



# SUSTAINABLE COASTAL AND MARINE TOURISM

## POLICY OPTIONS FOR PAKISTAN



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## Foreword

As Managing Director of the Pakistan Tourism Development Corporation (PTDC) and President of Sustainable Tourism Foundation Pakistan I have over three decades' experience to promote sustainable, community-based heritage and nature tourism, I view this report as a timely and essential contribution to the national tourism discourse. Pakistan's 1,001 km long Arabian Sea coastline is a unique but underutilized national asset. Rich biodiversity, culture, history and amazing landscape these coasts hold immense potential to drive sustainable economic growth, generate employment and enhance international recognition. Realizing this vision, however, requires more than ambition; it demands integrated strategies, sound policies and a commitment to balancing development with conservation. This report takes an important step in that direction.

The authors have effectively highlighted long-standing challenges that have hindered coastal and maritime tourism in Pakistan. Equally important, they propose practical pathways for reform and investment. Their recommended framework anchored in sustainable infrastructure, institutional reform, and community integration aligns closely with PTDC's mission to promote Pakistan as a world-class tourism destination while ensuring that local communities remain both beneficiaries and custodians of their natural and cultural resources.

As a reviewer, I found the comparative insights particularly valuable. Lessons drawn from regional and global experiences, including the Mediterranean, Pacific, and Southeast Asia, provide guidance for Pakistan's own roadmap. Above all, the report emphasizes the urgency of adopting a holistic, sustainable maritime policy approach to that places development, people and the environment at its core. The discussion regarding the use of AI in maritime tourism highlighted another valuable aspect.

I am confident that policymakers, industry stakeholders, investors, and local communities will find in this work both inspiration and direction. By responsibly unlocking the wealth of our coastal and maritime resources, Pakistan can transform its coastal and marine tourism sector into a vital pillar of the blue economy and a source of pride and prosperity for generations to come.

**Aftab-ur-Rehman Rana**

Managing Director

Pakistan Tourism Development Corporation  
(PTDC)

## EXECUTIVE SUMMARY

Globally, tourism is regarded as a driver of economic growth as it contributes about 10% to the global GDP. Coastal and marine tourism (CMT) has become a significant spearhead of economic development worldwide, particularly for the island nations across the regions of Southeast Asia, the Pacific, Europe, and Africa. Pakistan's extensive coastline, spanning approximately 1,001 km along the Arabian Sea, offers immense potential for coastal and marine tourism. However, despite its rich marine biodiversity, scenic beaches and cultural heritage, the sector remains underdeveloped due to inadequate infrastructure, weak policy frameworks, and environmental concerns. This study aimed to assess the current state of CMT in Pakistan, analyze global best practices, and recommend a strategic framework for sustainable CMT to achieve the objective of sustainable development by 2030.

The study proposed a three-pillar framework: Sustainable Infrastructure Development, focusing on eco-friendly resorts, transport, and facilities at key sites like Gwadar and Kund Malir etc.; Institutional Reform & Governance, through a centralized CMT authority and integrated coastal management; and Environmental & Community Integration, ensuring marine conservation, mangrove restoration, and community empowerment via jobs, entrepreneurship and cultural tourism. The discussion on use of AI in the CMT highlighted another valuable dimension, particularly in improving efficiency and sustainability. It emphasized how AI can enhance navigation safety, support smart port and cruise management, and personalize visitor experiences, while also helping to monitor marine ecosystems and reduce environmental impacts.

The long-term vision is to align Pakistan's CMT development with Sustainable Development Goals (SDGs). Achieving this requires not only investment and policy reforms but also strong regional cooperation in the Indian Ocean and active participation in global blue economy frameworks. In conclusion, Pakistan's coastal and maritime tourism remains an untapped frontier of economic growth, cultural promotion and environmental stewardship. If managed sustainably, this sector could emerge as a vital pillar of Pakistan's Blue Economy.

## List of Abbreviations

|         |   |                                                                  |
|---------|---|------------------------------------------------------------------|
| ACP     | - | Alpine Club Pakistan                                             |
| AI      | - | Artificial Intelligence                                          |
| ASEAN   | - | Association of Southeast Asian Nations                           |
| CMT     | - | Coastal and Marine Tourism                                       |
| CPEC    | - | China Pakistan Economic Corridor                                 |
| EIA     | - | Environmental Impact Assessment                                  |
| FCTE    | - | Framework Convention on Tourism Ethics                           |
| FDI     | - | Foreign Direct Investment                                        |
| GDP     | - | Gross Domestic Product                                           |
| GHG     | - | Greenhouse Gas emission                                          |
| GSCT    | - | Global Sustainable Tourism Council                               |
| ICPT    | - | International Code for the Protection of Tourists                |
| ICZM    | - | Integrated Coastal Zone Management                               |
| KPCTA   | - | Khyber Pakhtunkhwa Culture & Tourism Authority                   |
| LEED    | - | Leadership in Energy and Environmental Design                    |
| LNG     | - | Liquefied Natural Gas                                            |
| MDGs    | - | Millennium Development Goals                                     |
| M/o IPC | - | Ministry of Inter Provincial Coordination                        |
| MPAs    | - | Marine Protected Areas                                           |
| MSP     | - | Marine Spatial Planning                                          |
| NCCT    | - | National Coordination Committee on Tourism                       |
| NGOs    | - | Non- Governmental Organization                                   |
| NLP     | - | Natural Language Processing                                      |
| NTCB    | - | National Tourism Coordination Board                              |
| PATO    | - | Pakistan Association of Tour Operators                           |
| PHA     | - | Pakistan Hotels Association                                      |
| PTDC    | - | Pakistan Tourism Development Corporation                         |
| SCMTP   | - | Sustainable Coastal and Marine Tourism Policy                    |
| SDGs    | - | Sustainable Development Goals                                    |
| SOPs    | - | Standard Operating Procedure                                     |
| STDC    | - | Sindh Tourism Development Corporation                            |
| STFP    | - | Sustainable Tourism Foundation Pakistan                          |
| TAAP    | - | Travel Agents Association of Pakistan                            |
| TCKP    | - | Tourism Corporation Khyber Pakhtunkhwa                           |
| TDCP    | - | Tourism Development Corporation of Punjab                        |
| TDCP    | - | Tourism Development Corporation Punjab                           |
| UNDP    | - | United Nations Development Program                               |
| UNESCO  | - | United Nations Educational, Scientific and Cultural Organization |
| UNWTO   | - | United Nations World Tourism Organization                        |
| WCED    | - | World Commission on Environment and Development                  |
| WEF     | - | World Economic Forum                                             |
| WTO     | - | World Tourism Organization                                       |

## CHAPTER 1

### AN OVERVIEW OF COASTAL AND MARINE TOURISM

#### 1.1 Introduction

The Blue Economy is referred to as the sustainable use of ocean resources. It includes sectors such as ports and shipping, ship breaking and recycling, aquaculture and mariculture, and coastal and maritime tourism (CMT). It also includes new fields and industries such as marine biotechnology, deep sea mining and renewable energy<sup>1</sup>. CMT is one of the main pillars of blue economy. The marine tourism activities include beach tourism, fishing, wildlife watching etc. It also includes activities on the sea. These include sailing, scuba diving and cruising etc.<sup>2</sup>.

#### Categories of Maritime Tourism

1. Marine recreation
2. Coastal recreation
3. In-land Coastal recreation
4. Cruise Tourism



*Figure 1: Various sectors of the Blue Economy.*

#### 1.2 Global Tourism Overview

Globally around \$9.9 trillion was contributed by the tourism industry in the year 2023. Moreover, the sector supported around 348 million jobs. This highlighted an increase of about 13 million when compared to the year 2019<sup>3</sup>. In the year

1 Marwan, Yassir. "Blue Economy Literature Review." *International Journal of Business and Management* 18 (2024): 12–12. <https://doi.org/10.5539/ijbm.v18n3p12>.

2 Pascoe, Sean. "Recreational Beach Use Values with Multiple Activities." *Ecological Economics* 160 (2019): 137–144. <https://doi.org/10.1016/j.ecolecon.2019.02.018>.

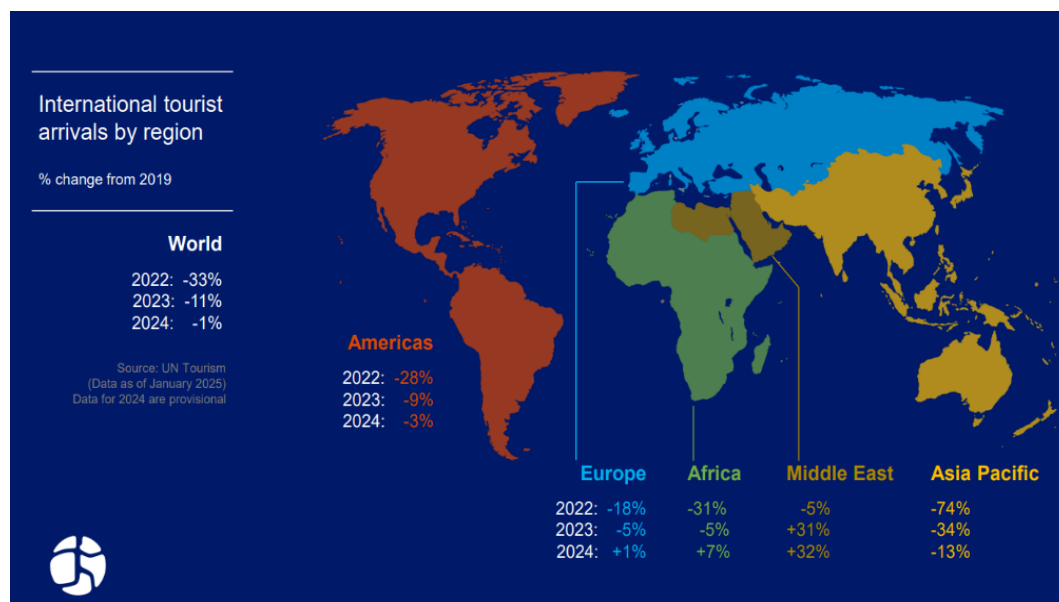
3 World Travel & Tourism Council. *Economic Impact Research*. Accessed August 1, 2025. <https://wtcc.org/research/economic-impact>.



2024 about 1.4 billion people traveled internationally. About \$11.10 trillion was contributed, which is equal to 10% of the global GDP. Hence according to the above mentioned statistics, tourism is one of the most important drivers of the economy and a main employment sector globally.

In 2024 about 1.4 billion tourists travelled internationally. This marks an increase of 11 % over 2023 and 99% recovery as compared to 2019. Hence after the COVID-19 pandemic the year 2024 marks recovery of the international tourists. Although there was a worldwide recovery in 2024, regional outcomes differ. While the Americas came close (-3%) and Asia and the Pacific stayed 13% below 2019 levels, Europe, the Middle East, and Africa all exceeded pre-pandemic numbers in 2024 (Figure 2). Assuming a sustained recovery in Asia and the Pacific and strong development in the majority of other regions, foreign visitor numbers are predicted to increase by 3% to 5% in 2025 compared to 2024<sup>4</sup>.

It is anticipated that the travel and tourism industry will continue to grow through 2025. This necessitates a great deal of responsibility to expedite change and place people and the environment at the forefront of tourism growth. In 2025, striking a balance between sustainability and growth will be crucial, as evidenced by two key trends that the Panel of Experts found: the pursuit of sustainable practices and the exploration of lesser-known locations.



**Figure 2: International tourists' arrival by region**

Coastal and ocean tourism constitutes a significant portion of global tourism, accounting for approximately 50% of the total tourism activities worldwide<sup>5</sup>. It

4 Karen Audit. "Global Tourism Hits 1.4 Billion Arrivals in 2024, Recovering 99% of Pre-Pandemic Levels with \$1.9 Trillion in Exports and 11% Growth over 2023." Karen Audit, 2024. <https://arenaudit.com/en/global-tourism-hits-1-4-billion-arrivals-in-2024-recovering-99-of-pre-pandemic-levels-with-1-9-trillion-in-exports-and-11-growth-over-2023>.

5 World Economic Forum. "Why the Tourism Industry Should Care about the State of the Ocean." World Economic Forum, October 2023. <https://www.weforum.org/stories/2023/10/why-the-tourism-industry-should-care-about-the-state-of-the-ocean/>.

serves as predominant economic sector for numerous small islands developing nations and various coastal regions. Ensuring the enduring sustainability and viability of this sector is essential for the ongoing prosperity of destinations and communities that depend on it. In 2023 CMT accounted for approximately 50% of all tourists' spending globally<sup>6</sup>.

### 1.2.1 Tourism as a Driver of Economic Growth

Coastal tourism has become a significant spearhead of global economic development worldwide, particularly in island nations across the regions of Southeast Asia, the Pacific, Europe, and Africa. In the Southeast Asia and Pacific regions tourism has emerged as a major contributor to economic growth. Countries like Thailand, Indonesia, Malaysia, Vietnam, and other Pacific islands are rich in cultural heritage, natural beauty, and unique biodiversity, which have helped them harness tourism as a strategic economic sector<sup>7</sup>. The tourism industry not only generates foreign exchange but also creates thousands of job opportunities, fosters entrepreneurship, and attracts foreign direct investment (FDI). In 2024 Thailand's tourism sector contributed approximately 12% of the GDP and over 20% of the employment, making it a critical pillar of the economy. Similarly, Bali in Indonesia has become a global hotspot, attracting tourists from all over the world and boosting local businesses in hospitality, transportation, and retail. In the year 2024 the travel and tourism industry in Malaysia and Indonesia contributed about 10.1% and 4.8% respectively to the GDP. In the Philippines tourism accounted for 9.8% of GDP in 2024. Tourism has helped in strengthening regional integration through collaborations like ASEAN (Association of Southeast Asian Nations) Tourism Strategic Plan, which aims to position Southeast Asia as a single tourism destination<sup>8</sup>.

In the Pacific, islands such as Fiji, Samoa, and Vanuatu are heavily dependent on tourism due to their limited industrial bases. Tourism helps earn foreign income, reduce poverty, and stimulates infrastructure development, including airports, roads, and communication systems. Ecotourism and cultural tourism have also grown, attracting environmentally conscious travelers and providing incentives for conservation efforts. Fiji is a standout example, with tourism accounting for nearly 40% of GDP and supporting 150,000 jobs as of 2023<sup>9</sup>.

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6 Ocean Breakthroughs. Coastal and Marine Tourism: Quantifying Its Footprint and Funding Requirements for Mitigation and Adaptation. June 2025. <https://ocean-breakthroughs.org/wp-content/uploads/2025/06/Coastal-and-Marine-Tourism-Quantifying-its-footprint-and-funding-requirements-for-mitigation-and-adaptation.pdf>.

7 Institute of Developing Economies (IDE-JETRO). Blue Economy for Sustainable Development in the Indian Ocean Region. IDE Research Report No. 481. 2022. <https://www.ide.go.jp/library/English/Publish/Reports/Vrf/pdf/481.pdf>.

8 hob-udom, Phobphison, Yan Zhao, Chanoksuda Chumnanont, Angkana Yaiyong, and Thanavutd Chutipongdech. "Comparative Analysis of Tourism Policies among Asean Member Countries: A Documentary Research Approach." Asia Social Issues 18 (04/02 2025): e272910. <https://doi.org/10.48048/asi.2025.272910>.

9 Export Finance Australia. Fiji: Strong Tourism Recovery Boosts Growth Prospects. July 2022. <https://www.exportfinance.gov.au/resources/world-risk-developments/2022/july/fiji-strong-tourism-recovery-boosts-growth-prospects/>.

While Tonga's tourism sector represents 11% of GDP and 9% of employment and recovering 93% of pre-pandemic arrivals in 2024<sup>10</sup>.

In 2022 maritime tourism continued to remain the largest sector of blue economy in Europe encompassing about 53% of the blue economy employment<sup>11</sup>. In European Union, travel and tourism sector contributed 10% to the economy in 2024. The tourism industry in 2024 in France contributed about 9.1% while in Italy it contributed 10.8 % to GDP. In Greece the tourism sector added €30.2 billion to the GDP in 2024. The United Kingdom's tourism industry, which includes the CMT, contributed about £286 billion market in the year 2024 which represents 10% of its GDP<sup>12</sup>.

With proper planning and sustainable practices, tourism sector can continue to serve as a powerful tool for economic growth, cultural preservation, and poverty alleviation, fueling billions in revenue, millions of jobs, and stronger FDI flows. However, the tourism sector faces some challenges, including environmental degradation, over-tourism, and vulnerability to climate change<sup>13</sup>. Thus, a shift toward sustainable practices and resilient policies is important for long-term benefits for both the people and planet

### 1.3 Overview of Tourism in Pakistan

Globally Pakistan is ranked as 101 out of 119 in the Travel and Tourism Development Index published recently by the World Economic Forum (WEF)<sup>14</sup>. The travel and tourism sector holds immense importance for Pakistan's economy. The travel and tourism sector contributed approximately 5.9% in 2022 to Pakistan's GDP. It supported around 4.2 million jobs<sup>15</sup>. It is extrapolated that the travel and tourism industry will produce more than \$4 billion in revenue in 2025. From 2025 to 2029, the sector is expected to expand at a rate of 6.75 percent annually, with the potential to reach a market value of \$5.53 billion by the end of 2029. With a projected market volume of US\$1.92 billion in 2025, the package vacations market is the biggest in Pakistan<sup>16</sup>.

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10 Tonga Ministry of Tourism. Tonga Domestic Tourism Recovery Plan 2022–2025. 2022. <https://tourismtonga.gov.to/wp-content/uploads/2022/12/TMoT.pdf>.

11 European Commission. EU Blue Economy Report 2025. EURAXESS. 2025. <https://euraxess.ec.europa.eu/worldwide/india/news/eu-blue-economy-report-2025>.

12 Condor Ferries. "UK Tourism Statistics: In 2024, the UK Tourism Industry Contributed Approximately £286 Billion to the Economy." Condor Ferries, 2025. <https://www.condorferries.co.uk/uk-tourism-statistics>

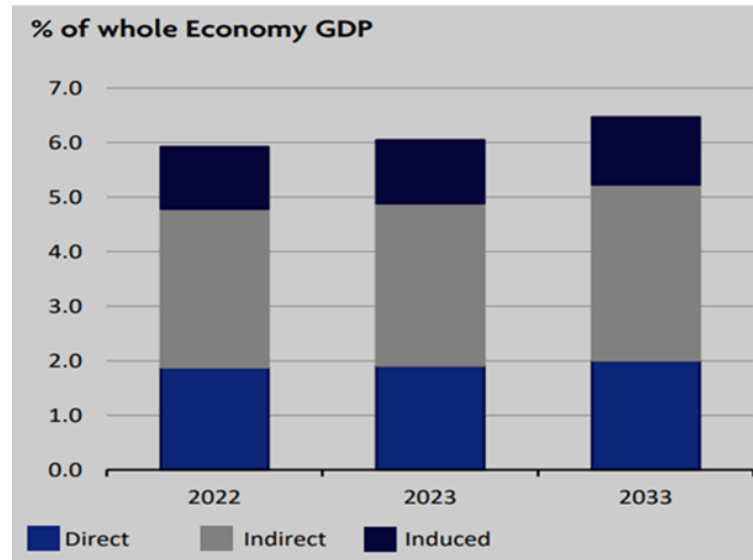
13 Omar, Noora'in, Roshidah Safeei, Fathiyah Jali, and Syakirah Mohammed. "Tourism under Pressure: Analyzing the Impacts of Climate Change and over-Tourism on Destinations." International Journal of Research and Innovation in Social Science VIII (10/09 2024): 1688-97. <https://doi.org/10.47772/IJRISS.2024.8090138>

14 World Economic Forum, Travel & Tourism Development Index 2024 (Geneva: World Economic Forum, 21 May 2024), accessed 11 August 2025, <https://www.weforum.org/publications/travel-tourism-development-index-2024/>.

15 Afzal, Kashif, Tayyaba Khalid, and Syed Waqas Ahmad. "Promoting Responsible Tourism in Pakistan's North." World Bank, November 1, 2023. <https://www.worldbank.org/en/news/feature/2023/11/01/promoting-responsible-tourism-in-pakistan-s-north>.

16 Statista. "Travel & Tourism – Pakistan." Statista Market Insights. Accessed August 1, 2025. <https://www.statista.com/outlook/mmo/travel-tourism/pakistan?currency=USD>.





**Figure 3: Percentage of tourism contribution to Pakistan's GDP<sup>17</sup>.**

However, the contribution of maritime tourism to Pakistan's overall tourism sector is relatively low. Experts suggest that the country's coastal regions can generate \$ 4.0 to 5.0 billion annually if developed properly<sup>18</sup>

#### 1.4 Maritime Tourism Governance in Pakistan

The Federal Government managed the tourism department since 1947. A separate Tourism Department was created at ministerial level in 1972. It was part of the Ministry of Minorities and Religious Affairs. Later, in 1976, the Tourism Division became part of the Commerce Ministry. A new institute Pakistan Tourism Development Corporation (PTDC) was created on March 30, 1970, primarily to promote and develop the tourism industry in Pakistan. In 1977 the Ministry of Culture, Archeology, Sports and Tourism was established. Then, in 1987, it was reshaped as the "Ministry of Culture and Tourism". Also, in the same year the Punjab Government set up its own Tourism Development Cooperation. Later, the other provinces of Sindh and Khyber Pakhtunkhwa also established their own tourism corporations. Then in March 1989 a separate ministry for tourism was set up as "Ministry of Tourism Division". This was joined with the Sports Ministry which was modified to "The Ministry of Culture" in 1993 and then renamed in 1997 as "The Ministry of Sports, Tourism and Youth Affairs". In 2004, more focus was allocated in the tourism sector, and a "Ministry of Tourism" was created with the goal to promote, develop and encourage tourism in Pakistan.

It was in the year 1990 that the First Tourism Policy in Pakistan was introduced. With the collaboration of United Nations Development Program (UNDP) and

<sup>17</sup> World Travel & Tourism Council. "Pakistan 2023 Annual Research: Key Highlights." Economic Impact Research, 2023. [https://assets-global.website-files.com/6329bc97af73223b575983ac/647f0f34bb09e68020b87df5\\_EIR2023-Pakistan.pdf](https://assets-global.website-files.com/6329bc97af73223b575983ac/647f0f34bb09e68020b87df5_EIR2023-Pakistan.pdf).

<sup>18</sup> Javed, S. "Challenges Plague Coastal Tourism Promotion in Pakistan." Sustainable Development Policy Institute, April 27, 2023. [https://sdpi.org/challenges-plague-coastal-tourism-promotion-in-pakistan/news\\_detail](https://sdpi.org/challenges-plague-coastal-tourism-promotion-in-pakistan/news_detail).

World Tourism Organization (WTO) the “Tourism Master Plan” was drafted in the year 2000. Then it was in the year 2011 that the Second Tourism Policy was formed. However, in 2011, the Ministry of Tourism was dissolved with the enforcement of 18<sup>th</sup> Amendment to the Constitution passed in the National Assembly. Hence, tourism has become more of a provincial subject<sup>19</sup>. The departments including Tourism Corporation Khyber-Pakhtunkhwa (TCKP), Khyber-Pakhtunkhwa Culture, Tourism Authority (KPCTA), Tourism Development Corporation Punjab (TDCP), Directorate of Tourism Baluchistan and Sindh Tourism Development Corporation (STDC) took control over tourism in the respective provinces.

In 2015 Khyber Pakhtunkhwa was the first province to form its Tourism Policy followed by Punjab in 2019. However, the Sindh and Baluchistan Provinces haven’t launched their respective formal tourism policies yet. In March 2019, federal government of Pakistan, after discussion with all the four provinces, established The National Tourism Coordination Board (NTCB) to promote tourism nationwide. The NTCB created nine working groups, but none focused on maritime tourism. To fill the gap, the National Institute of Maritime Affairs held a seminar in 2019 called “Potential of Maritime Tourism Development in Pakistan,” pushing for a maritime tourism working group. This idea was also supported during the Tourism Dialogue in Islamabad in April 2019. However, the group’s terms of reference are still waiting for government approval. Later on, August 2020, the National Coordination Committee on Tourism (NCCT) was launched to coordinate tourism development efforts across the country and help Pakistan grow as a tourist destination. However, still there is no specific maritime tourism authority to coordinate all stakeholders under one roof.

*Table 1: Tourism organizations in Pakistan.*

**Federal Govt. Tourism Organizations**

|                                          |                                                                                                                                                                                                                                                                                                      |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Pakistan Tourism Development Corporation | Established on March 30, 1970, as public corporation under the companies Act of 1913. PTDC’s primary goal is to promote and develop tourism throughout the country. Headquarters in Islamabad.                                                                                                       |
| National Tourism Coordination Board      | Established on March 12, 2019, to promote and coordinate tourism development across the country. It brings together representatives from the federal government, all four provinces, Gilgit-Baltistan and AJK to create unified strategies and policies aimed at boosting Pakistan’s tourism sector. |
| Department of Tourist Services Isb & GB  | It manages tourism regulations in Islamabad and Gilgit Baltistan overseeing licensing for hotels, travel agencies and tourist guides. It operates under the                                                                                                                                          |

19 Ullah, Azmat. "Remittances Review Tourism in Pakistan: Policies, Potential and Challenges." 9 (01/15 2024): 17.



ministry for Inter- provincial Coordination (MoICP) and enforces key tourism laws.

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### **Provincial Govt. Tourism Organization**

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|                                                 |                                                                                                                                                                                                          |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tourism Development Corporation of Punjab       | Established in 1947, it promotes tourism in Punjab by developing tourist facilities, organizing events and managing hotels and resorts across the provinces.                                             |
| Culture & Tourism Authority Khyber Pakhtonkhuwa | Focuses on preserving cultural heritage and boosting tourism in KPK through promotion, infrastructure development, and supporting local tourism businesses.                                              |
| Department of Tourism Gilgit Baltistan          | Established in 2005, this department manages tourism promotion, infrastructure development and cultural conservation in Gilgit Baltistan aiming to enhance the region's appeal as a tourist destination. |
| Department of Tourism Balochistan               | Responsible for promoting Balochistan's unique natural and cultural sites, this department works to attract tourists and support local communities.                                                      |
| Department of Tourism Azad Jammu & Kashmir      | Focusing on sustainable development, this department oversees tourism activities in Azad Jammu and Kashmir.                                                                                              |
| Sindh Tourism Development Corporation           | Promotes tourism in Sindh by managing hospitality and organizing cultural festivals.                                                                                                                     |

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### **Tourism Associations / Foundations**

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|                                               |                                                                                                                                      |
|-----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Pakistan Association of Tour Operators (PATO) | Established in 1974 Works to promote responsible tourism and improve industry standards.                                             |
| Pakistan Hotels Association (PHA)             | Representative body for the hotel industry in Pakistan. Working to strengthen and promote tourism development.                       |
| Travel Agents Association of Pakistan (TAAP)  | TAAP supports travel agents by providing training, networking opportunities, and representing their interests in the tourism sector. |

Sustainable Tourism  
Foundation Pakistan  
(STFP)

Established in 2006 STFP focuses on promoting eco-friendly and sustainable tourist practices.

Alpine Club Pakistan  
(ACP)

Established in 1974, ACP is dedicated to the promotion of mountaineering, climbing and mountain related adventures activities in Pakistan.

Pakistan needs a maritime tourism authority to regulate the sector and work with all relevant parties to develop rules and procedures that ensure smooth, unified development and management of maritime tourism. Clear rules and a one window operation system are needed, especially since the 18<sup>th</sup> amendment left maritime tourism responsibility unclear. The NTCB working with all provinces should create such a tourism policy that speeds up infrastructure development and addresses land acquisition problems, which currently slows down tourism especially maritime tourism in Balochistan and Sindh. A spatial departmental policy is needed to support these goals and focus on the obstacles hindering coastal development in these regions.

## 1.5 Opportunities in Pakistan's Coastal and Marine Tourism

Pakistan along the Arabian Sea has a coastline of about 1,001 km out of which 366.5 km belongs to Sindh and 734.5 km belongs to the Balochistan province<sup>20</sup>. The coastline presents exceptional opportunities for CMT. The opportunities provided by Pakistan's CMT includes pristine beaches, ecotourism sites, marine protected areas and diverse cultural & heritage sites. It also provides prospects for cruise line tourism.

Pakistan's coastline is home to some of the most breathtaking coastal beaches located in the provinces of Sindh and Baluchistan (Figure 4). Gwadar, which is now the strategic and scenic core of Pakistan with its deep-sea port. Especially with the development of China-Pakistan Economic Corridor (CPEC), Gwadar can provide many tourism activities and serve as a gateway city for coastal tourism along Makran Coast. Ormara, Pasni, Kund Malir, which are situated along the Makran Coastal Highway, offers primeval golden sands and turquoise waters, making it a hidden gem for eco-tourism and adventure seekers. Somniani, Daran, Hawks Bay, Sandspit, Clifton and Manora Island, just off Karachi's coast, blends colonial heritage with marine beauty, presenting a unique mix of history, culture, and coastal recreation. All these coastal locations offer immense potential for sustainable CMT <sup>21</sup>.

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20 Wasim, Muhammad, and Ghulam Abbas. "Review on Fisheries Resources and the Effect of Marine Pollution in Coastal Waters of Pakistan." *Journal of Zoology and Systematics* 2 (2024): 23–43. <https://doi.org/10.56946/jzs.v2i1.312>.

21 Shahzad, Dr. "De-Constructing the Problematic Maritime Tourism in Pakistan: Opportunities and Challenges." 08 (05/03 2020): 1-10. <https://doi.org/10.14741/ijmcr/v.8.3.6>.



**Figure 4:** Key marine and coastal tourism sites along Pakistan's coastline.

The Makran coast's Hingol National Park is known for its rich biodiversity. It also hosts amazing natural wonders like the Princess of Hope, Sphinx of Baluchistan (Lion of Baluchistan), and Chandragup mud volcanoes (Figure 5). Princess of Hope is formed by wind and water erosion that transformed rock into a human shaped figure. The sphinx of Baluchistan is about a 60 foot structure made of limestone that looks like the ancient Egyptian Sphinx. Historical and cultural sites, such as Hinglaj Mata Mandar, Old Jamia Masjid and Makli Necropolis, Bhanbore, and Shah Jahan Mosque, Balakot, Rato Kot Fort, Chau Khandi Tombs etc. are also present in the close vicinity of the coast which signifies Pakistan's rich maritime heritage<sup>22</sup> (Figure 8).

Marine Protected Areas (MPAs) such as Astola and Churna Island, which were declared as MPAs in 2019 and 2024 respectively, also provide spectacular tourism sites. Recently Miani Hor Mangroves, Balochistan have been declared as the third MPA in July 2025. Ramsar sites include Jiwani Coastal Wetland, Miani Hor Mangroves and Ormara Turtle Beaches. Keenjhar Lake, located in Thatta, is one of Pakistan's largest freshwater lakes is a vital Ramsar site declared in 1976. It accommodates diverse migratory bird species. Jubho Lagoon, is a coastal brackish wetland located in the Sujawal District, is also a Ramsar site which also hosts large populations of migratory waterbirds. It was declared Ramsar site in 2011. Hence the coastline of Pakistan can provide numerous opportunities for water sports adventure, cruise line, eco-friendly resorts along beaches and ecotourism activities (Figure 9). Also, the Pakistan's coastal area is rich in cuisine and culture (Figure 7). Moreover, the coastline of Pakistan holds significant potential for underwater cultural heritage as there had been centuries of maritime trade, naval activities and hence cultural exchange in the Indian Ocean. Pakistan is soon to ratify the 2001 UNESCO Convention

<sup>22</sup> Rehman, A., Ma, H., Irfan, M., Ahmad, M., and Traore, O. "Investigating the Influence of International Tourism in Pakistan and Its Linkage to Economic Growth: Evidence from ARDL Approach." *SAGE Open* 10, no. 2 (2020). <https://doi.org/10.1177/2158244020932525>.



on the Protection of Underwater Cultural Heritage. This announcement was made in August 2025<sup>23</sup>.



**Princess of Hope, Balochistan**



**Chandragup Mud Volcano, Balochistan**



**Sphinx of Balochistan**



**Makran Range, Balochistan**

*Figure 5: Pakistan's natural wonders.*

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23 Umaid Ali. "Pakistan Set to Become First South Asian Country to Ratify UNESCO Underwater Heritage Convention." Dawn, August 8, 2025. Accessed August 11, 2025. <https://www.dawn.com/news/1929509/pakistan-set-to-become-first-south-asian-country-to-ratify-unesco-underwater-heritage-convention>.



**Somniani Beach, Balochistan**



**Sandspit Beach, Karachi**



**Clifton Beach, Karachi**



**Gwadar Beach, Balochistan**



**Ormara Beach, Balochistan**



**French Beach, Karachi**

***Figure 6: Pakistan's breathtaking beaches.***

| <b>Pakistan's Coastal Cuisine</b>                                                                                                                                                                                                                                                                                                      | <b>Pakistan's Coastal Handicrafts</b>                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> <li>1. Machli (Fish) Karahi</li> <li>2. Prawn Masala</li> <li>3. Grilled Fish</li> <li>4. Sindhi Biryani with Seafood</li> <li>5. Balochi Fish</li> <li>6. Sindi Mutton and Fish Curry</li> <li>7. Makrani Cuisine</li> <li>8. Coastal Snacks and Street Food</li> <li>9. Coastal Breads</li> </ol> | <ol style="list-style-type: none"> <li>1. Shell Crafts</li> <li>2. Wooden Boat Models</li> <li>3. Handwoven Mats and Baskets</li> <li>4. Embroidered Textiles</li> <li>5. Pottery</li> <li>6. Fishing Nets and Accessories</li> </ol> |

**Figure 7:** Coastal culinary traditions and handicrafts of Pakistan.



**Shah Jahan Mosque, Thatta in Sindh**



**Chaukhandi Tombs, Sindh**



**Old Jamia Masjid in Malaki, Sindh**



**Malki Necropolis, Sindh**

**Figure 8:** Coastal religious and heritage sites in Pakistan.





Churna Island, Sindh



Astola Island, Balochistan



Hingol National Park, Balochistan



Miani Hor Mangroves, Balochistan



Keenjhar lake, Sindh



Indus Delta Mangroves, Sindh

**Figure 9:** Pakistan's exclusive ecotourism spots.

## 1.6 Current Status of Maritime Tourism and Its Challenges

Pakistan has a great potential to boost its Blue Economy sector through sustainable CMT but unfortunately there has been no substantial development in this sector. Pakistan faces several challenges when it comes to the development of CMT. The most prominent issues include the non-availability of a clear national maritime policy and strategies, lack of suitable infrastructure development and most importantly the security issues. After the 18<sup>th</sup> Amendment in the Constitution the devolution of power to the provinces took place which has created confusion over the CMT between the provinces instead of solving the issues. There is a huge absence of clarity when it comes to the domains of the federal and the provincial governments. Moreover, there is a lack of coordination between the various ministries, institutes and other relevant stakeholders. They may be working on the same tourism project proposal and are mostly unaware of each other initiatives<sup>24</sup>. Moreover, it is difficult to attract foreign and well as domestic tourists due to security concerns particularly in the case of coastal belt of Balochistan.

Unfortunately, when we talk about beaches of Pakistan, they are mostly underdeveloped. They lack the basic infrastructure to support tourism activities. Many of them are inaccessible due to the lack of proper road infrastructure. As there are limited facilities for the local tourists then how can they attract the foreigners who demand high standard services. The proper services for water sports are also not available and there are no proper rules and regulations for it. The foreigners are not allowed to leave the harbor. The water sports equipment was held by the Maritime Security Agency. The National Institute of Maritime Affairs in 2021 framed the "Coastal Leisure Tourism and Recreational Water Sports Guidelines". It discussed in detail the SOPs for snorkeling, scuba diving, Jet Ski para sailing, kite boarding, kayaking, rafting, surfing and other water supports. The watersports policy was shared with the Committee that was made under the supervision of Chief Secretary Sindh. The committee forward the policy draft to the Sindh Assembly for approval. The approval is still pending.

Environmental degradation has also emerged as a huge problem. The beaches in Karachi such as Clifton beach have become very polluted. The marine pollution is a great threat to the biodiversity and the fragile marine ecosystem. The economic conditions of the coastal communities are largely affected by marine pollution. Moreover, the local coastal communities are not involved in the tourism sector. Most importantly there is no projection and promotion of the coastal and marine tourism sites in Pakistan. This objective is largely neglected in the national tourism strategies<sup>25</sup>.

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24 Fatima, Naheed, and Mehwish Akhtar. "Maritime Tourism: Global Success Stories and the Case of Pakistan." *Polaris Journal of Maritime Research* 2 (2020). <https://doi.org/10.53963/pjmr.2020.005.1>.

25 Ur Rehman, Waseem, Kamran M. J. Iqbal, Muhammad Khan, Waqas Ullah, Ahmad Shah, and Muhammad Tariq. "Multi-Criteria Relationship Analysis of Knowledge, Perception, and Attitude of Stakeholders for Engagement Towards Maritime Pollution at Sea, Beach, and Coastal Environments." *Sustainability* 14 (2022): 16443. <https://doi.org/10.3390/su142416443>



Nevertheless, constant efforts are being carried out by the government to elevate the marine tourism sector in Pakistan. The Government of Pakistan has already approved a pioneering initiative for the establishment of international ferry services, connecting Pakistan to the Gulf countries. The Ministry of Maritime Affairs has approved the first-ever international ferry license to Sea Keepers, a UK based company. Ferry operations will initially begin from the locations of Karachi and Gwadar ports, with future plans to extend Oman, Iran, UAE, Saudi Arabia, and other GCC countries. The ferry terminals of Pakistani are being refurbished with modern immigration, customs, and security facilities to facilitate smooth international travel<sup>26</sup>.

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26 Pakistan to Launch Ferry Services to Gulf Countries – A New Travel Option for Pilgrims and Expats,” YP Pakistan, September 13, 2025, accessed September 15, 2025, <https://ypakistan.org.pk/pakistan-to-launch-ferry-services-to-gulf-countries/>

## CHAPTER 2

### GLOBAL PERSPECTIVES ON SUSTAINABLE COASTAL AND MARINE TOURISM

#### 2.1 Introduction

The modern concept of sustainable development was published by the World Commission on Environment and Development (WCED) in the **Brundtland Report** ("Our Common Future") in 1987. WCED at that time was chaired by Gro Harlem Brundtland, former Norwegian Prime Minister<sup>27</sup>. She is also known as the "mother of sustainability".

#### Sustainable Development

***"Sustainable Development meets the needs of the present without compromising the ability of future generations to meet their own needs."***

The idea for United Nations- Sustainable Development Goals (UN- SDGs) started at the Rio+20 Conference in 2012. SDGs basically succeeded the Millennium Development Goals (MDGs) (2000–2015). The MDGs mainly focused on poverty, health, and education. The SDGs were adopted by the United Nation on 25 September 2015 as a global framework for sustainable development till 2030<sup>28</sup>. The sustainable development comprises 17 Goals and 169 targets. They include various social, economic and environmental challenges.

#### 2.2 Sustainable Tourism

Environmental degradation and cultural disruptions may result because of conventional tourism. Hence to meet the "Agenda 2030 of UN-SDGs" shift from conventional to sustainable tourism is taking place globally.

#### Sustainable Tourism

***"Responsible travel to areas that helps in conserving the environment, sustaining the well-being of the local people, and imparting educational experience."***

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27 World Commission on Environment and Development. Our Common Future (Brundtland Report). Bern: Swiss Federal Office for Spatial Development ARE.  
<https://www.are.admin.ch/are/en/home/media/publications/sustainable-development/brundtland-report.html>.

28 Yumnam, Gyanajeet, Yumnam Gyanendra, and Charoibam Ibohal Singh. "A Systematic Bibliometric Review of the Global Research Dynamics of United Nations Sustainable Development Goals 2030." *Sustainable Futures* 7 (2024/06/01/ 2024): 100192.  
<https://doi.org/https://doi.org/10.1016/j.sfr.2024.100192>.  
<https://www.sciencedirect.com/science/article/pii/S266618882400042X>.



**Figure 10:** Integrating equity, economy and ecology for a responsible tourism future.

The main aim of sustainable tourism is to enhance the socio-economic conditions of the people but also to promote environmental conservation and responsible development<sup>29</sup>. Almost all the UN-SDGs align with sustainable growth of CMT, but the key ones are displayed in the Figure 11. Also, the decade 2021-2030 has been declared by the United Nations as the “Decade of Ocean Science for Sustainable Development”<sup>30</sup>.

This signifies the importance of sustainable tourism practices in the coastal and marine environment. The coastal and marine areas are facing problems such as climate change, pollution, coral bleaching and over-tourism<sup>31</sup>. Hence the CMT needs to shift towards sustainable practices that encourage environmental health, low carbon technologies, cultural preservation and local community participation. The international standards for sustainable tourism have been developed by the Global Sustainable Tourism Council (GSTC). GSTC guides for responsible tourism planning including waste and water management, biodiversity conservation and cultural preservation<sup>32</sup>.

29 Singh Raikwar, Ankit, and Deepa Easow. "A Systematic Review on the Benefits and Challenges of Maritime Tourism." *Journal of Advanced Zoology* 44 (2023): 725–745. <https://doi.org/10.17762/jaz.v44i3.860>.

30 Guan, Song, Fangyuan Qu, and Fang-Li Qiao. "United Nations Decade of Ocean Science for Sustainable Development (2021-2030): From Innovation of Ocean Science to Science-Based Ocean Governance." *Frontiers in Marine Science* 9 (01/11 2023). <https://doi.org/10.3389/fmars.2022.1091598>.

31 Trégarot, Ewan, Juan Pablo D'Olive, Andrea Zita Botelho, Andrea Cabrito, Gabriel O. Cardoso, Gema Casal, Cindy C. Cornet, et al. "Effects of Climate Change on Marine Coastal Ecosystems – a Review to Guide Research and Management." *Biological Conservation* 289 (2024/01/01/ 2024): 110394. <https://doi.org/https://doi.org/10.1016/j.biocon.2023.110394>.

<https://www.sciencedirect.com/science/article/pii/S0006320723004950>.

32 Anis, A., et al. "Global Sustainable Tourism Council (GSTC) Criteria Approach in Sustainable Tourism Planning: Case Study of Silokek Geopark Tourism at Sijunjung Regency." 2023, 182–189.



*Figure 11: Key UN-SDGs that align with sustainable coastal and marine tourism.*

## 2.3 Review of the Best International Practices in Sustainable Coastal and Marine Tourism

Coastal countries such as Australia and the Philippines, and many Mediterranean countries have adopted the Integrated Coastal Zone Management (ICZM) approach which is more all-embracing concerning tourism development whilst preserving the ecosystems, fisheries, and urban sprawl. It brings government, authorities, private investors and local communities on board so that together they design and implement integrated sustainable development strategies for the beaches, marine parks and coastal cities. This strategy assists in the integrated management of coastal and marine tourism<sup>33</sup>.

Sustainable tourism can play an important role in the management of Marine Protected Areas (MPAs). These areas help eco-tourists and marine biologists ensure the long-term existence of important marine eco-systems and species such as coral reefs and sea turtles<sup>34</sup>. Countries such as Australia (specifically the Great Barrier Reef Marine Park), Belize, and Palau have zoning and regulatory areas where tourism is controlled and regulated which is vital for the preservation of marine ecosystems. In these places, tourist quotas are enforced, motorized entry is banned, and educational briefings are compulsory so that tourists understand fundamental marine conservation precepts.

Other coastal states like Costa Rica, Thailand, and Indonesia have invested in community-based tourism where locals manage ecotourism activities like guided snorkeling, turtle watching tours, and mangrove walks. Revenues go directly to the local community and are then utilized in promoting conservation, cultural exchange, and poverty reduction. Through this approach the local communities benefit directly from tourism. Sustainable tourism operators also promote “leave no trace” campaigns for visitors to keep marine ecosystems clean, so that no negative impacts are made on the marine life, and no traces of pollution are left behind.

33 Shi, T. and J. Xu, Integrated Coastal Zone Management: A Workable Way to Address Coastal and Ocean Problems. 2019.

34 Oceans Research. "Importance of Marine Protected Areas." Oceans Research, 2023. <https://www.oceans-research.com/importance-of-marine-protected-areas/>



International awards are also given to tourism facilities after rigorous criteria and inspections and act as global benchmarks for environmental responsibility and public awareness. Two of these awards are the *Green Flag* and *Blue Flag*. Green Flag symbolizes excellence in parks and green spaces, promoting sustainable management and community involvement. Whereas on the other hand Blue Flag which is an international eco-label that is awarded to beaches and marinas that successfully meet high standards of water quality, safety, environmental education, and management<sup>35</sup>. Both flags encourage tourism, protect ecosystems, and foster pride in natural spaces. Countries like Spain, South Africa, and Greece and many other countries have adopted this model to promote responsible beach and marine resort development.

Tourism bodies in Australia, Hawaii, and Egypt's Red Sea ensure that divers and snorkelers are properly trained and educated to avoid coral damage. Operators also use mooring buoys to avoid anchor damage and provide briefings on marine life protection and conservation including bans on touching coral reefs or feeding fish. Smart tourism management systems like visitor tracking, digital permits, and reef health monitoring apps are commonly used in regions like the Great Barrier Reef, Galápagos, and Hawaii. These systems help in controlling tourist numbers, inform management decisions, and enhance visitor education. Palau, a Pacific island nation, introduced the Palau Pledge, has a unique immigration policy where all visitors must sign an agreement stamped into their passport promising to act responsibly. They also have Eco-Tax that is later used for environmental protection<sup>36</sup>. Certain dive sites have limited daily entries.

## **2.4 Sustainable Tourism Facilities**

Sustainable coastal resorts and cruise lines are tourism facilities and services to minimize the negative impacts on marine and coastal ecosystems. They play an important role in the reduction of carbon footprints. The main aim of introducing these new practices is to offer high-quality tourist experiences while preserving the natural and cultural heritage of coastal regions for future generations.

### **2.4.1 Sustainable Coastal Resorts**

Sustainable resorts use eco-friendly construction materials, efficient waste and water management systems, with the utilization of renewable energy resources like solar, wind or tidal energy, local sourcing of materials can also help in achieving the goal, and community engagement<sup>37</sup>. Many coastal states like Seychelles, Maldives, and Mauritius have implemented policies that ban single-

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35 El-Khodary, Dalia, and Mona Mohamed. "The Impact of The Blue Flag Program to Protect Beaches on The Behavior of Tourists at the Destination." *Journal of Tourism, Hotels and Heritage* 5, no. 1 (December 2022): 300–316. <https://doi.org/10.21608/sis.2022.175129.1105>.

36 Journeys With Purpose. "The Palau Pledge Is the World's First Immigration Policy Based on Environmental Protection." *Journeys With Purpose*. Accessed August 1, 2025. <https://journeyswithpurpose.org/the-palau-pledge/>

37 Quader, Mohammed, H. M. Kamrul Hassan, and Tareq Mahbub. "Sustainable Coastal and Marine Tourism in Bangladesh: A Qualitative Evaluation." *Tourism and hospitality management* 31 (01/01 2025). <https://doi.org/10.20867/thm.31.2.9>.

use plastics in resorts and implement strict waste management. Water desalination and greywater recycling are also made common in hotels for achieving the goals of sustainability. Below are some examples of sustainable resorts.

- a. **Margaritaville Beach Resort Playa Flamingo:** Playa Flamingo beach has the status of “Blue Flag beach”. This resort located in Costa Rica has taken several measures to reduce its carbon footprint. These include reducing bottled water at the resort by installing water filtration units. The building has been designed to use natural light and maximize airflow to reduce the need for air conditioning in public spaces. There is a composting unit for organic kitchen waste and have grown their own organic garden. The resort also works with the local NGOs to support the local communities.



*Figure 12: Margaritaville Beach Resort Playa Flamingo, Costa Rica.*

- b. **Raja Ampat Biodiversity Nature Resort:** Raja Ampat Resort, Indonesia certified by GSCT has led the charge in marine and coastal sustainability. It provides environmentally sustainable accommodation and activities for the tourists. Appropriate management of the property biodiversity conservation is taken care of. Conserving resource practices such as water saving, fixing instead of buying and locally produced supplies are carried out. Solar energy systems and efficient waste handling are there to reduce the carbon footprint. Tourists are encouraged to join beach clean-up activities organized by resort staff, as part of their dedication to preserving natural habitats.



**Figure 13:** Raja Ampat Biodiversity Nature Resort, Indonesia.

- c. **Bambu Indah:** Bambu Indah in Ubud, Bali is made entirely of bamboo, presenting a fine example of innovative sustainable architecture. The use of bamboo helps in minimizing environmental impact, and moreover, supports local artisans and craftsmen too by directly benefiting the local communities. The resort also offers organic farm-to-table dining experiences with ingredients sourced from nearby farms. The tourists can also participate in workshops on traditional Balinese crafts and sustainable living practices which help in promoting the cultural heritage of the state.
- d. **Soneva Kiri:** This coastal eco- resort in Thailand is made from sustainable material and incorporate energy efficient and waste management technologies. It has an on-site composting unit. The facility is actively involved in community development projects.
- e. **Veligandu Maldives Resort Island:** This resort in the Maldives uses solar power for all its energy needs, which helps in reducing its carbon footprint massively. The resort features natural ventilation and lighting so that electricity consumption is kept to a minimum. The resort also commits to using locally sourced materials for construction and furnishings.





*Figure 14: Veligandu Maldives Resort Island, Maldives.*

#### 2.4.2 Sustainable Cruise Lines

Sustainable cruise lines adopt greener technologies, such as liquefied natural gas (LNG) propulsion, hybrid-electric engines, and onboard waste treatment systems<sup>38</sup>. These practices help in reducing carbon and waste impact of cruise ships, which are significant contributors of ocean pollution, especially in fragile regions like the Arctic and Caribbean. Some sustainable cruise lines are mentioned below:

- a. **Hurtigruten:** This Norwegian cruise company is famous for its commitment to environmental sustainability. It operates hybrid-powered expedition ships like the MS Roald Amundsen, which reduces CO<sub>2</sub> emissions significantly. The company also imposes bans on single-use plastics, recycles waste onboard, and uses locally sourced food to minimize carbon footprints. Hurtigruten's practices and models can be used globally adopted by using their hybrid technology and sustainable food sourcing, especially in ecologically sensitive areas. Their strict non-disposables policy sets a standard for reducing ocean pollution.
- b. **HX:** It is a branch of Hurtigruten which offers smaller, eco-conscious voyages focusing mainly on polar and remote regions. The cruises are educational, engaging passengers in citizen science projects and providing lectures on marine ecosystems and conservation. HX's focus on environmental education can be incorporated into cruise tourism worldwide to raise awareness and create ambassadors for marine life protection among travelers.
- c. **Disney Cruise Line:** This cruise line has made noticeable investments in sustainability through waste minimization, advanced

<sup>38</sup> Cerveny, Lee, Anna Miller, and Scott Gende. "Sustainable Cruise Tourism in Marine World Heritage Sites." *Sustainability* 12 (01/14 2020). <https://doi.org/10.3390/su12020611>.

wastewater purification systems, and fuel-efficient ships. They also foster collaboration with organizations and emphasize conservation of marine wildlife protection in their private island activities. Disney's advanced water treatment technology and conservation partnerships are ascendable practices that can be integrated by other commercial cruise lines for cleaner operations and stronger environmental conservancy.



*Figure 15: Sustainable Disney Cruise line.*

d. **Regent:** Regent anchors on fuel efficiency and reduction of emissions by investing in newer, more efficient ships. They also concentrate on sustainable excursions and local partnerships that help in protecting marine ecosystems and alleviate cultural preservation. By ensuring that tourist activities are environmentally and culturally sensitive, Regent provides a model that can be replicated for inclusive, responsible cruise tourism that empowers coastal communities.

e. **Viking:** It is a travel company which uses energy-efficient hybrid engines, solar panels, and organic waste converters. Viking also adheres to stringent emissions and port impact guidelines. The company's technological innovation in ship design and waste reduction strategies has become industry benchmarks for low-impact marine tourism internationally.

f. **Oceania Cruises:** It is another travel company, which pays a focus on sustainable culinary and uses a major portion of sustainable seafood which is mainly sourced from the local market. The company aims to invest in cleaner fuels and support marine research initiatives. Promoting seafood and supporting marine research can be integrated into cruise itineraries worldwide to ensure ecosystem preservation and promote regenerative tourism.

g. **Virgin Voyages:** Virgin is working to achieve their agenda of single-use plastic-free ships, investment in carbon offsetting, and advanced wastewater treatment. Their vessels are specifically designed to be energy efficient, and the company also promotes healthy marine ecosystems through close collaboration with ocean advocacy





organizations. Virgin Voyage's holistic, tech-driven and modern approach, especially in eliminating single-use plastics and supporting carbon neutrality, offers a futuristic blueprint for sustainable cruising.

Sustainable coastal and marine tourism is no longer just a need of a time; it should be an operational necessity and global priority. Through merging technological innovation, community engagement, eco-certifications, legal protections, and smart planning, many countries have pioneered successful models. By learning from international best practices and case studies, Pakistan should design sustainable CMT policies, strategies and infrastructure.

## CHAPTER 3

### ROLE OF ARTIFICIAL INTELLIGENCE IN SUSTAINABLE COASTAL AND MARINE TOURISM

#### 3.1 Introduction

Coastal and marine tourism has played an important role in economic development and cultural exchange worldwide. However, the coastal destinations are facing issues due to environmental degradation and climate change. These include rising sea levels, increased erosion, pollution, and biodiversity loss resulting from mass tourism and habitat degradation. Without sustainable management, the knock-on effects threaten both environmental health and socioeconomic stability<sup>39</sup>. In response, global frameworks such as the United Nations Ocean Panel have set ambitious targets by 2030 that the coastal and marine tourism must be resilient, low-pollution, biodiversity-supporting, and beneficial to local communities<sup>40</sup>. Achieving this requires innovative tools that go beyond traditional methods.

#### 3.2 Artificial Intelligence (AI) and Travel Chatbots

Artificial Intelligence (AI) is now being applied to monitor marine ecosystems, manage visitor behavior, optimize operations, and bolster climate resilience. The term artificial intelligence refers to systems or technologies that mimic human intelligence to complete tasks and iteratively improve based on the data they collect<sup>41</sup>. AI technologies, such as machine learning and predictive analytics, as well as robotics and autonomous navigation, are being employed in tourism to optimize operations, reduce environmental impact, and personalize visitor experiences.

A chatbot is an AI-powered program which is specifically designed to simulate human conversation through either text or voice interactions by the use of natural language processing (NLP) and, in some cases, machine learning<sup>42</sup>. These digital assistants range from rule-based systems to advanced AI chatbots which are highly capable of understanding complex queries and improving over time with user interaction. They are progressively integrated into industries including hospitality and tourism due to their ability to provide instant, 24/7 support streamlining bookings, answering queries, and providing destination-specific information. By mimicking human conversation, chatbots enhance user engagement, reduce operational costs, and improve service efficiency. Their ability to learn and adapt over time allows for increasingly

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39 Santojanni, Francesca, Hannah Miner, Heather Hain, and Greg Sutton. "The Impact of Climate Change on Biodiversity in Coastal Ecosystems." *Jurnal Ilmu Pendidikan dan Humaniora* 12 (2023): 167–182. <https://doi.org/10.35335/jiph.v12i3.9>.

40 United Nations Development Programme (UNDP). *Ocean Promise: From Vision to Impact*. New York: UNDP, 2025. [https://www.undp.org/sites/g/files/zskgke326/files/2025-06/undp\\_ocean\\_promise\\_from\\_vision\\_to\\_impact.pdf](https://www.undp.org/sites/g/files/zskgke326/files/2025-06/undp_ocean_promise_from_vision_to_impact.pdf).

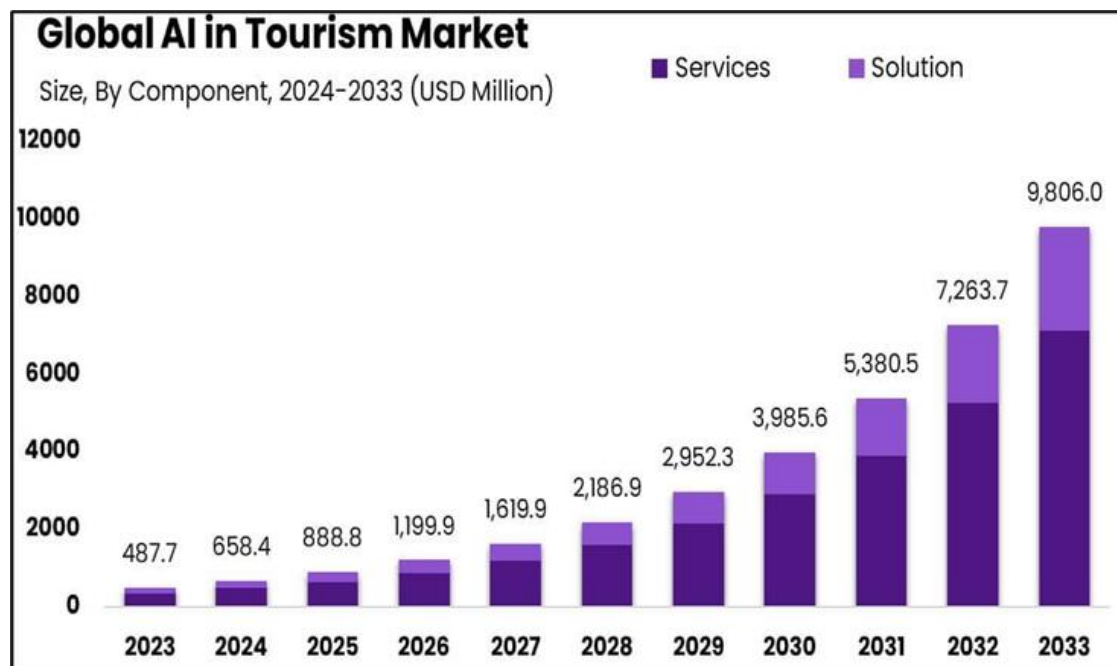
41 Jessica. "AI Predicts Ocean's Future: How Digital Ecosystems Are Saving Marine Life." *Marine Biodiversity Centre* (23 May 2025). <https://marinebiodiversity.ca>.

42 Adamopoulou, Eleni, and Lefteris Moussiades. "Chatbots: History, Technology, and Applications." *Machine Learning with Applications* 2 (2020). <https://doi.org/10.1016/j.mlwa.2020.100006>.

personalized interactions, making them valuable for both customers and service providers. Without the need for human assistance, hotel chatbots assist guests in checking room availability, learning about amenities, and making reservations by offering a seamless, contactless experience.

Tourism information chatbots help travelers explore destinations by providing up-to-date information on attractions, transportation, and local events, often in multiple languages. These applications not only streamline operations but also personalize travel experience for users<sup>43</sup>. AI has the capacity to more accurately predict weather conditions, which is helpful for planning activities. AI powered forecasts are being used by tourism businesses to schedule their services according to weather related challenges.

Travel companies and tourism boards are actively deploying a range of intelligent chatbots. These AI tools not only boost efficiency but also support sustainable tourism by minimizing resource use and reducing service delays<sup>44</sup>. The size of AI in global tourism market is going to increase in the coming years, as shown in figure 16. Some of the chatbots used in the travel and tourism industry are mentioned in table 2.



**Figure 16:** AI size in global tourism market<sup>45</sup>.

43 Chen, Weimei, Rupam Konar, and Jeetesh Kumar. "The Role of Ai Chatbots in Transforming Guest Engagement and Marketing in Hospitality." 595-620, 2024.

44 Sousa, Ana E., Paulo Cardoso, and Fernando Dias. "The Use of Artificial Intelligence Systems in Tourism and Hospitality: The Tourists' Perspective." *Administrative Sciences* 14, no. 8 (2024): 165. <https://www.mdpi.com/2076-3387/14/8/165>.

45 Market.US. AI in Tourism Market: Global AI in Tourism Market by Component (Solution, Services), by Application (Customer Service, Personalization, Operations Management, Marketing and Advertising, Others), by Technology (Machine Learning, Natural Language Processing (NLP), Computer Vision, Others), by End-User (Travel Agencies, Airlines, Others), Region and Companies – Industry Segment Outlook, Market Assessment, Competition Scenario, Trends and Forecast 2024-2033. Published October 2024. Accessed September 19, 2025. <https://market.us/report/ai-in-tourism-market/>.

*Table 2: Types of travel bots and their main functions.*

| <b>Chatbots</b>                      | <b>Function</b>                                                                                                                    |
|--------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Expedia's ChatGPT Assistant</b>   | Enable users to plan trips by answering questions with regard to traveling and offering suggestions.                               |
| <b>Skyscanner's Facebook Chatbot</b> | Allow users to search for flights, hotels and car rentals through Facebook Messenger.                                              |
| <b>KLM's Blue Bot</b>                | Flight-booking services and travel updates in real-time via messenger and voice platforms.                                         |
| <b>Priceline's Penny</b>             | Help travelers to plan their trips, remind them, and book confirmations via messaging.                                             |
| <b>Tiket.com's Travis</b>            | Answers to queries related to travel and help with booking tickets and hotel stays.                                                |
| <b>IndiGo's Dottie</b>               | Flight information, booking, and check-in services through WhatsApp and web chat.                                                  |
| <b>Bengaluru Metro's AI Chatbot</b>  | Metro route guidance, information of fare, and service announcements to passengers.                                                |
| <b>Zendesk</b>                       | Provides customer support automation by means of live chat, ticket and knowledge base integration.                                 |
| <b>Engati</b>                        | Builds and deploys chatbots for customer engagement on platforms like WhatsApp and website.                                        |
| <b>Yellow.ai</b>                     | Automation of customer and employee experience encompasses multiple channels facilitated by AI.                                    |
| <b>Botsonic</b>                      | Generative Pre-trained Transformer (GPT) based chatbots which can be customized to the websites of companies and customer support. |
| <b>Flow XO</b>                       | Allow tools to make chatbots for lead capture, customer support and FAQs.                                                          |
| <b>Verloop.io</b>                    | customer support through conversational AI for sales and service teams.                                                            |
| <b>NAVITIME Travel Bot</b>           | Enables travel planning at large, with 3D navigation of the visuals and simulation of the public transport.                        |
| <b>VisitDubai Chatbot</b>            | Offers immersive previews of hotels, attractions, and events using both VR and 3D images.                                          |
| <b>Qantas VR</b>                     | Provides three-dimensional previews of destinations and flight experiences through VR support.                                     |
| <b>Hello Lamp Post</b>               | 3D-enabled visuals in real-time.                                                                                                   |



### 3.3 Embracing AI for Sustainable Coastal and Marine Tourism

In marine tourism contexts, AI-powered systems can integrate satellite imagery, drones, underwater sensors, and acoustic networks to detect early signs of reef bleaching, track species presence, monitor plastic pollution, and issue predictive alerts. Some of the uses of AI powered tools in coastal and marine tourism are as follows.

- a. **Visitor Management and Marine Ecosystem Protection:** AI-driven decision support tools optimize visitor flow through predictive models, reducing overcrowding and environmental stress in hotspots like coral reefs and protected lagoons. Organizations such as the Allen Coral Atlas, for example, employ artificial intelligence to map coral reefs around the world, providing critical data to conservationists and policymakers. These devices provide early identification of environmental damage, allowing for timely intervention. An AI-powered prediction model can also predict how tourism activities, such as anchoring or scuba diving, would affect vulnerable ecosystems, allowing operators to change itineraries or limit visitor numbers in advance. Amsterdam and Barcelona have used AI to develop smart tourism destinations. In Amsterdam sensor network and AI forecasting are employed to monitor and predict crowd hotspots. It helps to reduce overcrowding and support sustainable tourism. Barcelona also uses app tools and sensor driven analyses for real time data on traffic monitoring and guidance for visitors<sup>46</sup>.
- b. **Climate Forecasting and Emissions Reductions:** Coastal and marine tourism will be greatly affected by climate change challenges in the future. Predicting future changes in climate is one of the prominent applications of AI. Also, according to Sun et al., 2024 tourism contributes about 8–10% of global GHG emissions. However, the concentration released varies by countries. GHG emissions can be mitigated by technological advancements such as energy optimization and emission reduction strategies and monitoring of forest and vegetative cover which are being executed by the aid of AI<sup>47</sup>.
- c. **Smart Navigation and Environmentally Friendly Routing:** AI improves maritime navigation systems through real-time data processing. Smart navigation technologies optimize routes to save fuel, avoid vulnerable maritime regions, and reduce carbon footprints. Companies such as Wartsila have created AI-powered maritime traffic systems that enable dynamic journey planning, resulting in more effective and sustainable cruise and ferry operations. Furthermore, autonomous vessels directed by AI have the potential to transform

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46 Khatun, Tahmina. "Case Studies of Smart Destinations: Enhancing Tourist Experiences and Promoting Sustainability." In *Smart Tourism for Sustainable Development* (2024).

47 Akter, Shahriar, Mujahid Mohiuddin Babu, Umme Hani, Saida Sultana, Ruwan Bandara, and David Grant. "Unleashing the Power of Artificial Intelligence for Climate Action in Industrial Markets." *Industrial Marketing Management* 117 (2024/02/01/ 2024): 92-113. <https://doi.org/https://doi.org/10.1016/j.indmarman.2023.12.011>.

marine tourism by providing low-emission, self-piloted eco-cruises<sup>48</sup>. Norway is efficiently using AI in marine cruise route optimization and also for the pollution control.

d. **Waste Management and Pollution Control:** For coastal and marine environment conservation and sustainable tourism AI driven solutions are playing an important role. Different sources such as sensors, satellite imagery and oceanographic databases provide a detailed image of pollution and its potential impacts. Moreover, AI-powered systems on ships can monitor waste, water discharge, oil leaks, and use advanced robotics. Autonomous waste-collecting drones combined with AI algorithms are being used in ocean cleaning programs, such as those developed by the Ocean Cleanup project. By automating trash management, maritime tourism operators may better comply with international requirements such as MARPOL while reducing their environmental impact<sup>49</sup>.

e. **Personalization of Tourist Experiences:** AI is revolutionizing client interaction by making tailored suggestions based on visitors' interests and environmental factors. Virtual assistants, chatbots, and AI-powered applications provide personalized itineraries that encourage environmentally beneficial activities, such as guided snorkeling trips to certified sustainable reefs or marine conservation education programs<sup>50</sup>. Personalization not only increases visitors' enjoyment, but it also discreetly encourages visitors to engage in more sustainable conduct, building a deeper understanding of marine environments.

### 3.4 Benefits of AI in Promoting Sustainable Maritime Tourism

The incorporation of AI in marine tourism provides numerous benefits:

a. **Efficiency and Cost Savings:** AI-powered optimizations minimize fuel use, reduce waste and maintenance expenses, making sustainability financially appealing to operators.

b. **Data-Driven Decision Making:** Artificial intelligence (AI) delivers real-time actionable insights that improve response to environmental and market changes. AI improves environmental stewardship by automating conservation initiatives and reducing human impact. AI's ability to examine and analyze various datasets, ranging from visitor flows and booking trends to environmental metrics, enables

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48 Riyadh, Muhammad. "Transforming the Shipping Industry with Autonomous Ships and Artificial Intelligence." *Maritime Park Journal of Maritime Technology and Society* 3, no. 2 (2024): 16–21. <https://doi.org/10.62012/mp.v3i2.35386>.

49 Zarei, Amir. "Reduce Your MARPOL Risk with AI-Powered FleetVision." *ShipIn Systems* via NorthStandard (2024). (Full journal citation not provided.)

50 Dar, Hafiz, and Mahnoor Dar. "Redefining Success of the Tourism Sector Through Technological Advancements." In *Technological Advancements and the Future of Travel and Tourism*, 201–214. <https://doi.org/10.4018/979-8-3693-5678-4.ch008>.

stakeholders to make data-driven decisions that optimize destination management, resource use, and sustainable tourism strategies in real time<sup>51</sup> (Cliff, 2024).

- c. **Improved Tourist Education and Engagement:** Artificial intelligence technologies provide interactive learning experiences, raising environmental awareness among tourists.
- d. **Compliance and Reputation Management:** Proactive usage of AI helps to comply with environmental rules and improves company reputation in an increasingly eco-conscious market.

### 3.5 Challenges and Limitations

While AI offers great potential for sustainable maritime tourism, it also brings several hurdles:

- a. **High Start-up Costs:** Implementing AI solutions often demands heavy initial investments, making it difficult for smaller businesses to adopt.
- b. **Privacy and Security Risks:** The collection and handling of large amounts of tourist data create significant concerns regarding privacy protection and cybersecurity.
- c. **Overdependence on Technology:** Relying too much on AI could weaken human expertise and adaptability, especially if a technical failure occurs.
- d. **Environmental Impact of AI:** Running AI systems, particularly data centers, consume a large amount of energy, which contradicts the sustainable goals that they aim to support.
- e. **Ethical and Social Issues:** Introducing autonomous technologies may lead to job losses in maritime tourism, prompting serious ethical debates about workforce displacement.

### 3.6 AI to Support Revolutionize Coastal and Maritime Tourism in Pakistan

AI could completely change the scope of coastal and maritime tourism in Pakistan in various ways i.e. AI can predict the tourist flow in specific regions, helping prevent overcrowding in popular spots like Clifton beach and Churna Island. Chatbots powered by AI can offer travel help in multiple languages, suggest personalized travel plans and recommend ecofriendly activities based on user preferences. Moreover, AI can help with better planning. It can study tourism patterns, environmental changes and climate data to help plan sustainable development focused on marine life preservation. It can analyze satellite images to keep a check on coral reefs, illegal fishing and pollution along

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51 Cliff, S. "Artificial Intelligence (AI): Paving the Way for Sustainable Tourism." ESDES Tourism Blog (8 February 2024). <https://blog.esdes.fr/en/artificial-intelligence-ai-paving-the-way-for-sustainable-tourism>.

the shore. Drones equipped with AI can check on marine wildlife, monitor habitats and help with targeted beach clean ups.

Crowd management systems can help preserve cultural sites and biodiversity by controlling visitor numbers. AI recommendation system can help with improved marketing and visitor engagement by suggesting tours to mangrove walks, turtle watching or sustainable boating which can help in attracting eco-friendly tourists. Virtual Reality combined with AI can give people a taste of these destinations before they visit, encouraging both foreign and local tourists to be aware about the safety and emergency response system.

**Table 3:** How AI can revolutionize coastal & maritime tourism in Pakistan.

| Domain                                | AI Applications                                                                                                                                                                      | Impact on Coastal & Marine Tourism (Pakistan)                                                                                     |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Tourist Experience & Personalization  | <ul style="list-style-type: none"> <li>▪ Chatbots &amp; Virtual Assistants</li> <li>▪ Personalized Itineraries via Machine Learning</li> <li>▪ AI-Powered Booking Systems</li> </ul> | Improved visitor engagement, convenience, and satisfaction Across coastal areas like Gwadar, Karachi and Pasni.                   |
| Tourism Flow & Demand Management      | <ul style="list-style-type: none"> <li>▪ Predictive Analytics for Tourist Patterns</li> <li>▪ AI-Powered Booking Systems</li> <li>▪ Dynamic Pricing Models</li> </ul>                | Crowd control and optimized infrastructure usage to avoid over tourism in fragile ecosystems (e.g. Astola Island, mangrove belts) |
| Environmental Monitoring & Protection | <ul style="list-style-type: none"> <li>▪ Satellite Image Analysis</li> <li>▪ AI Drones for Wildlife Tracking</li> <li>▪ Pollution Detection Algorithms</li> </ul>                    | Conservation of marine biodiversity and proactive management of pollution and habitat loss in coastal zones                       |
| Safety & Emergency Response           | <ul style="list-style-type: none"> <li>▪ Early Warning Systems Using AI</li> <li>▪ Smart Surveillance &amp; Facial Recognition</li> <li>▪ AI-Based Rescue Coordination</li> </ul>    | Enhanced tourist safety during coastal storms, tides, or emergencies, especially in underdeveloped areas                          |
| Marketing                             | <ul style="list-style-type: none"> <li>▪ AI Recommendation Engines</li> </ul>                                                                                                        | Targeted promotion of eco-tourism and local heritage                                                                              |

## CHAPTER 4

### SUSTAINABLE COASTAL AND MARINE TOURISM - POLICY RECOMMENDATIONS

#### 4.1 Introduction

Tourism has been granted as an industry in Pakistan. The 18th Amendment merely resulted in a fragmented approach to Coastal and Maritime Tourism (CMT). Pakistan does have a dedicated CMT Policy; nevertheless, there is a need for a more comprehensive sustainable CMT Policy. Sustainable tourism emphasizes managing and monitor tourism growth while avoiding environmental and cultural degradation and social inequality. As with any conventional tourism policy, the focus is on promotion and infrastructure development. Unlike these standard tourism policies, a sustainable approach will consider long-term environmental protection and the well-being of the local community, based on socio-economic benefits.

The coastal and marine areas are the most fragile and vulnerable to pollution, habitat destruction and overexploitation. Sustainable CMT policy will prioritize the protection of marine biodiversity, active preservation of coastal landscapes, responsible stewardship over ocean resources, and sustainable economic development. A sustainable policy also supports coastal communities' livelihoods, prevents over-tourism, and protects these natural assets for future generations for long term viability for tourism.

#### ***Vision***

***“To develop Pakistan’s coastal and marine tourism into a sustainable, inclusive, and resilient sector that conserves marine ecosystems, empowers local communities, and contributes to the national blue economy.”***

#### ***Mission***

***“To promote environmentally responsible and culturally respectful tourism along Pakistan’s coastal and marine regions through integrated planning, public-private partnerships, capacity building, and policy support hence ensuring economic growth, biodiversity conservation, and climate resilience for present and future generations.”***

#### 4.2 Recommendations for Sustainable Coastal and Marine Tourism Development

Pakistan’s coastal areas currently lack proper tourism infrastructure. So, as we begin to promote tourism in these regions, why not take this as an opportunity to build sustainable resorts, hotels, and develop eco-friendly policies from the very start. Since the CMT is still in its early stages here, it’s the perfect time to



ensure that growth happens responsibly and sustainably. Some policy recommendations suggested are as follows:

### **1.2.1 Policy Coherence:**

Incorporate the principles of sustainable tourism development in the National Tourism Policy, along with developing a separate Sustainable Coastal and Marine Tourism Policy (SCMTP) with the help of all relevant stakeholders ensuring both aligned and mutually reinforcing holistic development.

### **1.2.2 Collaboration between Stakeholders**

a. The coordination and collaboration between federal and provincial ministries, including but not limited to Maritime Affairs, Culture and Tourism, Pakistan Tourism Development Corporation (PTDC), Foreign Affairs, Commerce, Climate Change and Environmental Coordination, Provincial Tourism Department, Coastal Development Authority etc. should be facilitated under “Sustainable Blue Tourism Board” in order to increase the effectiveness of sustainable coastal and marine tourism initiatives.

b. Establishment of platforms to engage the local communities, NGOs, private sector and educational institutes so that they can actively participate in policy development. By involving the local communities, a sense of ownership shall be developed in them.

### **1.2.3 Commitment to International Obligations and Ethical Tourism**

The policies should demonstrate commitment to the principles highlighted in the United Nations World Tourism Organization (UNWTO), Global Code of Ethics for Tourism (2001), International Code for the Protection of Tourists (ICPT), Framework Convention on Tourism Ethics (FCTE) and United Nations Sustainable Development Goals (SDGs) Agenda 2023.

### **1.2.4 Integrated Marine and Coastal Planning**

Use tools for management of coastal areas based on ecosystem based approaches such as Integrated Coastal Zone Management (ICZM) and Marine Spatial Planning (MSP) to ensure the involvement of government and planning authorities.

### **1.2.5 Strategies to Green and Decarbonize the Tourism Industry**

a. It is important to devise and implement strategies designed to reduce the carbon footprints associated with the tourism industry.

b. There should be rigorous promotion of eco-certificates and green standards for hotels, tour operators and cruise services such as

EarthCheck, Blue Flag, Biosphere Responsible Tourism, Ecotourism Australia etc. which will help the businesses to align with the demands of environmentally conscious travelers by gaining recognition for their sustainability efforts.

c. It is important to educate tourists and travelers to support ecofriendly initiatives.

d. To mitigate environmental degradation the use of non-recyclable materials and single use plastics should be strictly prohibited to align with best global practices.

### 1.2.6 Support Responsible Businesses

In order to encourage sustainable practices within the tourism industry, tax incentives and subsidies should be provided to the tourism businesses that are committed to adopting Environmental, Social, and Governance (ESG) principles.



**Figure 17:** Comparison between conventional and sustainable coastal hotels and resorts.

### 1.2.7 Sustainable Coastal Resorts and Hotels Development

a. Standardization of certification systems for the resorts and hotels at regional levels should be developed and implemented.

b. For the coastal resorts and hotels green building standards should be paramount. This includes the introduction of renewable energy, the installation of rainwater harvesting units, and the establishment of waste management facilities.

c. The hotels should prioritize the use of locally sourced environmentally friendly material for the construction to reduce the carbon footprint associated with transportation of materials. Moreover, environmentally friendly construction material should be used.

d. Cuisine served should be prepared from local produced ingredients not only to reduce the emissions associated with food transportation but also to provide benefit to the local community.

e. Global Sustainable Tourism Council (GSTC) is a global accreditation scheme that sets international standards for sustainable tourism certifications. They don't certify directly but accredit certification bodies that certify hotels, tour operators, and destinations.

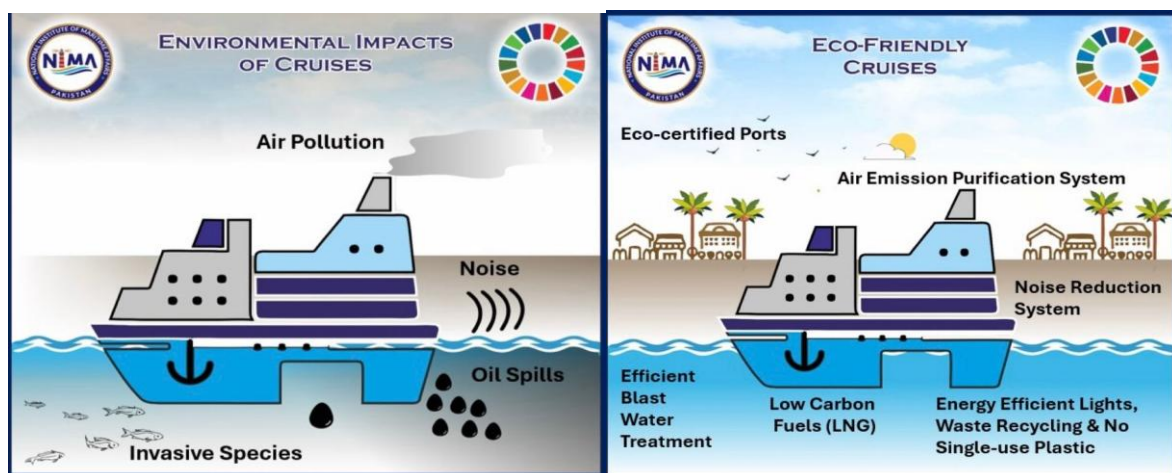
### 1.2.8 Sustainable Cruise Lines

a. It is important to upgrade the ports for Green Certifications. Such as Green Marine, Leadership in Energy and Environmental Design (LEED), Green Port Certificate etc. to accommodate environmentally friendly marine vessels.

b. For cleaner marine operations such cruise ships and ferries should be deployed that use clean energy fuels such as liquefied natural gas (LNG) or hybrid electric system instead of traditional heavy oils.

c. To protect the marine ecosystem tourism vessels should have strict regulations governing solid waste and sewage disposal and grey water treatment.

d. The routes of the cruise ships should be designed so that the ecological sensitive zones such as MPAs should not be disturbed.



**Figure 18:** Comparison between conventional and sustainable cruise lines.

### 1.2.9 Introducing Inland Water Transport

a. Inland water transport alongside coastal and marine tourism should be developed to create a network that enhances connectivity, reduces transport costs, supports local economies, and provides sustainable travel options for tourists and communities. Developing river cruise tours along the Indus can diversify Pakistan's maritime tourism by combining heritage, culture, and eco-tourism.

- b. Linking sites like Mohenjo-Daro and Kot Diji with modern cruise experiences would attract international visitors, create local jobs, and mirror successful models from the Nile and Mekong, while ensuring sustainability.

#### **1.2.10 Development of Monitoring and Evaluation Schemes**

- a. For the promotion of sustainable tourism practices increasing public awareness regarding the impact of human intervention is important.
- b. The carrying capacities of the various locations should be calculated to know of the acceptable limits in a locality to prevent over-ecotourism.

#### **1.2.11 Educational and Vocational Training for local Service Providers**

To become an ecotourism guide, the locals especially women should be trained and educated to equip them with the necessary skills and knowledge.

#### **1.2.12 Promotion of Eco-tourism Projects**

- a. Provide financial and technical support to local communities to develop ecotourism products and facilities.
- b. Support the branding of Pakistan as a sustainable coastal and marine destination spot.
- c. There should be promotion of projects with ecosystem restoration initiatives such as mangrove conservation, turtle and dolphin conservation and coral reef restoration.

#### **1.2.13 Technical Cooperation between Maritime Regions**

Dialogue and technical cooperation between marine regions is important. Technical cooperation among maritime regions is essential for sharing best practices, strengthening governance, and building capacity in sustainable coastal tourism. Collaborative initiatives such as joint research, training programs, technology transfer, and coordinated maritime policies can help regions like South Asia, the Pacific, and Europe learn from one another's successes in eco-tourism, cruise management, and marine conservation. Such cooperation not only fosters innovation but also ensures resilience and sustainability in the global blue economy.

### 1.2.14 Use of Technology/ Artificial Intelligence

Latest technologies such as Big data analysis, remote sensing and artificial intelligence based should be used to assess environmental impacts and monitor tourist behavior. This will help to provide valuable insights that can lead to operational improvements in the tourism sector.

## 4.3 Priority Coastal Destinations and Sustainable Tourism Zones

### 4.3.1 Gadani

Located 50 km west of Karachi (about 1 hour by road) in the district of Lasbela, Gadani, is internationally recognized for hosting one of the largest ship-breaking yards, still its spread-out sandy beaches remain mainly underutilized for tourism. Reports highlight that the area has absence of elementary visitor facilities such as restrooms, shaded areas, and safe picnic zones, alongside land disputes that hinder harbor development<sup>52</sup>. However, by taking measures like establishing eco-friendly resorts, solemn picnic areas, and upgraded road access could transform Gadani into a balanced hub for both industrial heritage and leisure tourism<sup>53</sup>.

### 4.3.2 Sonmiani Bay

Moving along the coastline in the east direction 95 km west of Karachi (about 2 hours by road), Sonmiani Bay in Lasbela is among of Pakistan's richest ecological zones, with having diverse mangrove forests, migratory bird habitats, and marine biodiversity. Organizations including WWF-Pakistan and UNDP have also shown support towards mangrove rehabilitation projects, so far eco-tourism potential remains untouched due to the nonappearance of information centers, guided tours, and educational facilities<sup>54</sup>. With Ramsar recognition, Sonmiani could progress into a flagship site for eco-tourism with the establishment of birdwatching platforms, boat safaris, and community-led conservation programs<sup>55</sup>.

### 4.3.3 Pasni

Pasni, is located in the province of Balochistan 530 km west of Karachi (8–9 hours by road) and it historically a key fishing town, featuring pristine beaches and serves as an entree point to various marine resources, yet its tourism remains constrained till date, due to the inadequate infrastructure and vulnerability to natural disasters. The 1945 tsunami devastated Pasni, emphasizing the dire need for disaster-

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52 The Friday Times, "Gadani's Beautiful Coastline Is Deprived of Basic Amenities," August 10, 2024, <https://www.thefridaytimes.com>

53 The Nation, "Gadani Set to Have a Tourist Resort," March 23, 2023, <https://www.nation.com.pk>

54 Business Recorder, "Mangrove Rehabilitation at Sonmiani Bay," January 31, 2008, <https://www.brecorder.com>

55 ARY News, "Sonmiani Beach: Balochistan's Hidden Tourist Gem," June 15, 2023, <https://arynews.tv>



preparedness in tourism planning<sup>56</sup>. Efforts and projects like investments in model beach parks, resilient eco-lodges, and early warning systems could boost Pasni's demand alongside ensuring visitor safety as well.

#### 4.3.4 Ormara

Ormara is situated about 360 km west of Karachi (6–7 hours by road), combining scenic beachfronts and historical significance together, Ormara is also believed to have been a stopping point for Alexander the Great's forces<sup>57</sup>. Contempt its potential, unfortunately Ormara lacks organized resorts and formalized visitor services. Developing beach parks, floating jetties, and small-scale eco-resorts would help unlock its potential while nurturing local employment<sup>58</sup>.

#### 4.3.5 Gwadar

Moving along the Makran Coast 635 km west of Karachi (10–11 hours by road), Gwadar has increased prominence not only as a port city but also in offering natural and recreational attractions such as marine drive, sunset park, and Golden sand beach. Although a little development has occurred, tourism facilities still remain insufficient, with limited number of hotels, recreational spaces, and cultural programming<sup>59</sup>. With the expansion of coastal resorts, and by introducing guided cultural tours, and investing in climate-resilient infrastructure, Gwadar can surely diversify beyond port functions and can serve as a gateway to maritime tourism<sup>60</sup>.



*Figure 19: Scenic view of Gwadar.*

#### 4.3.6 Jiwani

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56 Encyclopedia of Earthquakes, "1945 Balochistan Earthquake and Tsunami" (Springer, 2014).

57 Gwadar Development Authority (GDA), "Tourist Attractions in Gwadar," 2023, <https://gda.gov.pk>

58 Dawn, "Tourism Promotion Projects to Be Launched in Balochistan," January 9, 2021, <https://www.dawn.com>

59 Gwadar Development Authority (GDA), "Tourist Attractions in Gwadar."

60 Gwadar Pro, "Tourism Promotion Projects in Balochistan," July 22, 2021, <https://gwadarpro.pk>

In Pakistan's westernmost coast is Jiwani 700 km west of Karachi, near the Iranian border which is ecologically substantial as breeding ground for endangered green turtles<sup>61</sup>. However, it remains as one of the least developed coastal towns in Pakistan, with underprivileged connectivity, absence of tourist amenities, and no formal conservation-tourism linkages. Initiatives such as introducing turtle-watching programs, basic eco-lodges, and guided conservation tours would position Jiwani as a model for biodiversity-linked tourism. Communally, these sites have the potential to anchor Pakistan's coastal and maritime tourism economy. By addressing infrastructure gaps, strengthening governance, and linking conservation with community benefits, Pakistan can transform its coastline into a sustainable tourism corridor, comparable to other emerging maritime destinations in Asia and the Middle East.

#### 4.3.7 Hinglaj Mata Mandir

Hinglaj Mata Mandir, which is generally known as Nani Mandir, is a Hindu temple situated in the Hingol National Park. The temple is devoted to Hinglaj Mata, one of the 51 Shakti Peethas in Hinduism. It is a sacred site where the head of Goddess Sati is believed to have fallen. This respected location charms thousands of Hindu devotees, especially during the annual Hinglaj Yatra, that takes place in April. Located around 250 km northwest of Karachi, the temple is surrounded by rugged terrains, mud volcanoes, and striking natural beauty. A short distance away lies the Kund Malir Beach, that is a pristine coastal area with beautiful views and a serene atmosphere, which additionally adds to the scope for eco-tourism in the region. To develop the mandir as a sustainable tourist destination accessibility should be improved.

### **To be developed on the lines of Kartarpur**

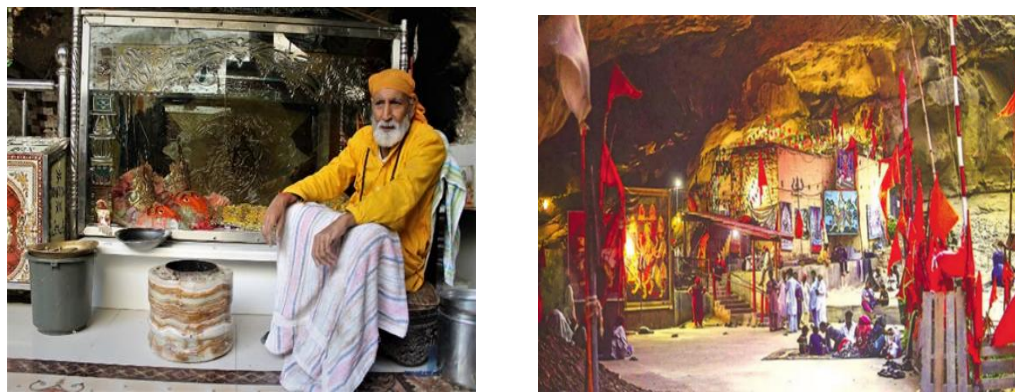
The road network which connects Karachi to Nani Mandir has been greatly improved with the Makran Coastal Highway. Further developments to this route include the construction of rest areas and medical services. Karachi's Jinnah International Airport, approximately 250 km from the temple serves as an access point for domestic and international tourists. The recently inaugurated Gwadar International Airport, 300 km away from Hinglaj Mandir, also provides excellent connectivity through airways<sup>62</sup>. Maritime connectivity is another important aspect of increasing accessibility. By exploring the feasibility of ferry services from Karachi to Pasni can act as an alternative route for tourists to access Hinglaj Mandir. This would allow visitors to enjoy a scenic sea journey enhancing the spiritual experience of the pilgrimage.

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61WWF-Pakistan, "Marine Turtle Conservation in Jiwani," 2017, <https://www.wwfpak.org>

62 Prof. Engr. Zamir Ahmed Awan, "Gwadar Airport: A Gateway to Prosperity and Progress," Modern Diplomacy, January 23, 2025, <https://moderndiplomacy.eu/2025/01/23/gwadar-airport-a-gateway-to-prosperity-and-progress/>.

Locally sourced, sustainable materials such as stone, clay, and timber should be used in the construction of temple complexes, resorts, and infrastructure to mitigate the environmental impact. These buildings should be designed to blend in with the natural environment by drawing inspiration from the traditional Baloch architecture and incorporates modern, eco-friendly technology as well. Utilizing solar panels or small-scale wind turbines for the generation of renewable energy will align with the region's potential for the sustainable energy. These measures would ensure that the development is not only eco-friendly, but also energy efficient. Water management is essential in a region like Balochistan, which faces water scarcity. Rainwater harvesting systems could be used to capture, store rainwater for resorts, and the surrounding areas would create a sustainable water supply<sup>63</sup>. Furthermore, grey water recycling should be implemented to reuse water from sinks, showers, and laundry for landscaping thereby reducing the use of fresh water.



**Figure 20:** Hinglaj Mata Mandir, Balochistan.

Eco-tourism and adventure tourism activities should be incorporated to attract a diverse range of tourists. The Hingol National Park surrounds Nani Mandir with its unique landscapes, mud volcanoes, and wildlife, which allows for nature hikes, bird watching, and safaris. Guided eco-tours and adventure treks will attract tourists, who want something more than just spiritual experiences and can explore the region's natural beauty<sup>64</sup>. A good waste-management policy is necessary. It should include segregated bins that must be filled with organic, recyclable, and non-recyclable waste, extensive education programs of the tourists on proper disposal methods, and zero-waste policy as well<sup>65</sup>. There should

63 Muhammad Aslam Buzdar, "Appraisal of Wastewater Generation at Nani Mandir of Hingol National Park and Community Based Holistic Conservation" Research Gate (Lasbela University of Agriculture, Water and Marine Sciences, April, 2023), [https://www.researchgate.net/publication/369858522\\_Appraisal\\_of\\_Wastewater\\_Generation\\_at\\_Nani\\_Mandir\\_of\\_Hingol\\_National\\_Park\\_and\\_Community\\_Based\\_Holistic\\_Conservation](https://www.researchgate.net/publication/369858522_Appraisal_of_Wastewater_Generation_at_Nani_Mandir_of_Hingol_National_Park_and_Community_Based_Holistic_Conservation).

64 Zil-e-Huma, "Natural Rock Art Designs in Balochistan: A Case Study of the Princess of Hope, Makran Coastal Highway," Pakistan Languages and Humanities Review 8, no. 3 (2024): 420, [https://doi.org/10.47205/plhr.2024\(8-III\)38](https://doi.org/10.47205/plhr.2024(8-III)38).

65 Muhammad Aslam Buzdar, "Appraisal of Wastewater Generation at Nani Mandir of Hingol National Park and Community Based Holistic Conservation" Research Gate (Lasbela University of Agriculture, Water and Marine Sciences, April, 2023), [https://www.researchgate.net/publication/369858522\\_Appraisal\\_of\\_Wastewater\\_Generation\\_at\\_Nani\\_Mandir\\_of\\_Hingol\\_National\\_Park\\_and\\_Community\\_Based\\_Holistic\\_Conservation](https://www.researchgate.net/publication/369858522_Appraisal_of_Wastewater_Generation_at_Nani_Mandir_of_Hingol_National_Park_and_Community_Based_Holistic_Conservation).

also be the precautionary measures to protect the special landscapes and faunae of the park, especially the mud volcanoes and the indigenous species.

Additional consideration is required with respect to the space and time distribution of the pilgrims to the Nani Mandir temple. It is in the month of April, in which thousands of devotees attend the Hinglaj Yatra (Navaratri festival) during the peak season. Off-peak tourism should be encouraged to try to turn the site into a year-round destination. The off-season (October to March) could be used to institute wellness retreats, spiritual workshops, meditation sessions, and peaceful retreats, thus, attracting travelers in need of spiritual reflection at any time of the year.

A key to ensure that tourism benefits are distributed equitably is community engagement. Training local communities in local crafts, hospitality, and guiding can generate sustainable jobs and empower them economically. In addition, cultural markets can be established for showcasing Baloch handicrafts, textiles, and traditional products which not only enrich the culture for the tourists but also provides income opportunities to the local artisans. This will also foster cultural preservation and encourage tourists with authentic, locally made souvenirs. With respect to cuisine, a dedicated food experience is to be introduced near Nani Mandir with eco-friendly food stalls and local restaurants, offering authentic Balochi and Makrani cuisine. To exhibit regional flavors, dishes like Sajji, Chapli Kebabs, Makrani Pulao, Lassi and many more should be featured to make it a unique cultural and culinary attraction. This approach will not only encourage the use of sustainable and locally sourced ingredients to emphasize the regional culinary heritage but also enhance the overall tourism experience for visitors.

#### **4.3.8 Thatta**

Thatta, located approximately 100 km east of Karachi, is historically significant as the former capital of Sindh and home to the Makli Necropolis, a UNESCO World Heritage Site<sup>66</sup>. Beyond its cultural heritage, Thatta's coastline extends deep into the Indus Delta, one of the largest deltaic systems in the world, covering more than 600,000 hectares of creeks, mudflats, and mangrove forests<sup>67</sup>.

#### **4.3.9 Keti Bandar**

During the Mughal reign, Keti Bandar was a thriving port town, which is located about 150 km east of Karachi. Although the port is now diminished, it has potential for both strategic capacities and tourism. By

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66 UNESCO, Historical Monuments at Makli, Thatta, United Nations Educational, Scientific and Cultural Organization, 2014, <https://whc.unesco.org/en/list/143>

67 WWF-Pakistan, Mangroves of the Indus Delta: Conservation for Sustainable Development (World Wide Fund for Nature, Pakistan, 2017).



taking initiatives such as investment in small harbors, eco-lodges, and guided tours of creeks, it could be strengthened as both a cultural and eco-tourism hub. In the present-day Ketī Bandar has declined due to siltation and infrastructural neglect. Despite this, it retains significant potential for revival as a hub of eco-tourism, small harbors, and community-based fishing tourism<sup>68</sup>.

#### **4.3.10 Shah Bandar**

It is located slightly further east, and is a fishing settlement at the bay of the Indus. It offers various opportunities for community-based tourism centered around fishing traditions, mangrove conservation, and experiential travel. It offers opportunities for cultural tourism tied to Sindh's fishing heritage<sup>69</sup>.

#### **4.3.11 Hajamro Creek**

Another site in Thatta's deltaic region is the Hajamro Creek, which is of ecological significance due to its dense mangrove cover and rich biodiversity, which offers immense potential for mangrove tours, kayak safaris, and conservation education centers. The entire Thatta coast is also linked with the Indus Delta Ramsar Site, one of the largest in the world, covering over 600,000 hectares of estuarine and coastal ecosystems. Hajamro Creek, within the delta, is an ecologically sensitive site with dense mangroves, migratory bird habitats, and marine biodiversity. This makes it ideal for eco-tourism activities such as mangrove tours, birdwatching platforms, kayak safaris and conservation education<sup>70</sup>.

Despite this immense ecological and cultural wealth, the sad reality is that the Thatta coastline remains almost invisible in Pakistan's tourism narrative. Poor road access, limited hospitality facilities, and lack of promotion hinder its visibility. Conservationists have long emphasized sustainable tourism models which focus on eco-lodges, guided boat tours, and mangrove restoration and how these initiatives could not only protect biodiversity but also empower fishing communities through income diversification<sup>71</sup>. Integrating Thatta's deltaic landscapes with its rich cultural assets like Makli could position the region as a flagship coastal eco-tourism destination, balancing heritage, biodiversity and local livelihoods.

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68 Daanish Mustafa and Hafsa Qazi, "Transition from Katcha to Pacca in Ketī Bunder: The Political Ecology of Disaster Vulnerability in Pakistan," *Global Environmental Change* 17, no. 3–4 (2007): 326–39.

69 Government of Sindh, *Sindh Coastal and Marine Tourism Development Plan* (Karachi: Planning & Development Department, 2021).

70 IUCN Pakistan, *Indus Delta: Conservation and Livelihood Opportunities* (International Union for Conservation of Nature, 2019).

71 WWF-Pakistan, *Mangroves of the Indus Delta: Conservation for Sustainable Development* (World Wide Fund for Nature, Pakistan, 2017).



#### 4.3.12 Bundal Island

Located southeast of Karachi's peninsular area, Bundal is an uninhabited island. Nearby islands include Khiprianwala and Buddo. It has an area of 24 square kilometers and has a great potential to be used as a case study for the demonstration of sustainable tourism in Pakistan. The island is renowned for housing the shrine of Sufi Saint Yusuf Shah, which attracts thousands of visitors during the annual Urs festival.

Biodiversity hot spots have great potential to attract tourists as compared to conventional tourism destinations<sup>72</sup>. The Bundal island with untouched beaches hosts a diverse range of flora and fauna typical of coastal and deltaic ecosystems. These environments often host diverse ecosystems such as coral reefs, mangroves, and tropical forests, which support a wide range of marine and terrestrial life<sup>73</sup>. However, their fragile ecological balance makes them highly vulnerable to anthropogenic pressures, including over-tourism, habitat destruction, and climate change impacts such as sea-level rise. Sustainable tourism development on islands can serve as both a conservation strategy and an economic driver, particularly when integrated with community-based initiatives and low-impact infrastructure. Galápagos Islands, Madagascar, St. Martin's Island (Bangladesh), Seychelles, Greater Antilles and Virgin are some of the some of the Island that are biodiversity hotspots and are developed as sustainable tourism destinations.

First of all, Environmental Impact Assessment (EIA) of the area is important. One of the most crucial frameworks of management of the island development is Zoning. The island should be divided into separate sectors such as conservation zones, eco-tourism zones and hospitality & accommodation zones, cultural zones, and also recreational zones. This will reduce overcrowding and divert human activities out of delicate ecological zones. Specific attraction points should be developed in the selected areas based on panoramic viewpoints.

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72 Jaz, Nur, Muzafar Habibullah, W. N. W. Azman-Saini, and Shivee Kaliappan. "Does Biodiversity Matter in the Tourism Demand Model? International Evidence." RPER (07/31 2023): 85-99. <https://doi.org/10.59072/rper.vi65.297>

73 PNC-IUCN Pakistan, Position Paper: Bundal Island, 2020, PDF, accessed August 11, 2025, <https://pnc.iucnp.org/wp/wp-content/uploads/2020/10/Position-Paper-Bundal-Island.pdf>.



**Figure 21:** Location of Bundal Island in Arabian Sea.

For promoting responsible tourism all development strategies need to be based on the preservation of this natural heritage. The island should be regulated, for human use as well as the preservation of flora and fauna. The eco-tourism facilities such as the elevated walkways, observation towers, and guided nature tours can be introduced that can allow the visitors to enjoy the biodiversity in the island without causing harm to it.

In terms of infrastructure, the island should incorporate sustainable luxury facilities with a collection of beachside resorts, eco-lodges and tented camps designed with green architecture. Renewable energy sources such as solar and wind power should be used to meet island's energy needs and reduce dependency on fossil fuels. The measures to manage water, such as rainwater harvesting and desalination plants, should be used. Moreover, all the waste management processes must be designed in accordance with zero-waste policy, where recycling, composting, and waste-to-energy technologies should be incorporated to alleviate the possible environmental effects. The transportation networks should be designed with the goals of environmental conservation. Karachi should have inter-island ferry services that will route on a scheduled basis and use vessels that will be low emission or electric-powered. Bundal Island could be used as an example to create a destination where nature thrives, communities prosper, and sustainability defines every experience.

#### **4.3.13 Peace Boat**

Peace Boat is a global non-governmental organization (NGO) based in Japan which was founded in 1983. Its general goal is to promote world educational trips to support peace, human rights and sustainability.

Presently, the organization has over 100 voyages and has visited over 270 ports in around 80 countries across all continents<sup>74</sup>. Such itineraries help to exchange cultures, educate people on international problems and communities, which in turn leads to mutual understanding and collaboration across different cultures.

The 120<sup>th</sup> Global Voyage left the port of Yokohama on 23 April 2025. The itinerary covered destinations like Alaska, Spain, France, Germany, South Africa, and some places in the Caribbean and the Pacific, among other places where the participants will take part in cultural exchanges and community projects that facilitate peace and sustainability. The voyage concluded on August 7, 2025<sup>75</sup>.

Peace Boat's approach to "sustainable peace through tourism" highlights the inclusion of education, advocacy, and community engagement into travel experiences. The participants get to know about other cultures along with critical global issues as well. Therefore, the program includes workshops, lectures, and discussions about climate change, human rights, and nuclear disarmament, thus, meeting the UN-SDGs. This model demonstrates how tourism can be used as a diplomatic tool in building trust and cooperation among nations, leading to long-standing relationships that go beyond tourism.

Pakistan, endowed with a rich cultural heritage, diverse landscapes, and strategic significance, has a lot to benefit from such initiatives like Peace Boat's voyages. The country has some of the most stunning coastal destinations. By opening its doors to peace tourism and working with organizations such as Peace Boat, Pakistan can present its natural beauty while fostering international cooperation too. Such partnerships would enable Pakistan to strengthen its contributions to the global peacebuilding by facilitating cultural exchanges, that focus on shared values and priorities. Such tourism initiatives would also help Pakistan develop stronger ties with other countries, using peace tourism as a diplomatic, mutual respect, and sustainable means of development. Given Pakistan's strategic location and its participation in regional maritime exercises, such as the AMAN naval exercises, opportunities are present for future partnerships in fields such as maritime security, environmental conservation, and cultural exchange as well.

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74 Blanchard Lynda-ann, Sumiko Hatakeyama, and Akira Kawasaki, 2021, "Making Waves: Peace Boat Japan as a Model of Sustainable Peace through Tourism," *Journal of Sustainable Tourism* 30 (2–3): 600–617, 10.1080/09669582.2021.1950737.

75 "Time for Peace 120 Departs," Peace Boat, April 23, 2025, <https://peaceboat.org/english/news/time-for-peace-120-departs>.



**Figure 22:** Peace Boat promoting sustainable development and global peace through educational voyages.