

Sustainable Ecotourism in Andaman & Nicobar Islands: Balancing Growth and Conservation

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Abstract

A pristine world of silver sands, clear blue seas, coral reefs, swaying coconut tree, tropical forests, volcanic mountains and a gently undulating landscape. The islands comprising of 836 islands/islets/rocky reefs, of which only 31 islands are permanently inhabited, spread over an area of 8,249 km. Situated between 6o 45" North and 13o 41" North latitude and 92o 12" East and 93o 57" East longitude, the islands offer exciting ecotourism products with natural and cultural settings. A major contributor to the economies of many island nations, especially those in the tropics, has been the tourist industry in recent decades. The present study explores the potential of ecotourism in the Andaman and Nicobar Islands (ANIs) archipelago, focusing on its impact on the region's economy, environment, and local communities. The objective of the research is to assess factors influencing tourist preferences, evaluate the efforts of local administration in promoting sustainable tourism, and analyse the delicate balance between tourism development and environmental conservation. The study employs a mixed-method approach, incorporating primary data along with secondary data from government reports and academic literature. A comparative analysis with other tropical island nations provides context for the tourism growth in the ANIs. The findings highlight that while the ANIs have significant potential for ecotourism, there are challenges in ensuring that tourism growth does not compromise environmental sustainability or the cultural heritage of local communities. The study underscores the need for a holistic approach to tourism development that integrates environmental stewardship, community participation, and economic growth.

Keywords: Andaman, ANIs, Ecotourism, GDP, Islands, Nicobar

1. Introduction

The Andaman and Nicobar Islands is a beautiful chain of islands located in the Bay of Bengal and has been a source of inspiration among various tourists, especially into nature and adventure. Boasting of beautiful sandy beaches, tropical coloured forests, and popular

sea creatures, these islands are perfect holiday destinations, which give a natural break from the hustles of civilization. [1] But there is an even more important and less obvious relationship between these palms and the environment, where the channel between man and nature is occupied by ecotourism. Visiting this destination with focus on ecotourism does not only reveal beauty and unique attractions of Andaman and Nicobar Islands

but lays foundation of responsible tourism that will preserve the area's unique flora and fauna, increase the tourists' interactions with the local population.[2]

Ecotourism refers to a form of tourism that is responsible for visiting natural areas and has the aim of protecting nature whilst benefiting the people but not disturbing their culture, there is a suggestion that a form of ecotourism should be adopted to experience Andaman and Nicobar Islands. [3] This kind of tourism adopts measures that do not harm the environment and natural habitats that tourists utilise in their exploration, with the intention of creating increased socio-economic returns to the hosts. In the context of the Andaman and Nicobar Islands, ecotourism opens up a way of exploring the natural world, their cultural heritage as well as the complicated patterns of the environment for those who would wish to do so.[4]

The Andaman and Nicobar Islands in particular have rich bio-diversity that includes many flora and fauna species that are endemic to this part of the world. Originally rich in wildlife, mainly due to its dense tropical rainforests that occupy a large part of the islands, some of the fauna include the Andaman wild hog, the Nicobar megapode and the saltwater crocodile. [5,6] It is also found that these forests house numerous plant species with several rarest types of flora many of them endangered. For the ecotourist, it is a beautiful opportunity to take a look at what the world is like without interference by man and the environment as it was intended. One of the guided tours one can take lets you learn about the history of this area along with the interesting facts about the local flora and fauna, and the need to conserve these ecosystems. [7,8]

The fauna and flora surrounding the Andaman and Nicobar islands remain mysterious as much as its marine environments. [9] The waters are absolutely crystal clear and diving enthusiasts can come face to face with extravagant coral formations as well as a variety of marine creatures starting from rays to turtles and ending with a colourful gallery of fish. Snorkelling and scuba diving are some of the activities rich session that will enable them to explore this marine beauty. [10,11] But, there are tourism such as the ecotourism that promote the concern of conserving these ecosystems from the detriment that over exercising this expendability causes to the dives. Through endorsement of environmentally friendly tourism the islands aim to preserve the ever-sensitive Equatorial marine life to be marvel by the forthcoming generation. [12,13]

As beautiful as the Andaman and Nicobar Islands are, there is much more to the islands besides the value they place in their aboriginal population, its customs and ways of life. [14] The Jarawa people, Onge, Great Andamanese and the Nicobarese are tribals who have lived and evolved with nature for ages, thus holding immense importance and significance when it comes to learning about sustainability. It makes ecotourism a platform of direct human interaction where the visitors have a first-hand experience of the lifestyle of these ethnic groups. [15,16] Many programs that promote responsible tourism focus on avoiding negative impacts to local residents and their environment and on supporting self-generated activities that would channel funding and development efforts towards tourism-related ventures that reduce poverty and maintain the cultural heritage.[17]

In addition, ecotourism contributes towards the enhancement of knowledge of the people on environmental concerns and efforts required for their preservation as is the case in the Andaman and Nicobar Islands. [18,19] Special interest in these islands is environmental preservation and sustainable development in the context of learning and recreation;

educational programmes and museums in the form of interpretative centres at eco lodges and tour operators are significant in sensitizing the visitors on problems of climate change, deforestation, and species loss in the islands. Through encouraging tourists to act responsibly and being mindful of their impacts on the environment, these initiatives seek to create more collective responsibility towards sustainable living and preserving our resources.[20]

Review of literature

Miller, (2023) [21] Ecotourism as a concept has its roots in the 1950s. Not many people had heard of or grasped the idea prior to that. Several earlier iterations of ecotourism attempted, in essence, the something as modern ecotourism accomplishes. In the 1950s, when hunting was made legal in Africa, ecotourism was first promoted.

Roe et al., (2021) [22] Some examples of service sectors are transportation (airlines, cruise ships, taxis), hospitality (hotels, resorts, etc.) and entertainment (amusement parks, casinos, shopping centres, theaters, etc.). The World Tourism Organization has put forth the most restrictive definition of tourism. Any type of travel involving an absence from home for more than one night but less than a year is considered tourism under this definition. However, in most cases, tourists only mean people who travel for fun, whether it's within a country or outside.

Objectives

1. To assess the factors influencing tourists' choice and decision in favor of Andaman and Nicobar Islands and their interest to the economy, comfort, safety, and attractiveness of natural sights, cultural and historical monuments.
2. To evaluate the Andaman administration's recent efforts in developing sustainable tourist facilities and promoting conservation of the biosphere reserve alongside tourism.

Statement of the problem

Being a place of scenic beauty and bestowing great ecological importance and significance, the Andaman and Nicobar Islands have to grapple with the dilemma of stimulating tourism development in the region next to being able to protect the natural environment and assimilate the traditional life of the indigenous people. As the IUCN is proposing more and more environment friendly tourism experiences in these unspoiled island locations, it is becoming increasingly clear that a more holistic and sustainable approach is required for the management of tourism.

Significance of the study

This research is significant in many ways because it attempts to explain the major problem regarding sustainable ecotourism development in one of the world's most pristine and biologically diverse ecosystems: the Andaman and Nicobar Islands. In this way, the research establishes a basis for understanding the potential effects, threats, and opportunities to guide policymakers as well as tourism authorities and stakeholders in an effort to develop proper strategies seeking to foster sustainable tourism development. The study can be useful in the development of a coherent blueprint for tourism that recognises environmental stewardship,

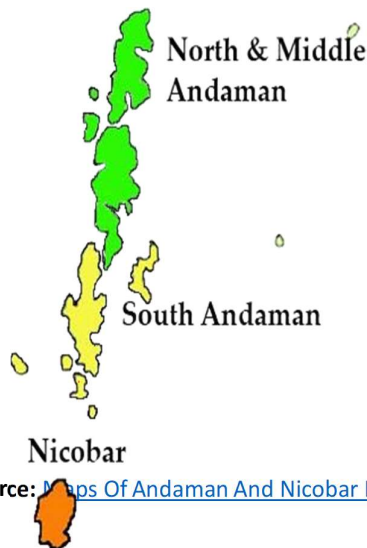
community participation, and ethic tolu.

2. Research methodology

2.1 Profile of the area

The physical geographical character of the A&N Islands presents rolling and low range hilly mountains along with narrow longitudinal valleys at the foothills thereby making the topographical structure undulated to some extent and sloping steep from higher to lower mountain ranges and coastal plains. These islands are located in the Bay of Bengal within latitudes 6-14°N and Longitudes 92-94°

E They are located at sea level and up to 365 meters above sea level. The climate is warm and moist equatorial tropical one; Sometimes referred to as tropical wet climate. On the temperature scale, Merchiston ranges with the average temperature of 29 °C – 32 °C maximum and 22°C – 24°C minimum. The islands have an average annual precipitation of 3100 mm with about the 8-9 months of the year receiving precipitation with approximately 95% or 2935 mm of the total precipitation falling from May to December. The dry season between January and April presents several challenges like moisture stress and effects of heat strokes to agriculture. Relative humidity in the Islands fluctuates between sixty-eight to eighty-six percent on the average.



Source: [Maps Of Andaman And Nicobar Islands - Western Europe Map \(Study Area\)](#)

2.2 Natural setting with woodland

Being tropical islands, Andaman and Nicobar are the ultimate attraction for the biogeographic nature lovers. The islands are covered with evergreen and semi evergreen forests and is home to large mangrove regions which can offer the tourist a distinct experience in a natural setting. These forests

have a great variety of endemic plants and animals, thus offering much possibility, for introduction to wildlife, and/via birdwatching.

2.3 Social Profile

With an estimated 82% literacy rate, the A&N Islands were home to 3.8 lakhs in 2011 (Census 2011). Three districts make up the Union Territory (UT) of Andaman and Nicobar

Islands: South Andaman, North and Middle Andaman, and Nicobar. With 204 revenue villages and 11 tehsils, the areas are divided into four sections. In 2011 and 2012, almost 61% of the population of A&N Islands was actively seeking employment. Currently, the inhabitants of A&N Islands include local tribespeople, refugees from Sri Lanka and Bangladesh, and settlers from mainland India, particularly those from the states of Tamil Nadu, Kerala, Andhra Pradesh, Bihar, Jharkhand and Chhattisgarh, as well as government employees and defense personnel.

2.4 Tribal communities

The indigenous tribal groups of the Andaman Islands are the Jarawas, Sentinelese, Great Andamanese, and Onges. The former three groups live in the interior forests of the islands, while the latter two groups inhabit the Strait Islands and Little Andaman. In 2011, out of a total A&N population of 3.84 lakhs, there were 300 Jarawas, 90 Sentinelese, 98 Onges, 48 Great Andamanese, and more than 280 Shompens, the primitive tribe. The first contact was initiated in 1974 with the Jarawas, but they remained hostile until 1999. The indigenous people of the islands speak six different dialects and languages. Despite this, there are still various government programs and policies aimed at integrating the indigenous people, and anthropologists are worried that these initiatives are having a negative impact.

2.5 Farming

For many people in the A&N Islands, agriculture is a means of subsistence. Plantation crops, including coconuts, arecanuts, and others, are abundant, especially in the higher elevations. The valleys are known for their abundant vegetable, paddy, spice, and fruit crops. During the dry season, the rice fallows are also used to grow pulses and oilseeds. The farming population relies on coconuts for their livelihood and income, as they occupy over half of the total cultivable land. Of the 11,349 agricultural holdings on A&N Islands, 9,444 are held by individuals, 1,783 by couples, and 122 by institutions. Subhash Chand et al. (2012) found that the number of assets classified as marginal and minor has grown over the years.

2.6 The agriculture, zoo, and aquaculture industries

Farming in the A&N Islands revolves around animal husbandry. Pigs, goats, ducks, buffalo, and other unremarkable livestock make up the island livestock population. A total of 173,970 animals, including

buffaloes, cattle, goats, and pigs, were counted on these islands in the 2007 Livestock Census. Constant inbreeding and careless breeding have rendered all germ plasm unusable, leading to low yields. Unfortunately, the islands' limited access to veterinary care limits the total milk production to around 25,280 metric tons in 2011. The A&N Islands have a total marine fishery potential of around 0.14 million tons.

2.7 Economic and local government

In 1947, the islands were declared a Union Territory (UT) of the Republic of India

following India's independence from British rule. “The position of Lieutenant Governor was subsequently elevated from that of Chief Commissioner, who was responsible for administering these Islands. The islands adhere to the Panchayati raj system of government, which operates on a three-tiered administrative hierarchy: the district-level Zilla Parishad, the middle-level Panchayat Samiti, and the village-level Village Panchayat. Approximately 56.1% of A&N's gross state domestic product (GSDP) comes from the service sector, with the primary sector coming in at 31.7% and the secondary sector at 12.2%.

2.8 Ecotourism Development Initiatives

Over the last sixty years, there has been a consistent rise in the amount of money that the government has spent on tourist development. Up to the seventh plan, tourism spent less than 1% of total expenditure. However, it jumped significantly in the plans that followed, reaching 2.15 % in the eleventh plan (2007–2012). It is clear from looking at the data that the tourism industry's revenue grew steadily from 2004 to 2023. After it, yearly revenue for local administrations surpassed 2200 crores. This shows that the industry is becoming more important as a means of generating income for the islands' budget.

Table 1: Proceeds from the Andaman and Nicobar Islands' tourist industry.

Year	Revenue (in Rs. 0000)
2004-05	10
2005-06	20
2006-07	40
2007-08	60
2008-09	80
2009-10	100
2010-11	120
2011-12	150
2012-13	180
2013-14	200
2014-15	250
2015-16	500
2016-17	700
2017-18	1000
2018-	1200

19	
	1400
2019-20	
2020-21	1600
2021-22	2000
2022-23	2500

On order to entice tourists, the A&N administration is heavily investing on tourist-related infrastructure development. In addition to the approximately one hundred private hotels and resorts in the area, the Andaman Administration also runs guesthouses that offer boarding services. Not only that, but there are also classified paid guest accommodations. On the islands, you can choose from seventy-four different private tour operators. Training facilities for tourism sector employees and officials are also available on the islands. National parks, wildlife sanctuaries, live volcanoes, and most importantly, tranquil, pollution-free environments, draw tourists from all over the world.

2.9 Andaman Islands tourist spots

The South Andaman and North and Middle Andaman districts of the A&N Islands are home to the island's tourist attractions, such as Havelock, Neil, Rose & Smith, Vavecarbyn's cove, Good Will Estate, the scuba dive centre at Wandoor, the Island Trade Fair Exhibition ground, and many more. Biological Park at Chidiyatappu, a limestone cave, a mud volcano, Mahatma Gandhi National Marine Park, Mount Harriet National Park, and many other attractions are available. Shows that the number of tourists visiting various attractions has been steadily climbing from 2017–18 to 2022-23.

Table 2: Total number of tourists visiting A&N Islands venues

S. No.	Important tourist place	2017-2018	2018-2019	2019-2020	2020-2021	2021-2022	2022-2023
1	Light and Sound Spectacle	–	58,635	1,50,968	2,34,250	1,29,115	129,427
2	RG Water Adventure Park	–	–	–	–	–	20,831
3	Mini Zoo at Haddo	33,677	33,648	95,574	1,02,187	52,967	41,877
4	Mahatma Gandhi Marine Reserve	2384	3201	17,037	22,256	28,572	14,412

5	Mount Harriet Nature Park	17,638	12,040	21,382	24,885	22,297	23,803
6	Wandoor Caves & Limestone Formations	5192	47,920	1,19,307	1,03,755	60,990	78,449
7	Chidiyatappu Biodiversity Park	–	–	–	–	–	3077
Total	Total	58,891	1,55,444	4,04,268	4,87,333	2,93,941	3,11,876

2.10 The structure for data and analysis

This paper's data came from a wide range of primary and secondary sources, including the Andaman tourism department, several research organizations, the Department of Agriculture, Fisheries,

and Animal Husbandry, and publications issued by the A&N administration. Everything from the yearly rainfall pattern to the pattern of perishable food production and its monthly availability from local production, the number of tourists that arrived from 2004 to 2023 and their composition were covered. Using previously administered surveys, we gathered information from tourists regarding their cleanliness preferences, conservation efforts, and views on the need to save popular tourist locations. The study was conducted in three stages. To lay the groundwork for the research, a comprehensive literature review was conducted on the topics of island tourism, sustainable tourism, and tourism planning. To further our awareness of tourism and related development challenges on both the mainland and the islands, we looked at a variety of publications and studies on India and A&N Island specifically. Analyzed with A&N Island were the critical performance metrics of tropical island nations. The analysis provided the necessary context to pinpoint and investigate in depth particular concerns pertaining to sustainability, development patterns, and the future of tourism in the A&N Islands.

Third, main data came from certain islanders, such as visitors, high-ranking tourism department officials, hotel owners, proprietors of private tourist huts, and public and private transportation providers. Interviews with relevant individuals, as well as online surveys, in-person meetings with visitors and service providers, and phone calls were all used to compile the data. Using the method of familiarization and discovery, a thorough comprehension of the past, present, and future of tourism growth in the A&N Islands was achieved.

Garret ranks converted into % =

$$\sum_{ij=1,2,3,\dots,n} \frac{N100(R_{ij} - 0.5)}{N_j} \times 100$$

Where,

R_{ij} = position assigned to the i th component by the j th tourist

N_j = j th individual tourist's ranking of elements.

3. Results and Discussion

3.1 Tourist growth in tropical island nations: a comparative study

Tourism, fishing, farming, logging, and the processing and production of food were the mainstays of the economies of most tropical island states. But agriculture and tourism are the two most important industries to the A&N Islands, accounting for 56% of the economy. Shows the proportion of tourists visiting tropical island nations and the A&N Islands relative to their population from 2022 to 2023. The number of tourists exceeded the indigenous population in several island nations, such as Singapore (194%), Barbados (193%), and the Seychelles (157%).

Table 3: Various Island nations' tourist inflow as a percentage of total population

Country	Revenue (in Rs. 0000)
A&N Islands	41.30
Solomon Island	1.55
Trinidad & Tobago	43.84
Fiji	59.91
Samoa	46.54
Vanuatu	29.38
Jamaica	53.17
Cape Verde	39.48
Barbados	193.97
Maldives	102.33
Seychelles	157.32
Singapore	194.08

The need to further develop and make tourist-friendly attractions is shown by the significantly lower ratio of 41% in A&N Islands. Compared to A&N Islands, the per capita income of the island nations mentioned above was 300–7800% more. All of the tropical islands had extremely high literacy rates, with the lowest being 82%. This is an intriguing finding.

Table 4: Tropical island nations' economic outlook

Name	Area (00 sq. km)	Population (million)	Literacy (%)	Major economic activity	Forest area (%)	Agriculture share (in GDP %)	Share of services sector (GDP %)	Per capita income (\$)
Andaman and Nicobar Islands	82.5	0.38	86	Tourism, service, agriculture	83	36.1	48.9	945.8
Antigua & Barbuda	4.4	0.08	85.8	Tourism, agriculture	20.5	3.8	74.3	18,300
Barbados	4.3	0.28	99.7	Tourism, sugar	4.7	6	58.4	18,900
Cape Verde	40.3	0.50	76.6	Fuel, shoes, garments, fish	21.1	9	73.9	7000

Comoros	22.4	0.80	50	Cash crops (vanilla, ylang-ylang into perfume)	4.3	40	56	600
Dominica	7.5	0.07	87	Agriculture, tourism, soap	61.3	17.7	32.8	3800
Fed.State s Micronesia	7.1	0.11	89	Agriculture ,fisheries	NA	28.9	55.9	2300
Fiji	182	0.92	93.7	Sugar, coconutoil, fish, timber, garments, gold	44.6	8.9	77.6	4100
Grenada	3.5	0.09	96	Tourism and agriculture	14.7	5.4	62	3900
Jamaica	108.3	2.78	87.9	Services, tourism, remittances and bauxite/	30	5	61	4800
Kiribati	7.3	0.11	NA	alumina Copra, fish, tourism	38.4	8.9	66.8	3600
Madagascar	5870	20.0	68.9	Agriculture, fisheries ,forestry	20	26.8	57.4	900
Maldives	3.0	0.39	96.3	Tourism ,fisheries	3.3	16	77	4600
Marshall Islands	1.8	0.06	93.7	Copra cake, coconut oil, fisheries, handicrafts	NA	31.7	53.4	2900
Nauru	0.2	0.01	NA	Exports of phosphates	17	NA	NA	5000
Palau	4.6	0.02	92	Tourism, subsistence agriculture, fisheries	76.1	6.2	81.8	7600
Philippines	3000	96.0	92.6	Copper, petroleum products, coconut oil, fruits	19.4	13.8	54.5	3200
Saint Kitts & Nevis	2.7	0.04	97.8	Tourism, manufacturing	NA	3.5	70.7	13,900
Saint Lucia	6.2	0.17	90.1	Tourism, industries, offshore banking	NA	5	53.6	4800
Saint V. & Grenadines	3.9	0.12	96	Agricultural ,tourism	NA	10	64	9800
Samoa	28.3	0.22	NA	Agriculture, fisheries	37.2	11.4	30.2	5400

São Tomé & Príncipe	9.6	0.21	NA	Cocoa production	28.3	14.9	71	1600
Seychelles	4.5	0.08	91.8	Tourism	66.7	2.1	69.6	16,600
Singapore	7.1	4.61	92.5	Exports (electronics, IT products)	3.3	0	68.8	49,990
Solomon Islands	289	0.58	NA	Agriculture, fisheries, forestry	88.8	42	47	1900
Sri Lanka	656	21.1	90.7	Food processing, beverages, textiles, port	30	11.7	58.4	4000
Trinidad & Tobago	51.3	1.06	98.6	construction Oil, gas, petrochemicals	50.5	0.6	37.4	21,700
Tuvalu	0.26	0.01	NA	Sale of stamps	43	16.6	56.2	1600

When compared to the A&N Islands, the proportion of arable land is much larger, ranging from 12– 35%. Additionally, neighbouring nations saw significantly larger tourist inflow. When comparing the aforementioned indications to A&N Islands, it was discovered that certain smaller island nations (<1000sq. km area) performed better. This suggests that neighbouring tropical island nations' income was higher due to higher revenue from the tourism sector, despite having a smaller geographical area. But some of the island nations—like Singapore and Barbados—have also become major exporters of electronic goods and industrial processors.

3.2 Changes in the number of visitors to the A&N Islands

According to 1980 data recorded by the A&N administration, the annual number of tourists was below 10,000. Later on, when the government set up sufficient facilities for lodging and transportation, the number of tourists began to rise. From 2013 to 2023, the number of international tourists visiting the islands increased from 5,249 to 14,615—representing 162 different nations. The arrival of tourists from various destinations has been on the rise from 2004–2005 to 2010–2011. The overall number of tourists was incredibly low (<0.04 million) between 2004 and 2005. With the exception of the year following the tsunami, the inflow surged dramatically and followed an almost linear trajectory from 2005 to 2017.

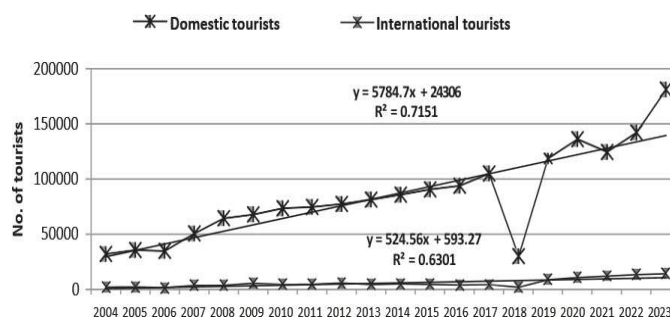


Figure1: Trend in the number of tourists visiting the Andaman and Nicobar Islands each year.

Be that as it may, the influx of tourists, especially those from other countries, has skyrocketed since the tsunami. Israelis make up 43% of the international tourists, followed by Britons at 15%, Americans at 7%, and Italians at 6%. The majority of the foreign tourists were between the ages of 30 and 50 (75%), according to the data collected via questionnaires. Those above the age of 50 made up the second largest age group. From two to six people would typically accompany the head of the household on an average occasion. The majority of the youngsters, nevertheless, were between the ages of 10 and 17.

The factors that influence tourists' choice of vacation spot

Problems including how tourists choose their travel locations, the quality of their experiences there, and other variables influence their actions are crucial. The tourists' preference order for various quantitative and qualitative aspects of the islands' tourism was determined using the Garret Ranking technique. The available facilities, degree of satisfaction, security, hospitality, and other amenities in the islands were assessed through interviews with tourist heads and their families. That travel economics came out on top, followed by tourism site facilities and satisfaction.

Table 5: Influences on vacationers' choice of activities and locations (scale 1 to 10).

Factor	function	Scale value (xi)										Ranks	Std
		I = 78	I = 68	III = 65	I = 59	V = 45	VI = 40	VI = 32	VI = 26	Total Score	Mean Score		
Economy in	f	64	77	54	51	24	22	12	26	30	41		23
Travel	fx	4992	5236	3510	3009	1080	880	384	676	19,767	2471	I	1979
Facilities at	f	48	55	49	60	46	26	22	24	30	41		15
Islands	fx	3744	3740	3185	3540	2070	1040	704	624	18,647	2331	II	1387
Satisfaction	f	45	42	34	46	28	35	43	57	30	41		9
	fx	3354	2448	1820	2891	3240	1160	576	1430	16,919	2115	III	1025
Safety	f	31	36	42	18	33	56	55	59	30	41		14
	fx	3510	2856	2210	2714	1260	1400	1376	1482	16,808	2101	IV	849
Cleanliness	f	35	29	43	28	40	60	78	17	30	41		19
	fx	2808	1700	3445	2478	2205	1880	1024	1196	16,736	2092	V	815

Conni vance	f	43	36	28	49	72	29	1 8	5 5	3 30	4 1		17
	fx	27 30	19 7 2	279 5	165 2	180 0	240 0	24 96	4 42	16,2 87	20 3 6	VI	77 0
Comfor t	f	36	25	53	42	49	47	3 2	4 6	3 30	4 1		9
	fx	24 18	24 4 8	273 0	106 2	148 5	224 0	17 60	153 4	15,6 77	19 6 0	VII	58 2
Reser vation of to	f	28	30	27	36	38	55	7 0	4 6	3 30	4 1		15
and for journey	fx	21 84	20 4 0	175 5	212 4	171 0	220 0	22 40	119 6	15,4 49	19 3 1	VIII	35 9
Total	∑f	33 0	33 0	330	330	330	330	3 30	3 30	26 40	3 30		

The most essential elements in picking the visiting destination were the economy of travel and boarding, as well as the facilities. When deciding where to go, other factors were also taken into account, such as

cleanliness, security, and safety. Regarding the facilities and services, it was noted that the majority of tourists assessed the services as good (41.67%), with almost 20% giving them a very good rating. Nevertheless, nearly a quarter thought that the islands' services were subpar. An criterion of preference was the level of environmental protection, according to a survey conducted in Bhutan.

4. Discussion

Inadequate information, transportation, communication, and accommodation options, as well as other infrastructure issues, are some of the valid reasons that limit the expansion of tourism on the island. A powerful faction within the administration is also of the firm belief that the environment of these islands would suffer as a result of any effort to cultivate mass tourism there. Some said that the island's unique and precious flora and wildlife may already be extinct, and that opening it up to tourists might lead to the indiscriminate killing of these species. The issue of preserving the island's ethnic diversity also arises. Determining the relative importance of developing A&N Islands as tourist resorts, security concerns, and environmental protection requirements must be prioritized.”[23]

Responsible tourism is visiting natural regions in a way that doesn't harm the environment, helps conserve natural resources, and has a positive social and economic impact on the local community.

[24] All communities, regardless of their economic, social, cultural, environmental, or physical situation, have a lot to gain from sustainable development. Energy efficiency improvements, waste management campaigns, freshwater resource enhancements, biodiversity conservation, and sustainable resource usage are all part of a comprehensive strategy for sustainable development. [25] As an integrated, multidisciplinary mechanism, the island systems management approach provides an adaptive management strategy that controls the effects of human intervention on the physical environment of islands and solves the problem of resource use conflict. [26,27] But it can only function if there is a system in

place, both legally and institutionally, that unites the efforts of the public and private sectors to accomplish shared objectives. If islands are to become economically, socially, and ecologically resilient and self-sufficient, it is crucial to address the constraints of physical and natural resources while also integrating planning, social cohesion, increased attention to manage biodiversity, and strengthening territorial planning. [28,29] One popular idea for mitigating tourism's negative effects is to create designated tourist enclaves, where tourists can enjoy their vacation without interfering with locals. The beaches of Radhanagar and Niel Island are prime examples of enclave tourism. The resort in these enclaves is totally cut off from the rest of the island. [30]

5. Conclusion

The rising tide lifts the boat, as the number of visitors to the A&N Islands has been steadily rising from 2004 to 2023. It used to be around 2.0 lakhs annually, and it's going to keep going up. More food, fruits, vegetables, and flowers need to be grown locally if we are to take advantage of the opportunities presented by the growing tourist industry. Sustainable tourism development of these

islands can be achieved through the implementation of appropriate ecotourism strategies. As a result, Agri-horticulture goods and services, as well as their potential demand and supply in the future, must be included in a long-term strategy that takes weather into account. Significant consequences for ecotourism may also result from the degree to which international consumption, supply, business presence, and human mobility shape the environments in which destinations function. The island faces significant challenges in terms of infrastructure, resources, and its reliance on the mainland, all of which hinder its development.

5.1 Findings of the study

Through this study the author identified some possibilities and issues that ecotourism of Andaman and Nicobar Islands can bring. Therefore, while the Indonesia islands could provide natural wonders that are different from most of the attractions found in other parts of the world, several issues with the practice of tourism have raised worries especially because the tourism sector in Indonesia is still expanding with little regulation aimed at protecting the natural environment and the initial inhabitants of the Indonesia islands. This is true because this kind of ecotourism is sustainable and benefits the local people, aims at protecting ecological systems and has minimal impact on the environment. It does this by utilising a framework such as the five strategic approaches to achieve this which include enclave tourism, visitor management by permits and guideline, and integrated planning.

5.2 Scope for further research

It is recommended for further studies to be conducted whereby the potential threats are analyzed for harming the islands' nature and ways of preventing such negative consequences to be pursued. Further, learning about the socio-cultural effects resulting from the act of tourism in the aboriginal groups' societies along with aforesaid the culturally sustainable tourism frameworks would be effective. Implementing and introducing experimental eco-

friendly infrastructural developments and functional transport, resort accommodations and employing renewable energy resources for tourism could be a key to a sustainable future for tourism.

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