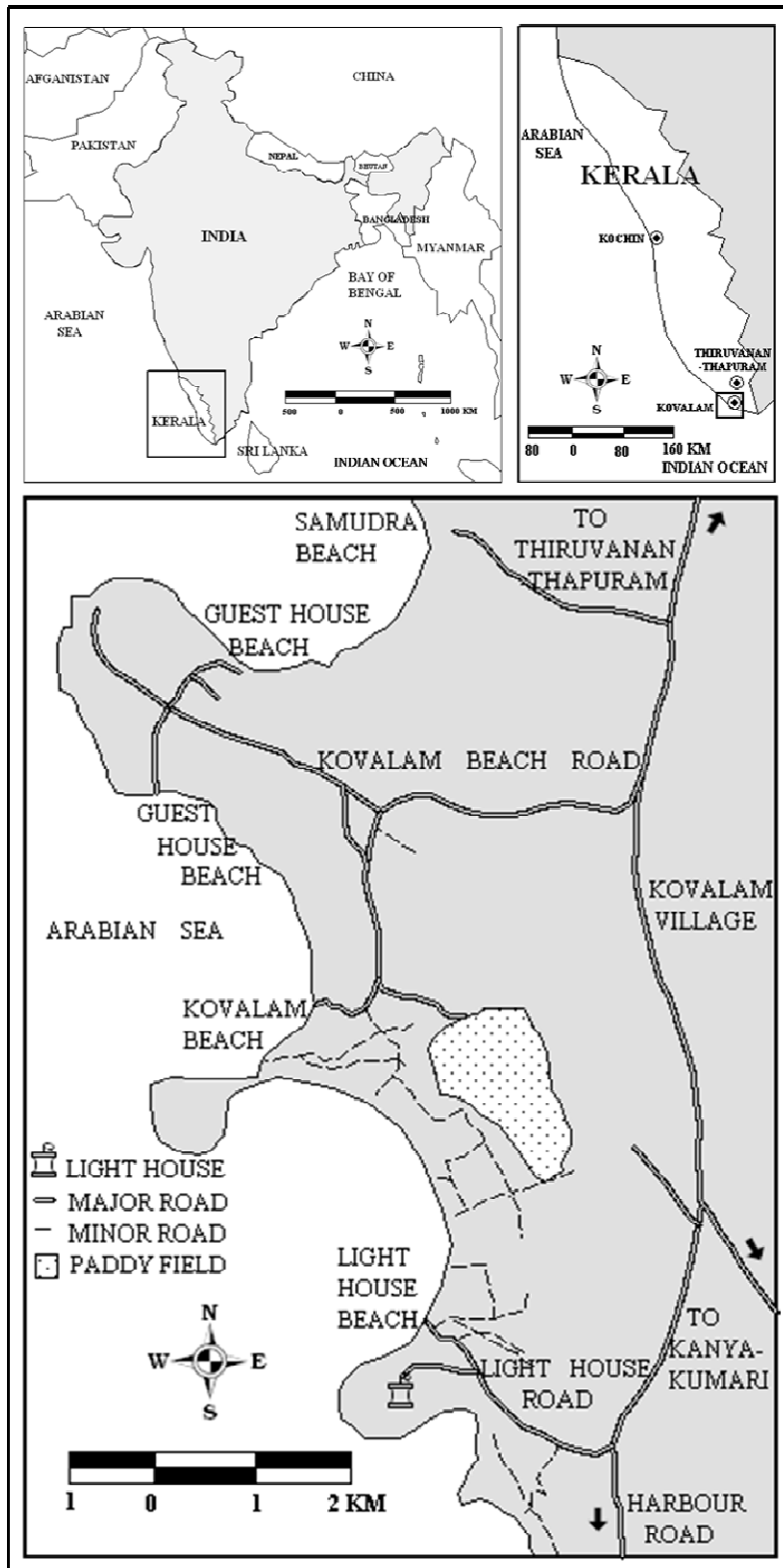


Figure 1. Location map of the study area

These parts of south-west coast exhibit many striking geomorphological units (Ahamed, 1972). Apart from coastal zone features like beaches, beach-cliffs, stacks, shore platforms, beach ridges, estuaries and lagoons, the study area include lateritic surfaces and valley flats with alluvial fills. In fact, the entire gamut of land forming forces accompanied by the tectonic movements are found to have exerted much influence on the evolution of these polycyclic and polygenetic landscapes found here (Mallik, 1987).

The late Maharaja of Travancore Sree Thirunal Balarama first brought Kovalam to public eyes as his summer retreat (Thanal and Greenpeace, 2001). The European guests of the Travancore kingdom discovered the potentiality of Kovalam as a tourist destination in the late 1930's. But the real fame as a beach resort was won later for Kovalam in the early 1980's with the arrivals of *Hippies* or Bohemian tourists of Anglo-American origin. Afterwards, development initiatives under 'Club Mediterranean Project', several projects of Indian Tourism Development Corporation (ITDC) and Kerala Tourism Development Corporation (KTDC) like 'Chartered Tourism Initiative' starting in 1995, and setting up of Kovalam Vizhinjam Development Authority (KVDA) had strengthened infrastructural development and transformed Kovalam to a world class sea-resort from a mere fishing village (Government of India, 2004). Today Kovalam stands as a stark reminder of how a small fishing village with coconut groves, where cultivation of coconut trees for copra and oil, manufacturing coir from husks, fishing in near shore region were the major sources of livelihood even in the late 1980s, has been transformed drastically due to unplanned tourism (Biju, 2006).

Methodology

The methods applied in this study include field level assessment of beach activities and participatory tourist and citizen appraisals (Breda, 2005). The reports of several NGOs, publications in local newspapers, and extended internet-based tourist-blog surveys have also been taken in consideration in order to collect multiple views about the nature, dynamics and impact of tourism development in Kovalam.

Field level assessment of beach activities

The study of beach related activities was conducted by analysis of beach morphology first and then assessment of the current geo-environmental profile of Kovalam. The four distinctly wide beaches present in Kovalam have been studied from morphological perspective to find out their present condition and consequent response to the 'tourism boom'. For this purpose a primary field level survey was carried out by the authors with the help of local graduate students from August, 2006 to May, 2010 and significant morpho-dynamic characteristics of the beaches have been identified. For the study of geo-environmental profile, several environmental parameters related to beach pollution and water quality status had been studied based on primary and secondary level data.

Application of participatory methods to assess tourism sustainability

For assessing the perception about sustainability status of tourism in Kovalam, a questionnaire was structured as part of the primary survey. The questionnaire was designed to comprehend how the beach tourism was perceived and practiced by both the tourists and locals and to determine user's likes and dislikes regarding the beaches as well as their opinions about the future prospects of tourism in Kovalam (Deng *et al.*, 2003).

Development of composite sustainability score

As an outcome of the analysis, composite sustainability scores have been constructed for the four beaches and surrounding locality. These scores, in turn, indicate the nature and magnitude of problems of tourism

and eventually help to create a framework for future development strategies of tourism in a sustainable way, keeping in view the needs for gaining economic prosperity and maintaining ecological balance.

Results and discussion

It is not possible to accomplish studies on analysis of the framework of relationships between human activities and the immediate environment without taking into account the geographical location and spatial relations which are the integral components of the landscape. Hence, geomorphological aspects of the beaches were assessed first and then investigations about the status of tourism were carried out.

Morpho-dynamic aspects of beaches of Kovalam

The beaches of Kovalam are the parts of a submergent coastline and at the same time are morphodynamically in a reflective stage (Nair, 1987). Beach profiles thus periodically change in the temporal wave climate and in accordance with the grain size-beach slope relationship. While the coastal area along the beaches is predominantly made of heavily fractured and eroded granite or gneiss rocks, the distinct four terraces are composed of granite along with some exposure of amphibolites. Because of wide recognition of Kovalam among the international tourism community as one of the ‘ideal beaches of India’, large scale human interference across the near-shore zone occurred during the last few decades. The old mosque near Kovalam beach as well as local agricultural lands and coconut fields are in danger of wave-induced exposition. A comprehensive list of the morpho-dynamic variables active in the locality has been given in Table 2.

Table 2. Status of the morpho-dynamic variables of Kovalam beaches

Factors	Range
Tide height	0.9 m (semi diurnal)
Wave	Highest of 3 m elevation
Wave period	5 to 12 sec
Littoral drift	Southward (May – August) Northward (rest of the year)
Beach material	Fine to medium (0.15 - 0.6 mm in radius)
Seasonal change	Erosion (April – September) Accretion (after September)
Beach gradient	82 – 90 m/ km
Beach ridge height	2.26 m (on average)

Geo-environmental profile of Kovalam village

Today in Kovalam, the fishing village actually does not exist at all. In its place one finds unplanned hotels and restaurants most of which are located hardly 10 m away from the sea (Figure 2) and, in turn, are in violation of Coastal Regulation Zone (CRZ) guidelines (Government of Kerala, 2005). To comprehend the challenges of this multi-faceted nature of unplanned coastal development, an effort was made to acquire knowledge about a set of elements like location of most vulnerable zones in terms of pollution, land use demands and socio- economic status of Kovalam.

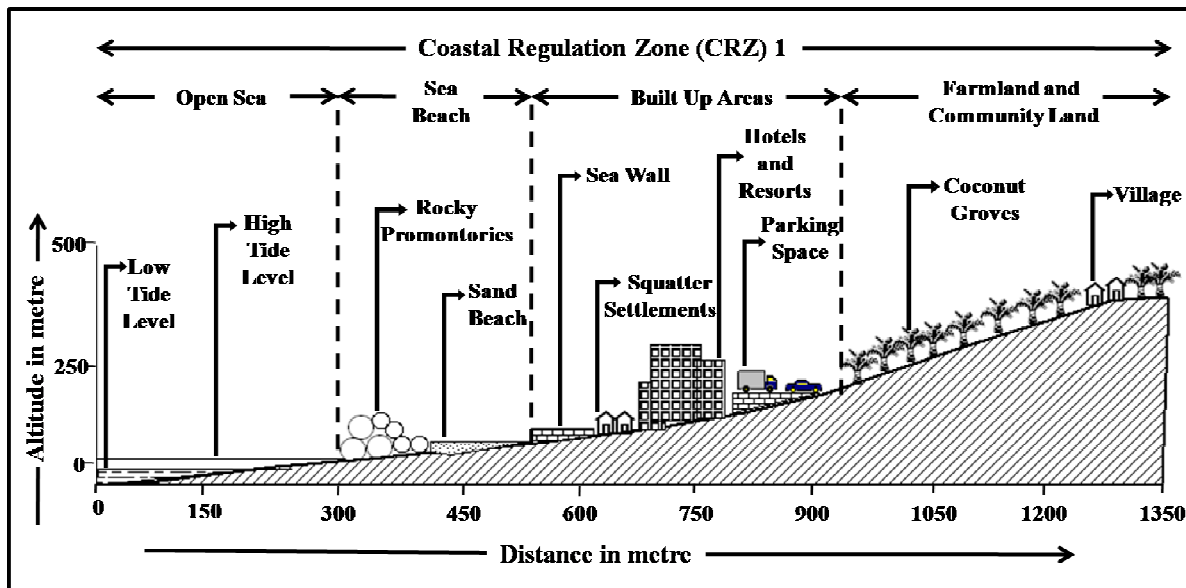


Figure 2. Landscape profile across the terraced coast of Kovalam near the Light House

A. Physical profile

Kovalam has magnificent sandy beaches which are surrounded on the land side by ridges and lateritic slopes as well as clay covered small flood plains used as paddy fields. There are large rocky promontories of granitic rocks along the shoreline protruding into the seas. Some marine organisms of anemones genus and some varieties of sponges can be observed along the sandy shore. But during the last decade, Kovalam and its surrounding areas were overwhelmingly affected by marine erosion. The spatial pattern of distribution of the erosion magnitude is uneven and irrespective of the forested or deforested (reclaimed for agriculture primarily) stretches of the coast. All these have devastating influences on the tourism of Kovalam. During the field surveys the following facts were noticed:

- i. Mosque near Kovalam beach was subjected to severe erosion
- ii. Steady cliff erosion (2006-2010) near Ashoka Hotel
- iii. During the period of 2006 to 2010, approximately 25 sq. m of beach ridge had been eroded near Guest House beach and the rate of erosion was aggravating due to human interference

B. Social profile

Tourism is now an integral part of global financial market and its values now encroach upon all human interactions. Kovalam is not an exception in this regard. However, the economic benefits reaped through the ‘tourism boom’ have not reached everywhere homogenously across the social fabric. It was revealed through the study that Hindus, especially *Ezhavas* have emerged as the dominant community and are the most powerful group in the tourism business. Nowadays, most of *Ezhavas* have switched over to hotel business leaving the traditional activities of farming and artisanship. Tourism has also changed the social composition of the area by increasing the presence of floating population such as tourists, unskilled outside workers and related migrants.

The inevitable question raised in this context was whether development of tourism has increased employment opportunities or not. According to the locals, tourism in their area has rather decreased employment for them. At the same time the government and hotel management groups campaign for employment generating capacity of tourism in Kovalam. But it was also learnt that persons who owned almost 40% of the hotels in Kovalam were from other districts and states and they generally gave employment to people of their native places (Jayashree, 2000). Hence tourism in Kovalam has not always been able to improve the living standards of the local population apart from the little trickling down of the

tourism revenues which the locals earn through informal menial jobs like vending in the sea beaches. Thus locally generated wealth disappears from the community resource pool and the natives become aliens in their own backyard.

C. Physico-cultural interface

Growth of tourism industry has changed the land use pattern of Kovalam in a large extent. Land available anywhere is immediately used for construction of commercial establishments and as dumping grounds violating CRZ guidelines. Absence of any proper waste disposal system leads to burying of waste on the coast itself (Thanal, 2005). These objects, when exposed in monsoon, create environmental nuisance. The perennial stream flowing across the Light House beach has almost become a sewer channel. Ground water contamination due to linkages in septic tanks and indiscriminate use of pesticides and chemical fertilizers in farmlands are also matters of concern (Sridhar and Nair, 2004). Illegal sand mining, construction of concrete structures in the name of beautification of beaches, huge tourist pressure beyond the ecosystem's carrying capacity in peak seasons also contribute to the vulnerability of this fragile coastal ecosystem (Radhakrishnan, 2004). Cases of prostitution and sexual harassments are also in the rise because of the illegal sex tourism activities.

Participatory appraisal of tourism

The process of assessment of tourism and formulation of combat strategies were deliberately kept to be a 'bottom-up' approach, implying that concerns and suggestions of the locals were noted and reflected in the final framework.

A. Beach appraisal

Six major variables were taken purposively for holistic appraisal of the beaches of Kovalam and data were collected for the two base years, i.e. 2006 and 2010. The respondents were mainly tourists, both of national and international origin, and locals. The respondents were asked to rank the four beaches in a five point scale to find out their relative sustainability status (Table 3). From the responses given, it was found that all the beaches of Kovalam had obtained more or less higher scores in case of aesthetic quality. Guest House beach obtained highest score (4-4.2) due to its privacy and well maintained international ambiance. Cleanliness is another major factor in case of creating popularity of the beaches throughout the world. In Kovalam, most beaches were rated as average (2-3) in overall cleanliness. The major contributor in this respect is the 'Zero Waste Kovalam Project' run by a local NGO named Thanal. The respondents were also asked about their level of satisfaction about the role of authorities regarding protection and conservation of the beaches and most of them were not satisfied. Many of the tourists (77%) complained about the lack of proper management of natural aesthetic beauty of the beaches and the increasing menace of beach-vending. Overall, Light House beach had been rated as the worst one. According to the respondents, the reason behind this was the existence of ritual offering places and associated religious activities on the beach itself thus polluting the water as well as deteriorating the ambiance.

As far the remaining factors like safety provisions, existence of erosion resistance green belts, and presence of tourism amenities are concerned, the respondents had given more or less average scores. Safety provisions and presence of green belts had obtained most satisfactory scores in Guest House and Samudra beaches.

Table 3. Beach appraisal through perception surveys (2006-2010)

No.	Variable	Name of the beach							
		Samudra		Kovalam		Guesthouse		Lighthouse	
		2006	2010	2006	2010	2006	2010	2006	2010
1	Aesthetic value	3.3	3.0	3.5	2.0	4.0	4.2	4.0	3.8
2	Overall cleanliness	3.0	3.4	4.0	3.1	2.0	2.9	3.2	3.4
3	Performance of management authority	2.0	3.1	3.0	3.9	2.8	3.0	2.0	2.1
4	Presence of safety provisions	3.0	3.0	1.0	2.1	1.9	2.0	2.1	1.4
5	Existence of erosion resistant belts	3.2	2.1	3.0	2.9	4.2	4.1	3.1	3.2
6	Presence of tourism amenities	4.0	4.1	3.0	3.4	3.2	4.0	3.2	3.4

B. Comprehensive assessment of environmental status

Although beach-wise appraisal was indeed conducive to assess the individual quality of the beaches of Kovalam, the overall status of environmental management and tourism sustainability could not be judged without a comprehensive study of whole of the coastal areas of Kovalam (White, 2009). For this, the respondents were asked to rank Kovalam with respect to fifteen factors on a ten point scale each according to their degree of satisfaction. Moreover, they were also requested to mention the name of a particular beach resort over the world which they thought to be worthy of getting the highest score.

From the responses given, it was inferred that most of the beaches in Kovalam reached higher satisfaction levels in case of water quality, litter disposal, and recycling of waste materials (Figure 3). On the other hand, monitoring of water quality, visual pollution, security provisions in beaches, rate of human intervention and invasion of exotic species in the coastal waters were identified as the prime factors in which Kovalam was lagging far behind than the other major beaches globally. However it became somewhat clear that, as far the physical set up was concerned, Kovalam possessed one of the best coastal environments where tourism should flourish. But the analysis also revealed the fact that the lack of proper development strategy and unplanned growth often hindered the long-term efforts to sustain tourism.

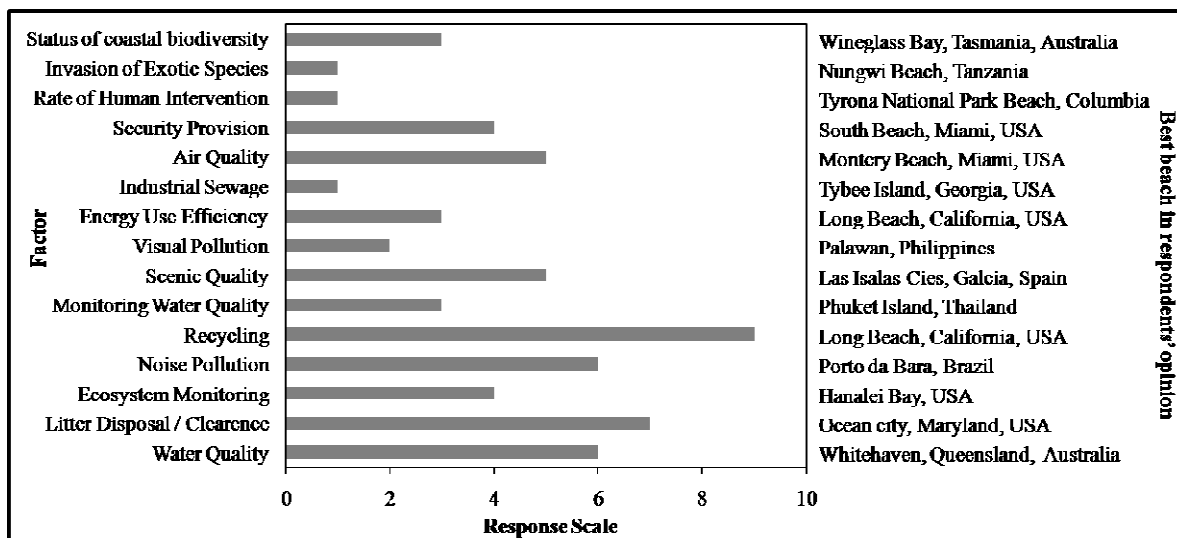


Figure 3. Environmental assessment through perception scores

Analysis of tourism sustainability status

After the assessment of overall environmental quality, it becomes imperative to deduce the status of tourism in applying sustainable practices at the four different beaches of Kovalam so as to determine the prospects and bottlenecks of future growth of tourism.

A. Beach-wise composite score

After the beach-wise appraisal, composite scores for the year 2006 and 2010 were calculated from the data shown in Table 3 by simply summing up the scores of the six variables to give a tourism sustainability rank to each of the beaches of Kovalam (Table 4).

Table 4. Composite scores of tourism sustainability status of Kovalam beaches

Name of the beach	Composite score		Tourism sustainability rank	
	2006	2010	2006	2010
Samudra	18.5	18.7	1 st	2 nd
Kovalam	17.5	17.4	4 th	3 rd
Guest house	18.1	20.2	2 nd	1 st
Light house	17.6	17.3	3 rd	4 th

According to the composite scores of 2006, Samudra ranked 1st followed by Guest House, Light House, and then Kovalam beach. But in 2010, while Guest House beach was ranked 1st, Samudra obtained the 2nd rank. The probable reason behind this change may be the overall development of Guest House beach under the KTDC and maintenance of its international ambiance throughout the last few years, as most of the international tourist hotels are located here.

B. Tourism sustainability status score

Although tourism in Kovalam is growing at a rapid pace but the growth does not always follow the sustainable paths, rather in this era of consumer oriented open market economy, financial growth often tries to cash in rapidly by reaping immediate benefits from the environment overlooking all the

Table 5. Scores of beach sustainability status and tourism generating potential

Year	Season	Name of the beach							
		Samudra		Kovalam		Guest House		Light House	
		X	Y	X	Y	X	Y	X	Y
2006	Pre-monsoon	5.4	6.8	6.2	8.1	5.5	3.2	5.1	4.5
	Monsoon	3.3	4.3	4.2	5.2	4.1	3.1	3.8	3.9
	Post-monsoon	1.1	2.9	2.3	3.3	2.4	1.8	1.9	2.1
2007	Pre-monsoon	2.8	3.1	4.9	3.5	4.2	2.1	2.4	3.1
	Monsoon	2.9	3.2	4.1	3.8	3.6	2.4	2.2	2.2
	Post-monsoon	3.2	3.9	5.8	4.8	5.1	2.6	4.8	4.2
2008	Pre-monsoon	4.5	4.2	6.8	5.6	5.9	3.2	4.7	4.9
	Monsoon	3.8	3.4	4.9	3.8	4.3	3.3	3.9	4.6
	Post-monsoon	4.1	3.8	5.4	5.8	3.7	3.6	3.5	3.7
2009	Pre-monsoon	4.3	4.2	6.9	6.3	5.3	3.5	4.7	4.1
	Monsoon	3.2	3.9	4.2	4.8	3.8	3.0	3.2	3.3
	Post-monsoon	4.6	4.5	5.2	6.5	4.6	4.1	3.9	4.0
2010	Pre-monsoon	5.5	5.1	6.4	7.2	5.8	2.6	4.4	5.7
	Monsoon	3.2	3.8	4.3	4.6	3.9	2.9	3.2	3.0
	Post-monsoon	4.5	5.2	5.3	7.5	5.3	2.8	4.6	5.1

possibilities of future environmental degradations. Hence, a detailed study was carried out to investigate the nature of correlation between beach sustainability status (X) and tourism generating potential (Y) of the beaches of Kovalam throughout the study period for three distinct seasons viz. pre-monsoon, monsoon and post-monsoon (Table 5).

From the response score matrix, it was inferred that in most of the beaches a positive correlation existed between sustainable beach management practices and growth of tourism in general. The study also showed that Guest House beach had better sustainability scores among all the beaches indicating the presence and implementation of proper management strategies. However, in terms of tourism generating potential, this beach obtained least scores as it was primarily secluded from the common people and used by the elites only. Hence a low and insignificant correlation ($r = 0.355$) had been obtained for this beach (Figure 4C). On the other hand, Light House beach showed progressively poor trend in beach management and consequently its tourism generating potential had also reduced year by year. In this case, a very high value of correlation coefficient ($r = 0.865^*$) was obtained pointing to the ever increasing problems of beach erosion, dumping of litters and absence of pollution combat strategies (Figure 4D). Here, * denotes statistical significance ($p < 0.05$). Samudra (0.803^*) and Kovalam (0.663^*) beaches had also exhibited similar trends (Figure 4A and 4B respectively). It therefore became obvious that tourism in Kovalam, although facing several problems, can achieve a bright future if practiced in a sustainable way in the long run giving its ecological ambiance greater importance.

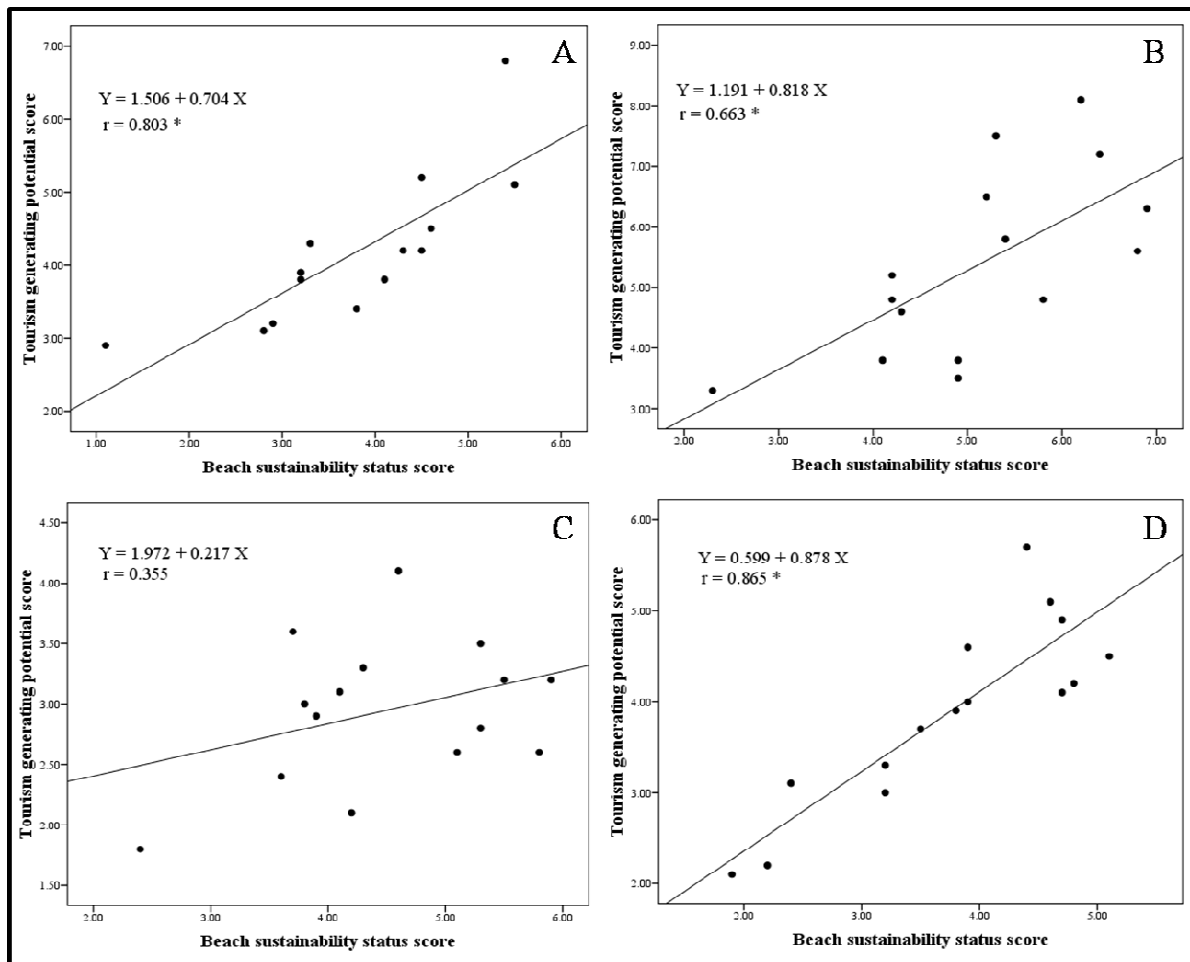


Figure 4. Correlation between beach sustainability status and tourism generating potential for Samudra (A), Kovalam (B), Guest House (C) and Light House (D) beaches

Discussion

The notion of sustainability in case of coastal tourism fully acknowledges that environmental and social sustainability cannot be seen in isolation (Thiele *et al.*, 2005). Tourism development in Kovalam has been the major catalyst for a wide spectrum of environmental and social changes. Ranging from accentuated rates of beach erosion to coastal pollution and eventual devastation of coastal biodiversity, Kovalam has suffered a lot due to unsustainable tourism practices. Its social life has also been altered drastically. The emergence of sex tourism in the form of prostitution and massage parlours as well as mushrooming of alcohol serving bars are the only few examples of this alteration. Another significant impact of unplanned and uncontrolled tourism is the restrictions on access to the beaches, e.g. the Guest House beach, to the local inhabitants. For ages, these beaches were used to be the central places for all ritual and festive activities including fishing and canoeing as well as afternoon walks and rests. However, with the advent of tourism and associated virtual and real restrictions on beach accessibility, these activities cannot be performed there in the same manner. Tackling these problems are herculean tasks, but not the impossible ones. A well coordinated long term effort, both from public and private enterprises and especially from the local communities, can certainly reduce the unsustainable practices and eventually lead to a new approach of enhancing tourism, which will be both economically viable and environmentally sustainable (Tosun, 2005). The immediate task, therefore, for the local government in particular and the state government in general, is to articulate the channels of positive interventions to actively engage the local community in managing the whole tourism process by themselves and in turn creating ecologically sustainable and economically beneficial local resource pools (Sreekumar and Parayil, 2002). Some basic guidelines which have to be strongly followed to initiate and maintain these sustainable tourism development procedures are given in Table 6.

Table 6. Framework of guidelines for implementation of sustainable tourism

Actions required		
Physical	Social	Ecological
1. Stringent implementation and maintenance of CRZ guidelines 2. Monitoring of concretization and built up areas within the beach premises 3. Provisions for periodical monitoring of coastal water quality and habitat condition 4. Protection of beach morphology with least human intervention 5. Maintenance of local freshwater-bodies as steady sources of drinking water 6. Development of proper parking area 7. Promotion of other alternative tourist attractions, aquatic recreational modes to decongest the overcrowded beaches	1. Tourism should concise with the prevailing value systems and cultural integrity of local communities 2. Community level participation in the policy making process of tourism development should be ensured 3. Tourism should create employment options to enhance livelihood status without disturbing traditional lifestyles 4. Sex tourism, child prostitution, and drug peddling should be addressed at the grassroots by developing proper ‘host-guest’ relationships and infrastructural development fulfilling basic needs of the society 5. Beach vendors in Kovalam (especially at Light house and Kovalam) should be rehabilitated by giving legal permits and selling areas to solely promote local handicrafts	1. Preservation and restoration of coastal ecology through tree planting, watershed development, reduction of marine pollution and use of biodegradable wastes 2. Establishment of a proper waste disposal system 3. Environmental impact assessment should be done for any artificial development as well as factors that can change land use pattern of the beach 4. Proper sanitation and ecologically sustainable ambiance should be the criteria before giving permission to any type of development in the CRZ 1 leaving the area of 500 m length from the coastline completely undisturbed 5. Awareness campaign through posters, workshops, and objective based tourist information centers to educate locals and tourists about the coastal ecology

Conclusion

Kovalam is a classic example of a coastal resort of the developing world where immediate monetary benefit has always taken the front seat whenever the questions of conservation and sustainable management rise. In these places, environmental conservation and community development have never been taken as the prerequisites for the betterment of tourism industry. As a result of the ever increasing conflicts between the demands of existing environmental and tourism development policies, one may see the seeds of demise of a prospective industry by the deterioration of that very ecological milieu on which it thrives. The 'Zero Waste Kovalam Project' is an exception in this regard due to its holistic nature in protecting the environment and local communities. Standing on the thin line between survival and destruction, the coastal village of Kovalam needs more such initiatives from all corners of the society to protect itself from the havocs created by the consumerist urban-industrial culture.

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