

Integrated management of coastal zones linked to tourism in small islands of Ecuador and Cuba

Manejo integrado de zonas costeras vinculadas al turismo en pequeñas islas de Ecuador y Cuba

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Abstract

This paper establishes a conceptual model about the integrated management of coastal zones linked to land use planning. The components of the environmental management model were formulated based on two different case studies concerning evidence of environmental impacts. The proposed model can contribute to preserving the natural heritage, and savings in materials, labor, energy, and time, by focusing on the problem in advance and estimating the environmental costs for long-term valuations used for feasibility studies.

Key words: environmental impact, coastal zones, integrated management, tourism

Resumen

Este trabajo establece un modelo conceptual sobre el manejo integrado de zonas costeras vinculado a la ordenación territorial. Los componentes del modelo de gestión ambiental se formularon en base a dos estudios de casos diferentes sobre evidencia de impactos ambientales. El modelo propuesto puede contribuir a la preservación del patrimonio natural y al ahorro de materiales, mano de obra, energía y tiempo, al enfocarse en el problema con anticipación y estimar los costos ambientales para las valoraciones a largo plazo utilizadas para los estudios de factibilidad.

Palabras clave: impactos ambientales zonas costeras, manejo integrado, turismo

1. Introduction

According to international authors Mazaro & Arzin; 2008; Edgell & Jason, 2013, using an appropriate model to evaluate the status of a sustainable tourism destination allows for comparison between different destinations in this category. Ritchie and Crouch (2003; as cited by Diéguez et al., 2011) put forth a model of tourism in which the natural resources of a destination attract tourists to it.

Both civic (roads, drainage, and sewage) and tourism-specific (hotels, parking, marine port, airports, and others) infrastructure requires land, which is often made available by clearing forests and changes in land

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use. Increased activity and consumption may lead to rapid depletion of renewable and non-renewable natural resources such as construction materials, forests, and water (Batta, 2006).

The literature includes reports (Wei & Wall, 2005; Legrand, Simons-Kaufmann, & Sloan, 2012; Hall & Stephen, 2014) that, practices that respect the environment help reduce economic costs, which in turn enhances the global competitiveness of tourist destinations.

Other authors demonstrate that construction has a decisive influence on the transformation of these environments, involves enormous quantities of carbon emissions, consumes energy and resources, generates large volumes of waste, and occupies ever-increasing areas of land (Escallón & Villate, 2013; Alcolado et al., 2011).

Managing global change can be closely aligned with local development and humanitarian processes, thereby enhancing the overall sustainability of development processes and outcomes (Hay, 2013). Designing and implementing adaptive land management and development policies for the coastal zone requires an interdisciplinary and integrated approach (Lloyd, Peel, Duck, 2013).

Islands are the most vulnerable and fragile of tourism destinations and will experience even more pressure as the combined impacts of economic, social, and environmental change accelerate in the future (Calsen and Butler, 2011).

The Competitiveness Monitor (CM) Model for evaluating a territory involves eight components, broken down into individual indicators, which highlight the development of infrastructural (highways, sanitation facilities, potable water) and environmental factors (population density, polluting emissions, international treaties and others) (Pulido & Sánchez, 2009).

While the locations vary, conclusions are applicable to tourism in the small and fragile island like the Cuban archipelago and Galapagos Islands in Ecuador.

1.1. Galapagos Island in Ecuador

Most research of Galapagos tourism involves impacts on local community based tourism, natural resources and biodiversity conservation (Ruiz-Ballesteros and Brondizio 2013; Self, Self, & Bell-Haynes, 2010; Powell & Ham, 2008; De Groot, 2003; Kenchington, 1989).

Galapagos will become another example of man's dangerous habit of preferring short-term economic gains over long-term ecological and economic interests. The Galapagos Islands are well known for their natural beauty and unique wildlife (more than 60% of all organisms are endemic). It is an area of very special significance to ecologists, (Self, Self, & Bell-Haynes, 2010; .De Groot, 2003; Kenchington, 1989).

Because of the unique biodiversity of the Galapagos Islands, and the increase in tourism and its negative consequences, growing land use, unsustainable human settlements like Floreana and Santa Cruz, introduction invasive species, and unwanted by-products from tourism, as a result, the Galapagos Islands were placed on UNESCO's list of World Heritage Sites in Danger in 2007.

1.2. Small Cuban Island

The Cuban archipelago has been experiencing accelerated growth in the use of land for tourism purposes, primarily geared toward sun and beach tourism, in addition to nautical activities and recreational marinas.

This development is concentrated in coastal beach areas, primarily in the natural areas of small islands known as the Cuban keys, where there is a plan to build hotel facilities with enough capacity to host a million and a half

tourists per year previous studies (Oreylli, Bancroft, & Ruiz, 2010; Diéguez, Gueimonde, Catorna, & Blanco, 2011; ONU, 2015; Blancas, Lozano, González, & Caballero, 2018).

Environmental impacts caused by similar construction activities and by practices that are insufficient to ensure the effective implementation of sustainability-focused architectural interventions adapted to the particular conditions of the Cuban archipiélago (Alcolado, García, & Arellano, 2011; Hernández & Alcolado, 2012; Burgui, 2013; Ruiz, 2015).

2. Methodology

In developing this study, both theoretical and empirical methods were used, including environmental management tools and techniques, primarily theoretical modeling. The study rests upon a theoretical conception that results in a model of environmental management whose structure is based on a case study of the Cuban archipelago, and Galapagos Island in Ecuador, which have been negatively impacted by deficient construction interventions.

The documentary analysis conducted looks at five land use plans in insular ecosystems of Cuba with high degrees of ecological fragility, namely, Cayo Coco, Cayo Guillermo, Cayo Santa Maria, Cayo Sabinal Grande, and Cayo Ensenachos, which account for more than 90% of the hotel infrastructure of the northern archipelago, along with 54 infrastructural and architectural projects; we consider this scope to be an effective basis on which to more deeply explore and clarify the impacts of construction activity through environmental impact assessments of tourism projects in this region of Cuba.

The empirical methods of semi-structured interviews and direct observation served to define the components of the Environmental Management Model. A literature review was conducted alongside a systematic review of empirical experiences, using the criteria and/or judgments of experts gathered through the Delphi Method. This method of structuring a group communication process enables a group of individuals to address a complex problem together. In addition, the Kendall coefficient was applied to estimate the degree of agreement in ordinal numbers based on the degree of variance of the ranges obtained from the different experts (Linstone & Turoff, 2011; Landeta & Barrutia, 2011). This method is based on monitoring and evaluation of changes to the environment (De Burgos, Vasquez, & Plaza, 2011) over a fixed period of time and allows other complementary analyses to be incorporated.

The model is formed around the participatory engagement of groups involved in management over a desired period of time. Its participatory concept is expressed in the engagement of three types of fundamental stakeholders: community (comprised of workers and visitors), scientists (professors, specialists, scientific researchers) and institutions (government, decision-makers, tourism companies, and others).

2.1. Stages and activities

The states and activities of the proposed model are described below:

Stage 1: Preparation: associated with building the capacities and conditions that allow for the different stakeholders to participate in the research. Planning, linked to the scope of responsibilities, entails establishing the desired outcome and how to achieve it, including the resources or means to do so.

Stage 2: Execution: determined by the relevant required actions and making it possible to determine the efficacy of the process.

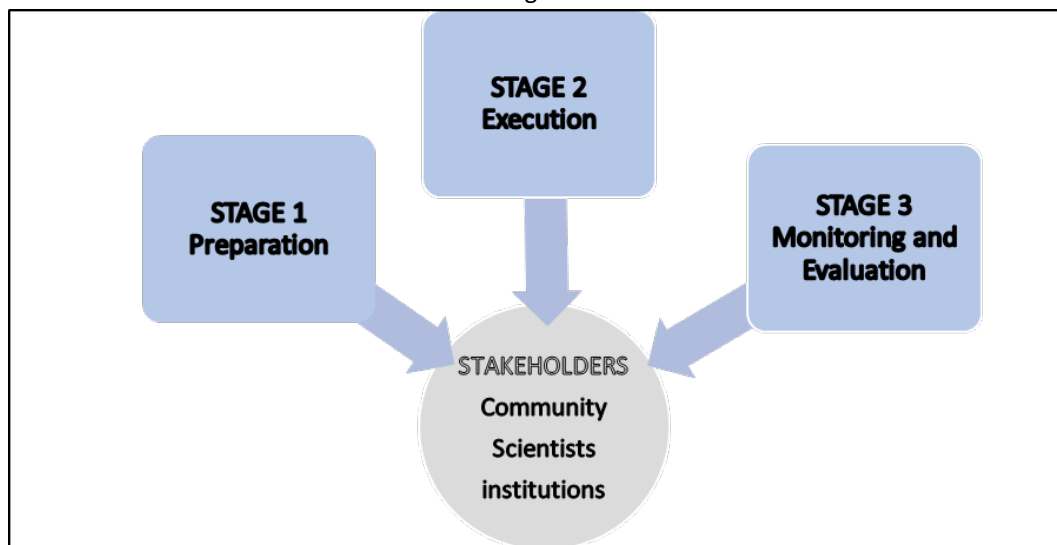
Stage 3: Monitoring and evaluation: to ensure that the proposed actions achieve or help achieve the desired outcome.

The model includes a process of cyclical feedback by monitoring the results of sustainable architectural planning; such a process initiates or points to the need for a new planning process when sustainable and respectful ecosystem management is achieved or when subsidiary goals are met, and its repercussions for the tourist destination at the local and regional scale. No limits were set to this management model, since its goals evolve constantly.

The principal entry point to this process in this study is the environmental management work being carried out in the Cuban keys, and Galapagos Island where tourism activity is insufficiently managed given the particular nature and heightened ecological fragility of these ecosystems, as well as the insufficient enforcement of environmental legislation.

The components of the model in the Graphic 1, are based on those environmental management instruments which are essential to the topic of the study. In order to determine the primary management components, semi-structured interviews were held with a panel of experts and the data were analyzed in the qualitative phase of the study; this was followed by the confirmatory phase, in which quantitative analysis tools and statistical methods were applied to verify the pertinence of the components and the validity of their characterization of the systems studied during field work.

Graphic 1
Representation of the Stakeholders
Model with stages and activities



Source: Own elaboration

3. Results

The process of applying the model to this highly fragile island ecosystems produced the following validated, practical results:

-Research and transfer of technologies: Insufficiencies were observed in the technological responses needed in the construction sector to address the need to develop sustainable tourism in small islands, which can be modified by employing the methodological tools established in this study.

-Assessment of the economic and environmental costs: Planning and feasibility studies as conducted in the environmental management context include economic and capital costs but not long-term costs, even for those investments considered to be of national importance. Although progress has been made in improving the quality of economic feasibility studies for investments in general, there is still much to be done in terms of assessing

environmental costs. It is necessary for small islands to develop new methods of accounting for environmental resources and to implement a tax-and-fee system to create environmental protection funds. There is a need to economically value the proposed prevention and mitigation measures, as a result of the environmental impact study.

-Public participation: There is currently an insufficient amount of public participation and consultation in the environmental impact assessment process; not all studies are done directly in conjunction with the population affected by a project, even though conceptually, under the conditions of the social model, this kind of participation is operationally viable since there are community structures in place to facilitate this process. Their opinions can be channeled through the representatives of the people's councils and other grassroots organizations, and community leaders.

-Land use planning: In examining environmental land use and zoning plans, one can detect gaps in information regarding the state of the environment, and the research done on these aspects is superficial and does not cover the informational needs for a planning process that can incorporate the environmental dimension. Neither are there studies on the acceptable limit of change and the carrying capacity of ecosystems in natural coastal areas, that is, how much and what kind of land occupation they can sustain.

-Sustainable forecasting and design: The majority of tourism projects previously implemented do not take the environmental dimension into account in planning and making future projections. This is mainly due to the lack of knowledge about how to intervene in the small islands and other highly ecologically fragile and sensitive areas without causing severe environmental impacts, as well as due to the lack of a more integrated and holistic approach during the conceptual stage, which is needed to achieve a balance between the need for tourism development and the principles and practices of sustainability.

-Preservation of tangible and intangible natural and cultural heritage: The natural heritage of the fragile ecosystems island is not being respected, and this is causing a loss in the resilience of these fragile ecosystems, primarily because of the effects of construction activities, including the clearing of mangroves and the filling-in of coastal lakes. In addition, tourism architecture should incorporate the tangible elements of cultural heritage, while hotel operations should honor its intangible cultural heritage in terms of cuisine and other expressions of cultural and national identity.

4. Conclusions

The conceptual model for sustainable land use planning in small island ecosystems in Cuba and Ecuador, strongly based on community public policies; it offers a theoretical and quasi-experimental design concept for the development of a sustainable model aimed at developing an appropriate and appropriate participatory and durable multi-level governance system.

The concrete model that derives from the results, along with its components, is characterized in its conception and implementation by qualities that enable its rational application in the area being studied, based on its relevance, logical consistency, flexibility and generality, so that its use can be extended to other similar ecosystems.

The application of the model will help to introduce components of sustainability-focused environmental management as well as to adequate valuation of economic costs through an environmental lens, which will lead to the adoption of preventive measures instead of retroactive ones with respect to the environment.

This model should be implemented to make it possible to integrate planning for tourism development as part of a holistic system, optimal planning process, efficient investment process, and development paradigm focused on

sustainability that is appropriate to the conditions of the fragile ecosystems in Cuban archipelago and Galapagos Island.

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