



Norwegian University
of Life Sciences

Master's Thesis 2023 30 ECTS
Faculty of Landscape and Society

SUSTAINABILITY ASSESSMENT AND CHALLENGES OF TOURISM DEVELOPMENT IN ANDAMAN AND NICOBAR ISLANDS: A CASE STUDY OF MAHATMA GANDHI MARINE NATIONAL PARK (MGMNP) AND WANDOOR BEACH

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ACKNOWLEDGEMENT

Every accomplishment requires the support and efforts of many people and this work is no different.

First of all, I would especially like to express my heartfelt thanks to my supervisor Professor Espen Olav Sjaastad, for his vital support, encouragement, expert tips, and invaluable guidance during the course of research. It was a privilege to complete this work under his supervision.

A sincere thanks to all my respondents for their cooperation and genuine interest in providing their valuable feedback and time from their busy schedules impersonating the pillars of this study.

I am also very thankful to Professor Ian Bryceson, for his guidance during the initiation of my research work.

Finally, I must express my profound gratitude to my parents and friends for providing me with unfailing support and continuous encouragement throughout my years of study and through the process of writing and completing this thesis. This accomplishment would not have been possible without them.

Varsha

ABSTRACT

Tourism has become a significant source of income for the Andaman and Nicobar Islands, leading to a notable rise in local involvement in tourism-related endeavors. This transition from traditional livelihoods has led to an increased reliance of the local population on tourism as their primary economic activity. However, this shift has also made them more susceptible to the potential vulnerabilities that the tourism sector can introduce.

In this research, we conducted an analysis of the sustainability of tourism in light of the challenges encountered by the sector, using the Mahatma Gandhi Marine National Park and Wandoor Beach as a case study. The findings underscore both the emergence of tourism as a means of livelihood and its associated vulnerabilities for the host communities, highlighted by consecutive incidents of crocodile attacks and the subsequent closure due to the COVID-19 pandemic.

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CHAPTER 1: INTRODUCTION

Coastal and marine ecosystems have always been complex and diverse in nature. These environments provide a home to an extensive range of species and habitats, encompassing mangroves, coral reefs, different kinds of fish, and other marine creatures. As a result, human populations have increasingly settled in coastal regions for sustenance and resources. Consequently, the excessive utilization of marine resources became an unavoidable outcome due to the absence of well-defined socio-ecological and political boundaries for these ecosystems (Ferrol-Schulte et al., 2013). This has necessitated the implementation of protective measures to mitigate the anthropogenic pressure on the marine environments.

One such proposition that has gained prominence is the establishment of Marine Protected Areas (MPAs). These protected designated areas aim to alleviate the human pressure on the marine environment by regulating human activities within their boundaries, to conserve both environmental resources and biodiversity (Atmodjo et al., 2020).

While MPAs have been a great instrument in safeguarding ecological integrity, a new set of challenges emerges on the social front (Christie, 2004). Numerous studies have been conducted to examine the local attitudes towards these protected areas as their access to the resources became limited (Walpole & Goodwin, 2001). This has led to conflicts between conservation efforts and the traditional livelihood activities of the local communities, highlighting the need for balanced strategies.

Coastal tourism, renowned for its distinctive biodiversity on both land and in aquatic environments, attracts a significant volume of tourists worldwide. As a result, tourism has emerged as an alternative livelihood option for many residing along these coasts which earlier depended solely on natural marine resources for sustenance. Tourism has also proven its ability as an additional revenue generation for both MPAs and local inhabitants (Sharma et al., 2019). Thus, the concept of sustainable tourism, often referred to as 'Ecotourism' has been integrated into the management plan of these protected areas. This integration aims to create a balance between biodiversity conservation and promoting the well-being of local populations. Although challenges regarding effective implementation persist on the ground which is further compounded by the

unexpected and uncertain shocks and stresses that impact the sustainability of tourism development.

1.1 Background of MPAs in India

India boasts a vast coastline stretching over 7516.6 km, distributed among nine states and four Union Territories, including the Andaman and Nicobar Islands and Lakshadweep Island (Singh, 2003). The diverse Indian coastal environment is home to fragile ecosystems including mangroves, coral reefs, and sea-grass beds, which serve as a vital support system for both natural biodiversity and human populations (Latha & Prasad, 2010). However, the unrestrained exploitation of these natural resources has left the coastal and marine ecosystems susceptible to degradation and irreversible damage.

The growing concern to safeguard these ecosystems prompted the formation of MPAs in India. During the 1980s and 1990s, MPAs were established under the Wildlife (Protection) Act of 1972, to protect the diverse marine ecosystems (Rajagopalan, 2008; Bijoor et al., 2018). These MPAs are identified as ‘national parks’, ‘wildlife sanctuaries’, or ‘biosphere reserves’ that have an entire or a part of a coastal area 500m from High Tide Line (HTL) (Singh, 2003; Rajagopalan, 2008; Bijoor et al., 2018). In the Andaman and Nicobar Islands (ANI), there exist approximately 105 protected areas out of which 15 are categorized as MPAs (Singh, 2003).

1.1.1 About the ANI

The ANI, classified as one of the seven union territories of India, is geographically situated in the eastern region, specifically located in the Bay of Bengal and the Andaman Sea. This particular union territory comprises a total of 836 islands, islets, and rocky outcrops, with only 31 islands inhabited by human populations. Out of these 21 inhabited islands are located in the Andaman group and 10 in the smaller Nicobar group. The union territory is divided into three main districts: the South Andaman District, which encompasses the capital city of Port Blair, serving as the primary gateway to the Andaman and Nicobar Islands; the North and Middle Andaman Districts, separated from the South Andaman District by a creek; and the Nicobar District (Andaman and Nicobar Administration, s.a.).

The Islands possess a coastline spanning 1962 km, characterized by abundant marine biodiversity. This rich biodiversity encompasses numerous species of fish, echinoderms, mollusks, coral reefs, sea snakes, and sea turtles. Hence, these islands are a haven for approximately 93 Wildlife Sanctuaries, six National Parks, and one Biosphere Reserve (Basic Statistics Tourism, 2021-22). Apart from the beautiful beaches and landscapes, this island also holds a rich and diverse cultural history accounting for the tribes that are still untouched by the clutches of modernization.

The historical timeline beginning with the settlement of convicts during colonial rule, the Japanese occupation during World War 2, the subsequent transfer of administration to India after independence, and the arrival of refugees during the post-independence period have all played crucial roles in shaping the population and history of the Andaman and Nicobar Islands. As a result, the population of these previously secluded islands comprises six indigenous groups and settler populations. They have contributed to the cultural diversity and demographic makeup of the islands, with the effects still visible today.

Along with a rich cultural history, ANI has also become a famous tourist destination for coastal tourism. From sandy beaches to an abundant diversity of coral reefs, shells, and marine life has a great impact on the tourism development in these islands. The Andaman group of islands offers tourists enhanced infrastructure and a plethora of beaches and activities to indulge in. However, the Nicobar Islands, being less accessible, retain an air of enigma and intrigue. With the island's government efforts and promotion, the number of tourists has increased over the years. However, the number of domestic tourists remains prominent when compared to foreign tourists.

The growth in tourism over the years on these ecologically delicate islands has sparked discussions about promoting sustainable tourism practices. For this study of sustainable tourism development in ANI, a specific case study is being conducted on the Mahatma Gandhi Marine National Park (MGMNP) and Wandoor Beach.

This marine park was established in 1983 under the Wildlife (Protection) Act of 1972, with the primary aim of safeguarding marine biodiversity, particularly coral reefs and nesting sea turtles. The park consists of approximately 12 islands adorned with lush green forests and sandy beaches, hosting a wide variety of corals. Covering an expansive area of around 282 sq. km., the park is designated as a fully plastic-free zone as reported in the recent management report of the MGMNP

(2022). The main tourist activities offered include trekking, snorkeling, scuba diving, sea walking, and the opportunity to witness beaches teeming with vibrant aquatic life.

1.2 Objective and Research Question

The main objective of the study is to investigate the sustainability of current tourism development in the Andaman and Nicobar Islands, with a focus on Mahatma Gandhi Marine National Park (MGMNP) and Wandoor Beach. The research utilizes the “Sustainable Livelihood Framework for Tourism”, to assess the existing tourism development as a viable sustainable livelihood strategy, and to address the challenges faced by the local tourism sector.

Therefore, to better assess the development of sustainable tourism in this context, the following sub-research questions need to be addressed:

1. What are the current tourism trends in the area surrounding the MGMNP and Wandoor Beach?
2. What are the diverse impacts of tourism on the social, economic, and institutional practices within the selected areas?
3. What are the vulnerabilities encountered by the tourism sector in the study area?
4. How do these vulnerabilities impact the socioeconomic and institutional sustainability of the host community?
5. What are the possible solutions for sustainable tourism development in the region?

CHAPTER 2: CONCEPT AND THEORY

2.1 Sustainable Tourism

Tourism has emerged as a fast-growing industry making it the topic of discourse in sustainability literature. Tourism's local and global influence has showcased the crucial role the tourism industry can play in achieving or aiding Sustainable Development Goals (SDGs) (Saarinen, 2020; UNWTO, s.a.). The use of the word 'sustainable tourism' has given rise to various context-specific understandings of tourism. This has led to alternative forms of tourism that are considered sustainable as per the requirements and resources available to the host destination. Hence, there are multi-sectoral perspectives for tourism under the context of sustainable development (Wall, 1996 as cited by Butler 1999).

Therefore, it becomes all the more important to have a universally acceptable definition of sustainable tourism. Shifting the focus from only the economic gains of tourism to a destination's social and environmental well-being. Hence, sustainable tourism has been defined as tourism that is responsible for the economic, social, and environmental well-being of a destination, and fulfills the needs of the environment, visitors, host communities, and tourist industries at present while also 'enhancing the opportunity for the future' (UNWTO, s.a.). To achieve sustainable tourism objectives active engagement and collaboration among all relevant stakeholders is a necessity. These stakeholders significantly impact all three pillars of sustainability, namely environment, social, and economic.

Thus, realizing the tourism potential efforts are being made to interpret the tourism context in 17 SDGs. In the 2030 agenda of Sustainable Development Goals (SDGs), Sustainable Tourism is an indispensable part of 4 SDGs which target sustainable use of destination resources, providing decent employment to local communities together with promoting local cultures and products, so that both guests and hosts can gain from their interactions without exceeding the carrying capacity of the destination's environment.

The three principles of sustainability incorporate any tourist destination's environmental, socio-cultural, and economic dimensions. Therefore, as per UNWTO, sustainable tourism is envisioned to be capable of significantly using the environmental resources of a destination yet

preserving its natural heritage and biodiversity, along with the socio-cultural authenticity of host communities, while also generating long-term economic gains for various stakeholders involved especially the host communities effectively contributing to poverty reduction. All these principles should be achieved with the active participation of all relevant stakeholders in the policy-making process to ensure a quality experience for both tourists and host communities.

This policy-making process is dependent on an institution for its effective implication on the ground. According to Brinkerhoff and Goldsmith (1990), institutions assume a legitimizing role wherein they establish rules and regulations to be followed by the people. Institutional sustainability incorporates equitable and robust participation of all pertinent stakeholders within the decision-making process to achieve sustainable tourism development. Thus, the inclusion of the institutional dimension as the fourth pillar of sustainability has often been pointed out by many scholars (Shen et al., 2008).

Institutional sustainability involves the collaboration of governmental bodies, private enterprises, non-government organizations (NGOs), and community members, all of which play a key role in the formation and implementation of effective development policies. However, the integration of an institutional framework that ensures fair representation and empowerment to marginalized stakeholders continues to be hindered by the prevailing class dynamics that retain authoritative control (Bianchi & de Man, 2021). Hence, striking a balance among all four dimensions of sustainability (Ashley & Carney, 1999) remains imperative for the advancement of sustainable tourism.

2.1.1 MPAs And Sustainable Tourism

MPAs have been established with the primary goal of conservation and protection of coastal and marine ecosystems. However, these protected areas have restricted the resource extraction of local communities to preserve marine biodiversity. This frequently gives rise to conflicts between the MPAs and the local populations. Nevertheless, these protected areas have also introduced tourism opportunities in many of the developing countries (Walpole & Goodwin, 2001). The reason behind this is additional revenue generation for the management of MPAs supplementing the governmental support (Atmodjo et al., 2017). Thus, the development of sustainable tourism has

been considered an economic strategy to support conservation initiatives by optimal utilization of the concerned natural capital.

Additionally, the growth of tourism also generates new income-generating opportunities for the local populations and increases cooperation with park management (Fish & Walton, 2012). This, in turn, enhances awareness regarding biodiversity conservation among both tourists and local communities. As a result, effective management strategies of MPAs necessitate a careful integration of preservation efforts with tourism-related activities.

Hence, the concept of sustainable tourism can contribute to the objective of MPAs including safeguarding biodiversity while also providing local communities with opportunities for economic and social advancement. As a result, significant expansion has been documented in India's protected areas through nature-based tourism (Poyyamoli, 2018). However, the success of these initiatives depends on possessing the appropriate knowledge, expertise, and institutional frameworks, to encourage cooperation between stakeholders with decision-making power, and equal benefits for their engagement (Fish & Walton, 2012). Consequently, the predominant approach for protected areas management involves eco-tourism as the central framework for sustainable tourism development within and around the park vicinity.

2.1.2 Ecotourism

Ecotourism is a subset of sustainable tourism often used as a synonym term for nature-based or conservation tourism. According to Goodwin (1996, p. 288), ecotourism can be defined “as low-impact nature tourism” as it aids in the preservation of species and ecosystems, either by directly supporting conservation efforts or by generating income for the local populations. This additional financial support can be considered a valuable source of livelihood by the local residents which further encourages them to value and safeguard their natural heritage.

The fundamental characteristics of ecotourism include its nature-based approach as tourists visit a destination to appreciate and enjoy the natural landscape, hosted by locally owned businesses. The central focus of ecotourism is to lessen the adverse effects of tourism on both the environment and local cultural heritage while raising awareness among tourists and hosts alike.

Another important aspect of ecotourism development is the active involvement of local populations in various tourism activities (Poyyamoli, 2018).

However, when it comes to MPAs, while they have successfully achieved their desired environmental goals, they frequently encounter challenges in gaining societal support. In a particular study conducted by Christie (2004), four MPAs situated in the Philippines and Indonesia were investigated. The research revealed a significant interconnection between the accomplishments in ecological and social aspects. Importantly, she highlighted that the continued ecological success of MPAs relies on positive local support in the long run. As a result, the successful introduction of ecotourism initiatives greatly relies on active engagement from the community.

2.1.3 Community Participation

Tourism development of a destination relies heavily on the local population's tolerance and perspective towards tourism. Sustainable tourism, as defined by UNWTO (s.a.), places significant importance on the well-being of the host communities' welfare for the both current and future advancement of the destinations tourism sector. Since the local population is the one sharing their resources for the satisfaction of tourists, there is a strong emphasis in tourism literature on their involvement in the tourism development process.

In one of his works Timothy (1999), highlighted three key aspects of local participation in tourism. Firstly, the engagement of local residents in the decision-making process related to tourism development. Secondly, ensuring an equitable distribution of benefits between locals and other stakeholders in the tourism industry. And, lastly, the need to educate local residents about tourism. He further pointed out that the notion of equal participation could differ across diverse developing countries due to varied socio-economic and political circumstances. Therefore, it becomes important to assess the level of community participation based on the unique characteristics of each destination's system.

Community participation as stated by Arnstein (1969, p. 216) is the “redistribution of power”. This provides the citizens with the authority to be engaged in economic and political processes that they are usually excluded from and gain access to equal benefit sharing. Arnstein's

conceptual framework includes a ladder of participation to explain the extent of participation with eight hierarchical levels.

The bottom two levels are manipulation and therapy. They signify non-participation, focusing on educating individuals without any actual influence. Levels 3, 4, and 5 comprise informing, consultation, and placation, where the voice of people is heard but not necessarily acted upon. These levels are considered as levels of tokenism (Arnstein, 1969). Heading to the top three levels of 6, 7, and 8, people have the power in the decision-making process. These levels consist of partnership, delegated power, and citizen control, signifying the evolutionary progression of the community's role in shaping decisions.

Following Connor (1988) introduced a new ladder of citizen participation to avoid public disputes related to certain policies or projects in different settings such as urban or rural. He suggested a sequential ladder of participation consisting of elements like education, information feedback, consultation, joint planning, mediation, litigation, and resolution/prevention. These steps of the ladder are interconnected, allowing for progression from one to another if prior steps prove ineffective. Furthermore, these stages are also concerned with providing equity and empowerment to the local communities.

Community participation should entail active participation that leads to the empowerment of the local population. Empowerment can be viewed as the highest level of community participation ladder that can be achieved (Choguill, 1996).

However, active participation is often been constrained by the lack of information and knowledge of the decision-making process. Locals should be made aware of the opportunities and challenges associated with tourism, enabling them to actively take part in the planning, execution, and assessment of policies or projects intended for tourism development in their area (Cole, 2006). Especially in protected areas, community participation is based on the knowledge and awareness of locals about their region's tourism potential. They should also be able to recognize the significance of conservation efforts by the authorities and be able to work together.

2.2 Butler's Tourist Area Life Cycle

Butler (1980) modified the product life cycle model to the context of the tourism industry. He then introduced the concept of the 'Tourist Area Life Cycle' (TALC) which serves as a model for growth in the tourism sector of a destination. He outlined six distinct phases in the evolution of the tourist area life cycle which include:

1. Exploration

The initial phase of exploration commences when a small number of adventurous travelers are attracted by the distinct and unique natural and cultural attributes of the destination. During this development stage, access to the location is limited and facilities available for tourists are basic. At this stage, the physical and social aspects of the area remain unaffected by tourism. Therefore, the arrival and departure of tourists hold little to no significance for the social and economic well-being of the local residents.

2. Involvement

With the increase in tourist footfall, more local inhabitants become engaged in offering amenities to the visitors, thereby generating supplementary earnings for themselves. The initial tourist market is set up and promotional efforts to attract tourists emerge. The demands for enhancement of infrastructure such as transportation and other facilities for both visitors and residents arise for the local governments.

3. Development

During this phase, the number of tourists increases during peak periods, potentially surpassing the local population. The emergence of external companies offering much better facilities leads to diminishing local influence. As a result, a well-defined tourist market is established. Both natural and cultural assets and attractions are preserved and promoted. On the contrary, the physical transformation of the area becomes evident, not all of which is embraced by the local community. Furthermore, the destination might face challenges like degradation of quality of service due to overuse of facilities, overcrowding, and added pressure on the existing services.

4. Consolidation

During the consolidation stage, while the overall number of tourists continues to rise, the rate of increase has slowed down. At this stage, residents might start experiencing a decrease in their quality of life due to the negative impacts of tourism activities. The perceived impacts of tourism may not be viewed positively. The substantial influx of visitors and facilities provided for them could trigger opposition and dissatisfaction among permanent residents, especially those who are directly not involved in the tourist sector.

5. Stagnation

During this stage, the destination will have attained its highest point in terms of the number of visitors, with a majority being returning guests. Numerous attractions and amenities will have reached or even exceeded their maximum carrying capacity, leading to challenges on ecological, societal, and economic fronts. While the region will have a firmly established reputation, it will no longer be considered trendy.

6. Post-stagnation

This stage includes a minimum of five possible outcomes ranging from a period of decline to a period of rejuvenation, partially reflecting the success or failure of local decision-making.

a) Decline

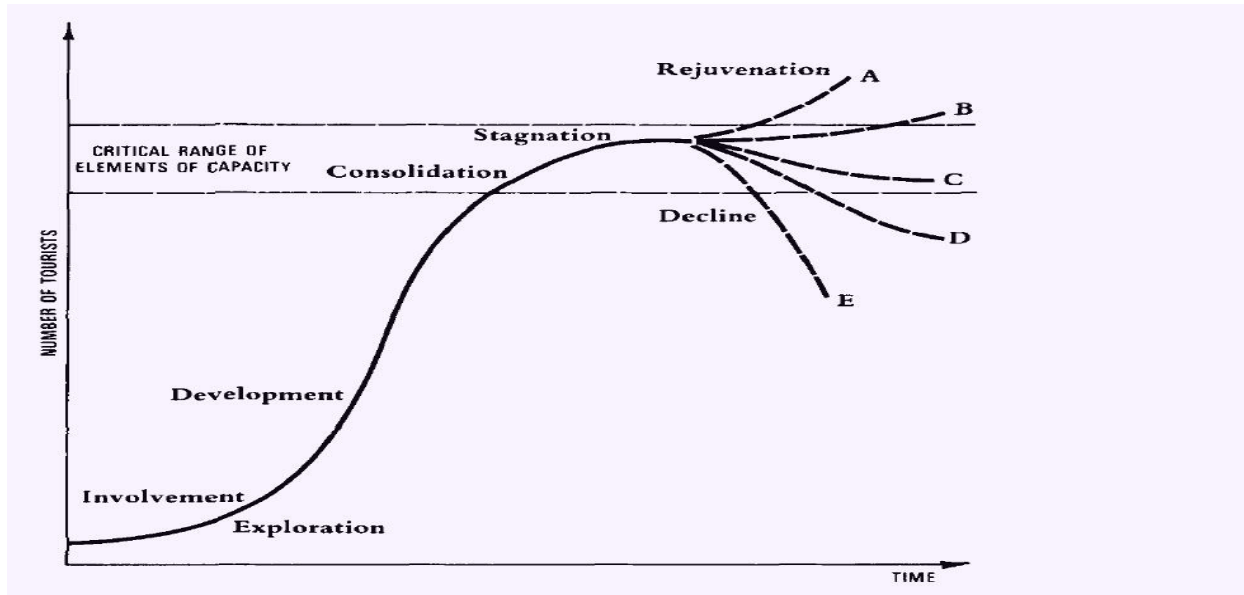
This is the final stage, where the destination will be unable to keep up with the new and modern attractions leading to the decline of the tourism market. The place will lose its appeal to vacationers. Numerous tourist amenities start to disappear as the region loses its attraction. The overall quality of life within the destination community significantly declines during this stage. Ultimately, the area might entirely lose its tourist identity.

b) Rejuvenation

Within the product life cycle, the rejuvenation stage is regarded as the renewal stage or the reintroduction of the product with fresh attributes. This stage requires the proactive engagement of destination planners and marketing firms for a comprehensive transformation of the tourist

attractions and amenities. Frequently, the incorporation of man-made attractions becomes essential for the revival of the tourist destination. However, should competition with neighboring areas persist, the efficacy of these measures could potentially be diminished.

Figure 1: Hypothetical Evolution of Tourist Area



(Source: Butler, 1980).

The dynamic nature of tourism is intertwined with a multitude of factors that continually shape its course of evolution. As Butler (1980) emphasizes, factors such as visitor number, accessibility to destination, interrelationships between stakeholders, and the pace of development prevent a uniform sequence for tourism growth and transformation of every destination.

Thus, each destination tourism cycle is impacted by its blend of these factors. For instance, one destination might experience sudden growth in its tourism sector without going through the involvement phase, or others might experience stagnation without reaching the development phase. Many scholars have used this life cycle to examine the destination situation after a crisis (Bojanic, 2005) or to determine the involvement of the community (Shen, 2009).

In this study, TALC is also utilized to assess the emergence of tourism as a livelihood activity and the local communities' level of engagement in the region's tourism. The integration of TALC as an analytical framework provides a comprehensive way to investigate the change in

the socio-economic dynamics of local communities with the development of tourism as a livelihood strategy.

2.3 Sustainable Livelihoods

The sustainable livelihood concept has emerged as an essential development aspect, especially for rural development. The earliest definition of sustainable livelihood can be traced back to the report of an Advisory Panel of the World Commission on Environment and Development (WCED) in the year 1987. In this report, livelihood was characterized as the possession of sufficient funds and the availability of food and cash flows to fulfill basic needs.

Additionally, it encompassed the concepts of livelihood security and sustainability for a household achieved by various means, such as “ownership of land, livestock or trees, rights to grazing, fishing, hunting or gathering, through stable employment with adequate remuneration or through varied repertoires of activities” (WCED, 1987a, p.2-5, as cited by Chambers & Conway 1992; Shen 2009).

In accordance with the WCED panel definition, Chambers and Conway (1992) expanded their interpretation of sustainable livelihoods. According to their adapted definition, a livelihood incorporates various elements such as capabilities, assets (including stores, resources, claims, and access), and activities necessary to sustain a means of living.

A livelihood is considered sustainable if it possesses the ability to withstand and recover from stress and shocks, while also being able to maintain or enhance its capabilities and assets. Furthermore, it should also be able to provide sustainable livelihood opportunities for future generations and offer net benefits to other livelihoods at both local and global levels, in both the short and long term.

In their comprehensive definition, they not only put emphasis on the capabilities of individuals or households to acquire means of living but also on the essential aspect of sustainability of livelihoods. This perception pertains to the livelihood's ability to endure and remain feasible in the face of potential “stresses and shocks”. Therefore, a description of a sustainable livelihood includes its capacity to not only navigate unforeseen circumstances but also to ‘recognize and recover’ from them, ensuring its continuity for future generations (Shen, 2009).

Hence, the definition of sustainable livelihood by Chambers and Conway holds particular importance, given its emphasis on people-centric approaches. Notably this definition has been widely adopted by various governmental agencies including the UK Department for International Development (DFID), United Nations Development Programme (UNDP), OXFAM, and CARE to integrate it and develop their own interpretation of sustainable livelihoods into their respective rural development practices (Shen et al., 2008).

An alternative definition of sustainable livelihood has been presented by Frank Ellis (1999). He conceptualizes livelihood within the context of sustainability as the combination of activities, assets, and their accessibility that collectively contribute to the means of subsistence for an individual or a household.

With regards to Chambers and Conway's (1992) definition, Ellis equates capabilities to assets and activities. The assets here include the various forms of capital such as natural, physical, human, financial, and social capital. All these assets and activities are dependent on one's own priorities and accessibility to these resources. Thus, livelihood diversification is subject to the degree of availability of the five capitals at the disposal of individuals or households.

2.3.1 Sustainable Livelihood Framework (SLF)

The sustainable livelihood approach adopted by DFID is the most commonly used. This approach is based on core principles of sustainable livelihoods. It is people-centered, puts emphasis on active engagement and participation of households, and is supported through a multi-level framework of assistance. This strategy also requires the involvement of both the public and private sectors (Ashley & Carney, 1999). Thus, the SLF proposed by DFID consists of five key elements namely, livelihood assets, transforming structures and processes, livelihood strategies, livelihood outcomes, and vulnerability context.

1. Livelihood assets have been presented in a pentagram-based model which comprises natural, social, physical, human, and financial capital. All these assets are important to the poor and access to these assets has been considered fundamental for the household's production, engagement, and participation in labor markets and during an exchange with other households (Ellis 1999; Shen et al., 2008; Shen 2009). Natural capital refers to the natural resource base available to households

in the form of land, water, and other natural assets. Social capital revolves around the social networks and connections that exist among households and communities. Physical capital includes the basic infrastructure (such as transportation networks) and tools (such as farm tools, and machinery) utilized by households to support their livelihood activities. Human capital comprises the intellectual and physical attributes of individuals within households, including their skills, knowledge, and health. And finally financial capital encompasses the financial resources available to the households including savings, credits, or pensions. These financial assets can help mitigate sudden economic shocks, ensuring stability and supporting household resilience (Scoones, 1998; Ellis, 1999; Shen, 2009).

2. Transforming structures and processes comprise institutional structures that are essential for determining the livelihood assets and outcomes in the SLF (Shen, 2009). These structures are often represented as public and private sectors. The processes involve the laws, policies, culture, and institutions. The distribution of livelihood resources is not always consistent depending on the institutional arrangements, policy, power, and politics of a place (Scoones, 1998). Therefore, these transforming structures and processes, provide a common ground for interactions between local, national, and international associations.

3. Vulnerability Context serves as a fundamental cornerstone within the SLF, enabling a more comprehensive understanding of the conditions that have shaped a particular livelihood. So, this is regarded as a key concept related to the sustainability of livelihoods (Shen et al, 2008; Shen,2009). The vulnerability context includes three crucial components: shocks, trends, and seasonality. Here, shocks refer to sudden and unforeseen events that significantly impact the health of humans and agriculture (e.g., epidemics, pandemics, bird flu), natural disasters (such as tsunamis, earthquakes, floods), as well as conflicts like wars, and economic shocks. Trends, another aspect of the vulnerability context include the change in available resources, population growth patterns, economic trends, and technological advancement all of which can influence the sustainability of livelihoods in the long term. Lastly, seasonality also plays a crucial part in the vulnerability context. It refers to the periodic and seasonal fluctuations that lead to variations in health conditions, employment opportunities, prices of goods and services, and production levels

(DFID, 1999a as cited by Shen 2009). The exploration of all these elements of vulnerability context contributes to a holistic understating of the intricacies of sustainable livelihoods.

4. Livelihood Outcomes as the name suggests, are the accomplishments as a result of the implementation of livelihood strategies. The possession of assets and performing the activities to make a livelihood work is marked with a desire to improve their way of living. This is especially true for rural communities. According to the DFID (1999a as cited by Shen, 2009) sustainable livelihood framework, livelihood outcomes are related to more income, increased well-being, reduced vulnerability, improved food security, and more sustainable use of natural resource base. The ultimate objective of pursuing a livelihood is to enhance the living standards of the rural poor and pave the way towards long-term well-being. Therefore, a thorough and diversified understanding of livelihood outcomes is crucial for a lasting impact.

5. Livelihood Strategies are the activities employed to achieve various livelihood outcomes, thereby ensuring economic stability, social well-being, and overall sustainability. From the resource-based approach, including natural resource-based and non-natural resource-based strategies to the incorporation of agricultural intensification, livelihood diversification, and migration, the diversity of livelihood activities becomes evident (Ellis, 1999; Scoones, 1998; Shen, 2009). The natural resource-based strategies revolve around local natural resources such as agriculture and fishing. The non-natural-based activities include skilled labor and other service-related occupations. Livelihood diversification is the process of individuals or households engaging in multiple economic activities for their survival and mitigation of external shocks (Scoones, 1998; Ellis, 1999). Lastly, migration as a livelihood strategy is the relocation of individuals or households in pursuit of better economic opportunities.

Due to its flexible approach, sustainable livelihood approaches have been employed in the development, assessment, and re-evaluation of numerous projects in many developing countries including India (Ashley & Carney, 1999). Furthermore, the application of the SLF has been broadened to cover tourism development aimed at reducing poverty and promoting rural development, as elaborated in the following section.

2.3.2 Sustainable Livelihood Framework for Tourism (SLFT)

Adapting from the DFID sustainable livelihood framework, Shen et al (2008) proposed the ‘Sustainable Livelihood Framework for Tourism’(SLFT) integrating SLF and tourism. They expanded on the dynamic nature of tourism and argued that SLA should be regarded in the tourism context to explore the livelihood strategies of tourist destinations. Thus, sustainable tourism livelihood can be defined within a tourism context, as a livelihood strategy that is capable of accomplishing the desired livelihood outcomes while dealing with vulnerabilities faced by the tourism sector. Here, livelihood outcomes are concerned with the achievement of economic, social, environmental, and institutional sustainability by tourism sector development without compromising other livelihood options (Shen, 2009).

They further talked about the importance of community participation in ‘the decision-making process and ‘tourism benefits sharing’ (Timothy, 1999) as sustainable tourism depends on potential arrangements and association between communities and institutions that govern the policy development process. Therefore, the SLFT further incorporates institutional assets with other key features of SLA and tourism. Thus, it consists of livelihood assets, tourism-related and non-tourism-related activities, livelihood outcomes, institutional arrangements, and vulnerability context, all of which are formed and influenced under the tourism context (Shen et al., 2008).

1. Tourism context encompasses the characterization of the tourist or ‘consumer’ profile, whether they are international tourists, domestic tourists, or both. The diverse socio-cultural and economic backgrounds of international and domestic tourists shape the tourism market and products in different ways for different host communities (Shen et al., 2008; Çakir et al., 2018). Additionally, the shift towards community-based tourism also plays a key role in tourism development as a livelihood strategy. Lastly, the identification of the stage of tourism development using Butler’s TALC model should be considered to explore the development stage of tourism as a livelihood strategy (Shen et al., 2008; Shen 2009).

2. Tourism livelihood Assets consist of natural, economic, human, social, and institutional capital. However, similar to livelihood assets presented by DFID (1999), the addition of institutional

capital is an important representation of community participation in the decision-making process for sustainable tourism development.

Natural capital comprises natural resources that are useful for the development of tourism such as water, land, and other natural assets. Natural capital also acts as a primary magnet for tourist visitation to destinations engaged with nature-based tourism.

Economic capital is a combination of both physical and financial capital (Scoones, 1998). Thus, economic capital consists of the improvement of basic infrastructure, tools, additional savings, and other economic benefits that are desired and acquired by the host communities through tourism development.

Human capital refers to the attainment of relevant skill sets and knowledge for the facilitation of tourism-related activities. This also includes sustaining good well-being standards for proficient engagement in labor-intensive activities to achieve favorable tourism livelihood outcomes.

Social capital represents the social relationships that exist between host communities. Effective community-based participation and association between the local communities are crucial for environmental and socio-economic sustainability.

Institutional capital is an essential addition to tourism livelihood assets. It focuses on community participation in the 'policy-making process with equal benefit sharing' and their access to the tourism market through effective political governance (Shen et al, 2008). All these assets share a dynamic relationship depending on their accessibility often leading to the growth of one asset in the decline or absence of another.

3. Institutional Arrangements in the tourism context, are represented by vertical and horizontal institutional arrangements. The vertical arrangement denoted the intricate relationship formed between the national, regional, and local governments catalyzed by the advancement of tourism. Whereas, the horizontal arrangement entails the emergence of new alliances between governments, tourism enterprises, host/local communities, NGOs, and tourists at a new tourist destination. This leads to a 'change in local institutional structures' leading to a change in a destination's laws,

policies, rules, and regulations that impact the livelihood strategies of host communities (Shen et al., 2008).

4. Livelihood Strategies consist of tourism-related activities (TRAs) and non-tourism-related activities (NTRAs). As the term suggests TRAs include employment provided by tourism-related services such as tourist guides, while NTRAs represent non-tourism-related employment such as fishing, agriculture, and others (Shen et al., 2008). Both TRAs and NTRAs exist together at a tourism destination as livelihood activities. Local communities are involved in both TRAs and NTRAs as livelihood diversification is often the norm in tourist destinations.

5. Tourism Livelihood outcomes are measured at the community level instead of the individual or household level as was the case in sustainable livelihood outcomes. Sustainable tourism livelihoods should be able to persist while enduring different phases of vulnerability. Therefore, it is important for tourism to be able to provide long-term economic benefits to all the stakeholders. It should also be capable of maintaining the social and cultural integrity of the destination while conserving the local natural resources and increasing local participation through relevant institutions. Thus, sustainable tourism livelihood outcomes rely on the resilience of tourism livelihood.

6. Vulnerability context in SLFT is composed of shocks, seasonality, trends, and institutions pertaining to a tourist destination. Shocks in this context, comprise a range of disturbances resulting in economic, natural, human, and conflict-related phenomena. Economic shocks are sudden financial crises that impact the tourism market such as the 2008 financial crisis. Natural shocks include natural disasters like earthquakes, volcanic eruptions, and tsunamis that might have a positive or negative effect on different forms of tourism. Human shocks are accounted for by epidemics or pandemics such as COVID-19 which halted tourism activities on a global scale. Conflicts may include human-human conflicts such as wars, or human-nature conflicts such as crocodile attacks or orca attacks.

Seasonality is considered seasonal fluctuations of tourism activities and markets. The majority of tourist destinations are dependent on seasonal tourist activities such as beach tourism, ski tourism, etc. that might impact a tourism livelihood in a positive or negative way. Trends are

dependent on national or international shifts in the economic, resource, population, or tourism market trends with the advancement of technology. When it comes to institutions, inefficient decisions, and actions by the authorities can lead to increased vulnerability of destinations. Thus, vulnerability needs careful examination as it varies for different destinations at different levels.

In the context of MPAs, vulnerabilities can manifest in different ways. One key vulnerability is the stakeholder conflict, which revolves around disputes between local communities and park authorities concerning resource use and imposed restrictions. This conflict often arises due to inadequate institutional structures and limited involvement of the local population in the decision-making process (Ferrol-Schulte et al., 2013).

Another significant vulnerability common in protected areas is human-wildlife conflict. It emerges as a result of the conservation initiatives of a particular species. This can lead to unwanted encounters and clashes between local inhabitants and wildlife, impacting both the biodiversity conservation efforts and local livelihoods.

Furthermore, unexpected shocks such as pandemics and trends present another form of vulnerability. These unforeseen events can overwhelm the local capacity to effectively respond and adapt. Thus, the SLFT can play a crucial role in assessing the degree to which local livelihoods depend on tourism.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Research Design

The present study employed qualitative research methods for data collection purposes. Qualitative research provides the researcher with an enhanced understanding of respondents' perceptions regarding social settings, and their interpretations of their surroundings and circumstances (Berg, B.L., 2001; Bryman 2016). Thus, qualitative research allowed for a more profound comprehension of the viewpoints held by study participants.

The study was carried out over a duration of one month, specifically throughout the month of March 2023. The fieldwork was predominantly conducted within the proximity of the MGMNP and Wandoor Beach. This primarily comprises the geographical area encompassing the Wandoor village. One of the primary objectives of the research was to explore the local population's perceptions of MGMNP and its role in tourism development within the region.

3.2 Sampling methods

Wandoor Village was selected as the focal point of this study due to its proximity to both MGMNP and Wandoor Beach, making it a central location for regional tourism activities. Additionally, Wandoor Village accommodates the administrative headquarters and interpretation center of the marine park. The target population for this research included a diverse range of stakeholders encompassing MGMNP officials, shops, restaurants, local authorities, and local residents of the village.

The study adopted a non-probability sampling strategy, effectively utilizing both purposive and snowball sampling methods. The purposive sampling approach was used to prioritize the research objectives. This involves selecting a unit of analysis that addresses the answers to the research questions asked (Bryman, 2016). This method was applied to collect insights from the key informants such as marine parks officials, local authorities, shopkeepers, and restaurant owners near the park entrance and Wandoor Beach, as they are regarded as the main stakeholders of the tourism sector. Thus, informal/unstructured interviews were held to better comprehend the current situation of park management and the evolution of the tourism sector within the region.

Additionally, snowball sampling was employed to identify other relevant stakeholders with the help of key informants. Initial interactions with the park officials and other respondents helped me to gain access to additional respondents who were involved in the policy-making and various aspects of the regional tourism industry.

3.3 Data Collection Methods

Both primary and secondary data were gathered using different methods. Primary data was collected throughout the fieldwork using participant observation, unstructured interviews, and field notes.

3.3.1 Participant observation

Participant observation is a qualitative research method, that requires a researcher to closely observe the respondent's behaviors, engage in conversations, and gain valuable insights into their perceptions and responses in their social settings (Bryman, 2016). Through regular visits to the area and engaging in informal conversations with both locals and park officials, a rapport was gradually established. While roaming around in the village and having informal conversations with the residents, helped me obtain some important information about the ongoing human-wildlife conflict which I was unaware of in the beginning. This further helped me shape my research objectives. In addition, sitting at the shops, and observing the daily activities of the respondents provided me with a better understanding of their concerns around the present situation of tourism in the area. The conversations between the respondents also brought forth diverse perceptions of residents about the marine park and its significance for tourism development in the region.

3.3.2 Unstructured interviews

Unstructured interviews were conducted with the relevant stakeholders selected through purposive sampling. The unstructured interviews help a researcher to obtain extra insights about various observations they made by questioning the participant (Berg. B.L., 2001). These unstructured interviews helped me acquire additional information during the natural flow of the conversation.

3.3.3 Field notes

Field notes were taken during the course of fieldwork. According to Bryman (2016), field notes can be characterized as mental notes, jotted notes, full field notes, and methodological notes. During the interviews, taking down mental and abbreviated notes helped me keep the respondent engaged in the conversation. After returning from the field, I used to write detailed descriptions of my observations and interviews based on these notes on the same day, so as to not forget any relevant information.

The secondary data was collected through a review and analysis of various sources such as newspaper reports, journals research articles, books, research reports, and documents including the various official reports such as the MGMNP management report, and the ANI tourism department website and brochures.

3.4 Ethical Consideration and Limitations

Ethical concerns within research mainly include harm to participants, insufficiently informed consent, invasion of privacy, and the use of deception (Bryman, 2016). Consequently, prior to each interview, informed consent was acquired by providing a clear objective of the reason behind the research, and respondents were given a choice to refuse to answer questions they were not comfortable with. To ensure anonymity and confidentiality of the informants no personal information was gathered during the fieldwork. These ethical safeguards were constantly reflected upon alongside the efforts to prevent any form of bias.

One of the limitations of the study was the short duration of my fieldwork. Staying in the field for just four weeks constrained my ability to engage extensively with the informants. Furthermore, due to limited accommodation options near the marine park, I had to travel back and forth from Port Blair by bus. This led to time constraints during the field observations. Another limitation was the closure of some tourist services due to a lack of tourists and I was not able to establish contact with them. This factor hindered the potential of collecting more comprehensive data. Lastly, the accessibility of certain individuals who were earlier involved in tourism was obstructed as they were either fishing out in the sea or working on other islands. Consequently,

direct interviews with these individuals during fieldwork were not possible. These limitations proved unavoidable at times and presented challenges in the study's execution.

CHAPTER 4: AN EXPLORATION MGMNP

Established in 1983, the MGMNP holds the distinction of being one of the first three marine national parks in India and the first marine park in the Andaman and Nicobar Islands. Its boundaries were carefully delineated in accordance with the Wildlife (Protection) Act, 1972, taking into consideration the ecological, geomorphological, faunal, and zoological significance of the region. After confirming that the demarcated area within the marine park did not belong to any individual, an official notification dated 1999 officially proclaimed the designated area as the "Mahatma Gandhi Marine National Park" (Department of Environment & Forest, Andaman & Nicobar Administration, 2022).

The park encompasses a total area of 281.5 sq. km. and is composed of 15 islands from the labyrinth group, situated between the southwest coast of South Andaman and the northeast coast of Rutland Island. The landmass within the park covers approximately 61 sq. km., while the remaining 220.5 sq. km. comprises open sea and creeks. It is important to note that all islands within the park are uninhabited. However, two islands, namely Jolly Buoy and Red Skin, are accessible to tourists during the day without overnight stays.

4.1 Ecological Importance of The Park

The primary aim of the MGMNP is to preserve the natural environment and resources by mitigating anthropogenic disturbances and conserving biodiversity. Consequently, the park plays a pivotal role in safeguarding and sustaining the habitat of a wide array of terrestrial and marine flora and fauna. The park encompasses vibrant lush mangrove forests on land and an unparalleled diversity of coral reefs beneath the sea.

According to the MGMNP report (2022), as of the present time, there are 16 different species of flourishing and undisturbed mangrove habitats within the park boundary. Mangrove forests, provide shelter to a diverse array of animal species, many of which rely partially or entirely on the existence of mangrove ecosystems. Similarly, coral reefs facilitate protection and nutrition for marine fauna. MGMNP conserves a wide variety of coral reefs that are significant for sustaining the ecological balance underwater as well as on land. There are around 120 species of corals recorded in the park with over 300 species of coral reef fishes creating a colorful marine

world (Department of Environment & Forest, Andaman & Nicobar Administration, 2022). The following table 1 provides an overview of the islands within the park and the biodiversity they host.

Table 1: Brief summary of islands within MGMNP

ISLANDS	AREA (sq. km.)	IMPORTANT FEATURE
Alexandra	4.97	Reef wall, Sea fan jungle
Belle	0.08	Patchy coral reef
Boat	7.28	Turtle nesting beach, giant frouper
Chester	0.49	Large coral rock, sea fans
Grub	0.47	Excellent coral reef, Giant clam, Feather stars
Hobday	5.28	Underwater cave, Giant grouper, saltwater crocodile habitat
Jolly Buoy	1.74	Large shoals of fishes, good diversity of coral and reef wall
Malaya	1.94	Patchy coral reefs
Pluto	0.52	Patchy coral reefs
Redskin	7.07	Reef wall, high diversity of corals, saltwater crocodile habitat
Riflemen	0.08	Strong current, Sea fans
Rutland (only a small part in park)	136.17	Leatherback turtle nesting beach (largest beach in the park), saltwater crocodile habitat

Snob	1.45	Patchy coral reef, Sea grass beds
Twins	1.84	Turtle nesting beach, sharks, Manta rays, Moray eels
Tarmugil	23.33	Turtle nesting, saltwater crocodile habitat, sharks,

(Source: MGMNP Brochure)

Furthermore, a total of 86 bird species have been recorded within the boundaries of the MGMNP, out of which 50 are exclusively found on these islands. Especially, two critically endangered avian species, namely the Andaman Teal- native solely to the Andaman Islands and White-bellied Sea Eagle can also be found within the boundaries of the park.

The park also serves as a habitat for numerous reptile species. These reptiles encompass four species of turtles, one species of crocodile, thirteen species of snakes, and an unspecified number of lizard species. Among the sea turtles found in these areas are the olive ridley (*Lepidochelys olivacea*), green (*Chelonia mydas*), hawksbill (*Eretmochelys imbricata*), leatherback (*Dermochelys coriacea*), and loggerhead (*Caretta caretta*) species.

The coastal creeks bordered by mangrove forests found near Wandoor, Manjeri, Hobday, Red Skin, Tarmugli, and Rutland (Jahaji) islands in the main South Andaman Island serve as favorable habitats for saltwater crocodiles. These islands also contain larger mangrove forest areas where nesting sites for crocodiles have been identified. According to the Wildlife (Protection) Act, 1972, all five species of sea turtles and the saltwater crocodile are protected under Schedule I species (Department of Environment & Forest, Andaman & Nicobar Administration., 2022).

Apart from reptiles, the MGMNP has also been home to two marine mammal species known as the Common Dolphin and Dugong. In India, the critically endangered dugong is found in the regions containing seagrass beds. The Andaman and Nicobar Islands are one of those places followed by the Gulf of Mannar and Kutch, as well as in Palk Bay. Within the marine park sightings of dugongs have been reported in Boat Island and to the north of Tarmugli. Therefore, it becomes all the more important to preserve such a rich and fascinating ecosystem in order to maintain the

natural balance. To further the conservation efforts the management of the marine park has adopted a holistic approach by creating zones.

4.2 Zoning within the MGMNP

Within the context of national parks, zoning has been employed as a technique to establish an equilibrium between the conservation and utilization of land and its resources within designated geographical areas (Mason, 2012). Zonation has also been adopted within the framework of the MGMNP management.

The primary objective of zonation is the conservation of multifarious ecosystems and the promotion of sustainable use of natural resources. Three distinct zones have been mentioned in the current management plan of the MGMNP (2022), namely, the Preservation Zone, the Multiple Use Zone, and the Tourism Zone.

1. Preservation zone

The preservation zone of the MGMNP comprises a diverse range of ecosystems, encompassing natural reef areas, the benthic zone, mangroves, and the overall island ecosystems. The primary objective of this zone is to safeguard areas of biological significance, mitigate conflicts, and ensure the continued existence of vital species and habitats over the long term. Within this designated zone, all activities are subject to restrictions with the exception of research endeavors. The preservation zone is further subdivided into four sub-preservation zones constituting approximately two-thirds of the total area of the MGMNP.

2. Multiple Use Zone

The multiple-use zone includes the intertidal areas and the land above the high tide lines, extending along the outer boundary of the MGMNP and adjacent to the villages within its sphere of influence.

In the management plan of the marine park, a multiple-use zone has been integrated to address and minimize conflicts between human activities and wildlife in the designated area. The primary objective is to disseminate information and raise awareness among the local population about the importance and benefits of biodiversity conservation. This aspiration is to be realized by establishing regulatory check posts with effective communication facilities at jetties, especially

during emergencies related to human-wildlife conflicts. Furthermore, engaging local youth as tour guides or nature interpreters, along with reinforcing the efforts of the eco-development committee, will play a crucial role in gaining support from the local community for the sustainable management of the natural environment.

3. Tourism zone

As per the 2015 eco-tourism policy guidelines, the construction of permanent infrastructure in forested areas of the islands is strictly forbidden. Consequently, tourism activities will only be allowed in designated tourism zones determined by the authorities. The management of the park will regulate all tourist-related activities to ensure the preservation of the unique biodiversity and the safety of visitors. Moreover, efforts are made to promote and adopt a low-impact tourism approach that supports the park's conservation efforts while providing necessary assistance.

Additionally, besides actively advocating for the promotion of the MGMNP to generate income, the tourism zone will also offer support to the local community, which relies on the tourism sector associated with the MGMNP, either directly or indirectly. This support includes substantial enhancements to tourist facilities situated within the Zone of Influence, such as the noteworthy locations of Phongy Balu, Wandoor, and Guptara. These enhancements aim to improve the visitor's experience while also contributing to the socio-economic well-being of the local populations.

In line with this, the park management report includes a pioneering approach to the establishment of Eco Development Committees. These committees' purpose is to foster active local participation and engagement, by creating new avenues for employment within the park management.

4.3 'Fascinating Marine World of MGMNP

The tagline serves as an enticing introduction that piques the interest of tourists toward the unexplored marine realm. As mentioned in the recent management plan of the MGMNP (2022), conservation goes hand in hand with utilization. Hence, in the case of the marine park 'sustainability' is primarily concerned with the responsible utilization of natural resources that enhance the environmental and socio-economic benefits over a long period of time. Additionally,

an increased awareness among the local population is also crucial for the effective preservation of such a diverse ecosystem.

Thus, sustainable tourism development tends to have a significant impact on the local's support for the marine park's initial objective of preservation. The park's authorities have implemented various conservation and research programs to protect the unique ecosystem while promoting sustainable tourism. Efforts include habitat preservation, species protection, and ecological monitoring to ensure the long-term sustainability of the park's environment and resources. Many regulations and measures are in place to ensure the preservation of marine biodiversity along with enhancing visitor experiences.

The marine park is situated in the South Andaman district, approximately 29 km away from the capital city of Port Blair. Its proximity to the capital city makes it an ideal destination for day trips attracting a significant number of tourists. Visitors can easily reach the park by taking the regular bus service, booking a taxi, or renting a two-wheeler from Port Blair.

4.3.1 Tourist Attractions

While around 15 uninhabited islands are located within the boundary of the MGMNP, only two islands, Jolly Buoy and Red Skin, are open for tourists to visit. These islands, along with their surrounding reef areas and the beach area of Phongy Balu, have alternating periods of accessibility.

Jolly Buoy is open for visitation from November to May, while Red Skin can be accessed from May to November. This covert rotation system is put in place to ensure sufficient time for the rehabilitation of the delicate environment and to reduce the negative impact of human activity as much as possible.

Prior permission is necessary to access the MGMNP, and permits can be obtained from the Forest permit counter at the IP&T office in Port Blair. To preserve the islands' capacity, a limited number of daily permits are issued. Table 2 below demonstrates the increase in the number of tourists visiting till the outbreak of the pandemic leading to the closure of the marine park.

Table 2: Tourist visitation to the MGMNP

YEAR	JOLLY BUOY	RED SKIN	TOTAL
2012	27559	12397	39956
2013	35009	15678	50687
2014	31493	35461	66954
2015	28588	9370	37958
2016	29081	12102	41183
2017	35326	12731	48057
2018	31436	10133	41569
2019	15195	63332	78527
2020	16108	11	16119
2021	884	0	884
2022	0	0	0
2023 (till march)	0	0	0

(Source: MGMNP Office)

4.3.2 Tourist Activities and Guidelines

Visitors are offered an immersive experience through recreational activities such as swimming, snorkeling, and glass-bottom boat rides. To safeguard the marine biodiversity these activities are confined to designated tourist islands and safety zones, closely supervised by guides. This precautionary measure aims to prevent potential encounters with wildlife such as indigenous

saltwater crocodiles inhabiting these waters and mitigate any harm to the marine biodiversity, particularly the coral reefs, that could result from tourists' lack of awareness or negligence.

The marine park places a strong emphasis on environmental preservation. Therefore, it is strictly forbidden for visitors to touch or feed marine creatures, or to collect any underwater organisms, whether alive or dead, as mementos. This rule has been implemented with the objective of preserving the natural dynamics and equilibrium of the ecosystem. Additionally, in order to maintain cleanliness and safeguard the environment, the islands have been officially designated as plastic-free zones. Consequently, the use of any plastic materials is not allowed within the park premises upon entry. Informative signs placed near the park entrance and dock provide comprehensive details regarding the rules and regulations that tourists must follow, as well as information about the various protected species.

The recreational facility situated within the park provides educational resources through a combination of film presentations and a museum that showcases life-sized models of the diverse marine species found in the region. These initiatives aim to raise awareness among visitors about the importance of marine conservation and promote a deeper understanding of the marine ecosystem's intricacies.

As part of ongoing safety improvements, the park authorities have temporarily closed the park to evaluate the effectiveness of fiberglass boats as a replacement for traditional wooden boats. This evaluation aims to enhance safety measures for transportation within the park, ensuring the well-being of both visitors and the marine environment.

4.4 Zone of Influence

The Zone of Influence refers to the surrounding residential areas of Wandoor, Humpherrygunj, Guptapara, and Beodnabad Gram Panchayats, which are located in the vicinity of MGMNP. According to the 2011 census (Department of Environment & Forest, Andaman & Nicobar Administration, 2022), with a total of thirteen villages the population of this region is recorded as 8,395 as presented in the table below. Manglutan and Wandoor village, touching the marine park boundary demonstrate a significant population. The livelihood of the inhabitants ranges from agriculture, horticulture, and fishing activities to government and private sector employment with

an increased interest in tourism-related jobs in recent years Table 3 provides information about village populations around the MGMNP.

Table 3: Population of villages in the zone of influence (as per 2011 census)

Village	Household	Total Population
Wandoor	364	1437
Mamyo	187	825
Hasmatabad	208	872
Humpherrygunj	103	424
Manglutan	631	2430
Guptapara	225	936
Manjeri	137	613
Pongi BaluCBala Gera	3	12
Chidiyatapu	123	499
R. M. Point	4	6
Bamboo nallah including Kitchad nallah	32	96
Rutland (revenue village)	26	76
Badakhari	57	169
TOTAL	2100	8395

(Source: Department of Environment & Forest, Andaman & Nicobar Administration, 2022)

The present study was conducted in Wandoor village, which offers an entry point to the MGMNP. Due to its proximity to the marine park and Wandoor Beach, the local community from the village is most involved with tourism.

Wandoor village was established for the settlement of refugees during the post-independence settlement plan of 1949. Seven families of refugees from East Pakistan were relocated and assigned land in Wandoor. This was followed by the establishment of permanent residences for refugees in the 1970s after the independence of Bangladesh, as they were also provided with land for settlement. Adding to this, the migrant workers recruited for forest production activities who were not officially assigned any land, also chose to settle on these lands, resulting in an increase in the local population over the years (Department of Environment & Forest, Andaman & Nicobar Administration, 2022). Thus, leading to the diverse legal status of land with different income sources and further social stratification within the community.

Currently, Wandoor has a total population of 1437, out of which 496 fall under the category of working class (Primary Census abstract, 2011). Almost every respondent household has more than one source of income generation. Most of them were involved in fishing and small-scale agriculture, while also renting shops and restaurants near MGMNP and Wandoor Beach. They also have family members working in the public and private sectors in Port Blair and other nearby islands. Therefore, every household is supported by more than one livelihood strategy, tourism being one of them.

With the placement of MGMNP on the tourism map of the islands, employment opportunities have also been created. Before the pandemic, locals with required permits used to operate tourist boats within the park and provided employment to many others. Locals have also set up small shops and restaurants that receive their business from the visitors of the marine park. Additionally, Wandoor Beach which is located a short distance away, also hosts tourists visiting the park for a stroll on the sandy beach with its crystal-clear water and breathtaking sunset views. However, this has made them dependent on the functioning of the marine park.

However, the impact of the tourism industry on the local villages is still limited. One of the main reasons for this is that most tourists prefer to stay in Port Blair and only visit MGMNP during the day. This has resulted in minimal direct benefits for the local population in the influence zone.

The number of hotels near the marine park is still limited when compared to other tourist places on the island. There is one government guesthouse but still, it is recommended to stay in Port Blair for a wide range of options. Another reason is, that only a few influential individuals are able to get a permit to operate their boats within the park which also influences the social dynamics among the local population. Thus, the relationship between the marine park and the local population remains dependent on economic benefit.

CHAPTER 5: DATA ANALYSIS

In this chapter, major findings from the research conducted in the surrounding area of MGMNP and Wandoor Beach including Wandoor Village are presented. SLFT is applied to gain a better understanding of livelihood diversification and vulnerability within the tourism sector around the MGMNP and Wandoor Beach.

5.1 Sustainable Tourism and Livelihoods

5.1.1 Tourism context

The presence of the tourism industry has had a noteworthy influence on the surrounding villages of MGMNP, particularly Wandoor. The establishment of the marine park not only promoted the conservation of the natural environment but also introduced the host communities to various employment opportunities stemming from tourism.

Before the creation of MGMNP, Wandoor Beach attracted numerous tourists. It was particularly crowded by the local tourists who frequented the area for picnics and swimming on weekends. Local communities were accustomed to hosting visitors, providing them with refreshments and other facilities, as one of the respondents recalled, *“It used to be so crowded with families, especially during weekends. Everybody used to come here for swimming.”* However, restrictions imposed on entering the water after a crocodile attack resulted in the decline of the beach’s popularity.

Presently, the marine park attracts a considerable proportion of tourists annually. According to the respondents, the MGMNP receives a higher number of domestic tourists when compared to international tourists. One of the studies conducted by Tewari and Chaudhary (2016), sheds light on this trend. It reveals that the majority of domestic tourists visiting MGMNP utilized the leave travel concession (LTC) scheme of the Indian government. Notably, the LTC plays a pivotal role in the tourism promotion strategy of the ANI tourism department, aimed at attracting domestic travelers. During my stay, a mainland Indian family also availed the LTC service to visit the islands before they retired from government services.

Consequently, the rise in tourist influx has not only influenced the dynamics of MGMNP but has also increased the involvement of locals in tourism-related activities which is further discussed in the chapter. This shift has led the residents from Wandoor to increasingly view tourism as a more promising economic avenue when compared to other traditional livelihood options such as wage labor, fishing, and agriculture.

Hence, small shops, restaurants, and a few accommodation facilities have been set up near the park entrance and along the Wandoor beach. Though these facilities are still small in number, the economic benefits of tourism have captured the local community's attention. They have witnessed tourism as a flourishing enterprise on nearby islands. This has made the respondents hopeful for a similar transformation with an increase in the number of tourists and tourist facilities within the region.

Consequently, this inclination towards tourism development represents that the TALC of the region is in the earlier phases of development. However, this transition has been impacted by various challenges faced by the tourism sector of the area in recent years which are presented in the section concerning tourism vulnerability.

5.1.2 Institutional arrangement

Marine parks in India are designated as highly protected areas under the Wildlife (Protection) Act, of 1972, which safeguards both terrestrial and marine animals, birds, and plants, to protect the natural environment (Rajagopalan, 2008). Therefore, the Ministry of Environment, Forest and Climate Change (MoEFCC) serves as the central agency responsible for the safeguarding and management of these protected areas at the national level. Meanwhile, the wildlife wing of the Forest Department takes charge of managing these MPAs at the state level, (Singh, 2003; Rajagopalan, 2008). This is the vertical arrangement of institutions that have the final say in the decision-making process. All the projects and proposals regarding any kind of development in and around MPAs need the final approval of MoEFCC.

Horizontally, concerning the decisions of MGMNP management on the local scale, the ultimate authority rests with the Range Officer, Wandoor responsible for the conservation and preservation of the marine park environment. The Range Officer, responsible for Research, and

Survey is accountable for tourism and visitor management within the marine national park. Additionally, the maintenance of the MGMNP rest house also falls within their capabilities (Department of Environment & Forest, Andaman & Nicobar Administration., 2022). Consequently, all the policies and initiatives concerning tourism development within the marine park are devised and executed by these authorities with little to no intervention from the local populations.

An official claimed that if the decision regarding the development of the area outside the park boundary is to be taken, for example, the development of a hotel, public notices will be issued to invite locals for discussion. However, this does not ensure active participation on the local level as a result of a lack of awareness and knowledge about the decision-making process.

Therefore, in the case of tourism promotion and infrastructure development on Wandoor Beach, the village head and the administrative department act as representatives of residents. However, the inability of the previous village head to maintain the tourism potential of the beach after the crocodile attack has made the local communities angry.

“The village head did not do anything after restrictions were imposed on swimming on the beach and tourism suffered in the area” was the immediate reply from the majority of the respondents when asked about the local leaders' role in the tourism management of the region. After the attack, no concrete actions were taken by the local authorities to rejuvenate the tourism of this once-popular beach in the past few years.

Recently, a collaborative effort between the village administration and the Wildlife Division of Wandoor has led to the formulation of a proposal aimed at reopening Wandoor Beach for tourism. The proposed plan includes the restoration of the safety net, and the suggestion to de-reserve a part of the beach with permission for various tourist activities such as glass bottom boats, swimming, and snorkeling. The objective is to reestablish the beach's tourism and increase income-generating opportunities for local communities. But its execution depends on final approval from MoEFCC which might take a considerable amount of time.

However, despite the joint efforts and comprehensive proposal, a divide in awareness among the local community is evident. While some residents are a bit informed about these

initiatives, others are still unaware and express dissatisfaction based on previous leaders' inefficiencies. This further represents a lack of proper communication between the local authorities and residents.

One of the main reasons behind this is the local's distrust of the political parties and divergent political views. Political influence plays a significant role in shaping the dynamics among various stakeholders involved in the region's development. Differing political inclinations often give rise to disputes among these stakeholders leading to hindering the attempts at equal community participation. These institutional structures and processes also play a crucial role in the distribution and accessibility of livelihood assets in the region.

5.1.3 Livelihood Assets

In regards to the research area, agricultural land, fish catch, and water bodies can be considered their natural capital. The concept of natural capital comprises the natural resources available in the region that directly benefit the local inhabitants. However, the establishment of MGMNP has imposed restrictions on the utilization of these natural resources. This is especially true in the case of fishing within the boundaries of marine parks. As a result, locals have started engaging in additional livelihood options.

“The cost of fishing net, fuel, and other tools required for operating the boat during fishing, prove to be more expensive than the total earnings from fishing. This is due to insufficient fish catch outside the park boundaries. We also have to stay longer at the sea, which results in additional expenses.”

This reply highlights the rise in local expenditure on natural resource extraction with little return. In the case of agriculture, some respondents had small agricultural land. However, the crop yield has declined due to changes in soil composition after the 2004 Tsunamis.

Thus, tourism has introduced the locals to the income-generating potential of nature in the area. Respondents are very well aware of the importance of conservation of the natural beauty of the place. According to them, it is the primary asset for tourism development in the area. Thus, awareness regarding protection of the natural resources can be seen in locals involved in tourism.

Human capital with regard to the study area can be attributed to the cultivation of skills and knowledge by the host community to be a part of the tourism sector. According to many of the respondents, their children have completed training courses for different tourism-related activities such as scuba diving or tourist guides. This acquisition of expertise in tourist activities has increased local involvement and dependence on the tourism industry especially among the youth.

Tourism has resulted in the improvement of the economic capital of the host community. Earlier, they were primarily dependent on agriculture or fishing for income generation. However, the devastation caused by the 2004 tsunamis has deteriorated these activities. Tourism came as a welcome relief with the further development of infrastructure. The transportation facilities in the area have improved with regular bus services from the capital city.

“The earnings from tourism were enough for me to take care of my entire family,” one responded while recollecting the times when the beach used to be frequented by tourists. Thus, from an economic point of view, tourism has provided significant benefits to the host community.

Social capital refers to the social connections within the host community. Villagers have been residing in the area for multiple generations. This has shaped a resilient communal bond of trust, reciprocity, and shared norms. It has also been reported and observed that nobody in the village locks their doors. This highlights a level of trust between the households along with a sense of safety.

Institutional capital is concerned with community participation in decision-making, equal benefit sharing, and access to the tourism market. The decisions concerning tourism within the marine park are solely taken by the designated officers. The revenue generated through park fees is utilized for the management of the park.

Nevertheless, the benefits derived by the local population of the MGMNP are not substantial, as only a few influential individuals in the tourism market, who own tourist boats operating within the park, acquire an advantageous position. The employment opportunities within the boat crew are limited and restricted to a select few. Thus, the passive participation of locals can be observed in terms of community participation.

5.1.4 Tourism as a Livelihood Strategy

According to the 2001 census, agriculture was the primary sector within the zone of influence of the MGMNP. It was followed by daily labor, government employment, and fishing. Nonetheless, the 2004 tsunami resulted in substantial alterations in the ways people earned their livelihoods, primarily due to the flooding and deterioration of agricultural land. Consequently, the occupational composition of the tsunami-affected villages showed significant discrepancies compared to the pre-tsunami conditions reported in the 2001 census (Kulkarni et al, 2004 as cited by Saxena and Saxena, 2008).

Fast forward to the 2011 Census data, a notable shift has occurred as the majority of the population within the zone of influence is now engaged in alternative occupations, primarily within the service sector. Large-scale industries are still not prominent in the region. Therefore, the primary occupations in this region remain agriculture, fishing, labor, government services, and private company jobs. Out of which, over four-fifths of the working population falls under the ‘other works’ (including tourism) category, indicating employment in either the government or private sector. And only a small percentage, are still involved in agriculture (Department of Environment & Forest, Andaman & Nicobar Administration, 2022).

This indicates a shift in the employment structure of the regions within the zone of influence over a period of time. The tsunami in 2004 also had a significant impact on agriculture and fishing as the catch declined. Additionally, after the establishment of the marine park, fishing practices became intertwined with the management strategies of the park (Department of Environment & Forest, Andaman & Nicobar Administration, 2022). It is essential to highlight that fishing within the park boundaries is strictly prohibited, regardless of the fishing method employed.

However, registered fishermen are permitted to traverse the park for legitimate reasons. Due to the scarcity of fish in the nearby waters surrounding the boundary of the park, fishermen now have to travel long distances to find an adequate catch. As a result, they often spend extended periods away from home in search of sufficient fish. This has often been the cause of distress for the locals dependent on fishing as a livelihood activity. Consequently, challenges related to fishing restrictions within the marine park boundaries and occasional conflicts with forest rangers persist.

Thus, the availability of diverse employment opportunities in tourism-related roles has contributed to the diversification of the livelihoods of the host populations.

The NTRAs are non-tourism-related occupations which in the research area are referred to the government service, fishing, agriculture, labor, and other private jobs. The amalgamation of NTRAs and TRAs can be observed in the study location.

The research findings reveal that a significant portion of the respondents report that the majority of the households in the village have at least one individual involved in activities related to tourism. The specific occupation within this sector varies depending on the human capital and requirements of each family.

A study conducted by Saxena and Saxena (2008) showed that the local tourist services in the region experienced growth, increasing from zero to 21, accompanied by a rise in the number of bank loans granted for the acquisition of boats intended for tourism. In addition, local boat operators who have been given official authorization have been providing transportation services to tourists who visit the islands within the park. They employ around 10-15 locals to work on these boats.

Over the years, a significant number of young people in the village have received training in various tourism-related roles such as dive operators, tourist guides, taxi drivers, shop assistants, and boat operators. Additionally, many individuals have found employment as guides for a range of water activities organized on the tourist islands. The presence of small retail stores, restaurants, and a nearby accommodation facility near the marine park has generated employment prospects for the local population. As the number of tourists visiting the marine park has grown, the community has become increasingly engaged with tourism-related businesses.

After their visit to MGMNP, tourists often choose to unwind and admire the sunset at Wandoor Beach. This popular destination offers a variety of amenities, including small shops that cater to tourists' needs and desires. These establishments, such as souvenir shops, tea stalls, fresh coconut vendors, and eateries, not only provide an opportunity for tourists to enjoy local refreshments but also offer a chance to purchase locally crafted items.

It is important to note that these shops are authorized by the government, and permits are issued specifically for the sale of shell items. While tourists are not permitted to collect sea shells or items from the shore, they are encouraged to support the local community by purchasing souvenirs made from shells, corals, pearls, and other materials available at these shops. This arrangement ensures that the host community benefits from the sale of unique local products.

5.2 Tourism Vulnerability

5.2.1 Human-crocodile conflict

‘Beware of crocodile’ and *‘Swimming is prohibited’* these warning signs can be found on the coasts, streams, and creeks in South Andaman. South Andaman has recently witnessed a rise in crocodile-related incidents, leading to the implementation of warning signs and safety measures. One of the incidents that led to these measures happened in November 2017 at Wandoor Beach.

On that fateful day, a young migrant worker was attacked by a 16ft crocodile while swimming at Wandoor Beach. The attack occurred due to a torn safety net that had been set up to safeguard individuals from crocodile encounters, given the proximity of the Lohabarrack Crocodile Sanctuary.

«As soon as he submerged his head underwater, he was grabbed by the crocodile by the neck» one of the respondents who witnessed the incident recalled.

Despite the efforts of the victim's friends, bystanders, lifeguards, and officials, they were unable to rescue him from the clutches of the massive reptile as nobody was prepared for the unsuspected attack. This lack of preparedness among the rescue team can be attributed to the absence of training specifically focused on responding to crocodile attacks (Khandekar, 2018).

Additionally, the unavailability of specialized rescue equipment further hindered their response time as they had to wait for the rescuers from Port Blair. Subsequently, traps were set up by the wildlife department along the Wandoor coast. They were successful in capturing five crocodiles. One of them was suspected to be a man-eater crocodile earlier relocated after it attacked a person in 2015 as they often exhibit strong homing instincts and can navigate back to familiar areas (Sridhar, 2018; Khandekar, 2018).

Over the years, crocodile sightings have increased around the villages surrounding the marine national park and crocodile sanctuary. Some unfortunate encounters between locals and crocodiles have led to injuries and even death. Between the years 2015 and 2019, a total of 8 crocodile attacks occurred, leading to 3 deaths and 2 injuries. Notable, information regarding the remaining 3 incidents is absent concerning fatalities and injuries caused by crocodile attacks. So it can be assumed that those have resulted in damage to property.

An official record of crocodile attacks leading to death and injury including damage caused to property in South Andaman has been depicted in the table below.

Table 4: Crocodile Attacks in South Andaman

Year	Total incidence	Number Of Persons	
		Death	Injury
2015-2016	0	0	0
2016-2017	6	2	1
2017-2018	2	1	1
2018-2019	0	0	0

(Source: Department of Environment and Forest, ANI, 2019)

In response to these unfortunate incidents, compensations have been provisioned for the crocodile attack victims and their families. A compensation of INR 7000 has been designated for property loss, while a compensation of INR 3,00,000 is allocated for the loss of human life (Department of Environment and Forest, ANI, 2019). However, it is also important to note that these compensation figures are susceptible to delays and instances of corruption according to some respondents. This significantly impacts both the psychological well-being and economic stability of the affected families.

«How can one compensate for the life of one's dear ones they have lost forever», one respondent pointed out while talking about the crocodile attacks.

In one of the recent attacks in December 2022, a local of Manglutan village was attacked by a crocodile while fishing in the creek with his wife. Till his wife got help, he was taken by the crocodile resulting in a search operation being conducted by both locals and the forest department

(Sanjib, 2022). This incident further intensified the anger of residents against the increasing number of crocodiles in the area and the apparent lack of preparedness by the officials.

The rise in the number of crocodiles can be attributed to the conservation efforts of the Indian government in collaboration with UNDP/FAO during the 1970s. Project Crocodile was launched in 1975 to protect saltwater crocodiles (*Crocodylus porosus*) from illegal hunting as only a small number remained in the Brahamani- Baitarani deltaic area of Orissa, the Sunderbans of West Bengal, and the Andaman & Nicobar Islands (Vos, 1984). The goal of this project was to breed the three species of crocodiles in rehabilitation centers to a suitable size and then release them in the newly established protected areas (Vos,1984).

The Indian Government through the Wildlife (Protection) Act, 1972, granted legal protection to saltwater crocodiles, designating them as Schedule I animals. Causing any harm to them is considered a punishable offense leading to seven years in prison. Crocodiles were bred in captivity at Haddo Zoo in Port Blair to facilitate effective breeding and population growth. They were then released in streams and creeks, so they could thrive in their natural habitat (Khandekar, 2018). These conservation efforts have yielded notable outcomes, a significant increase in the number of crocodiles has taken place leading to a rise in human-crocodile encounters.

Furthermore, a devastating tsunami that occurred in December 2004 severely impacted the South and Southeast Asia regions, including the Andaman and Nicobar Islands. The tsunami caused significant loss of life, killing and displacing thousands of people. It also resulted in the submergence of numerous villages and agricultural areas. The tsunami was triggered by an earthquake, and the movement of tectonic plates caused significant changes in the topography of the Andaman and Nicobar Islands. The northern part of the Andaman Islands experienced a rise of approximately 1.5 meters, while the southern part of Andamans sank by about 1.2 meters (Khandekar, 2018). These tectonic changes brought about the displacement of crocodiles from the northern to the southern part of the Andamans.

Moreover, the human population also increased with the settlement efforts for Andamans and Nicobar Islands post-independence. The closeness of human settlements to the streams and creeks for easy access to water and fishing has led to the dumping of kitchen and poultry waste such as remnants of dead fish into these water bodies. Crocodiles are considered opportunistic

feeders who are drawn to the presence of food. The practice of waste disposal increased the likelihood of attracting crocodiles to those areas.

Over the years, the rise in the crocodile population has resulted in increased sightings and conflicts between humans and crocodiles in the affected villages. The residents of the area also live in constant fear of encountering these crocodiles, given their proximity to the creature's habitat. Despite being aware of the potential danger, they have no choice but to continue using these water sources to carry out their daily activities. Additionally, they also feel a sense of constraint due to legal protection for these animals, which prevents them from taking any action against them.

With the development of the tourism industry in ANI, it has become all the more important to maintain and safeguard tourists from possible wildlife threats and vice versa. Precaution has always been the first step towards fulfilling the visitor's needs without compromising the conservation objective.

Consequently, the crocodile attack at Wandoor Beach served as a catalyst for the implementation of measures to inform and caution individuals about the presence of crocodiles in the area. However, the enforcement of restrictions on swimming and water activities at Wandoor Beach has been discouraging the development of tourism in the area.

«If they are not allowed to enter the waters, why would tourists visit here» One of the respondents stated the facts.

Another respondent expressed a similar sentiment *«Who would enter the waters at their own risk, It's the official's responsibility to safeguard the visitors by installing nets, and if they want they can also charge a small fee to enter the water.»*

One even suggested adopting a management strategy similar to Australia, where according to him crocodiles are actively managed after reaching a certain size. An appropriate monitoring system and culling of the notorious ones can provide some peace of mind to the locals.

However, the current practice among forest officials involves the traditional method of relocating the crocodile when caught to another location away from human settlements. But these

species are territorial and thus, find their way back or sometimes settle in other human territories on their way (Shanker and Muralidharan, 2018). Another method used is putting up a safety net in the water, but it also requires constant checks as the earlier attack happened due to the torn net.

A trap has also been set in the water near the beach, but the majority of respondents claimed that it was unsuccessful. In recent times, no crocodiles have been caught in that trap due to insufficient food that is unable to attract the animal. Still, no new safety net has been installed in the waters after the attack, and restrictions have been imposed on beach activities.

This fuels the local's frustration against the local authorities. Some even expressed their frustrations against the former village head's incapability to handle the situation effectively. They firmly believe that Wandoor Beach has the potential to become a popular tourist destination, much like Radhanagar Beach, renowned as Asia's best beach. Nevertheless, it is worth noting that there has been an unfortunate incident of a crocodile attacking a foreign tourist at Radhanagar Beach back in 2010. Despite this unfortunate incident, no tourist activities were suspended for an extended period of time. And now, Radhanagar Beach is the most popular attraction among tourists visiting the islands.

Furthermore, the existence of a marine park, actively endorsed by the government and frequented by numerous tourists, made locals hope for the area's development as a popular tourist destination. This picturesque beach, with souvenir shops and refreshment stalls, offers a serene view of pristine, transparent waters. However, tourists are often disappointed with the restrictions to enter the water. Therefore, the emphasis on restricting water activities instead of actively promoting Wandoor Beach has upset the community.

This demonstrates that promoting tourism involves a careful balance between ensuring visitor safety and attracting tourists to enjoy the unique attractions of a location. While safety measures are crucial, it is important for officials to consider alternative approaches that allow visitors to engage in water activities while maintaining their well-being.

The safety concerns inside the park have been taken care of by the officials, and a similar approach can be followed for Wandoor Beach. That is by implementing effective safety protocols, providing lifeguards, educating visitors about potential risks, and establishing designated

swimming areas, a balance can be achieved between safety and promoting tourism. However, before any further actions could be discussed or taken, the tourism sector was hit by the COVID-19 pandemic which is discussed in the next section.

5.2.2 COVID-19 Pandemic

The COVID-19 pandemic has had a profound and far-reaching influence on the lives of individuals across the globe. It has caused significant disruptions in diverse sectors, most notably the tourism industry. During the pandemic, the closure of borders and confinement of people to their homes left many with fears of uncertain future prospects of tourism. Amidst this global crisis, numerous establishments have been driven out of operations, thereby disrupting the tourism development activities in the region of ANI.

The emergence of the COVID-19 pandemic left these remote islands feeling more isolated. Connected to the mainland only through air and waterways, visitation of even domestic tourists became impossible during these uncertain times. With the sudden lockdown, people have to stay inside their houses and solely depend on their savings or have to ask for help from their relatives. This confinement to their homes left people feeling helpless and even doubt the severity of the pandemic.

“COVID-19 was not a big issue but the government made it into one for their benefit,” mentioned one of the respondents. This again diverts the attention toward the discourse of peoples’ diversified perception of the pandemic and its danger.

“We could not go out of our houses and our savings were diminishing. No help was given from the government,” replied one as they reminisced about the times during the COVID-19 lockdown. Some were even unable to pay the various expenses for their shops and restaurants near MGMNP and Wandoor Beach.

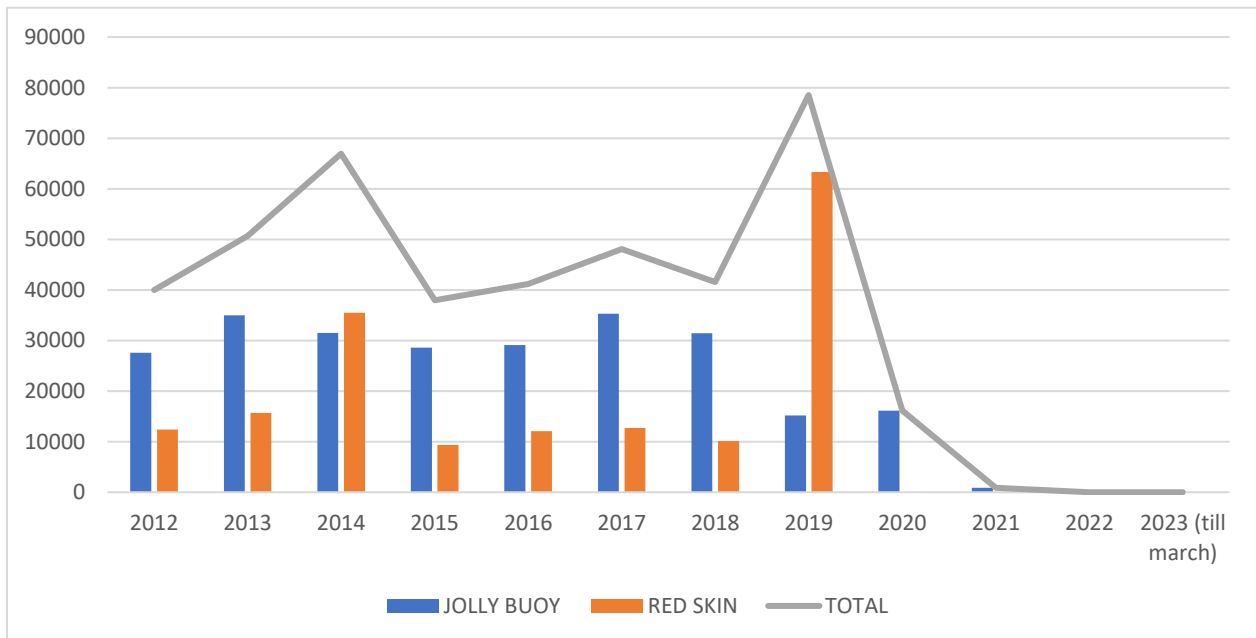
With the complete shutdown of island borders, tourism activities also came to a halt. Notably, the closure of the marine park stands out as a prominent consequence, making it inaccessible to visitors for an extended duration of three years.

“COVID has resulted in great loss because everything was closed and no tourists visited here,” was the immediate response one gets regarding the current situation of tourism in the area.

During the tourist season before COVID-19, the shops and hotels near the marine park would receive a considerable number of visitors who would stop by for refreshments and lunch while exploring the marine park and Wandoor Beach. However, the closure of MGMNP has had a significant negative impact on the local population, which has come to rely on tourism as a significant source of income, either directly or indirectly.

A visual representation in the form of a graph, presented below, depicts the fluctuating trajectory of tourist visitation to the park. Over the course of the past decade, the number of tourists visiting the park had been steadily increasing until the advent of the COVID-19 pandemic, which triggered an abrupt and drastic decline in visitor numbers. After completing their voyage of islands within the marine park, they used to visit Wandoor Beach for sunset views. Therefore, these tourists can also be counted as visitors of Wandoor Beach according to the respondents.

Chart 1: Tourist visitation to the MGMNP



(Source: MGMNP Office)

“My son used to work on the boat in the park, but because of COVID, he lost his job, and now we have to rely on fishing and this small shop for our subsistence. The earnings are very less compared to what we earned through tourists,” mentioned one of the respondents who also used to be a tourist guide before the pandemic.

Before the arrival of the pandemic, the marine park authorities granted authorization for the operation of wooden boats to the local inhabitants. They provided transportation services to the tourists visiting the marine park. Moreover, the marine park also had glass-bottom boats, providing visitors a captivating glimpse into the underwater realm. This flourishing venture not only catered to the needs of tourists but also presented employment prospects for the local community, particularly the youth, who received comprehensive training in various tourism-related activities.

Therefore, these individuals were entrusted with roles as boat assistants and guides within the marine park, offering an immersive experience to tourists exploring the islands. Remarkably, the local communities, possessing profound knowledge of the surrounding ecosystem, enjoyed a distinct advantage in this regard.

Unfortunately, the closure of the marine park has created a disconcerting situation. The once vibrant wooden boats now lie idle along the shoreline leading to multifaceted repercussions for the host community. As a result, some local residents have reverted to traditional occupations such as fishing or small-scale agriculture to sustain their livelihoods during the pandemic. While the COVID-19 lockdown may have granted the natural environment much-needed rest, it had a negative socio-economic impact on the livelihoods of local communities surrounding the MGMNP.

Under significant COVID protocols, the island was opened for tourists visiting Port Blair, Swaraj Dweep, and Shaheed Dweep in 2021 (Andaman & Nicobar Tourism, s.a.). However, the marine park remained close, much to the struggling host community's despair.

5.2.3 Testing of fiberglass boats

The continued closure of the marine park happened due to the capability testing of new fiber boats. These new fiber boats equipped with better technology and monitoring systems are supposed to

replace the old wooden boats during the next tourist season. These boats are further furnished with better cabin facilities and safety equipment.

Therefore, park authorities ran a trial period for these boats to check their potential and competency with the marine biodiversity of the park. This trial period prolonged the park closure to another year in addition to the COVID-19 shutdown. Hence the park has been closed for a period of three years now. This resulted in increased frustrations among the local communities relying on the opening of the marine park and tourist arrival.

One of the immediate consequences is the plight faced by the small shops and restaurants located near the marine park's entrance. Previously, each of these establishments employed 7-8 local assistants and flourished due to a steady influx of tourists to the park. However, with the closure of the marine park over the last few years, they are now facing difficulties in supporting their own families. As some of them solely relied on the income generated from these shops.

While the majority of these locals are also involved in other economic activities, they still perceive tourism to be a more profitable revenue-generating activity. Consequently, the current absence of tourists has left these shop owners idle, as they anxiously wait for the reopening of the park and the arrival of tourists. The lack of tourism has disrupted the flow of visitors and their associated spending, resulting in a significant economic setback for these businesses and the local communities they support.

Another issue that has been raised by the locals is that these fiberglass boats are expensive. So, they can only be operated by those with good financial means and connections. Unlike earlier, it would be impossible for the local boat operators to afford such boats and acquire permission from the park. A respondent expressed this sentiment by stating, "*Only the one with money can manage to have those expensive boats. And only a person with connections will be able to get a job on that boat.*" Thus, locals are still uncertain about the advantages of these boats for their livelihood.

Moreover, the local youth, influenced by shifting employment trends over the years, exhibit a preference for more lucrative employment opportunities, to escape the demanding nature of fishing that necessitates prolonged periods spent at sea. Hence, they find themselves compelled to

seek employment prospects in the capital or other islands open for tourism such as Swaraj Dweep, Shadheed Dweep, and Port Blair. This migration from their homes raises concerns among their families, who harbor apprehensions regarding their overall well-being while being employed far away from their homes.

Likewise, Wandoor Beach, once a popular destination for tourists exploring the adjacent marine park, has also experienced a significant decline in visitor numbers. While the authorities have prohibited tourists from entering the waters due to the inherent risk of crocodile attacks, a few adventurous souls still frequent the beach, drawn by the allure of witnessing breathtaking sunset views. For the local hosts who operated small shops along the shoreline, these occasional visitors provided a glimmer of hope amidst an otherwise desolate situation.

However, since the extended closure of the marine park, the once-vibrant beach has transformed into a desolate and melancholic landscape. One respondent even compared its ambiance to that of a somber and secluded cemetery,

«It has become difficult to even pay for the electricity and rent of the shop,» has been a common source of distress among most of the respondents. Previously bustling with activity, the local shop owners now find themselves with empty stalls and dwindling sales. The absence of a regular stream of tourists has had a profound impact on the local economy and the livelihoods of those who relied on the influx of visitors.

CHAPTER 6: CONCLUSION

The objective of this study was to assess the sustainability of tourism development in ANI using MGMNP and Wandoor Beach as case studies. From the research findings, it can be concluded that the tourism sector of the area surrounding MGMNP is highly dependent on the functioning of the marine park. Notably, the marine park has replaced the earlier frequented Wandoor Beach as a tourist attraction.

The responses and observations during the fieldwork have shed light on the shift of perspective towards tourism. The surrounding area of the MGMNP has experienced a significant increase in tourism activities over the past decade. This shows the increased dependence of the local population on tourism. Though some still carry out NTRAs they do it along the TRAs. So, a combination or we can say diversification of livelihood can be noticed in the study area. This surge in TRAs has not only transformed the local economy but has also impacted the way of life and livelihoods of the local residents.

Butler's TALC model, which describes the different stages of tourism development in a destination, has been applied to understand this transformation. One notable outcome of the tourism growth is the increased involvement of local residents in the tourism sector. This has led to a shift in perception, where tourism is seen as a viable livelihood option. As a result, there has been a growing interest, especially among the younger generation in acquiring skills and knowledge related to tourism activities. This has had a positive impact on human capital development and social sustainability, as the community has become more interested, educated, and skilled in diverse roles.

However, despite these positive aspects, there are certain challenges that need to be addressed. One of the challenges is the lack of active participation from local communities in decision-making processes related to tourism development. This can be attributed to the existing institutional framework, which is characterized by a hierarchical structure. With decision-making power concentrated at higher levels of government, there is a disconnect between the park authorities, village administration, and its residents. This lack of communication and cooperation hinders effective community involvement and can impact the overall sustainability of tourism development in the long run.

Additionally, the increased reliance on tourism as a primary source of income has made the community vulnerable to shocks and disruptions. Unlike the 2004 Tsunami that shifted the local's interest toward tourism, the current vulnerabilities faced by the tourism sector have made the local economy and well-being susceptible to unexpected events.

The human-crocodile conflict has made the local population doubt the purpose behind their legal protection. This has resulted in increased discontent among locals against the conservation efforts of the government. An official has emphasized that it was the humans who have invaded the animal's habitat not the other way around. This has prompted a call for finding a balance between conservation and development. However, not everybody shares the same sentiment, as they mention living in the constant fear of potentially encountering a crocodile.

Another aspect of vulnerability surfaced within the tourism sector when the closure of the MGMNP occurred due to the COVID-19 pandemic and the survey of fiber boats. These circumstances revealed a significant reliance of the host community on the tourism activity facilitated by the marine park. These shocks have left the host community struggling, as they anticipate the reopening of the MGMNP. These vulnerabilities underscore the need for a diversified livelihood strategy that can provide resilience against such sudden shocks. Therefore, positive livelihood outcomes expected from tourism development have been affected.

As previously discussed, the MGMNP has emerged as a prominent tourist attraction within the region. Consequently, there is a pressing need to actively involve and educate the local communities about the decision-making processes. This will play a crucial role in establishing sustainable institutions. Although the incorporation of Eco-Development Committees into the MGMNP management plan (2022) is a step in the right direction, it is important to acknowledge that the full-fledged implementation of these committees might require a considerable amount of time.

In essence, the present state of tourism lacks comprehensive sustainability, particularly when examining the economic and institutional dimensions. To foster a more sustainable outcome from tourism, it is imperative to establish a strong and interactive partnership between park authorities and the local residents. Gaining a deeper insight into the park's objectives and

addressing the concerns of the local livelihoods will contribute to the evolution of a sustainable approach to tourism development.

Encouraging active community engagement is pivotal, ensuring the inclusion of all stakeholders. A collaborative endeavor aimed at biodiversity conservation and tourism development is essential in striving for the overarching goal of achieving long-term sustainability across various facets of the environment, society, economy, and institutions encompassing the entire area.

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