



Case Study

Indicators of sustainable tourism: A case study from a Taiwan's wetland



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ABSTRACT

This study aims to identify indicators for sustainable wetland tourism. In study 1, the fuzzy Delphi method was used to determine key dimensions and indicators. In study 2, the relative weights of these dimensions and indicators were examined using the analytic hierarchy process. The empirical results revealed 141 indicators in the hierarchy for sustainable wetland tourism. At the first level, the weight of the stakeholder dimension was greater than that of the environment dimension. At the second level, the impact on community development was the most important factor within the stakeholder dimension. Among the identified indicators, the top 7.8% were respect for local traditional culture, respect for local lifestyle, compliance with destination guidelines, traffic problems, destruction of the natural environment, existence of crowds at the destination, participation in cultural activities, understanding the culture, assimilation into the local culture, overall effect of tourism, benefit–cost differential, and reduction of environmental impact. A series of management implications are drawn, including the need to use this information to foster stakeholder involvement and collaboration, to focus on planning for sustainable tourism development in general, and to use these indicators for the management of wetland-based sustainable tourism development.

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1. Introduction

Like other forms of nature-based tourism, wetland tourism can be defined as a type of tourism that is directly dependent on a relatively undisturbed natural area that contributes to the conservation and management of the wetland setting (Ceballos-Lascuráin, 1996; Lee, 2009a). Because of their biodiversity, wildlife habitats, ecological environment, and fishing villages, wetlands can constitute a nature-based tourism destination that offers leisure, recreation, and tourism for tourists/recreationists (Kerstetter et al., 2004; Lee, 2009a, 2011; Chiu et al., 2014). Wetland tourism provides village-level and small-scale accommodations so that tourists can enjoy the natural surroundings in a friendly manner without damaging the environment. Tourists visiting wetland destinations provide income directly to the residents and destination and provide valuable local support for nature conservation. According to social exchange theory, host residents who perceive more benefits than costs from tourism may support the development of sustainable tourism (Lee, 2013); in this way, wetland tourism can contribute to the sustainable development of the wetland destination (Galley and Clifton, 2004; Biggs et al., 2012).

One indicator represents a measurable parameter or observable variable related to a latent variable or a phenomenon that is difficult to capture. Indicators can be derived using qualitative and/or quantitative approaches, and the application of indicators can help elucidate complex realities (Holden, 2006). As an indicator, sustainability has become a keystone for tourism, environmental management, and environmental studies.

Indeed, sustainable tourism indicators are broadly recognized as useful tools for planning rural or cultural tourism (Blancas et al., 2011; Lozano-Oyola et al., 2012), managing crises (de Sausmarez, 2007), managing community tourism (Choi and Sirakaya, 2006), assessing tourism destinations (Pérez et al., 2013), measuring responsible behavior and tourism practices (Blackstock et al., 2008), and selecting criteria for policy implementation and scientific recognition (Tanguay et al., 2013).

According to stakeholder theory, numerous stakeholders, including tourists, hosts, governments, non-government organizations (NGOs), for-profit organizations, and other tourist-related businesses may be involved in the development and implementation of sustainable tourism (Fennell, 1999). Sustainable tourism requires both an awareness of tourism activities that have relatively low impact on nature and a consideration of whether all stakeholders' support is warranted.

Wetland tourism typically involves nature-based tourism. This topic has been discussed extensively in the literature in areas such

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as the assessment of a behavioral theoretical framework for wetland tourism (Kerstetter et al., 2004; Lee, 2009b, 2011; Wang et al., 2012; Chiu et al., 2014), support for host residents in tourism development (Zhang and Lei, 2012; Lee, 2013), and the management of sustainable tourism (Shikida et al., 2010). However, there is a lack of studies integrating dimensions related to various stakeholders and environmental management to develop indicators for sustainable tourism that will facilitate wetland tourism management and planning.

To address this research gap, this study sought to develop indicators of sustainable wetland tourism. For this purpose, study 1 aimed to develop a framework for the stakeholders and natural environment of wetland tourism and study 2 aimed to assess and calculate the relative weights of each sustainable tourism indicator.

2. Theoretical framework

Tourism development has typically been determined by dimensions of economic, environmental, social, cultural, and institutional perspectives that facilitate sustainability (Edén et al., 2000; Yoon et al., 2001; Choi and Sirakaya, 2006; Bhuiyan et al., 2015). Ross and Wall (1999a) have established a framework for sustainable tourism development by assessing the relationships among the local community, tourism, and resources. This study thus applies a framework integrating perspectives of local communities, biological diversity, and tourism to assess sustainability indicators of wetland sustainable development.

2.1. Stakeholder theory

Scholars have identified five main stakeholders in the tourism context: tourists, residents, industries, government officials (policy makers), and NGOs (Miller and Twining-Ward, 2005; Choi and Sirakaya, 2006; Tsaour et al., 2006; Liu, 2007). According to stakeholder theory (Freeman, 1984), all stakeholder groups should be involved in the entire tourism development process (Goeldner and Ritchie, 2009), and the sustainability of tourism development is determined by the perspective of the stakeholder, for example, by including residents, tourism entrepreneurs, governments, and tourists (Lynch et al., 2011; Hallak et al., 2012; Lee, 2013; Lee et al., 2015b). Stakeholder theory has been widely adopted and debated in research on policy making and planning for local tourism (D'Angella and Go, 2009), residents' attitudes toward tourism (Lee, 2013), attendees' support for tourism development (Lee et al., 2015a), and the management of stakeholder groups (Sautter and Leisen, 1999).

Previous research has shown that the application of stakeholder theory to sustainable tourism can elucidate concerns related to protected area partnerships and the assessment of sustainable tourism indicators (Sautter and Leisen, 1999). In related research, Ross and Wall (1999a,b) have established a framework to assess the stakeholders of local communities, tourism, and biological diversity. Furthermore, to evaluate ecotourism sustainability, Tsaour et al. (2006) have used subjective measures to assess the relation among resources, community, and tourism in the context of a sustainable approach to ecotourism, and Choi and Sirakaya (2006) have used stakeholder participation in a community to assess indicators of sustainable community-based tourism development. However, indicators for wetland tourism have rarely been examined in the literature, necessitating further study.

2.2. Indicators of sustainable tourism

Sustainable development refers to development that meets the current generation's needs without compromising the ability of future generations to meet their needs (WCED, 1987). Nature-based

destinations with abundant natural resources provide various tourist attractions such as wildlife habitats, coral reefs, intertidal zones, and wetlands (Madin and Fenton, 2004; Lee, 2009a,b; Lee et al., 2015b), all of which offer opportunities for recreational experiences, environmental education, and entertainment, generating support for environmental conservation (Ballantyne et al., 2011a,b; Lee, 2011). Thus, the development of nature-based tourism can benefit struggling local economies (Bramwell and Lane, 1993; Andersson, 2007; Lee, 2009b) and play an important role in sustainable development (Andersson, 2007; Lee, 2009b; Nyaupane and Chhetri, 2009). Consequently, nature-based tourism is a rapid-growth sector world-wide (Fennell, 1999; Karanth and DeFries, 2011).

Tourism development may nevertheless engender several negative effects, such as negative environmental (Needham and Szuster, 2011), economic (Wagner, 1997), social (Logar, 2010), cultural (Logar, 2010), and seasonal income/employment (Logar, 2010) impacts. In particular, adverse environmental effects from the greenhouse gas emissions associated with travel, accommodations, and recreational activities have been hotly debated (Gössling and Schumacher, 2010). It is thus crucial to develop sustainable tourism, increase its benefits, and minimize any harmful effects. For this purpose, sustainable tourism indicators can facilitate the assessment of the sustainability of tourism development.

Scholars in previous studies have used social, economic, and environmental indicators of sustainability to assess sustainable tourism practices, and their findings suggest that sustainable tourism indicators are necessary to objectively measure the degree of such practices' sustainability (Choi and Sirakaya, 2006; Lozano-Oyola et al., 2012). Tanguay et al. (2013) have reviewed 11 case studies assessing between 9 and 768 sustainable tourism indicators to select criteria for policy implementation and scientific recognition related to a case study of the Gaspésie region in Québec. Those authors have identified 507 expert-recognized indicators, including indicators related to environmental, economic, and cultural aspects.

No consensus has been reached as to how each sustainability indicator contributes to the goal of sustainable tourism. Singh et al. (2009) have suggested that the use of equal weighting for sustainability indicators facilitates the interpretation of each indicator. In contrast, Choi and Sirakaya (2006) have employed a Delphi survey in which 36 tourism experts assessed 125 indicators on a five-point Likert scale to weight the relative importance of each indicator.

Applying the Delphi technique, Tsaour et al. (2006) have utilized stakeholder perceptions to determine the sustainable tourism performance of an indigenous ecotourism destination, with the results indicating that natural resources and the environment are the most important factors for ensuring sustainable tourism.

The analytical hierarchy process (AHP) method proposed by Saaty (1977) is widely used to evaluate respondents' expressed preferences or opinions because it allows scholars to effectively structure complex problems, such as the relative importance of sustainable tourism indicators in the form of hierarchical data (Park and Yoon, 2011; Day and Cai, 2012; Mikulić et al., 2015). Thus, the AHP constitutes an effective approach to assessing the relative importance of sustainable tourism indicators (Park and Yoon, 2011).

3. The survey

3.1. Study 1

3.1.1. Study site

This study was conducted in the Cigu wetland (120°5'17" E, 23°7'8" N), which is situated in the Southwest Coast National Scenic Area, Taiwan. This area is famous for its rich and diverse birdlife,

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