Abstract

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TITLE: Assessing the Ecotourism Potential of Indian Sundarbans for Sustainable Development

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The Indian Sundarbans consists of 102 islands. People live on 52 of these islands. The total area of Indian Sundarbans is 9630 sq km. The Sundarbans is a symbol of beauty. Green forests full of different species of mangrove trees, rivers, animals, birds, flowers, fruits, fish etc. attract tourists again and again. Eco-friendly tourism gives pleasure to tourists. The Sundarbans tourism industry plays a vital role in the development of the Indian economy, because Sundarbans tourism is the world's largest sector, which generates revenue and foreign currency for the country. Indian Sundarbans has potentiality of tourism and resources that can help in economic growth.

The main purpose of this research is to assess potential ecotourism sites in the Indian Sundarbans by the three bottom lines (social-economics-environment), Geographic Information System (GIS) and Energy Performance Index (EPI). This is based on the ecosystem of the Sundarbans, its ecological and bio-physical properties, and the socio-economic data. All data were gathered through field visits, interviews and secondary data collected from different literature sources.

Chapter I outlines the objectives of the study as follows:

(i) To conduct the landuse/landcover analysis of the study areas.

(ii) To understand the socio-economic profiles of tourists in the study areas.

(iii) To assess the socio-economic, cultural and environmental impacts of tourism in the study areas.

(iv) To assess the physical, economic and socio-cultural impact of tourism.

(v) To assess the environmental performance of the hospitality sub-sector through their Energy Performance Index.

(vi) To make a comparative assessment of the effects of tourism on the environment of the study areas.

(vii) To propose Ecotourism strategies for the Indian Sundarbans.

Five study areas were selected to for the research. These are – Sagar Island, Bakkhali, Jharkhali, Pakhiralaya and Dayapur. Face to face interviews, discussions, field verification and observations and grass root data collection were the primary sources of information. All collected data have been compiled, tabulated, analyzed, processed and presented using excels, GIS and statistical software.

In chapter II, literature reviews are described in five sections: concept of ecotourism, ecotourism vs. sustainable development, ecotourism assessment indicators, individual studies pertaining to ecological footprint, energy efficiency and carbon footprint and studies on coastal regulation zone.

In chapter III, landuse/landcover (LULC) time-series analysis was conducted over four decades of 1986, 1996, 2006 and 2014 using multi-temporal Landsat satellite data under eleven categories – agricultural land, mangrove, settlement with vegetation, creek, mudflat, water body, aquacultural farm, other vegetation, marshy land, beach and open space. Land use / land cover analysis shows that for all five sites the amount of agricultural land has decreased and settlement has increased.

In chapter IV, tourist traffic flow, accommodation facilities and hotel tariff, socio, economic and environmental perception of the domestic and foreign tourists of study areas

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were studied. The tourist traffic flow shows that the number of tourists in each study area is increasing every year.

In chapter V, energy consumption and the corresponding carbon emission of hotels and lodges were assessed. Energy Performance Index values were quantified in terms of kWh/m^2/year and carbon emission values were quantified in terms of KgC/ m^2/year. The Bakkhali region has the highest level of carbon emissions among the study areas.

In chapter VI, the demographic profiles of the study areas have been studied. Restrictions on irrigation and agricultural facilities have pushed the majority of the population into extreme poverty and paved the way for the development of tourism in certain areas, which is considered to be conducive to local livelihoods. Research has shown local involvement in inter-island boat trips, food / raw material supply, working as a tourist guide, selling non-timber forest products (NTFP), etc. Tourism in the region has benefited financially. In the process, the chapter introduces the population profiles of the five study areas, maps the growth of tourism on these islands in terms of the hospitality sector and how local people perceive this growth in terms of their employment opportunities, livelihood options and increasing income levels. Although mixed reactions were found during the study, most of the opinions were found to be largely favorable for tourism.

In chapter VII, a comparative summary of the study areas have been presented. The results show that Sagar Island has the highest number of beds (2804), compared to the number of beds (368) in the Jharkhali tourism area. Again, it is seen that Bakkhali hotels consume more energy and emit more carbon than the other four study areas.

In chapter VIII, several strategies have been adopted to make these five tourist sites healthy and environmentally friendly. The importance of these strategies is immense in developing countries and coastal tourism regions.

In chapter IX, the concluding remarks of this research and future avenues of the work have been presented. Major research findings have been given below:

i. With the growth in tourism sector, land use/land cover planning is an important factor as it is seen that the development of tourist sites are taking place by destroying mangroves in Jharkhali and converting agricultural land to fair ground in the Sagar Island.
ii. The number of 'over night stay tourists' is higher than the number of 'day trippers'.
iii. The impact of tourism on the local socio-economy is positive and there is a lot of interest in the community for further development of tourism in the study areas (e.g. home stay tourism).
iv. Ecotourism therefore, can be a tool for environmental protection, local empowerment, poverty alleviation.
v. The carbon footprint check is an essential element of ecotourism, as the level of carbon emissions in this region must be regulated to be not more than the sustainable level to protect the environment.
vi. Local cultural heritage gets encouragement through eco-tourism practices, heritage tourism centering on archaeological sites can also be promoted.

This study demonstrates that the random growth and rapid expansion of tourism and the process of tourism industry with unfavorable geographical conditions have put tremendous pressure on these five tourist centers. But the great economic potential, limited flow of tourists, decentralization of tourism activities, restructuring of tourism policy, proper zoning, expansion of capacity building of infrastructure, prudent use of resources and its management, involvement of local people and seasonal character of tourism have been put forward on the basis of sustainable development policy, which will help sustain the industry in the long run.

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