

Analyzing Growth Trends of the Built Area in the Precincts of Various Types of Tourist Attractions in India: 2D and 3D Analysis

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Abstract : With the rapid growth in tourist arrivals, there has been a huge demand for the growth of infrastructure in the destinations. With the increasing preference of tourists to stay near attractions, there has been a considerable change in the land use around tourist sites. However, with the inclusion of certain regulations and guidelines provided by the authorities based on the nature of tourism activity and geographical constraints, the pattern of growth of built form is different for various tourist sites. Therefore, this study explores the patterns of growth of built-up for a decade from 2009 to 2019 through two-dimensional and three-dimensional analysis. Land use maps are created through supervised classification of satellite images obtained from LANDSAT 4-5 and LANDSAT 8 for 2009 and 2019, respectively. The overall expansion of the built-up area in the region is analyzed in relation to the distance from the city's geographical center and the tourism-related growth regions are identified which are influenced by the proximity of tourist attractions. The primary tourist sites of various destinations with different geographical characteristics and tourism activities, that have undergone a significant increase in built-up area and are occupied with tourism-related infrastructure are selected for further study. Proximity analysis of the tourism-related growth sites is carried out to delineate the influence zone of the tourist site in a destination. Further, a temporal analysis of volumetric growth of built form is carried out to understand the morphology of the tourist precincts over time. The Digital Surface Model (DSM) and Digital Terrain Model (DTM) are used to extract the building footprints along with building height. Factors such as building height, and building density are evaluated to understand the patterns of three-dimensional growth of the built area in the region. The study also explores the underlying reasons for such changes in built form around various tourist sites and predicts the impact of such growth patterns in the region. The building height and building density around tourist site creates a huge impact on the appeal of the destination. The surroundings that are incompatible with the theme of the tourist site have a negative impact on the attractiveness of the destination that leads to negative feedback by the tourists, which is not a sustainable form of development. Therefore, proper spatial measures are necessary in terms of area and volume of the built environment for a healthy and sustainable environment around the tourist sites in the destination.

Keywords : sustainable tourism, growth patterns, land-use changes, 3-dimensional analysis of built-up area

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