Site Suitability for Ecotourism using GIS & AHP; A Case Study of Surat Thani, Thailand

Khwanruthai BUNRUAMKAEW

Division of Spatial Information Science, Graduate School of Life and Environmental Sciences, University of Tsukuba
Email: krt_b@hotmail.com

1. INTRODUCTION

Ecotourism has a strong correction with sustainable tourism. Suitable management for ecotourism development is essential in order to be able to maximize the positive impacts and minimize negative impacts on all aspects of tourism. This will help to conserve and maintain the biological richness of the areas and opportunities in the field of ecotourism management.

The experiences of ecotourism practices in Thailand show some successes but also show how the mismanagement of the ecotourism development process could lead to confusion. It is imperative that only some areas are suitable for ecotourism to be developed and ensure that ecotourism criteria are matched with the basic resource characteristics of the area.

The integration of the AHP in GIS combines decision support methodology with powerful visualization and mapping capabilities which in turn should considerably facilitate the creation of land suitability map. This is also an additional benefit achieved by integrating geo-scientific aspects in the land use decision process, as demanded by Agenda 21.

2. STUDY AREA

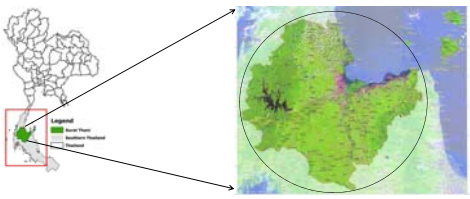

Fig.1 Study area location

The area chosen for this current research is specially focused on the land ecosystem of Surat Thani Province, Southern Thailand, which 49 % of the area is mountainous with high mountain ranges along the north and south of the provincial.

Surat Thani Province appears to have many attributes needed for the successful development of ecotourism. It should largely free from urban settlements with untouched landscape, a rich vegetation cover, considerable wildlife, and traditional indigenous population. Such characteristics suit the selection of the area for the case study to demonstrate the application of the methodology.

3. METHODOLOGY

Analytical flowchart

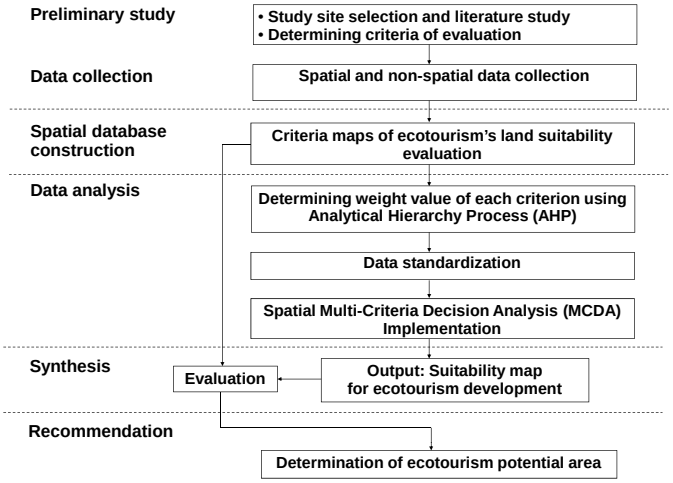

Fig.2 Flowchart of analysis

Criteria and hierarchy of components

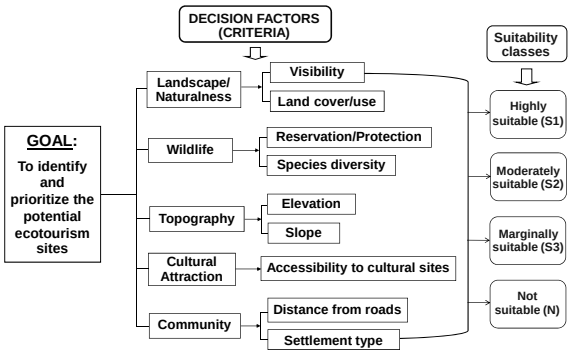

Fig.3 Decision hierarchy of land suitability assessment for ecotourism

Criteria weight valuation

Table 1. Factor/criteria weight and class weight (rating) from AHP method for ecotourism by 21 experts preferences.

Factor (Criteria)		Total suitability score (weight)	
Landscape/Naturalness	Land cover/use	0.44	0.23
	Visibility		0.21
Wildlife	Reservation/Protection	0.11	0.06
	Species diversity		0.05
Topography	Elevation	0.31	0.16
	Slope		0.15
Cultural attraction	Accessibility to cultural sites	0.07	0.07
Community	Distance from roads	0.08	0.04
	Settlement type		0.04
Cumulative		1.00	1.00

4.RESULTS AND DISCUSSION

Land suitability classification criteria for ecotourism

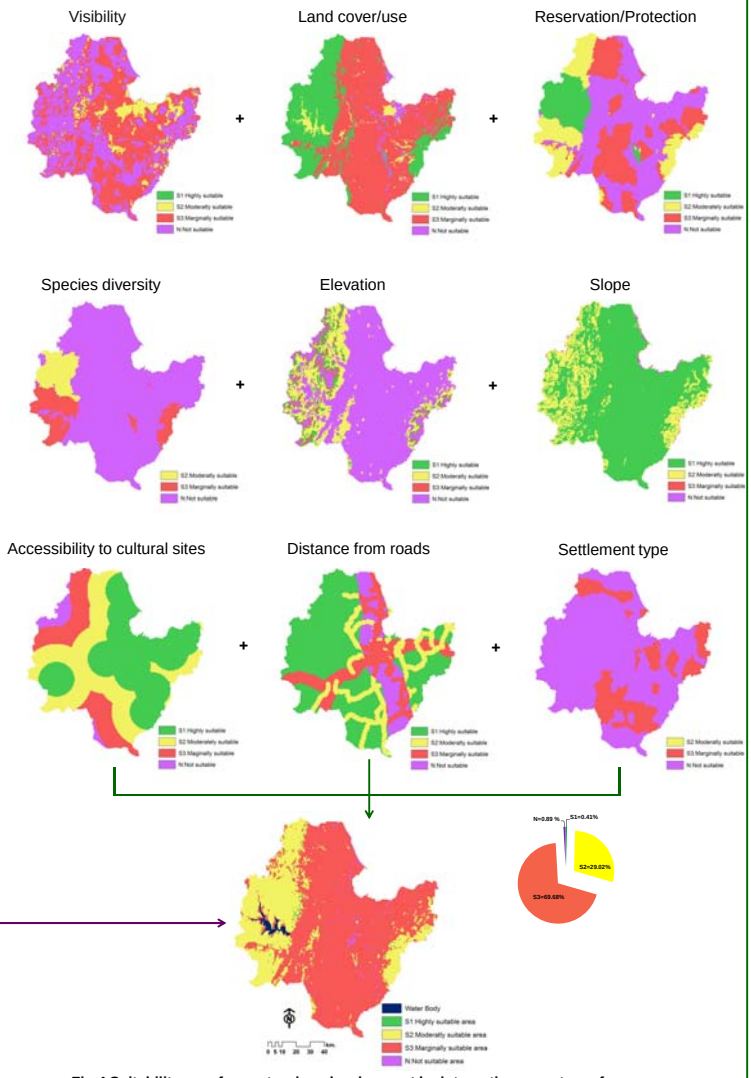

Fig.4 Suitability map for ecotourism development by integrating experts preferences

This work assessed potential suitable area for ecotourism based on physical characteristics of the land and socio-economic factors. In the process research focuses to develop an integrated approach of ecotourism development by identification of ecotourism site and development of the method to assess the ecotourism sustainability. The final output of this analysis is based on level of potential for ecotourism and could be used for supporting sustainable management of ecotourism in the area. In this case, the 'N:Not suitable area' and 'S3:Marginally suitable area' categories involves the most sensitive area and development activities within this area which will led to disaster and threaten the natural characteristic of the area. The 'S2:Moderatly suitable area' category allows for mild development but with high consideration on construction work and detail assessment of environmental impact. While the 'S1:Highly suitable area' category involves area with low sensitivity and available for exploitation. Still, development should be conducted in an appropriate manner with respect to minimizing development impact.