We are IntechOpen, the world’s leading publisher of Open Access books
Built by scientists, for scientists

5,000
Open access books available

124,000
International authors and editors

140M
Downloads

154
Countries delivered to

TOP 1%
Our authors are among the most cited scientists

12.2%
Contributors from top 500 universities

WEB OF SCIENCE™
Selection of our books indexed in the Book Citation Index in Web of Science™ Core Collection (BKCI)

Interested in publishing with us?
Contact book.department@intechopen.com

Numbers displayed above are based on latest data collected.
For more information visit www.intechopen.com
Chapter 4

Tourism Carrying Capacity for Beaches of South Andaman Island, India

R. Sridhar, E. Yuvaraj, V. Sachithanandam, T. Mageswaran, R. Purvaja and R. Ramesh

Additional information is available at the end of the chapter

http://dx.doi.org/10.5772/62724

Abstract

The Andaman and Nicobar Islands (ANI) is one of the largest tourist areas in India attracting both the international and domestic tourists each year. The Island Administration has a vision to develop the islands as an upmarket island destination for ecotourism. Among the island group, the South Andaman region is the most visited tourist destination and beaches of these islands have great potential for tourism attractions. The present work is an attempt to understand the potential of these beaches by assessing the carrying capacity in terms of number of visitors that can be allowed over a period of time, which will further help with better tourism management. The methodology used to estimate the tourism carrying capacity (TCC) is based on the physical and ecological conditions of each site and the existing infrastructure. The total effective carrying capacity (ECC) estimated for the beaches of Port Blair area (126,301 visitors/day) reveals that the current tourism activity is in lower level compared to its carrying capacity. Such carrying capacity assessments can be used as an input into the regular planning process. Preliminary estimates suggest that A&N Islands can be promoted for high value-low volume, eco-friendly, and environmentally sustainable tourism.

Keywords: Andaman, beaches, carrying capacity, tourism, islands

1. Introduction

Tourism is one of the driving forces of global economic growth and has become increasingly competitive in the global arena. Tourism accounts for almost 10% of global GDP, generates more than US$ 1.5 trillion in trade income or 30% of the world’s services exports, and provides one
in eleven jobs worldwide [1]. As per the India’s Tourism Statistics Report (2014), India’s foreign exchange earnings from tourism is US$ 20.24 billion at annual growth rate of 4.0%. India’s position in the World Tourism Receipts is at 15th place, and in the Asia and Pacific Region, India retains seventh place. During 2014, the number of Foreign Tourist Visits (FTVs) to the States/Union Territories (UTs) was 22.57 million as compared to 19.95 million in 2013 and 18.26 million in 2012 and registered a growth of 13.12% over 2013 as compared to a growth of 9.24% in 2013 over 2012 (MoT, 2014). The top 10 source countries for Foreign Tourist Arrivals in India in 2014 include United States (14.57%), Bangladesh (12.27%), United Kingdom (10.92%), Sri Lanka (3.20%), Russian Federation (3.51%), Canada (3.50%), Malaysia (3.41%), France (3.20%), Australia (3.12%), and Germany (3.11%) and other countries (38.44%).

Similar to the Foreign Tourist Arrival, “domestic tourism also plays an important role in overall tourism development in the country. The number of domestic tourist visits increased from 462 million in 2006 to 740 million in 2010. In 2009, when the country witnessed a negative growth of 2.2% in foreign tourists arrivals, domestic tourist visits registered a growth of 18.8%. This growth of domestic tourist visit sustained tourism infrastructure during the lean period of tourism sector [2]. There has been a continuous increase in India’s domestic tourist visit to its all states/UTs from 1991 to 2012, with the Compound Annual Growth Rate (CAGR) being 13.96%.

India is one of the few countries that offer a wide range of destinations for potential tourists. Tourism has grown in leaps and bounds over the years with each region of India contributing to its splendour and exuberance. In India, the Ministry of Tourism (MoT) is the nodal agency for the development and promotion of tourism in the country and also responsible for international cooperation in tourism (Government of India (Allocation of Business) Rules, 1961 as amended up to 12th Feb 2016). The MoT formulates national policies and programs and coordinates activities of various government and private agencies for the development and promotion of tourism in the country. The National Tourism Policy, formulated in the year 2002, aims for tourism development in India in a systematic manner, positioning it as a major engine of economic growth and to harness its direct and multiplier effects for employment and poverty eradication in an environmentally sustainable manner.

National Council of Applied Economic Research (2014) [3], using the data from International Passenger Survey 2010–2011, observed that monuments, forts, palaces, museums, hill stations, and beaches are some of the motivational factors that are influencing the decision of potential tourists visiting India. The ANI is one of the largest tourist areas in India that provide for a unique combination of terrestrial, mangrove, coastal, and marine ecosystems. The bays, coral reefs, mangroves, seagrass meadows, beaches, and caves make these islands special and attract both international and domestic tourists each year. “The Island Administration has the vision to develop the islands as an upmarket island destination for ecotourism through environmentally sustainable development of infrastructure without disturbing the natural ecosystem with the objective of creating more employment opportunities and synergize socio-economic development of the islands” [4]. Tourist visit including foreign visitors to ANI is on the increasing trend. The year 2000 witnessed a total number of 86,066 visitors to ANI which has grown up to 146,990 in the year 2007 and 218,035 in the year 2011 and 256,237 in the year 2012.
The tourist arrival to ANI for the year 2013–2014 is 258,418 (with 17,811 foreign tourists). With the continuous increase in tourist flow to Andaman Islands and subsequent population pressure, there is a need to understand the tourism carrying capacity (TCC) for various tourist destinations in the island in addition to the importance given toward environmental protection, while planning for tourism development particularly in areas such as wildlife sanctuaries, beaches, and other fragile ecosystems.

2. Tourism carrying capacity: A review of concept

The concept of TCC, though emerged in the 1970s and 1980, has received significant attention in recent years as part of an effective strategy to address environmental, economic, and social issues [6–8].

There have been many attempts to define carrying capacity. It was stated that TCC is a specific type of environmental carrying capacity and refers to the biophysical and social capacity of the environment with respect to touristic activity and its development [9–10]. Middleton and Hawkins (1998) [11] defined carrying capacity as “a measure of the tolerance a site or building are open to tourists activity and limit beyond which an area may suffer from the adverse impacts of tourism.” TCC can also be defined as “the maximum number of people that use tourism site without unacceptable effect on environmental resources while meeting the demand” [12].

Chamberlin (1997) [13] defines it as “the level of human activity an area can accommodate without the area deteriorating, the resident community being adversely affected or the quality of visitors experience declining.” Clark [14] defines carrying capacity as a “certain threshold level of tourism activity beyond which there will occur damage to the environment, including natural habitats.” He also states that the “actual carrying capacity limit in terms of numbers of visitors or any other quota or parameter is usually a judgement call based upon the level of change that can be accepted, regarding sustainability of resources, satisfaction of resource users, and socio-economic impact” [14]. The TCC represents “the maximum level of visitor use that an area can maintain, that is, the limit of human activity: if this level is exceeded, the resource will deteriorate” [15].

The UN World Tourism Organisation (WTO) defines TCC as “the maximum number of people that may visit a tourist destination at the same time, without causing destruction of the physical, economic, socio-cultural environment and an unacceptable decrease in the quality of visitors’ satisfaction.” Tourism operations in protected areas need to be planned carefully and monitor regularly to ensure their long-term sustainability. Otherwise, such operations will have negative consequences and tourism will contribute to the further deterioration of these areas. Many of the protected areas have promoted tourism for their social, economic, and livelihood opportunities of the local residents [15–19].

Individual tourist destinations were studied assessing the TCC all over the world [20–24]. It has been suggested that development of a tourist destination should be based on their innate
capacities for tourism. TCC was considered as an appropriate tool for management and remains one of the most useful and applied techniques for tourism and recreation planning, if combined with other management tools [25, 26].

Coccossis and Mexa [6] showed that carrying capacity assessment remains a powerful concept that can be used for planning and management of sustainable tourism. Many studies calculated carrying capacity using physical, ecological, psychological, and economical approach. Because of expanding degree of environmental threat with growing tourism, a suitable method needs to be carried out and carrying capacity stays one of the applied and effective methods [27]. Hamed and Fataei [28] estimates the TCC to Fandoqloo forest in Iran using physical, real, and effective carrying capacities. Results of their study showed that each tourist spot has its specific priorities and the carrying capacity of each region differs according to the environmental conditions. Nghi et al. [23] assessed the environmental carrying capacities for Phong Nha-Ke Bang and Dong Hoi using three basic components: ecological, economic, and social. The authors have calculated the TCC in Dong Hoi and Phong Nha centers by using the adjustment from physical carrying capacity (PCC) to real carrying capacity (RCC) based on various limiting factors such as infrastructure and management capacities. Their results show that Dong Hoi center has the highest TCC and Phong Nha has a lower TCC than other centers in Quang Binh.

Lagmoj et al. [29] in their study evaluated TCC in three ways viz., PCC, RCC, and ECC, and found that “ECC is in low range due to lack of required facilities and infrastructures as well as manpower for management and providing tourism services for tourists.” They estimated the “PCC in Khorma forest as 3712 persons/day while RCC, considering limiting factors including the number of very hot days and the number of wet days, is 2001 persons/day. The ECC, taking the management capabilities including the number of manpower and the budget, 69 persons/day was calculated for Khorma forest”. Armin and Calichi [30] in their study of PCC, the factors viz., tourist flows, the size of the area, the optimum space available for each tourist and the visiting time, were considered. Their results showed that the total visitors to the park in 2012 were 220 visitors per day that actual average park visitation are higher than the estimated carrying capacity and stated that the expanding recreational use would affect production and other forest benefits in the long term and suggested that a recreational forest use plan must be adjusted by the planner to keep the park more exploiting.

3. Andaman and Nicobar Islands (ANI)

The ANI form an important group of oceanic islands, situated in the Bay of Bengal, extending between 92° to 94° East and 6° to 14° North latitude, with rich biodiversity and high degree of endemism. It is presumed that these islands had a former land connection from Cape Negris at south part of Burma to Achin Head (Cape Pedro) in Andalas (Sumatra). Since pre-historic times, these islands were the home of aboriginal tribes. The vulnerable tribal groups who have been identified in the Andaman group of islands are the Great Andamanese, Onges, Jarawas, and Sentinalese, all of Negrito origin, while the tribes in the Nicobar group are the Nicobarese and Shompens, both of Mongloid origin. These islands have the total geographical area of 8249