

Sustainable Tourism Infrastructure Development

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Abstract

This study looks at the development of sustainable tourist infrastructure, focusing only on physical factors. In terms of resource efficiency and environmental sustainability, planning, design, and management techniques are assessed through a review of the literature and case studies. In order to pinpoint problems and offer viable solutions, the research carefully examines how much energy, water, garbage, and transportation systems are used. The report promotes minimising environmental effect and optimising resource conservation in tourism infrastructure projects by highlighting eco-friendly technology and design ideas. Innovative strategies, such as the use of sustainable construction materials, integrated renewable energy, water-saving techniques, and effective transportation systems, are demonstrated in successful case studies. The research prioritises physical factors to ensure lowest ecological impact and long-term environmental resilience, advocating for sustainable tourist infrastructure by integrating theoretical and practical insights. The findings contribute to advancing sustainable development goals within the tourism sector, offering actionable recommendations for policymakers, planners, and developers to create destinations in harmony with natural surroundings.

Keywords— Sustainable tourism, Tourism infrastructure, Physical parameters, Water usage, Waste management, Transportation systems

1. Introduction-

Tourism denotes the temporary, short term movement of people to destinations outside the places where they normally live and work and their activities during the stay at these destinations. It is one of the most important economic activities in the world today because it directly generates services, products, foreign currency, employment and investments. The broad phenomenon of individuals or organisations going to locations outside of their normal surroundings for a variety of purposes, including leisure, commerce, pleasure, and cultural exploration, is known as tourism.

Tourism is a multifaceted industry that includes everything from sightseeing and adventure travel to eco-tourism and historical investigation. It is essential to economic, social, and cultural dynamics. It acts as a stimulant for economic growth, encouraging the creation of jobs, the expansion of infrastructure, and the production of income in addition to advancing intercultural understanding and the protection of the environment and cultural heritage.

Infrastructure-Infrastructure refers to all such activities, services, and facilities needed to provide different kinds of services in an economy. To put it simply, it is the framework that supports the nation's social and economic growth.

Tourism infrastructure- The foundation for both the growth of tourism and the use of already-existing destination resources is tourist infrastructure. Numerous services are included in the tourism infrastructure since they are essential to meeting visitors' demands and enhancing their enjoyment while visiting the places.

Tourism infrastructure work on different categories-

- Accessibility
- Attractiveness
- Amenities

Challenges associated with tourism infrastructure maintenance-

1. **Lack of effective maintenance management system:** For the proper execution of maintenance work, there is a need for teamwork
2. **Lack of policies and specific maintenance strategies:** There is a need for a clear and defined maintenance policy.

3. **Lack of maintenance culture:** There is need to train people on the importance of effective infrastructure within the tourism industry

2. NEED OF THE STUDY

- To Aim Towards Sustainability
- Due to the influx of tourism in the cities a load on the infrastructure and services can be observed, specially in Physical infrastructure sector.
- Due to floating population in the designated tourism core of urban area, issues pertaining to solid waste management and transportation is highly observed. Thus in our study I did analyze the gap between these sectors arises for the infrastructure impacted by tourism which may results in the up gradation of the lifestyle of the city and its permanent users.

3. AIM - To study the tourism planning with respect to sustainable Physical infrastructure development.

4. OBJECTIVES-

- To understand what is Sustainable Tourism infrastructure.
- To identify various Sustainable tourism-related infrastructure needs and its limits.
- Case study of various sustainable infrastructure development projects and examine the problems, issues and various strategies, acts, rules and regulations to be used in study area.

5. SCOPE & LIMITATIONS-

The Research will focus on Physical Parameter.

- The study will be limited to Urban Areas
- The Research shall not focus on Social aspect economically viable through sustainability.

6. LITERATURE

Sustainable Tourism-"... tourism that addresses the needs of tourists, the industry, the environment, and host communities while fully accounting for its current and future economic, social, and environmental impacts."

UNESCO defines sustainable tourism as "tourism that respects both local people and the traveller, cultural heritage and the environment".

Why is Sustainable Tourism Important?

Sustainable tourism is crucial because it guarantees that the beneficial effects of travel exceed the negative ones, turning travel into a force for good. People, culture, heritage, language, animals, natural resources, our environment, and everything else that makes this world unique are safeguarded through sustainable tourism approaches.

- The goal of sustainable tourism development is to categorise the advantages and disadvantages of tourism growth.
- to evaluate the use of socioeconomic and environmental impact assessment methods to the development of sustainable tourism. To determine the procedure and action plan for the development of sustainable tourism.

Principles of sustainable Tourism-

- Using resource sustainability
- Reduce over consumption of waste
- Maintaining Biodiversity
- Integrating tourism into planning
- Support local economics
- Involving local communities

Benefits of sustainable Tourism-

- Has a lower ecological impact
- Allow wildlife to stay wild
- Keep the environment clean
- Supports & empowers local communities
- Preserves cultural Heritage

CONCEPT OF TOURISM:

- The activity of tourism involves both material and physiological components.
- These consist of the accessibility of lodging, travel, and entertainment for tourists.

TOURISM IN INDIA-

- In 2021, the travel and tourism sector in India made up around 178 billion dollars of the GDP of the nation.
- approximately 10 million international visitors visited the nation in 2017, bringing in approximately 27.31 billion dollars in foreign exchange profits.
- India takes great pride in its varied topography, which offers world heritage sites of genuinely remarkable beauty in addition to specialised travel experiences such as exhilarating adventure travel, top-notch medical travel, serene ecotourism, and fascinating cruise travel.
- Due to these distinctive offers, visitor arrivals have increased dramatically, creating a large number of job possibilities.

INDIA'S SUSTAINABLE TOURISM CRITERIA: RELEVANCE TO TOUR OPERATORS

1. **Demonstrate Effective Sustainable Management.** The organisation has implemented a long-term sustainability management system that is suitable to its reality and scale, and that considers environmental, sociocultural, quality, health and safety issues.
2. **Design and construction of buildings and infrastructure.** - Comply with land usage and protected or heritage area requirements .
3. Maximize social and economic benefits to the local community and minimize negative impacts- The organisation actively supports initiatives for social and community participation and development, including, among others, infrastructure, education, health, and sanitation
4. **Maximize benefits to cultural and historical heritage and minimize negative impacts-** The organisation follows established guidelines or a code of behaviour at culturally, ecologically or historically sensitive sites, in

order to minimize visitor impact and maximize satisfaction

5. Maximize benefits to the environment and minimize negative impacts

- **Conserving Resources-** Purchasing policy favours environmentally responsible and eco-friendly products for building materials, capital goods, food and consumables.
- **Reducing Pollution-** The organization implements a step-by-step plan to identify, and then quantify, sources of greenhouse gas emissions under its control, and activate measures to offset climate change in a time-bound manner.
- **Conserving biodiversity, ecosystems and landscapes-** The organisation does not participate in, accept, allow or encourage the use of, or display or trade in endangered species of flora and fauna, except trophy displays, as permitted under the law.¹¹

The Indian government announced a new tourism policy in 2002.

The 7-S Mantra is the foundation of the policy.

1. SWAAGAT (Welcome)
2. SOOCHANAA (Information)
3. SUVIDHAA (Facilitation)
4. SURAKSHAA (Security)
5. SAHYOG (Cooperation)
6. SANRACHNAA (Infrastructure)
7. SAFAAI (Cleanliness)

CHALLENGES IN SUTAINABLE TOURISM IN INDIA

- Absence of consensus on the role of tourism.
- Lack of quality infrastructure.
- Shortage of qualified manpower, both skilled and semi-skilled.
- **Lack of effective maintenance management system:** For the proper execution of maintenance work, there is a need for teamwork. It requires all managerial aspects including planning,

organizing, implementation, and control to be in-play.

- **Lack of policies and specific maintenance strategies:** There is a need for a clear and defined maintenance policy.
- **Lack of maintenance culture:** People must be trained on the value of efficient infrastructure for the tourist sector.
- **Safety and security-**
- **Fast pace of innovation and new technologies:** the digital revolution.
- **New business models-** With fresh, aggressive business strategies, new competitors have entered the fray. The distribution of tourism items has been redesigned via new internet platforms.
- **Limits to sustainable development.**

SUGGESTIONS FOR IMPROVEMENT

- Handle the problems of pollution, hazards to the environment and ecology, and loss of cultural heritage; make the shift to sustainable tourism.
- Analyse the heedless growth of the tourism sector.
- Ease bureaucratic hurdles.
- In India, there are around 80 domestic visitors for every foreign visitor. India ought to take advantage of this.
- The foundations required to promote sustainable tourism in India may be found in domestic travel.
- Maximise the immense potential of the nation's human resources. Excellent facilities for education and training attract talented people to the field, which can be a significant factor.
- It is necessary to establish the destination area as an industrial zone..
- Establishment of a favourable climate for the growth of tourism infrastructure.

- The policy framework to support investors. The following policies were revised in some countries:
 - Tax regime
 - License acquiring procedures
 - Regulatory environment and the creation of a single authority for tourism promotion
- Increasing public knowledge of the social and economic effects of city tourism on local and national economies.
- Including urban tourism as a fundamental tenet of all levels of government policy.
- Highlighting the value of investing in professional training and human resources.
- Promoting and recognising local policies and activities that are sustainable.
- Applying creative thinking to target niche markets and create new, highly valuable products.
- Improving the standard of the experience for guests.
- Advancing towards the concept of “smart cities”.

Initiatives taken by India to promote sustainable tourism

1. **“Atithi Devo Bhava”** Campaigns organized for social awareness at various tourist destinations.
2. **Setting up of wayside amenities** – Center gave financial assistance for wayside amenities for sustainable services.
3. Sustained cleanliness drives By involving NGO's, schools, colleges, agencies and industry associations.
4. **Dekho Apna Desh:** In order to encourage domestic tourism, the Hon'ble Prime Minister asked every citizen to visit at least 15 sites by 2022. In response, the Ministry created the Dekho Apna Desh (DAD) project.
5. **Bharat Parv and Paryatan Parv:** The Ministry has been organizing the Bharat Parv

and Paryatan Parv in collaboration with the States/ UTs and other central ministries / Departments for the last four years to showcase the rich culture, history and heritage of India to the citizens.

6. **Domestic Tourism campaigns and promotion on Social Media and website:** Campaigns to promote domestic travel are run by DAVP in the domestic market using print and electronic media. Additionally, the Ministry promotes national tourism sites, goods, celebrations, cuisines, etc. through its social media accounts under the banner of "Promotion and Advertising of Leisure Activities for Sustainability of Hospitality" (PALASH) 293..
7. **Promotion of Fairs/ festivals/Events** – To create awareness among the masses the Ministry celebrates special events / days with citizen's participation like International Day of Yoga, World Tourism Day, Constitution Day, Independence day and other regional festivals.

FORMULA FOR CALCULATION OF INFRASTRUCTURE IN TOURISM CITY OR AREA-

Derivation of Infrastructure Requirement

$$\square \text{ TIR} = \text{VC} \times (\text{WF} + \text{WT} + \text{WU} + \dots)$$

- (TIR): Total Infrastructure Requirements
- (VC): Visitor Capacity- Determine the maximum number of visitors the tourism area can accommodate.
- (WF) Facilities: Includes hotels, restaurants, recreational spaces, etc.

Number of Hotel Rooms = (Average Daily Arrivals * Average Length of Stay) / Occupancy Rate

The World Tourism Organization (UNWTO) suggests that the average hotel occupancy rate is around 60-70%

- (WT) Transportation : Encompasses Roads, Parking areas, and Public transportation.

Transportation Capacity = (Number of Tourists / Average Capacity of Transportation Modes)

- (WU) Utilities : Involves water supply, sewage, waste management, energy, etc.
- **Sustainability Index** = (Number of Sustainable Practices / Total Practices) * 100
- **Total Solid Waste Management Requirements** = (Average Waste Generation per Visitor * Visitor Capacity) + Additional Waste from Facilities

CONCLUSION

In conclusion, this research underscores the critical importance of addressing physical parameters in sustainable tourism infrastructure development to minimize environmental impact and promote long-term sustainability. Through the examination of concrete components including structures, transit networks, energy consumption, water conservation, and garbage removal, this research has yielded important insights into methods for improving sustainability in tourism infrastructure projects. Key problems and possibilities have been highlighted through an interdisciplinary examination of literature and case studies, emphasising the need for integrated methods that prioritise resource efficiency and environmental protection. Going forward, it will be necessary for stakeholders, planners, and politicians to work together to put best practices and creative solutions from successful case studies into action. This will guarantee that tourism development adheres to sustainable principles and benefits both destination communities and tourists. Sustainable tourism infrastructure may support the preservation of natural resources, the improvement of local livelihoods, and the development of genuine and meaningful tourist experiences by using a comprehensive strategy that takes into account environmental, sociocultural, and economic factors. Future research and useful interventions aiming at promoting sustainable tourism growth globally can build on the findings of this study.

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