Sustainability assessment of mangrove forest as a tourist destination: A case study using GSTC Criteria in Kota Belud, Sabah, Malaysia

T Hamimah¹, N Nurul Huda¹, K Uni Kamlun¹, A R Rosmalina¹ and C K L Jennifer²

¹ Faculty of Tropical Forestry, Universiti Malaysia Sabah, Jalan UMS, 88400 Kota Kinabalu Sabah, Malaysia
² Faculty of Business, Economics and Accounting, Universiti Malaysia Sabah, Jalan UMS, 88400 Kota Kinabalu, Sabah, Malaysia

* Corresponding author: hamima@ums.edu.my

Abstract. The mangrove forest has been one of the natural areas that provides the local communities with economics opportunities especially those involving tourism activities. However, over time it could face destruction if there is no measure taken to monitor the impacts. The objective of this study is to identify mangrove forest conservation efforts in Nanamun River, Kota Belud, Sabah, Malaysia as sustainable ecotourism destination and to propose sustainable conservation guidelines based on the Global Sustainable Tourism Council’s Criteria and Indicator (GSTC) guidelines. A total of 14 in-depth interviews were conducted with stakeholders which involved the local government authorities, community representatives and local tour operators, as the primary data for this study. Purposive sampling were deployed specifically snowball sampling technique to identify key persons that could provide relevant information. The data collecting instrument were based on the Global Sustainable Tourism Council Criteria and Indicator (GSTC) guidelines for destination management which comprised 4 main sections (criterias): A) Demonstrate effective sustainable management; B) Maximize economic benefits to the host community and minimize negative impacts; C) Maximize benefits to communities, visitors, and culture; minimize negative impacts; and D) Maximize benefits to the environment and minimize negative impacts. This study found that there are some efforts to conserve mangrove forest in the study area. Among the 4 criteria, section A (sustainable management) and B (economic benefits) were found to have most of the indicators for sustainability checked. However, some of the conservation efforts might still need to be formalized. Recommendations were made in accordance with the gaps found based on the GSTC guidelines used.

Keywords: Sustainable ecotourism; mangrove forests; stakeholders; GSTC guidelines.

1. Introduction
The mangrove forest area is one of the natural resource areas that provides local people surrounding the area with high economic opportunities that could range from fishing, getting charcoal supplies, and ecotourism activities [1,2]. Over time, however, the mangrove forest faces destruction such as from urban development, aquaculture, exploitation of fisheries, and so forth, due to development and economic demands [3]. A solution to minimize this negative impact in the tourism sector could be done through stakeholder participation and collaboration [4]. Stakeholders, for instance in ecotourism, are key players who could influence more people such as the local communities, tour operators and other local organisations, to solve common issues and challenges. If more people support the concept of
Conservation in the eco-tourism area of mangrove forest, it would function more efficiently [5]. Conservation is a widely used approach to the sustainability of mangrove forest resources to ensure that natural resources remain in their original state. A real philosophy of conservation is the effort to manage the environment of today's society by not neglecting it for future generations [4]. Thus, leading global authority in setting and managing standards for sustainable tourism, the Global Sustainable Tourism Council (GSTC) has suggested the GSTC Criteria and indicator to serve as the global baseline standards for sustainability in travel and tourism. It has been used for education and awareness-raising, policy making for businesses and government agencies and other organization types, measurement and evaluation, and as a basis for certification. Criteria are the minimum, not the maximum, to be achieved by businesses, government and destinations with a view to social, environmental, cultural and economic sustainability. Since tourist destinations each have their own culture, climate, customs and rules, the requirements are intended to be adapted to local conditions and to be complemented by additional relevant location and activity criteria [6].

2. Methodology

This study was conducted in the District of Kota Belud, which is located in the west coast of Sabah, Malaysia between 6° 21’ N and 116° 25’ E. Kota Belud district occupies approximately 134,000-hectare and received 2500–3500 mm of rainfall annually. The population of Kota Belud is 91,272 [7]. The specific location which is the mangrove forest area is covering two villages (Kampung Nanamun and Rampayan Laut), where an extensive wetland with estimated of more than 790-hectare area is found (Figure 1).

The two mentioned villages have been hosting tourists to the mangrove forest areas for river-cruise activities along the Nanamun-Rampayan river to enjoy the mangrove forest scenery and for wildlife watching (Proboscis monkey and bird watching), as well as fireflies watching at night. In-depth interview sessions were conducted with 14 stakeholders comprising three groups namely local authorities (District Officer, District Forest Officer, and community leaders), local tourism operators and village committee members. Data collections were conducted from 2 to 9 September 2019, by setting up appointment with the identified stakeholders. Snowball sampling technique was deployed in this study where participating stakeholders were identified through information and recommendation from the local authority offices based on who could likely provide information on the current and existing information regarding resource conservation efforts. The interview guide was developed based on the Global Sustainable Tourism Council (GSTC) Criteria and Indicators guideline for destination.
management. It has four sections according to the 4 pillars of sustainability adopted by the GSTC (sustainable management, social and economy, culture, and environment). Specifically, the data collecting instrument consisted of the following 4 sections, namely (A) Demonstrate effective sustainable management; (B) Maximize economic benefits to the host community and minimize negative impacts; (C) Maximize benefits to communities, visitors, and culture; minimize negative impacts; and (D) Maximize benefits to the environment and minimize negative impacts.

3. Results and discussion

3.1 Mangrove forest conservation efforts as a sustainable ecotourism destination

Table 1 presents the results for the conservation efforts in the study area based on the GSTC criteria and indicator for tourism destination management. Each section presents the item and its respective responses for existing effort. For all sections, the indicator used is whether the criteria which represent conservation efforts are already in existence or not, which have resulted in a simple dichotomous response of “Yes” or “No”. Thus, the total number of indicators selected is one for each criteria. Dichotomous response was used instead of scale response as the questions asked were more to the existing efforts and not individual perception. Each “Yes” response is considered a checked indicator and counted as existing known efforts. All responses were followed by descriptions of the known efforts by the respondents. There were differences in the responses of the different group of respondents (local authorities, communities, tour operators). The differences were due to the level of implementation of each effort. For instance, most of the efforts are already suggested to be implemented at local authority level but have not yet implemented on the ground. Results are further discussed according to each section below.

| Table 1. Mangrove forest conservation efforts based on GSTC criteria and indicator for destination management. |
|---------------------------------------------------------------|---------------------------------------------------------------|
| SECTION A n | SECTION C n |
| 1(A1) Sustainable destination strategy | 13 | 1(C1) Attraction protection policy | - |
| 2(A2) Destination management organization | 13 | 2(C2) Visitor management | - |
| 3(A3) Monitoring | 5 | 3(C3) Visitor behavior | 8 |
| 4(A5) Climate change adaptation | 3 | 4(C4) Cultural heritage protection | - |
| 5(A6) Inventory of tourism assets and attractions | - | |
| 6(A7) Planning regulations | 4 | 5(C5) Site interpretation | 13 |
| 7(A10) Visitor satisfaction | - | |
| 8(A11) Sustainability standards | 2 | |
| 9(A12) Safety and security | 7 | 1(D1) Environmental responsibilities | 1 |
| 10(A13) Crisis and emergency management | 3 | 2(D2) Protection of sensitive environments | - |
| 11(A14) Promotion | 12 | 3(D3) Wildlife protection | 4 |
| SECTION B n | 4(D4) Greenhouse gas emissions (DOE) | - |
| 1(B1) Economic monitoring | - | 5(D5) Energy conservation programme | - |
| 2(B2) Local career opportunities | 5 | 6(D6) Water management system | 2 |
| 3(B4) Local community opinion | 10 | 7(D8) Water Quality monitoring system | 2 |
| 4(B6) Tourism awareness and education | - | 8(D9) Wastewater management | - |
| 5(B7) Preventing exploitation | 1 | 9(D10) Solid waste reduction | - |
| 6(B9) Supporting local entrepreneurs and fair trade | - | 10(D11) Light and noise pollution minimization | 1 |
3.1.1 Section A: Demonstrate effective sustainable management. Among the eleven criteria assessed for Section A, only two criteria were found to be currently non-existent. Among the nine existing criteria, three were found to be most familiar among the respondents, namely Criteria A1, A2, and A14, which means there are existing “sustainable destination strategy”, there are “destination management organization” taking care of the resources and current tourism activities, as well as there are “promotions” for the local tourism products. Based on the in-depth interview, it was prevalent that most of the promotions are using social media such as Facebook, Instagram as well as personal blogs. Community-based mangrove management through eco-tourism has also been supported as mechanism for sustainable management in other neighbouring country such Indonesia [8] thus, supporting the existing known conservation efforts for most criteria in this section as indicator for sustainability in the study area.

3.1.2 Section B: Maximize economic benefits to the host community and minimize negative impacts. Among the six criteria for Section B, three criteria were found to be currently non-existent. Among the three existing criteria, only one was found to be most familiar among the respondents, namely the “local community opinion” which indicate that there are mediums for the local community to express their opinion regarding tourism activities in their area. One of the existing criteria which receives only moderate response among the respondents is the “local career opportunities”. Based on the in-depth interview, this moderate response could be explained by the number of current employments in tourism related activities, where not many of the community members are involved.

3.1.3 Section C: Maximize benefits to communities, visitors and culture; minimize negative impacts. Among the five criteria for Section C, three criteria were found to be still non-existent. The two existing criteria are “visitor behaviour” and “site interpretation”. The criteria “visitor behaviour” imposes that the destination should have guidelines for proper visitor behavior at sensitive sites. Based on the in-depth interview, it was clear that there are such guidelines provided and briefed to the tourists by the local tour operators. Whereas, for criteria “site interpretation”, almost all the respondents clarified that accurate interpretive information is provided for their mangrove forest resource attractions.

3.1.4 Section D: Maximize benefits to the environment and minimize negative impact. For this section, among the ten assessed criteria, five were found to be non-existent. Among the five existing criteria, only one was found to be most familiar among most of the respondents, which is “wildlife protection”. The other four existing criteria (“environmental responsibilities”, “water management system”, “water quality monitoring system”, and “light and noise pollution minimization” were mentioned by only those from among the top management level in the local authorities. This is due to the fact that most of the matters in Section D are managed at State Government level under the Department of Environment. This situation has been previously touched by [2] where different stakeholders received more information based on their level of involvement.

3.2 Recommendation based on the assessment results

It has been posited by previous studies specifically for mangrove forest management that community-based mangrove forest management needs evaluation of sustainability using applicable criteria and indicator contextual to the study area [9]. For the case of this study, recommendations for criteria to be made available for the study site, were based on items that were found to have no response from the stakeholders which indicates that there are no known efforts in that area. As such, two criteria were recommended for Section A, three criteria for Section B and C respectively, and five criteria for Section D (Table 1). All explanation for the recommended criteria were according to the GSTC criteria and indicator guidelines for destination management [4].

The two criteria recommended from Section A are the “inventory of tourism assets and attractions” and “visitor satisfaction”. According to the GSTC guideline for sustainable destination management, all destinations should have a system for all assets and attractions, including natural and cultural sites. While the attractions are obvious in the study site, there is no recorded inventory of its assets and
ttractions. As for criteria “visitor satisfaction”, the destination should have a system for collection and public reporting on visitor satisfaction, and if necessary, to take action to improve.

The three criteria recommended for Section B are the “economic monitoring”, “tourism awareness and education” and “Supporting local entrepreneurs and fair trade”. The “economic monitoring” means there should be a system to monitor the direct and indirect economic contribution of tourism to the destination’s economy and publicly reported at least annually or regularly. The second recommended criteria for Section B (tourism awareness and education) means regular programmes to communities to enhance their understanding of the opportunities and challenges of tourism and the understanding why sustainability is important. The third recommended criteria which is “supporting local entrepreneurs and fair trade” implies that there should be a system that supports local and small-and medium-sized enterprises and promotes/develops local sustainable products and fair-trade principles based on the area’s nature and culture. This could include products such as food and beverages, crafts, performance arts, agricultural produces and so forth.

The three criteria recommended for section C are the “attraction protection policy”, “visitor management”, and “cultural heritage protection”. Criteria “attraction protection policy” implies that the destination should have a policy and system to evaluate, rehabilitate, and conserve natural and cultural sites, which could include built heritage as well as scenic views. As for “visitor management” criteria, this denotes that the destination should have a visitor management system for attraction sites and that the management system includes procedures to preserve, protect, and enhance the natural/ cultural assets. The third recommended criteria “cultural heritage protection” suggests that the destination should have laws to govern proper sale, trade, display or gifting of historical artefacts. This includes programmes to protect and celebrate intangible cultural heritage such as songs, music, skills as well as crafts.

For section D, the five recommended criteria were, “protection of sensitive environments”, “greenhouse gas emission”, “energy conservation programme”, “wastewater management”, and “solid waste reduction”. The first criteria for this section, “protection of sensitive environments” implies that the destination should have a system to monitor the tourism impacts not only to the environment as whole but to the habitats, species and ecosystems. The suggestion is that the government should provide programmes to help local people understand green practises so that they are more sensitive and concerned. The government also plays an important role in protecting developing tourist areas, such as curbing mangrove cutting activities, intensifying replanting, and reducing open burning, especially for locals. The second recommended criteria suggest for the destination to have a system to encourage the involved organizations to monitor greenhouse gas emissions from all aspects of their operations, which include to measure, minimize, and publicly report. The third recommended criteria suggests that the destination should have a system to encourage involved organizations to monitor energy consumption which include to measure, reduce and publicly report, in order to reduce reliance on non-renewable resources. The fourth recommended criteria, “wastewater management”, denotes that the destination should have a clear and enforced guidelines in place for the sitting, maintenance and testing of discharge from septic tanks and wastewater treatment systems, to ensure wastes are properly treated with minimal adverse effects. While, the fifth recommended criteria, “solid waste reduction” suggests for the destination to have a system to encourage organizations involved to reduce, reuse, and recycle solid waste. Based on the in-depth interview, there is no waste reduction system as there are still many people who use plastic (food containers, plastic goods), especially for business such as restaurants.

4. Conclusion
This study found that there are mangrove forest conservation efforts in the study area based on the assessment using the GSTC guidelines. As mentioned, some efforts are practised at ground level by the stakeholders to directly protect the mangrove forest resources while some of the efforts, although might not yet been practised on the ground but have been provided with certain policies and laws at administrative level. As such, some efforts might still need to be formalized to enable a more systematic
assessment for the mangrove forest resource sustainability. Recommendations were made in response to the gaps found from the sustainability assessment in this study.

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