Sustainable Development Suitability in Linear Cultural Heritage

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Heritage area development assessments can increase public and government knowledge of the state of heritage areas and aid decision makers in formulating sensible policies or plans to protect and develop heritage areas. The valley is the spatial model of mountain economic development proposed on the basis of a basin combined with the ecological protection, rural development, and cultural inheritance present in mountainous areas.

sustainable development suitability | linear cultural heritage | analytic hierarchy process

1. Introduction

Linear cultural heritage (LCH) is a cultural heritage collection in a linear geographic space characterized by a sizeable spatial span, thematic prominence, and cultural diversity. LCH can be traced back to historical trails [1], cultural routes [2], and heritage corridors [3][4], and it now encompasses canals, railroads, linear defenses, and other linear features [5][6][7]. Assessing LCH development status and strategies to achieve sustainable development has become increasingly significant [8]. Since the development of LCH involves complex factors, such as cultural preservation, ecological sensitivity, and economic base, and is unevenly distributed geographically, it is necessary to establish comprehensive assessment indicators and scientific evaluation methods to aid decision makers in formulating differentiated spatial development strategies. However, most existing studies have focused on ecological reserves, agricultural land, urban land, and other objects, and LCH has not been evaluated with regard to its suitability for sustainable development [9][10].

2. Status of Sustainable Development Research Regarding Linear Cultural Heritage

Due to the large-scale spatial pattern and the integration of conservation management policies across administrative regions, the LCH process of sustainable development faces the following challenging issues [4][6][7][11][12]: 1. the construction of large-scale infrastructure and rapid urbanization have caused widespread threats and damage to cultural heritage; 2. excessive tourism development has resulted in ecological degradation in some areas; 3. the uneven economic development of heritage areas has resulted in overdevelopment in some areas and population loss and even poverty in other areas. Therefore, the academic community ought to concentrate on the sustainable development of LCH to determine development strategies suitable for the unique conditions of various regions.

In recent years, numerous researchers have established a variety of heritage assessment models that have been continually upgraded and refined. In addition to tourism value assessment [5][13] and risk assessment [14], vulnerability and resilience assessment [15][16] and sustainable development [17][18] have been studied. Researchers have examined urban areas, watersheds, and heritage areas within ecological reserves [7][19][20]. Božić et al. established the cultural route evaluation model (CREM) using the “Roman Emperor’s Route” in Serbia as an example based on the main value and added value [21]; Ferretti and Comino proposed the multi-attribute value theory (MAVT) evaluation method and used Italy’s “La Mandria” Natural Park as an example of a sustainable solution for the management of a complex heritage system [22]. However, few studies have been conducted to assess the SDS of LCH, resulting in a lack of evidence required to formulate pertinent policies.

The national cultural park is a proposed concept and policy instrument for local practice in China for LCH, and its implementation includes the Great Wall, the Grand Canal, and the Long March route [23]. However, most current planning decisions regarding national cultural sites, such as the Great Wall and the Grand Canal, are based on qualitative research or empirical judgments, with few decisions made and support given based on quantitative research [24]. The absence of a quantitative assessment research process precludes a comprehensive evaluation of the impact factors on heritage areas and an integrated balancing of the various factors. Therefore, the current LCH planning policy selects priority development areas without a comprehensive potential study or identifying different development types due to spatial variability and differences in the different dimensions (ecological, cultural, and socio-economic) along the route. Therefore, establishing an objective sustainable development suitability assessment system based on quantitative and qualitative research methodologies is crucial to enabling a more scientific approach to preserving and developing cultural resources.

3. Sustainable Development Suitability of Linear Cultural Heritage

Development suitability is a prerequisite for regional economic development. Development suitability analysis is a mapping process used by urban and rural planners to find the most suitable area for each decision, and it has growing importance in supporting and informing the promotion of cultural resource conservation, ecological improvement, and economic development growth in heritage regions [9][25]. The United Nations’ 2015 Sustainable Development Goals (SDGs) call for a more excellent balance between sustainable development’s economic, social, and environmental dimensions [18][26]. Due to the complexity and breadth of LCH’s sustainable development, which results from the interaction between three dimensions—cultural heritage resources, socio-economic components, and natural environment—a system that can assess the SDS of LCH is required.

In recent years, scholars have made many efforts to examine the achievement of the SDGs in heritage areas. Bassily connected architectural heritage to the Sustainable Development Goals and documented how various architectural heritage sites contribute to sustainable development [27]. Naheed emphasized the connection between cultural heritage and urban sustainable development and its role in urban planning [28]. Guzman connected SDG11 and SDG13 to evaluate the potential correlation between development factors and the preservation of urban

cultural heritage using local indicators [29]. To assess the sustainability of LCH, however, there are still preliminary studies that combine various dimensions (i.e., cultural, socio-economic, and ecological).

4. Method for Determining LCH Sustainable Development Suitability

The implementation of an LCH sustainable development suitability assessment involves a multi-criteria decision-making process (MCDM) requiring most stakeholders and professionals to establish normative guidelines [30][31]. In the case of the heritage area SDS assessment, consensus-based approaches are best suited to the development of rating-based assessment frameworks, especially if multiple dimensions need to be considered. In the analytic hierarchy process (AHP), pairwise comparisons are used to determine the relative significance of the various elements at each level of the hierarchy. Such comparisons can also be used to evaluate options at the lowest level of the hierarchy to ensure that the best decision can be made among multiple options, thereby transforming subjective opinions into objective measures for decision makers [32][33]. AHP has been applied in areas such as urban planning, environmental sciences, tourism management, and agriculture [34][35][36][37]. Despite concerns regarding the uncertainty of the AHP, the majority of studies have demonstrated that the AHP-generated suitability maps are not significantly different from those generated via other methods at the final step [9][38]. AHP is still an effective technique in terms of evaluating heritage areas, particularly in multi-dimensional and multi-indicator studies, because, in addition to its simplicity and adaptability, it requires fewer skills than other techniques [39][40]. In this study, AHP was used to determine the allocation of indicator weights in the SDS assessment procedure.

In multipurpose spatial decision-making studies, the combined GIS and AHP approach can select areas based on various objectives and criteria and support decision-making in heritage and regional planning [9][20]. However, most studies lack the consideration of complex spatial characteristics or disregard the variability in different regions after conducting a global assessment; therefore, this study employs a triangle illustration method to examine the suitability typology of internal regions after conducting a sustainability suitability assessment of LCH. This integrated method helps us to identify suitable areas for development and corresponding development strategies [37].

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