



Applying sustainability indicators to eco-tourism development: The case of Jeram Linang Amenity Forest, Kelantan

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Abstract

Sustainability is key to any long term eco-tourism development and particular performance indicators may be developed and applied to monitor the sustainable development of unique eco-tourism attractions. Jeram Linang Amenity Forest is unique in its scenic waterfalls, flora and fauna, and elevated river flows. This study examined the level of sustainable development of this Kelantan's eco-tourism resource based on visitors' perceptions of sustainable indicators set by the World Tourism Organisation (WTO). A total of 140 respondents participated in this study. The study found waste dumping as a major problem in this amenity forest where the littering by irresponsible visitors had led to the destruction of its beautiful scenery. Open burning within the area vicinity was also found to be undermining the pristine state of the forest despite its being a protected area under the jurisdiction of Ulu Sat Forest Reserve. All this point to the imperative of well planned and well executed remedial actions involving all stakeholders.

Keywords: recreational forest, sustainability indicators, sustainable tourism, sustainability monitoring, tourist perception, World Tourism Organisation

Introduction

Tourism is the fastest developing industry in the world including in Malaysia. The steady growth of the global economy has significantly contributed to improving the quality of life of the world's population allowing a significant number of people to earn a sustainable income and more leisure time. More people can now travel across the globe for vacation, recreational and other purposes. The increasing number of tourist arrivals indicates that the tourism industry is the catalyst that is able to change the economy, environment and social aspects of an area. This situation has significant impacts on the growth of new centres, producing employment opportunities and local community entrepreneurs apart from being a tourist destination.

In light of the situation, governments especially in developing countries have given serious consideration to this industry. Notably, the tourism sector is capable of generating revenue for the country, reducing the gap in development between urban and rural areas as well as improving the socio-economic condition of the rural population. The tourism sector is the fourth largest contributor to foreign exchange earnings in Malaysia (Fatehah & Siti Suahaina, 2007). The importance of the tourism sector to the economy of a country can be verified in a statement issued by the International Union of Official Travel Organization (IUOTO) at the Rome Conference in 1903 (The United Nations Conference on International Travel and Tourism):

...the role and importance of international tourism is very crucial as a source of foreign exchange, but also as a factor in determining the location of the industry and to promote natural resource areas.

(Yoeti, 1988)

Malaysia is blessed with abundant natural resources such as waterfalls, beautiful islands, amenity forests, caves and highland resorts, that can be developed as tourist attractions. Eco-tourism that is based on nature is a sector that has great potential to be developed as a new venture. Notably, tourism is an important industry because: (i) it provides substantial foreign exchange, (ii) it helps sustain the Malaysia economy during the fall in commodity prices, (iii) it significantly provides five per cent of employment, (iv) most of the tourists came from Asia-Pacific region, and (v) the government aggressively participate in promoting tourism (Mathieson & Wall, 1991).

Tourists are increasingly inclined towards a nature based environment as their preferred holiday destination. Therefore, if these back-to-nature holiday destinations are not properly preserved, the area will suffer a substantial decline in the number of tourists as it loses its appeal with environmental degradation. In time, the tourist inflow will grind to a halt as the destination loses its attraction. Thus, the introduction of the sustainable tourism concept is important since the policies focus on continuous sustainable tourism development (Badaruddin, 2008). According to the United Nations World Tourism Organisation (UNWTO) (2004), sustainable tourism is a continuous process that requires monitoring, introducing the necessary preventive and corrective actions when needed. Sustainable tourism should also safeguard the tourists' level of satisfaction and also ensure meaningful experiences to the tourists, raising their awareness on the prolonged issues and also promote sustainable tourism practices among them.

Literature review: Sustainable tourism and recreational forest

Sustainable tourism was introduced internationally as various adverse effects in some areas were associated with the increase of mass tourism in the 1960s. This sparked off a lot of criticisms and debates bringing about the introduction of the sustainable tourism approach that promotes a natural green setting and a peaceful environment. Sustainable tourism is developed from the impact of sustainable development. Until the early 1990s, the field of sustainable tourism did not take off. Nevertheless, tourism had been officially recognized and is a significant issue for international environmental politics in the *Convention on Biological Diversity* and Agenda 21 plan.

Dymond (1997) explains that the key to sustainable tourism development in the future is to focus on the studies that focus on sustainable tourism indicators specifically the study that is related to sustainable tourism indicators between regions in New Zealand. With the objective of achieving sustainable tourism development in a particular tourism destination, indicators must be used in realizing the particular form of development desired, namely site maintenance, management process and development control. Meanwhile, according to De Lacy et al. (2002), the need for collaboration between the public and private sectors is necessary to develop sustainable tourism. In addition, this study also discusses effective measures in the development and management of sustainable tourism, including planning and policy, constructing a predictive model, implementation monitoring, implementation improvement and implementation reporting.

In Malaysia, previous studies on sustainable tourism were conducted by several outstanding personalities and researchers. Fatimah and Fauziah (2007) did a study on the elements of sustainable tourism in Felda Gugusan Trolak area that offers multiple types of tourism products such as Sungai Klah Hot Water Recreational Park and Trolak Orchard. This study also suggests several measures to realize sustainable tourism development in order to diversify the concept of state tourism and to improve the standard of living of FELDA settlers, families and future generations of pioneers. In addition, the finding discovered that there are about 10 elements of resource areas that have potential for further improvement

to become multi-concept tourism products such as educational tourism, ecological tourism, rural tourism, agricultural tourism, industrial tourism and others.

In conclusion, the concept of sustainable tourism development emphasizes the use of existing resources wisely and concern should be given to the question of planning, commitment and involvement of governments and other concerned parties or stakeholders (Rees, 1989).

Although, the amenity forest is a forest area within a Permanent Forest Reserve, it can be used for relaxation, research and educational purposes as well as for preserving the flora and fauna. The area has unique individual attractions in the form of in-situ resources and can be exploited positively. Buckley's (2003) study shows that Baghmara forest communities in Nepal do not only manage to prevent environmental degradation in the area, but also manage to build additional habitats for wildlife. In addition, ecotourism attractions in the study area provides employment opportunities to the local community as tourists guides, concierge and many more. The income from tourist expenditures in Baghmara forest is used for ecotourism planning and management.

Rawat et al. (2008) explains the use of the forest in providing a variety of purposes in terms of ecological, economic and socio-cultural aspects as well benefitting the community and improving their quality of life. The evaluation of forest resources should be paid more attention according to the long-term trend changes, especially as the decrease of recreation resources is mostly caused by the activities of human society (Zhang & Zhou, 2013). For instance, damage to natural settings, degradation of the environment and conflicts between park users are some of the common problems associated with poor planning and management of recreation activities in parks (Arni & Khairil, 2013). This article also discusses the application of the criteria and indicators approach for sustainable forest management besides providing an overview of the current situation in the country towards the achievement of sustainable forest resources.

Wahida Ayob (2006) in her study 'Sungai Tekala amenity forest management, Hulu Langat, Selangor: Analytical study on weekends' explains that development planning and thorough management are important steps to improve the quality of an amenity forest and preserve the harmony, coalescence and integration that are formed between the elements of water, flora, fauna, communities and the environment of the forest. In addition, amenity forest management must meet the guidelines as this area is not concerned with capacity limitation on the numbers of incoming visitors which are not been capped at any one time. Cunha (2010) argues that the mismanagement of tourism activity can intensify the degradation of nature. Therefore, the management and development of amenity forests should be handled cautiously to ensure the stability and preservation of the amenity forest.

The concept and indicator of sustainable tourism

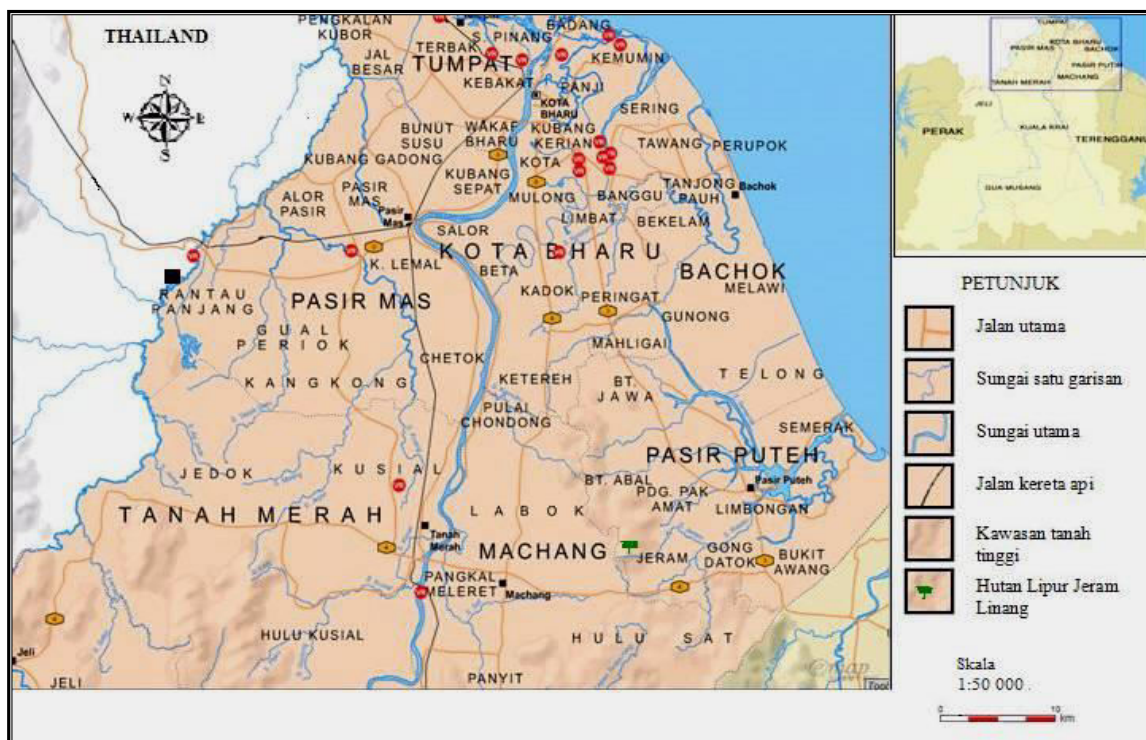
From an environmental context, tourism contributes both positive and negative influences depending on the approach used by the management in managing, monitoring and controlling the area. Tourism development and management that are not compatible with the standards will result in the destruction of habitat and landscape, eliminate resources and environmental pollution will become extremely critical particularly in unmanageable waste disposal issues. Therefore, the sustainable development approach for tourism planning in a forest is most essential to prevent the destruction of its natural resources and to it as a preferred recreational forest for visitors. To realize this concept, guidelines or indicators should be outlined and practiced as a tool to measure the sustainable level for a particular criteria. According to Sham Sani (2001), the indicators are the measurement of a particular criteria; it is used for two purposes, namely information quantification to explain in detail the study and to summarize information of a certain complex situation so that it can be easily understood. Sustainable indicators are tools to measure changes, to identify processes and provide frameworks for setting up targets and monitoring performance (Crabtree & Bayfield, 1998). The indicators provide a method to chart progress towards the importance of the objective to achieve a balanced form of development in the social, economic and environmental aspects as the primary objective of sustainable development of a nation.

Table 1. Main indicators of sustainable tourism

Indicators	Detailed Measurement	Indicator Field
1. Site maintenance	Site maintenance categories following the index of "International Union for the Conservation of Nature and Natural Resources (IUCN)	Ecology
2. Pressure	Total number of incoming tourists to the destination (yearly & monthly)	Ecology
3. Intensive use	Highest intensive usage (number of visitors per hectare)	Ecology
4. Waste disposal management	Percentage of waste sent to landfill area (additional indicators such as water supply can also be used)	Ecology
5. Critical ecosystem	Amount of unique species, extinct and will extinct at the destination	Ecology
6. Social impact	The ratio of the number of tourists to local community (during peak periods and subsequent periods)	Social
7. Local community's satisfaction	Level of satisfaction expressed by the local community (using survey questionnaires)	Economy
8. Development control	Using the environment reference procedure or formal control towards the development of the site and density	Planning
9. Planning process	Use the regional plans that have been schemed for the area including tourism planning	Planning
10. Visitors' satisfaction (tourists)	Level of satisfaction as expressed by tourists (using survey questionnaires)	Economy
11. Contribution to the local economy	Part of the total economic contribution derived from the tourism sector	Economy

Source: Dymond (1997)

Area of study



Source: JUPEM Negeri Kelantan (2002)

Figure 1. Location of the study

Jeram Linang Amenity Forest is located in Jajahan Hutan Kelantan Timur in Ulu Sat Permanent Forest Reserve. The location of the study area is at the border between the districts of Machang and Pasir Puteh and is about 22 km from Machang town and 14 km from Pasir Puteh. This amenity forest was officially opened on March 21, 1984 (Department of Forestry Kelantan, 2007). Of the total size of 306 hectares, 10 hectares have been developed and equipped with basic facilities for the convenience of the visitors. The terrain is rocky with an estimated height of between 80 to 400 meters above sea level.

Methodology

A total 140 respondents participated in this study consisting of daily visitors and the local community. The sampling method used is non-probabilistic sampling. The selection of respondents is done by asking those encountered during the fieldwork whether they consent to be part of the study. However, the researchers also pre-determined a certain number of respondents for each location in the study area. Most importantly the selected sample must truly reflect the population. The sample size is small but if it is properly selected, it is more acceptable compared to a large sample size that is carelessly selected (Neill, 2003). The instruments used are questionnaires and interviews. The questions encompassed in the survey are in the form of closed-ended and open-ended questions. It consists of four sections, namely Section A: Respondents' demographic profile, Section B: The features of the respondents' visit to the study area, Section C: The perceptions of respondents on sustainable tourism development in the study area and Section D: The difficulties and endeavours in the development of sustainable tourism in the amenity forest.

Findings and discussion

As stated in Table 1, the results show that the majority (95%) of the 140 respondents are daily visitors, while only 7 people are from the local community. Male respondents (65%) outnumber the females (35%). As for the ages of the respondents, the majority of the respondents are aged 20 years and below with 50 people in this age group. In terms of ethnicity, the Malays (93%) form the largest ethnic group visiting this forest. Most of the respondents encountered (82 people) are unmarried. The study also found that more than 70% of the respondents have secondary level education. Those who are still studying form the largest group of respondents compared to those who are working (30%).

The educational level and occupation of the respondents can be the benchmark for tourists' and visitors' perceptions on their knowledge of sustainable tourism in the study area. The level of education is an important social element in determining the progress of a community or otherwise. A knowledgeable society has the ability to change the life style and culture as well as their environment. In the tourism sector, the community's educational background usually influences their level of knowledge of a particular issue or the potential development in their area. Education is an avenue to spread the cultural traditions, values and knowledge both formally and informally to the members of the society so that they will be more educated and knowledgeable (Yahaya, 2008).

The natural asset is an environment that is created naturally and includes the natural vegetation, wildlife, rivers, hills and mountains, sandy beaches and islands (Habibah et al., 2013). Referring to Table 2, it is found that the majority of the respondents (more than 60% or 97 people) cite waterfalls and rivers as the major components of the attractions that drew them to visit the study area. The forest reserves and natural forests as well as picnic areas are not the main features that attract them to the area. The attractions have generated interest among tourists to come to the area. The potential tourists have expectations of the tourist attraction and it provides motivation for the tourists to come. The key point is that whether a place becomes a major tourist attraction or not depends on the tourists' assessment of the level of satisfaction and the benefits that can be obtained.

Table 1. Respondents' demographic profile

Characteristics	Criteria	Quantity (people)	Percentage (%)
Respondents' category	Local community	7	5
	Daily visitors	133	95
Gender	Men	91	65
	Female	49	35
Age	20 years old and below	50	35.7
	21 - 30 years old	47	33.6
	31 - 40 years old	17	12.1
	41 - 50 years old	18	12.9
	50 years old and above	8	5.7
Ethnic group	Malay	130	92.9
	Chinese	8	5.7
	Indian	2	1.4
Status	Single	82	58.6
	Married	58	41.4
Education	University/ College/ Matriculation	29	20.7
	Secondary school (Form 1-6)	109	77.9
	Primary school (Year 1-6)	2	1.4
	Public sector employees	17	12.1
Occupation	Private sector employees	6	4.3
	Self-employed	20	14.3
	Entrepreneurs	8	5.7
	Housewives	19	13.6
	Students	55	39.3
	Others	15	10.7

Table 2. Features or attributes of tourism that attract respondents to Jeram Linang Amenity Forest

Attractions Features	Frequency	Percentage (%)
1. Waterfall/river	97	69.3
2. Forest reserve/natural	35	25
3. Picnic area	8	5.7
Total	140	100

The findings of the study clearly shows that the level of respondents' knowledge on the meaning of sustainable tourism is very low, as more than 90% of the respondents fall into this category (Table 3). Only 8 people of the overall respondents realize the purpose of this concept. The problem of knowledge of a concept was also studied by Ohe (2008). His findings shows that only 44.7% of the respondents understand the concept of 'rural tourism' when they were asked questions related to it, even though it is a growing sector in the country. In fact, travel agencies in Malaysia in general have yet to fully grasp the concept of ecotourism (Badaruddin, 2002). Therefore, the local government with the assistance of the mass media and non-governmental organizations (NGO) should take the initiative to ensure that information on sustainable tourism especially from the aspects of its meaning and concept is made available to the community. As such, there will be no conflict between the parties as evident in the study by Rao et al. (2003) on the knowledge, attitudes and perceptions of the local people towards planning and management issues in Nanda Devi Biosphere, India.

Table 3. The meaning of sustainable tourism

Criteria	Frequency	Percentage (%)
'Yes'	8	5.7
'No'	132	94.3
Total	140	100

According to Table 4, there are several indicators which measure the development of sustainable tourism in the study area. The indicators or measurement indicators of sustainable tourism development have become the basis of a theoretical framework for the development of eco-friendly tourism activities particularly in rural areas (Fatimah & Fauziah, 2007). The majority of respondents agree with the statement that this amenity forest is beneficial to the surrounding population, contributing to the global economy. The majority of the visitors (more than 70%) are satisfied with the condition and amenities of this forest. More than 70% of the respondents disagree with the statement that the amenity forest brings about negative social consequences, that it is well-maintained, that there is a systematic waste disposal system and that the forest faces pressures of rapid development in the surrounding areas. Meanwhile, in response to statements related to the aspect of critical ecosystems, and the process of planning and development control, the views of the respondents are moderately in favour of these particular aspects with scores of more than 40%. The results show that the amenity forest area has the potential to be developed as a sustainable tourism destination based on the views of the respondents and through the researchers' observation. However, this does not mean that sustainable practices applies to the whole area. According to Drabkova (2013), the increased recreational demand for areas of high ecological value implies potential conflicts between conservation and recreational goals, and it is necessary to help the visitors understand the importance of sustainability, as well as to teach them in what way nature is influenced by humans.

Table 4. Sustainable tourism development indicators in the study area

Indicators characteristics	Yes	(%)	No	(%)
1. This amenity forest is well-kept / maintained properly (<i>site maintenance</i>)	32	22.8	108	77.2
2. There are pressures of rapid development in its vicinity (<i>pressure</i>)	40	28.6	100	71.4
3. Active development is underway in this amenity forest area (<i>intensive development</i>)	46	32.9	94	67.1
4. The waste management in this amenity forest is done systematically (<i>waste management</i>)	36	25.7	104	74.3
5. The ecosystem / amenity forest environment is destroyed (<i>critical ecosystem</i>)	76	54.3	64	45.7
6. This amenity forest provides benefits to the surrounding population (<i>residents' satisfaction</i>)	114	81.5	26	18.5
7. Visitors are satisfied with the surroundings and the facilities in this amenity forest (<i>visitors' satisfaction</i>)	99	70.7	41	29.3
8. This amenity forest contributes to the global economy	114	81.5	26	18.5
9. The amenity forest development is well planned and systematic (<i>the planning process</i>)	63	45	77	55
10. The development of the amenity forest area is controlled (<i>development control</i>)	69	49.3	71	50.7
11. This amenity forest leads to negative social consequences	15	10.7	125	89.3

The perceptions of tourists and visitors on the development of sustainable tourism in Malaysia, particularly in the study area, are obviously important. The respondents' views and opinions are crucial because their evaluations provide room for improvements and thus help in ensuring that the sustainable

tourism attractions in Malaysia continue to be a favourite destination for tourists and visitors in the near future. According to Rosniza Aznie et al. (2012), the aspect of accessibility is an important element in ensuring that Fraser's Hill not only continues to attract tourists but that it will also improve the quality of the social life of the local community. The awareness of the impacts of sustainable tourism development can be measured based on the understanding of the community of both the positive and negative impacts of tourism development. Torbidoni (2011) pointed out that achieving and maintaining an appropriate balance between conservation and use of forest areas for recreation, sport and tourism is not an easy task. That is why the training of forest managers should involve aspects not only how to enhance the recreational potential for specific areas but should also help them to find the right balance between the level of recreational use and the conservation of nature. As such, an effort to create a tourism-based society that is more cognizant and able to appraise is one of the steps in ensuring the existence of ecotourism (Honey, 1999).

Conclusion

Based on the discussion, the achievement of sustainable tourism development in the study area remains a utopia because the accomplishment is still far from excellent. Subsequently there are still a number of weaknesses and gaps that need to be resolved before the principles and development strategy of sustainable tourism can be realized. Amenity forest plays a vital role in the tourism industry in line with the level of development of the country and improvement in the quality life of the people ((Er Ar Choy et al., 2012). The behavioural aspects of several individuals, the management and the visitors taking things flippantly, complicate the implementation of the sustainable tourism concept. This is reflected in the findings of the study where the management's attitude is lacking particularly in carrying out the trust given, for instance the lack of monitoring activities and poor emphasis on the safety aspect of visitors. In addition, several visitors are very oblivious in keeping the place clean and tidy. However, sustainable tourism development can be created when there is a high level of awareness and commitment among all parties namely the government, policy makers, policy implementers and the community to make it happen (Haliza, 2005). The strategic plan of development - economic, social and environmental - must be integrated in a balanced manner and all parties involved need to participate effectively in ensuring that the sustainability of the area is secured and that the beauty of the area preserved so that the benefits can be continually enjoyed and passed on to the next generation.

References

- Arni AG, Khairil WA (2013) Promoting collaboration between local community and park management towards sustainable outdoor recreation. *Procedia - Social and Behavioral Sciences* **91**, 57-65.
- Badaruddin Mohamed (2002) The development of ecotourism in Malaysia - Is it really sustainable? International Year of Ecotourism 2002. Community Based Ecotourism in Southeast Asia - Regional Conference. Chiang Mai, Thailand. 3 - 7 March.
- Badaruddin Mohamed (2008) *Pelancongan Lestari*. Dewan Bahasa dan Pustaka, Kuala Lumpur.
- Buckley R (2003) *Case Studies in Ecotourism*. CABI Publishing, United Kingdom.
- Crabtree R, Bayfield N (1998) Developing sustainability indicators for mountain ecosystems: A study of the Cairngorms, Scotland. *Journal of Environmental Management* **52**, 1-14.
- Cunha AA (2010) Negative effects of tourism in a Brazilian Atlantic Forest National Park. *Journal for Nature Conservation* **18**, 291-295.
- De Lacy T, Battig M, Moore S, Noakes S (2002) *Public/Private Partnership for Sustainable Tourism: Delivering a Sustainability Strategy for Tourism Destinations*. Cooperative Research Centres for Sustainable Tourism, Australia.
- Department of Forestry Kelantan (2007).

- Drabkova A (2013) Tourists in Cansiglio Forest, Italy: Case study about forests visitors and their opinions. *Human Geographies - Journal of Study and Research in Human Geography* 7 (2), 35-43.
- Dymond SJ (1997) Indicators of sustainable tourism in New Zealand: A local government perspective. *Journal of Sustainable Tourism* 5 (4), 279-293.
- Er Ah Choy, Asmahani Atan, Harsuzilawati Muhammed, Zaini Sakawi, Adam JH (2011) Analisis kelebihan kompetitif ekopelancongan di Mukim Ulu Dong, Raub, Pahang, Malaysia. *GEOGRAFIA Online - Malaysian Journal of Society and Space* 8 (8), 158-169.
- Fatehah Osman, Siti Suhaina (2007) *Malaysia bukan destinasi pilihan. Isu-Isu Kenegaraan Malaysia*. Dewan Bahasa dan Pustaka, Kuala Lumpur.
- Fatimah Hassan, Fauziah Che Leh (2007) Pembangunan pelancongan lestari di Felda Gugusan Trolak: Satu analisis. *Prosiding Seminar Kebangsaan Geografi - Dunia Tanpa Sempadan*. Universiti Pendidikan Sultan Idris. 8 - 9 September.
- Habibah Ahmad, Hamzah Jusoh, Mushrifah Idris, Amriah Buang, Nur Amirah Kamarus Zaman, Sri Winarni Samsir, Ahmad Nazrin Aris Anuar (2013) Pemeraksanaan asset semula jadi untuk kelestarian pelancongan di Negeri Pahang. *GEOGRAFIA Online - Malaysian Journal of Society and Space* 9 (3), 80-94.
- Haliza Abdul Rahman (2005) Pembangunan dan kemapanan alam sekitar di Malaysia - Suatu utopia. *Jurnal Ilmu Kemanusiaan* 12.
- Honey M (1999) *Ecotourism and Sustainable Development: Who Owns Paradise?* Island Press, USA.
- Mathieson A, Wall G (1991) *Pelancongan: Impak Ekonomi, Fizikal dan Sosial*. Abdul Kadir Hj. Din (Penterjemah). Dewan Bahasa dan Pustaka, Kuala Lumpur.
- Neill J (2003) Random Sample. Available from: <http://wilderdom.com/Oecourse/PROFLIT/JamesNeill.htm>.
- Ohe Y (2008) Characteristics and issues of rural tourism in Japan. In: Pineda FD, Brebbia CA (ed) *Sustainable Tourism III*. Wessex Institute of Technology, UK.
- JUPEM Negeri Kelantan (2002) *Peta Lokasi Hutan Lipur Jeram Linang*.
- Rao KS, Nautiyal S, Maikhuri RK, Saxena KG (2003) Local people' knowledge, aptitude and perceptions of planning and management issues in Nanda Devi Biosphere Reserve, India. *Journal of Environmental Management* 31 (2), 168-181.
- Rees WE (1989) Defining Sustainable Development. *CHS Research Bulletin* - May (3). University of British Columbia.
- Rosniza Aznie CR, Asmah A, Zaini S, Abdul Rahim MN, Rosmiza MZ, Novel L, Mohd. Fuad MJ, Jumaat A, Er Ah Choy, Mohd Yusof Hussain (2012) Dilema perumahan penduduk tempatan Bukit Fraser dalam arus pembangunan ekopelancongan. *GEOGRAFIA Online - Malaysian Journal of Society and Space* 8 (8), 47-54.
- Sham Sani (2001) *Public Lecture: Developing Urban Sustainability Indicators for Malaysia. No 3*. Universiti Kebangsaan Malaysia, Bangi.
- Rawat TS, Menaria BL, Dugaya D, Kotwa PC (2008) Sustainable forest management in India. *Current Science* 94 (8), 25 April 2008.
- Torbidoni EIF (2011) Managing for recreational experience opportunities: The case of hikers in protected areas in Catalonia, Spain. *Environmental Management* 47, 482-496.
- UNWTO (2004) Sustainable Tourism: Definition. Available from: <http://www.unep.fr/scp/tourism/sustain/>.
- Wahida Ayob (2006) Pengurusan hutan rekreasi Sungai Tekala, Hulu Langat, Selangor: Analisis kajian pada hujung minggu. In: Hamidi Ismail, Tuan Pah Rokiah Syed Hussain, Johan Afendi Ibrahim (eds) *Pengurusan Persekitaran dan Pelancongan di Malaysia: Konsepsi dan Kajian*, pp.147-173. Universiti Utara Malaysia, Sintok.
- Yahaya Ibrahim (2008) *Pembangunan Pelancongan dan Perubahan Komuniti*. Dewan Bahasa dan Pustaka, Kuala Lumpur.
- Yoeti OA (1988) *Pemasaran Pelancongan*. Dewan Bahasa dan Pustaka, Kuala Lumpur.

Zhang Y, Zhou X (2013) A study of forest recreation evaluation model in China. *Procedia Computer Science* **24**, 280-288.