A Typical Seaside Tourist City's Spatial-Temporal Shifts in Ecosystem Services and Social-Ecological Drivers

Bernard Wellington*

Department of Environmental Science, University of Essex, United Kingdom

Abstract

Tourism is a significant economic and social activity with unique human-land interaction characteristics, which raises significant ecological and environmental challenges. In the coastal and noncoastal zones of Sanya, the changes in four ecosystem services—water yield (WY), carbon storage (CS), soil retention (SR), and habitat quality (HQ)—were analysed, and the contributing factors were explored. We discovered that the built-up land area of Sanya's coastal zone quadrupled between 2000 and 2018, that CS, SR, and HQ of the coastal zone had a clear downward trend relative to those of the non-coastal zone, and that WY was higher than that of the non-coastal zone, suggesting that the city's growth in coastal tourism had a negative impact on the area's ecological environment. Decrease in ecological health. Sanya's ecosystem services declined less from 2010 to 2018 than they did from 2000 to 2010, demonstrating the success of the city's recent ecological and environmental conservation efforts.

Keywords: Ecosystem services; Coastal tourism; Seaside

Introduction

Human well-being and the natural environment are intertwined through ecosystem services, which are the products and services that humans directly or indirectly acquire from ecosystems. However, because to global changes and rising human activity, approximately 60% of ecosystem services, particularly regulatory services, have declined during the past 50 years. Situational stimulations have demonstrated that this deterioration tendency would worsen in the ensuing decades, harming current human well-being and significantly reducing benefits from ecosystem services for future generations. To improve human well-being and promote regional sustainability, it is important theoretically and practically to allocate and use ecological services in a sensible manner. [1, 2].

Selection of ecosystem services

The three criteria listed below were used in this study to filter out ecosystem service indicators: According to the widely used Millennium Ecosystem Assessment Classification Framework and the generic International Classification of Ecosystem Services (CIECS), ecosystem services are separated into three groups: providing, regulating, and cultural services (Haines-Young and Potschin-Young, 2018). Stakeholders' worries. The indicators chosen for this article were strongly related to human well-being and attracted the interest of pertinent parties, including government agencies, relevant businesses, local citizens, and tourists. Data accessibility and spatial expression. Based on this, the study chose the following four services as essential ecosystem services: the services of water yield (WY), soil retention (SR), carbon storage (CS), and habitat quality (HQ) (HQ).

There will always be trade-offs between the growth of the tourism industry and ecosystem services. We discovered that the Municipal government provided support for tourism development in the early stages in the form of financial and land use policies. This was in combination with relevant studies of the Mediterranean tourist area, Davos tourist town in the Swiss Alps, Wulingyuan scenic area, Erhai lake basin, and other case areas. When it came to funding, the government prioritised reviewing and approving tourism projects, building up picturesque areas and the infrastructure that goes with them, fostering the coastal tourism business, and boosting public relations [3,4,5].

In terms of land, newly supplied land can satisfy the needs of tourism land as much as feasible through the formation of macro control policies such comprehensive urban planning and tourism development planning; the land policy was focused on tourism (Chen, 2020a, Chen, 2020b, Hu et al., 2018). The government's preference for fiscal and land policies is directly reflected in the landscape pattern, which modifies the amount and patterns of the regional landscape, including its connection and fragmentation. One of the main causes of the reduction in biodiversity is landscape fragmentation Many high-quality tourism resources were concentrated in the coastline area of coastal tourism cities like Sanya and Mediterranean tourist towns, tourism land gradually increased, and the surrounding tourism infrastructure and supporting service facilities gradually improved. The different and varying needs for ecosystem services could not be addressed, which creates competition and subsequently impacts the stability of the regional ecosystem. In the meantime, tourist numbers and seasonal populations have been rising, which has led to trade-offs in ecosystem services. [6, 7].

Discussion

We assessed Sanya's land use change and ecosystem services from 2000 to 2018 using the WY, SR, CS, and HQ model in the InVEST software. We examined the variables influencing ecosystem service by merging a geographical detector model with social-ecological data. The following are the primary conclusions: (1) Sanya had the quickest development rate for built-up land from 2000 to 2018; particularly in the coastal regions, huge amounts of cropland and woods were converted into built-up land, and the built-up land area rose by about seven times in that time. (2) The coastal zone had lower CS, SR, and

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HQ than the non-coastal zone in terms of spatial distribution, and the downward trend was clearer. [8, 9].

Conclusion

The WY, however, was greater than that of the non-coastal zone. According to time distribution, Sanya's ecosystem services declined less from 2010 to 2018 than they did from 2000 to 2010, showing that the city has clearly seen the benefits of ecological preservation measures in recent years and that the declining trend of ecosystem services has slowed. (3) The natural environment had the biggest impact on Sanya's ecosystem services, but tourism increasingly had a bigger impact as well. A trade-off between Sanya coastal tourism and ecological services was discovered; the core density of the four tourist components was favourably connected with WY and negatively correlated with SR, CS, and HQ. Tolerating trade-offs between ecological preservation and tourism growth. Additionally, logical dynamic planning and rigorous dynamic monitoring must be put into practise. To close the ecosystem service gap between coastal and non-coastal zones, the protection of coastal areas and the buffer zones around them should be strengthened [10].

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Conflict of Interest Statement

The author affirm that they have no known financial or interpersonal conflicts that would have appeared to have an impact on the research presented in this study.

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