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Sustainable Tourism's Indicator in the Protected Area: the Case of Kinabalu Park, Sabah

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ABSTRACT

Background: Sustainable tourism is on the rise and has been identified as a form of sustainability which is expected to contribute to communities, conservation and development. However, due to inadequate environmental assessment, many tourism destinations tend to be both hazardous and self-destructive and this requires developing indicators in all respects. Therefore, the use of criteria and indicators (C&I) of sustainable development have been acknowledged and recommended by the United Nations as important tools for use in measuring the status of management of sustainable development. The purpose of this study was to identify sustainability criteria and indicators for evaluating sustainable tourism development in protected area, Kinabalu Park, Sabah. The Delphi method were used to solicit opinions from an interdisciplinary panel of experts regarding suitable criteria and indicators of sustainability for Kinabalu Park. The results showed that there are 7 indicator can be used as an important tool for providing sustainable tourism in the Kinabalu Park namely, Maintenance of healthy ecosystem of Kinabalu Park, Conservation of cultural heritage, Enabling environment for tourism promotion, Livelihood generation and poverty alleviation, Tourist satisfaction, Carrying capacity and People participation and awareness generation. Overall, this study can be used for identification of sustainability indicators for Kinabalu Park.

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INTRODUCTION

Sustainable tourism was introduced after the Rio Earth Summit in 1992. Sustainability principles refer to the environmental, economic and socio-cultural aspects of tourism development, and a balancing must be established between these three pillars to achieved long-term sustainability. The main objective of sustainable tourism is to minimize the negative impacts of tourism development while contributing to nature conservation and benefiting local communities (Christ *et al.*, 2003). According to the World Tourism Organization (WTO, 2004), sustainable tourism refer to the development guidelines and practices are applicable to all forms of tourism in all types of destinations including mass tourism and the various niche tourism segments. Sustainable tourism also makes optimal use of environmental resources and ensures viable and long-term economic operations by fairly distributing socio-economic benefits to all stakeholders, especially for local communities and at the same time, a level of tourist satisfaction is maintained (WTO, 2004).

Malaysia is one of the most biodiversity-rich areas in the world (WWF, 2005) and the fastest growing tourism destinations in the Asia Pacific Region, ranking third with a market share of 10% after China and Hong Kong (WTO, 2004). In this context, Malaysian tourism products are a combination of the natural environment, people, heritage and culture, tourism facilities, and events, nature-based tourism destinations are more important than other tourism products in promoting the tourist destinations (Hamzah, 1997). The declaration of Mulu National Park in Sarawak and Kinabalu National Park in Sabah as World Heritage sites has added to the image of these two states as the wild, unexplored frontiers of Malaysia and become major attraction for nature tourism. The significance of nature-based tourism products in Malaysia is also recognized by the World Travel and Tourism Council (WTTC). In the context of Sabah tourism development, the strategy is to target high-yield and long stay visitors. Sustainability is a strong theme for tourism development under the Sabah government initiative. Involvement of local communities in tourism will be encouraged and supported, especially traditional handicraft development, village homestay and conservation of the protected area such as Kinabalu Park.

The targets for the tourism sector by 2025 are to:

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- I. Increase average tourist spending from RM2,517 in 2006 to RM3,383 by 2012 and RM5,364 by 2025
- II. Increase tourism receipts from RM2.88 billion in 2006 to RM8 billion by 2012 and RM48.5 billion by 2025
- III. Increase rural community tourism receipts (handicrafts, homestay, nature) from RM1.5 million in 2006 to RM4.5 million by 2012 and RM48 million by 2025

Literature review:

Sustainable Development:

The environmental protection as an international concern, and started dealing with global issues that affect sustainable development has been recognised in the UN's Stockholm Conference on the Human Environment in 1972 (Haas *et al.*, 1992). In this conference is led to the formation of the United Nations Environment Programme (UNEP) and the Brundtland Commission's report on "Our Common Future" for sustainable development (Kunugi, 1992). In 1980, the World Conservation Union (IUCN) adopted the "World Conservation Strategy" in 1980 and the "Caring for the Earth - A strategy for Sustainable Living," in 1990 to describing the interdependence of conservation and development (Kunugi, 1992). The World Conservation Strategy defines sustainable development as a set of strategies and tools that respond to five broad requirements:

- I. The integration of conservation and development.
- II. The satisfaction of basic human needs.
- III. The achievement of equity and social justice.
- IV. The provision for social self-determination and cultural diversity.
- V. The maintenance of ecological integrity (IISD 1997).

According to Levy (1993), the UNCED which met in June 1992 in Brazil, was the first official follow-up to the Stockholm conference and established the Earth Summit's agenda on environment and development (Strong 1991). The conference address some of the issues included the interrelationship between environment and development, conservation of biological diversity, health dimension of environmental problems, environmental education, and public awareness of environmental problems (Strong, 1991 & Collett, 1992). The conference adopted Agenda 21, a non-binding work plan that spell out all countries' goals and priorities with regard to the environment, sustainable development, financial, legal, and institutional issues (Levy, 1993).

Criteria and Indicators of Sustainability:

The UNCED created the UN's CSD to monitor the implementation of Agenda 21, which is the blueprint for sustainable development (Moldan & Billharz, 1997). The CSD recommended the development of criteria and indicators of sustainability that can measure the progress and direction in achieving sustainable development goals (Moldan & Billharz, 1997). The function of the criteria and indicators is to help assess past performance, and to determine what should be done to ensure a sustainable future. The CSD stressed the need for a set of universal standards for measuring progress toward sustainability (Moldan & Billharz, 1997). Besides, the measurements should be general and comprehensive enough to cover economic, social, environmental, cultural, institutional, and other activities that affect sustainable development (Moldan & Billharz, 1997). According to Tschirley (1996), indicators are pointers that can be used to reveal conditions and trends that help in development planning and decision-making and can be used to describe that sustainability indicators look at economic, social, and environmental information in an integrated manner, and are growing in importance with the advent and follow-up to Agenda 21. However, the challenge of developing sustainability criteria and indicators is the need to reconcile economic growth, social implication, and environmental protection so that the three components can be maintain in a dynamic balance (Tschirley, 1996). Sustainability criteria and indicators are an essential component in the overall assessment of the progress towards sustainable development (Gallopini, 1997) and used to measures the components of sustainability (ecosystem, economy, and society) and how well we are doing at living in harmony with our environment (Young, 1995). This implies that to achieve sustainability, we have to balance the development of our ecosystem, economy, and social needs (Munasinghe & Shearer, 1995). Lacking or lossing of each component will lead to instability of our living environment because the society, economy and ecosystem are intricately linked together (Young, 1995).

There are at least three criteria that should guide the development of sustainability indicators (Tschirley 1996):

- I. Policy relevance– this is to ensure that the indicator address issues of primary concern and receive the highest priority.
- II. Predictability- this is to allow a forward-looking perspective that can promote planning and decisions on issues.
- III. Measurability- this is to allow planners and analysts the mean to assess how the indicator was derived, and how it can be applied in the planning and decision-making process.

Development of Criteria and Indicators:

It was stated in Chapter 40 of Agenda 21 that “indicators of sustainable development need to be developed to provide solid bases for decision-making at all levels and to contribute to a self-regulating sustainability of integrated environment and development systems” (UNCED, 1992). According to Mitchell (1997), the measurement of sustainability is an essential prerequisite in promoting a sustainable society. Besides, the United Nations promotes countries and international institutions to develop the concept of indicators for sustainability and to identify measurements for such indicators.

Commission on Sustainable Development:

The Commission on Sustainable Development (CSD), together with SCOPE and the United Nations Environment Programme (UNEP), develop a framework, and a core set of indicators and related methodology sheets, consists of three essential elements. They are:

- I. Efforts were focused on the development and use of indicators at the national level.
- II. There was a need to build on the existing national and international indicator work being carried out by several organizations and countries.
- III. There was a high degree of co-operation and collaboration among the United Nations system, international organizations, and intergovernmental and nongovernmental organizations.

The International Tropical Timber Organization (ITTO):

The International Tropical Timber Organization (ITTO) developing guidelines, criteria, and indicators for sustainable forest management to defining the standards of best management practices of tropical forest (ITTO, 1997). The set of criteria and indicators evolved from principles of sustainable management as described in three ITTO guidelines, which include tropical forests, plantation forests, and the conservation of biological diversity. The ITTO criteria and indicators now serves as the basis for the process of certifying sustainable forest management and the labelling of types and products of tropical timber. The Center for International Forestry Research (CIFOR) field-tested the ITTO's criteria and indicators in a variety of locations to research the applicability of the sustainability measurements (Prabhu *et al.*, 1996).

The Center for International Forestry Research (CIFOR):

CIFOR's involvement in the development of criteria and indicators of sustainable forest management was initiated by Prabhu *et al.* (1996). The research was conducted with the involvement of independent, international, and multi-disciplinary teams of experts. The research involved comparative studies of over 1100 criteria and indicators that covered all aspects of forest management in Germany, Indonesia, Cote d'Ivoire, Cameroon, Brazil, and Austria (Prabhu *et al.* 1996). Most of the concerns about the criteria and indicators lie with the practicality of use and their relevance to forest management (Stork *et al.* 1996).

The Helsinki Process:

The European Ministerial Conference on the Protection of Forests in Europe held in Helsinki in 1993 passed a resolution on guidelines for sustainable forest management in Europe especially developing the criteria and indicators for the sustainable forest management of boreal forests (Laletin, 1997). The conference adopted the above six criteria and 27 indicators. The criteria for sustainable forest management used in the Helsinki Process are:

- I. Maintenance and enhancement of forest resources and their contribution to global carbon cycles.
- II. Maintenance of forest ecosystem health and vitality.
- III. Maintenance of productive functions of forests (wood and non-wood).
- IV. Maintenance and conservation of biological diversity.
- V. Maintenance of protective functions of forest management.
- VI. Maintenance of other socio-economic functions and conditions (Laletin, 1997).

The Montreal Process:

The International Seminar of Experts on Sustainable Development of Boreal and Temperate Forest (for non-European countries) held in Montreal, Canada in 1993, formed the Montreal Process Working Group on criteria and indicators development for the conservation and sustainable management of boreal and temperate forest (Laletin, 1997). The 12 member countries, which represent over 90% of the total temperate forest of the world, endorsed seven criteria and 67 indicators of the Montreal Process and also examined the data collection and reporting method of the criteria and indicators of the Montreal Process for implementation PICABUE Method for the Development of Indicators of Sustainable Development. The PICABUE method is rooted in the fundamentals of quality-of-life enhancement and ecological system conservation and attempts to incorporate the key sustainability principles of futurity, social equity, public participation, and conservation of the ecological environment (Mitchell *et al.* 1995). The criteria are:

- I. Conservation of biological diversity.
- II. Maintenance of productive capacity of forest ecosystem.
- III. Maintenance of forest ecosystem health and vitality.
- IV. Maintenance of forest contribution to global carbon cycle.
- V. Maintenance of long-term multiple socio-economic benefits to meet the needs of societies.
- VI. Conservation and maintenance of soil and water resources.
- VII. Legal, institutional and economic framework for forest conservation and sustainable management.

World Tourism Organization (WTO):

The tourism industry is vulnerable to change in the natural environment and the cultural environment so protecting the environment is important to ensure the tourism development can be sustainable. Realizing that the tourism industry required better information to support its sustainability, World Tourism Organization (WTO) established a task force to investigate the development of international indicators of sustainable tourism (IISD, 1993). The main idea was to devise simple measurements for environmental sensibility, stress on the environment, results of tourist use, and the human and biological consequences of tourist use (Manning, 1996). Besides, the indicators are intended to support decision-makers in managing tourism in an era of growing concern about environmental quality and sustainable development (IISD, 1993).

Conservation of Biological Diversity:

The conservation of biological diversity is very important as biodiversity provides the basis for human life and is essential for the life-support systems to function within the biosphere (Kimmins, 1992 & Alverson *et al.* 1994). The Convention on Biological Diversity is the newest worldwide law for the conservation of all life forms and it has become the most significant in an overall sense. The convention through Article 6 requires each signatory country to develop plans and strategies for the conservation and sustainable use of biological diversity and in Article 8 requires the Contracting Parties to establish and operate a protected areas system, regulate and manage biological resources, protect and restore ecosystems, control the introduction of exotic or alien species, and ensure that the present uses of the biological resources are sustainable. The agenda of the Convention on Biological Diversity also include the general measures for conservation and sustainable use of biodiversity, and the identification, monitoring and assessment of biodiversity (WCMC, 1992).

Methodology:

The Delphi Technique:

To meet the research objectives, this paper used the Delphi Technique to analyse the main criteria and indicator of sustainable tourism in study area. The Delphi technique is a procedure to solicit opinion, judgement, and consensus from a group of experts and an iterative process for soliciting and collating opinions on a particular topic or multidisciplinary issues through a set of carefully designed sequential questionnaires interspersed with summarized information and feedback of opinions derived from earlier responses (Dalkey & Helmer, 1962). The Delphi technique has been used abroad and also been applied from a multidisciplinary areas. For example, Shafer *et al.* (1974) used Delphi procedure on 400 panel participants to forecast future environmental conditions associated with both natural resource and wild land recreation management. Experts were drawn from the fields of natural resources management, environmental sciences, and ecology. Convergence of opinion was described to occur after four rounds of questioning (Shafer *et al.* 1974). Another study conducted by Sassaman and Randall (1977) used the Delphi approach to assess the impacts of non-timber forest products harvesting in national forests. In addition, Freeman *et al.* (1977) applied the Delphi technique to generate information used in assessing social conflict with regard to land management on national forests. Besides, Schuster *et al.* (1985) developed criteria for assessing elk habitat quality in western Montana. They used pictorial site representations of 171 specific elk habitat settings and requested experts to select by consensus the criteria to be used for assessing elk habitat quality (Schuster *et al.* 1985). Gregersen *et al.* (1989) and Jakes *et al.* (1990) identified emerging issues in national forest management using a Delphi exercise involving over 100 foresters.

Another research by Clark and Stankey (1991), they used the Delphi process to better define the "New Perspective" program of forestry. They utilized a multidisciplinary panel of experts from both forestry and non-forestry professions. Henderson *et al.* (1992) identified current and emerging issues in forest resources, ecology, and the environment by soliciting the opinions of leading members of forest community in Arkansas. Egan and Jones (1993) investigated non-industrial private forest owners' attitude toward forest stewardship and also used the Delphi procedure to determine forest harvest impact assessment criteria by getting input from experts (Egan and Jones 1997). Kangas *et al.* (1998) also used the Delphi technique in analyzing consistency of experts' judgement on the future of forest management with the incorporation of biodiversity considerations into forest planning. Gordon (1996) noted that most Delphi processes have been applied in the area of economic, political and technological forecasting. In fact, the Delphi technique has already been used in tourism planning (Moeller

& Shafer, 1987) and recommended for use in ecotourism research and planning (Ceballos-Lascurin 1996). Besides, the Delphi technique can also be used as a mean for soliciting interpretations, predictions, and recommendations on future events of ecotourism, sustainable development and protected areas management (Strauss & Zeigler, 1975).

The Delphi method provides the framework within which respondents with diverse backgrounds, busy schedule, and remotely located can work together on the same problems and then elicit judgmental data from them. In this study, the Delphi technique use to identifying and developing criteria and indicators that iterative, involving an interdisciplinary panel of experts in the area of conservation and sustainable tourism. In the absence of a standard set of criteria, Delphi processes were used to identify and develop criteria and indicators for the sustainable tourism in Kinabalu Park. The Delphi approach offered the opportunity to gather and refine criteria and indicators of sustainability. The identification, selection, and evaluation of measurable criteria and indicators of tourism sustainability involved the following development:

I. Identification of criteria and indicators.

II. Selection of minimum set of important criteria and indicators.

III. Selection of measurement and measurable standard for indicators.

IV. Initiation for the formulation of criteria and indicators evaluation procedures.

The basic approach adopted was to solicit criteria and indicators from the expert group and build selection on the most advanced sets of criteria and indicators.

Study Area: Kinabalu Park:

Kinabalu Park is located in the state of Sabah on Borneo Island. The park is situated at the northern tip of the Crocker Range, which forms the backbone of mainland Sabah (Figure 1). Kinabalu Park was established in 1964 and covers an area of 75,370 ha. The park is managed by the Sabah Parks Board of Trustees or Sabah Parks in leasehold for a period of 999 years free from all liabilities and encumbrances under the Parks Enactment, 1984 (Ali *et al.* 1990). Kinabalu Park is graded as a Type II protected area according to the IUCN category system. The most significant feature of the park is the majestic Mount Kinabalu, which soars up to a height of 4,095.2 m.



Source: WHOA! Adventures (2006)

Fig. 1: Location of Kinabalu Park, Malaysia.

The mountain is the highest peak between the Himalayas and the high mountains of New Guinea, as well as a prominent peak in the South East Asia region. The park is located at Mile 35 on Ranau Road, which is easily accessible by road from other parts of Sabah, as a good sealed road links the park headquarters to the Sabah state capital Kota Kinabalu, an approximately 2-hour drive (ca. 90 km). There are seven stations within the park namely Park Headquarters (Park HQ), Poring Hot Spring, Mesilau Nature Resort, Serinsim, Monggis, Sayap, and Nalapak. Of all the stations, Park HQ, Poring Hot Spring and Mesilau Nature Resort are open to visitors, while Serinsim, Monggis, Sayap and Nalapak serve as sub-stations, and are primarily the bases for regulation enforcement and research purposes. In terms of climate, Kinabalu Park is characterized by a dry period from February to May as a result of the southwest monsoons and wet period from October to January due to the northeast monsoons. The local climatic features bright early mornings followed by clouding at mid-morning, this covers the mountain by mid-day and usually brings showers to the upper slopes in the afternoon. Nights are generally clear.

The average annual rainfall is around 4,000 mm and the average daily temperature around 20°C at the Park HQ at an altitude of 1,560 m a.s.l. and 15-18°C at Mesilau Nature Resort 2,000 m a.s.l. At Panar Laban / Laban Rata (3,344 m a.s.l.), the average temperature ranges from 20°C to 10°C and can drop to below freezing at night. Occasionally, ice forms on the summit plateau. Kinabalu Park is managed by Sabah Parks but the

accommodation, restaurants and souvenir shops are managed by a private operator, Sutera Sanctuary Lodges (SSL), and transportation facilities by a cooperative organization, KOKTAS. Mountain guiding service is provided by the members of local communities, who are licensed and under the management of Sabah Parks. Porters providing services to climbers are also from the local communities. They also provide services to SSL and help to carry goods to Laban Rata (3,314 m a.s.l.), the last stop on summit trail which is equipped with restaurants and accommodation facilities. Kinabalu Park has a total of 5,000 to 6,000 vascular species (about 1,999 genera and 210 species) are to be found in the park. Of these, no less than 140 families of flowering plants (e.g., 1,200 wild orchid species) and a large number of ferns (612 species), mosses, liverworts and fungi (450 species) occur. Orchids, pitcher plants, rhododendrons and *Rafflesia* are among the most significant plants found in Kinabalu Park (Beaman and Anderson 2004). The park's high biodiversity and high percentage of local endemics, especially flora, is closely associated with its wide altitudinal ranges from around 150 m to over 4,000 m.



Kinabalu Park is one of the world's 13 hotspots for biodiversity and one of the 234 sites that have been designated as the primary centers of plant diversity in the world. An analysis of the global distribution of species diversity of vascular plants has further recognized the significance of Kinabalu Park in terms of the diversity of its flora by declaring it as one of the six highest diversity centers in the world (Martin *et al.* 2002). The biodiversity richness and conservation efforts in Kinabalu Park have gained significant international recognition such as the declaration by the UNESCO World Heritage Committee as a World Natural Heritage site after meeting selection criteria ii and iv (Sabah Parks 1998; UNESCO, 2006).

RESULTS AND DISCUSSIONS

Criteria 1: Maintenance of Balancing and Healthy Ecosystem of Kinabalu Park:

This criterion refers to the maintenance of the balancing and healthy ecosystem of Kinabalu Park is graded as a Type II protected area according to the IUCN category system. The biodiversity richness and conservation efforts in Kinabalu Park have gained significant international recognition such as the declaration by the UNESCO World Heritage Committee as a World Natural Heritage site after meeting selection criteria ii and iv (Sabah Parks 1998; UNESCO, 2006). Kinabalu Park is one of the major attractions of tourism sector in Sabah and along with tourism the indigenous people of this area are highly dependent on the forest resources.

Criteria 2: Poverty Alleviation and Livelihood generation:

Improvement of the socio-economic condition of the local people is one of the major objectives of developing tourism in Kinabalu Park, which can lead to sustainable development. In other word, through the tourism sector the benefit and power can be distribute among the local people in order to create the additional income for the poverty family in that area. At the same time can diversifying the livelihood opportunities for local people in study area.

Criteria 3: Conservation of Cultural Heritage:

Conservation of Cultural Heritage is the third ranking under this study. For tourism to claim that it preserves and enhances local cultures is highly disingenuous because ethnic groups especially in Kinabalu Park area such as dusun, sungai and kadazan are increasingly seen as major asset, an exotic backdrop to natural scenery and wildlife.

Criteria 4: Carrying Capacity Theory:

Carrying capacity is the maximum number of tourists allowed to visit the destination without disturbing the integrity of the ecosystem and one of the important elements in development of sustainable tourism. Generally it

has three main components physical, social and ecological. Carrying capacity helps in assessing the likely impact of visitors not only on focal species but total ecosystem.

Criteria 5: Conducive Environment for Tourism Development:

Management and development of sustainable tourism requires conducive environment, which can facilitate its development. This criterion addresses the general institutional requirements that are necessary to make sustainable tourism management possible. Taken together, the information gathered indicates the extent of political commitment to sustainable tourism development and management. In other words, proper infrastructure, skilled manpower, and good administrative environment right from the planning level to its implementation is required.

Criteria 6: People participation and awareness generation:

Tourism from a development perspective that considers not just total economic benefits for the community, but also how these benefits are distributed and the social and cultural effects of tourism development on local people. In case of Kinabalu Park, generation of environmental awareness is the result of the many project related to the conservation. In this case, the participation of the local people can be seen in term of providing tourism services as well as constructive contribution by local institutions and an international NGO. Besides, the Sabah Forest Department has initiated popular participation schemes in forestry activities through several committees and activities.

Criteria 7: Tourist satisfaction:

The landscape of Kinabalu Park has a unique scene including the flora and fauna. The richness of biodiversity becomes major attraction of large number of the visitors and tourists. These recreational benefits from the forests reflect the appreciation and aesthetic value assigned to it. This criterion deals with assessing the level of tourist's satisfaction with respect to tourist's infrastructure, services and conservation status.

Conclusions:

The concept of sustainable tourism is possible and can be achieved with all concerned institutions and their ethical values intact, while in reality, tourism development continues to rest with the narrow economic interest of powerful institution. In case of Kinabalu Park there are a lot of initiatives from various stakeholders for development of sustainable tourism as a possible potential/opportunity for poverty alleviation and income generation as component in environmental and biodiversity projects. It sometimes deliberately directed towards the removal of all barriers to travel including physical, economic, social and legal barriers. In case of Kinabalu Park, there is indeed a strong case for governments to scrutinize tourism activities, organize workshop and public debate to check types of developmental activities. At the same time, people should be involved in each steps of project, which may safeguard local resources and culture. Other than local communities the government and international agencies play a very important role for promotion as well as demotion of any initiative. All stakeholders needs to be more responsible for sustainable tourism to safeguard public lands, protected forests, water bodies, violation of local and indigenous customary rights. The development of criteria and indicators is just a monitoring tool and need based implementation of activities. In this case, the cooperation of stakeholders such as government, local community and NGOs can play a very important role in order to achieve the sustainable tourism.

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