Towards Sustainable Environmental Management through Green Tourism: Case study on Borneo Rainforest Lodge

Yahaya Ibrahim*
Yusnita Yusof**
Universiti Sultan Zainal Abidin

Abstract: Sustainable environmental management practice is the main contributor to green tourism in the context of the tourism industry. Tourists who are concerned about the environment are more likely to choose a tourism destination with the green tourism concept. Great environmental management can contribute to both conservation and tourism industry development, which involves a dynamic relationship between tourism, biodiversity and communities. This paper focuses mainly on tourism activities related to the sustainable environmental management practices such as energy management, waste management, waste water treatment and the use of local products and community participation in the instance of the Borneo Rainforest Lodge (BRL), which the authors offer as an exemplary green tourism destination.

Keyword: Sustainable, Environment Management, Green Tourism, Borneo, Rainforest Lodge, Danum Valley

Introduction

Environmental awareness and its inclusion in tourism development models has received increasing attention from all perspectives since the 1990s (Kirkpatrick 1990, p. 44-52; Erdogan and Tosun 2009, p. 406-414). Green tourism is a sub-sector of the tourism industry that is growing rapidly all over the world. The concept of green tourism is appealing to tourists as it propagates the opportunity to explore natural landscapes while enjoying clean air and viewing the diverse flora and fauna (Ras Melaka 2011). Examples of green tourism may differ slightly in focus and meaning, but generally the term translates as environmentally friendly tourism (Furqan et al. 2010, p. 64-74).
According to Millar and Baloglu (2008), green tourism can also be associated with products and services that are beneficial to producers and consumers without affecting the environment.

In the 1970s, business organisations in developing countries had low environmental awareness and carried out their activities without any notion of responsibility toward the environment. Between the 1980s and the 1990s, environmental pressures began to affect many industries in a number of ways, and this process continues today. The majority of people now understand that their consumer behaviour may affect the environment, and the numbers of those actively choosing environmentally friendly products is rising, despite the sometimes higher cost of these products (Laroche et al. 2001, p. 503-520).

During the 33rd ASEAN Tourism Forum in Sarawak Malaysia, The Malaysian Government agreed to impose a comprehensive set of green tourism directives and standards, taking into consideration many forms of business and state services such as hotels, homestays, spas, public toilets, clean tourism cities and community based tourism (NewsDesk 2014). The ASEAN Green Hotel Standards were introduced to recognise the hotels that meet the standards agreed upon by the ASEAN National Tourism Organization. Earlier, the Ministry of Tourism and Sports of Thailand (2013) outlined practices in the ASEAN Tourism Standards Book 2011-2015 to be used by hotel management, and has been adopted by the Ministry of Tourism and Culture of Malaysia (MOTAC). The hotels that meet the standards will receive the ASEAN Green Hotel Award, and are selected through nominations from each ASEAN member country (Ministry of Tourism and Sports of Thailand 2013).

**World Tourism Scenario**

According to the United Nations World Tourism Organization (UNWTO) (2016), despite occasional shocks, the tourism industry has demonstrated virtually uninterrupted growth over time, proving the sector’s strength and resilience. International tourist arrivals have increased from 25 million globally in 1950 to 278 million in 1980, 674 million in 2000 and 1,186 million in 2015.
Tourism is a major category of international trade in services. In addition to receipts earned by destinations, international tourism also generated USD 211 billion in exports through international passenger transport services rendered to non-residents in 2015, bringing the total value of tourism exports up to USD 1.5 trillion, or USD 4 billion a day on average.

UNWTO has also listed 10 countries that represent the world's top destinations. Two changes took place in the Top 10 ranking by international tourism receipts in 2015, and one in the Top 10 by international tourist arrivals. Following the strong rebound last year, Thailand jumped from 9th to 6th place in tourism receipts, while Hong Kong (China) moved up one position to 9th from 10th. According to the UNWTO (2016), France topped in the ranking, followed by the United States, Spain, China, Italy, Turkey, Germany, United Kingdom, Mexico and Russian Federation in terms of tourist arrivals. This data shows that by the year 2015, Malaysia was removed from the ranking. The UNWTO outlook for 2016 projects international tourist arrivals to grow by 4 percent worldwide in 2016. By region, growth is expected to be stronger in Asia and the Pacific (+4% to +5%).

Malaysian Tourism

Over the years, the tourism industry in Malaysia has grown significantly, both in terms of tourist arrivals as well as economic contribution. Malaysia’s tourism industry currently ranks as the second largest foreign exchange earner after the export of manufactured goods and the sixth largest contributor to the economy, contributing a total of RM161 billion or 14.9 percent of GDP in 2014. In 2014, tourism brought in RM19.4 billion of investment and contributed a total of 1.77 million jobs, i.e. 13 percent of total employment. (Tourism Malaysia 2016). The number of tourist arrivals is based on the continuous efforts of Tourism Malaysia, whose measures have included providing a visa fee waiver for tourists from China (Borneo Post 2015). In 2014 Malaysia experienced two tragedies with the loss of Malaysia Airlines aircraft MH17 and MH370. Nevertheless, Malaysia is expected to attract 36 million tourists in 2020, generating RM168 billion in tourist receipts.
The Malaysian Government’s role is to develop policies that will make Malaysia a more tourist-friendly destination. Among the top priorities are national security, travel facilitation and sustainable environmental management.

The Malaysian tourism market can be divided into three main categories: primary market, secondary market and potential markets. Malaysia is a major market for ASEAN countries, especially Singapore, Thailand, Brunei and Indonesia. The country also attracts many tourists from Japan, Hong Kong, South Korea, China, Taiwan, India, the United Kingdom, Australia, South Africa, Canada, and the United States.

Table 1. Categories of Malaysian Tourism Market

| Primary Market                   | Secondary Market                          | Potential Market                                      |
|---------------------------------|------------------------------------------|------------------------------------------------------|
| Singapore, Thailand, Brunei, Indonesia, Japan, Hong Kong, South Korea, China, Taiwan, India, United Kingdom, Australia, South Africa, Canada, United States | Philippines, Vietnam, Laos, Kuwait, Qatar, Jordan, Iran, Sri Lanka, Pakistan, Bangladesh, New Zealand, Belgium, Austria, Norway, Denmark and Portugal | Morocco, Algeria, Libya, Mexico, Brazil, Argentina, Hungary, Romania, Slovenia and Commonwealth countries |

Sources: Tourism Malaysia (2011).

According to Klepsh and Schneider (2012) and Mohamed (2008), the development and management of tourism models that do not comply with environmental law strictly can destroy natural habitats and resources. To overcome this problem, a sustainable environmental management approach should be taken to ensure the controlled development of tourism so that natural resources are preserved.

One strategy to this end is sustainable tourism development, which is viewed from multiple perspectives: the environmental, social and economic. Sustainable tourism can contribute to environmental conservation and also provide employment opportunities to the local community (Siti Nabiha et al. 2011, p. 56-63; Mohamed 2008).
The tourism sector also helps lower income groups in improving their standard of living through activities such as handicrafts, homestay programmes and being tourist guides. At the same time it increases the small and medium level industries (Treasury 2007). According to South West (2013) the number of tourists and jobs offered can be increased through the provision of sustainable tourism accommodation. Therefore, the establishment of environmentally friendly hotels and resorts is seen as one way to attract tourists to the country.

There are many types of tourism that are often associated with the sustainability concept. Among them are acceptable tourism, natural tourism, green tourism, eco-tourism and rural tourism (Faulkner et al. 2000). All of these kinds of tourism may not only change existing models of mass tourism to more sustainability forms, but also be of benefit to the local communities (Klepsh and Schneider 2012; Kasim and Scarlat 2007, p. 5–28).

**Sustainable Environmental Management**

Environmental management is important for sustainable tourism. Environmental management systems coordinate activities carried out to protect, increase or decrease various affects on the environment (Edwards 2004). Environmental management is a broad term, and covers issues such as effects on the environment (aesthetics, culture, ecology and society), sustainability, resource management and pollution (Rocabella Mykonos Art Hotel and SPA 2012).

The hotel industry is one of the more important segments of the tourism industry overall. Since the 1990s, the hotel industry has gradually adopted more green practices, due to an unstable economy and a renewed focus on customer service (Claver-Cortes et al. 2007, p. 663-679). Factors such as concern regarding environmental issues and global climate change have also garnered attention in the tourism and hotel sectors (Kasim 2004, p. 5–28). Green hotels, also known as eco-friendly hotels, ecological friendly hotels or environmental friendly hotels are hotels where the management have introduced water conservation, energy conservation, the reduction of solid waste, as well as saving operation costs in efforts to protect the environment (GHA 2013). ASEAN (2013) defines a green hotel as a hotel that is environmentally friendly and practices energy conservation. The number of
green hotels has grown in an ever competitive accommodation industry, and the number of guests interested in staying at green hotels has also increased (Manakotola and Jauhari 2007, p. 364-377).

A study by the International Hotels Environment Initiative (IHEI) and Accor has found that 90 percent of hotel patrons selected as respondents were more interested in staying at hotels that paid attention to the caring of the environment (Mensah 2004). J. Power and Associates also conducted a satisfaction survey of guests in North American hotels in 2007 and found that 75 percent would choose hotels that followed environmental conservation programmes if they were given the option (Butler 2008, p. 234-244). Since more hotel guests are now interested in green hotels, this form of management has created a direct relationship with customer demand (Manakotola and Jauhari 2007, p. 364-377), corporate image (Mensah 2004; Penny 2007, p. 286-295) and readiness to pay a premium price for green products (Laroche et al. 2001, p. 503-520).

In the hotel industry, environmental management can be defined as the implementation of suitable programmes and activities that are carried out to reduce negative effects on the environment (Mensah 2006). Among the criteria for green tourism include encouraging the use of green products, providing training programmes for environmental management, and waste management techniques such as recycling. In big hotel chains, environmental conservation programmes have been practiced to reduce energy consumption, water consumption, creation of waste and greenhouse gas emissions. Utility source efficiency programmes have also been targeted by hotels and commercial buildings to reduce electricity usage. Now more hotels have taken initiatives such as reuse of towel and linen programmes (Meade 2011). To handle environmental impacts, hotels have voluntarily taken the initiative to change their practices. This has not only benefitted the environment, but also the hotels themselves.

Previous studies have emphasized three main principles for sustainable tourism practices: energy management, waste management and water conservation (Chan et al. 2009, p. 329-346; Mensah 2006; Bohdanowicz 2005; Sloan et al. 2004, p. 179-188). These practices have been identified as the most popular environmental management practices in hotels, in line with good environmental practice, image formation and cost savings (Mensah
Wolff (2008, p. 24-26) and Heisterkamp (2009) state that consumers hope for more green hotels that behave responsibly toward the environment.

Green hotels also implement other practices, such as eco-cooking, light energy efficiency, fittings for turning on lights and use of electronics in email correspondence and online check in compared to using physical paper (Wolff 2008, p. 24-26). These practices are often carried out even though there is little research on how green characteristics influence consumer choices (Millar and Baloglu 2008).

The hotel management sector now better comprehends that sustainability and economic growth rely on sound environmental policies. Green practice is recognized as a basic component of quality service, and as important for the development of tourism and the hotel industry. However, the true extent of commitment to green practices by hotel management is mostly unknown (Al–Shourah 2007).

**Concepts of Green Tourism**

The term ‘Green’ characterizes actions taken that can reduce negative impacts on the environment resulting from human activity (Han et al. 2010, p. 325–334). Tourism is one among several industries strongly linked to nature and the environment. The increase of tourist numbers combined with poor management results in negative impacts on nature, communities, cultures and societies, which might include pollution, generation of waste, and land degradation (Budeanu 2005). The emerging awareness of this problem has triggered alternative tourism such as green tourism, natural tourism, ecotourism and rural tourism. The term ‘green tourism’ is alternately defined as a tourism model that is “environmentally friendly”, “environmentally sensitive”, “ecologically compatible” or “ecologically sound” (Faulk 2000). Due to the lack of a fixed, standard definition of the green tourism, Hassan and Nezakati (2014, p. 24–36) have called for efforts to further clarify the concept. They emphasise green tourism’s potential as playing an important role in environmental management.

According to Dodds and Joppe (2001, p. 261–267) the concept of green tourism can be categorised as follows:
Towards Sustainable Environmental Management

Wolff (2008, p. 24-26) and Heisterkamp (2009) state that consumers hope for more green hotels that behave responsibly toward the environment. Green hotels also implement other practices, such as eco-cooking, light energy efficiency, fittings for turning on lights and use of electronics in email correspondence and online check in compared to using physical paper (Wolff 2008, p. 24-26). These practices are often carried out even though there is little research on how green characteristics influence consumer choices (Millar and Baloglu 2008).

The hotel management sector now better comprehends that sustainability and economic growth rely on sound environmental policies. Green practice is recognized as a basic component of quality service, and as important for the development of tourism and the hotel industry. However, the true extent of commitment to green practices by hotel management is mostly unknown (Al–Shourah 2007).

Concepts of Green Tourism

The term 'Green' characterizes actions taken that can reduce negative impacts on the environment resulting from human activity (Han et al. 2010, p. 325–334). Tourism is one among several industries strongly linked to nature and the environment. The increase of tourist numbers combined with poor management results in negative impacts on nature, communities, cultures and societies, which might include pollution, generation of waste, and land degradation (Budeanu 2005). The emerging awareness of this problem has triggered alternative tourism such as green tourism, natural tourism, ecotourism and rural tourism. The term 'green tourism' is alternately defined as a tourism model that is "environmentally friendly", "environmentally sensitive", "ecologically compatible" or "ecologically sound" (Faulk 2000). Due to the lack of a fixed, standard definition of the green tourism, Hassan and Nezakati (2014, p. 24–36) have called for efforts to further clarify the concept. They emphasise green tourism's potential as playing an important role in environmental management.

According to Dodds and Joppe (2001, p. 261–267) the concept of green tourism can be categorised as follows:

i. Environmental responsibility: Protect and enhance the conservation of nature and the physical environment to ensure environmental health is assured.
ii. Vitality of the local economy: Supporting the local economy, businesses and communities to ensure economic vitality and sustainability.
iii. Cultural diversity: Respecting and appreciating diversity of cultures to ensure the continued well-being of the local culture.
iv. Experience: Provide a valuable and rewarding experience through active involvement, meaningful personal life, and engagement with nature, people, places and cultures.

The Ministry of Tourism and Sports of Thailand (2011) explain green tourism through the following seven concepts:

i. Green Heart: Concepts relating to encourage travellers to be more responsible in terms of social and environmental awareness.
ii. Green Logistics: The concept of encouraging more transport methods related to eco-friendly tourism.
iii. Green Destination: This concept encourages a well-managed tourism and environmental responsibility.
iv. Green Community: Concepts related to support community-based tourism in rural and urban areas, which promote environmental conservation, local traditions and lifestyles.
v. Green Activities: Concepts related to the promotion of tourism activities suitable for the local community.
vi. Green Services: The concept urging all service providers in relation to tourism to show respect, and be concerned about the environment.
vii. Green Plus: The concept of promoting Corporate Social Responsibility (CSR) among operators.

Green tourism strategies should conserve energy and water, guide effective waste management and reduce operating costs (GHA 2013; Alexander and Kennedy 2002). According to Manaktola and Jauhari (2007, p. 364-377) and Alexander and Kennedy (2002), efficient use of water, energy and materials reduces hotel operational costs and liabilities, increasing return with low-risk investments and expanding profits. However, Chong and Verma (2013, p. 1–
Towards Sustainable Environmental Management

Kasim (2004, p. 5–28) holds that green tourism businesses should practice an accountable approach toward employees, local culture and the environment, and allow decision-making to be informed by ‘green-thinking’. Wolff (2008, p. 24-26) and Heisterkamp (2009) agree that consumers have learnt to expect green businesses to be more socially and environmentally responsible, specifically in terms of eco-purchasing and recycling.

In 2008, the Task Force for the ASEAN National Tourism Organisation led by Thailand came up with six ASEAN Tourism Standards, one of them incorporating the ASEAN Green Hotel Standards. The main aim was to acknowledge the hotels that managed to adhere to these standards. ASEAN Green Hotel Awards were given to these hotels, which were chosen through nominations by each ASEAN member country (ASEAN 2013). ASEAN (ibid) outlined the practices that were to be adopted by hotel management in selected hotels and has been used by the Ministry of Tourism and Culture, Malaysia (MOTAC). Before May 2013, only 10 of the 1,809 hotels registered with the Ministry of Tourism and Culture were recognised and categorised as green hotels by the ASEAN National Tourism Organisation. On 19 January 2014, 86 hotels from 10 ASEAN countries received the ASEAN Green Hotel Award 2014 in a ceremony held in Kuching, Sarawak. Only 10 of them were hotels in Malaysia.

Despite the fact that the hotel industry has a considerable impact on the environment, a relative paucity of Malaysian hotels comply with green practices. We hold that the green hotel industry should be subjected to further research and examination so as to serve an exemplary and illustrative function. The case study below was carried out in line with this objective, and attempts to balance a focus on sustainable environmental management with the influence of this management model on operations.

A Case study: Borneo Rainforest Lodge

The area of focus for this case study is Sabah, due to the size and popularity of this state’s tourism industry. Sabah is more naturally abundant and spectacular than other states in Malaysia, and includes a wide coastal area
with white beaches and tropical islands. Above all, Sabah’s well-preserved rainforest is perhaps its greatest asset as a tourist destination (Tarmudi et al. 2014). Figure 1 shows tourist arrival numbers in Sabah from 2002-2015. Although the numbers are a little inconsistent, arrivals continued to grow annually from 2002 to 2015 (Tarmudi et al. 2014; Sabah Tourism Board 2017).

Borneo Rainforest Lodge (BRL) is one of the highest regarded wildlife lodges in Asia, consisting of an abundance of natural wonders and rich biodiversity. BRL is situated in a magnificent setting on the Danum River which flows through Sabah’s largest protected lowland rainforest in the 44,000-hectare Danum Valley Conservation Area (DVCA) with a spectacular 130 million year old virgin jungle canopy which provides a haven for some of Borneo’s most iconic and threatened species: the orangutan, the Bornean pygmy elephant, the Sumatran rhino, and the clouded leopard. Bird diversity is exceptionally rich, with over 340 species recorded. BRL advertises an extensive network of trails and a 300m-long canopy walkway giving a bird’s-eye view of nesting orangutans up to 26m high and an innumerable number of reptiles, amphibians, insects and plants (Henry 2016; Borneo Rainforest Lodge 2016) (Figure 2).

Figure 1. Number of Arrivals in Sabah.
Source: Adapted from Sabah Tourism Board (2017)
BRL is owned and managed by Innoprise Jungle Lodge Sdn. Bhd. (IJL), which is one of the subsidiaries of the Yayasan Sabah Group. BRL has well-appointed rooms, serves good quality food and employs qualified nature-tour guides. The service is of 5-star quality, while still maintaining sustainable and environmentally sensitive practices. Each of the 31 chalet style rooms has twin or double beds, smart furnishings and private bathrooms with hot water. The chalets are constructed in a natural wooden style with a fan and open ventilation system, allowing the flow of natural air to cool the interior (Henry 2016; Borneo Rainforest Lodge 2016).

Visitors and tourists can reserve and travel to Danum valley easily. However, in order to stay at the Borneo Rainforest Lodge, one could end up on a waiting list for two to six months, based on availability (Henry 2016), regardless of season. This is because the accommodation per package is limited to a certain volume of people only. After confirming the reservation, tourists may access BRL easily as all the necessary transportation is included in the prepared packages, only flight tickets are excluded. BRL staff use a four-wheel drive vehicle to pick up tourists either in Tawau or at Lahad Datu Airport or in their branch office located in Lahad Datu district, and deliver the guests directly to the resort (Henry 2016).
Environmental Management Practices in BRL

(a) Energy Management

In this section we discuss the use of renewable energy technology adopted by BRL in their daily-operational consumption. BRL is located in an area of high ecological vulnerability. The BRL management have to maintain a ‘small footprint’ with a high degree of geographical isolation. This renders BRL as sustainable tourism product provider with limited power resources and a highly constrained infrastructure (Henry 2016; Roper 2005). Addressing the challenges in sustainable tourism with a limited amount of resources, BRL has adopted an effective mechanism to minimise the use of energy, and in the long term, reduce its carbon footprint also.

BRL utilises a directly renewable energy source to power almost 95 percent of the resort (Henry 2016). Basic facilities including the residences use 100 percent power consumption from solar panels that were pre-installed separately. All electrical consumption including lighting, entertainment devices, the minibar, is solely dependent on solar generated power. However, this source is insufficient to power large energy-hungry devices such as air conditioners. The management of BRL have utilized natural cooling effects via architectural design. All of the structures were designed with a view to maximizing these natural cooling effects (Henry 2016) whilst retaining a rustic charm attractive to tourists (Trenkner and Dias 2014) (Figure 3).

![Solar Power System in BRL](image)

**Figure 3.** Solar Power System in BRL.
Source: Used with permission from Borneo Rainforest Lodge (2016)
(b) Waste Management

Solid waste management is defined here as the monitoring and control of the generation, collection, storage, transfer, processing and disposal of solid wastes (Tchobanoglous et al. 1993). In spite of the aggressive economic development in Malaysia, solid waste management remains at a relatively poor standard (Malaysian Ministry of Housing and Local Government 1988; Nesadurai 1999). In 2015, Malaysia produced 36,000 tonnes of solid waste and 8,000 tonnes food waste every day. Unfortunately, only 5 percent of it is recycled (Lim et al. 2016, p. 5-28). In line with its green tourism objectives, BRL has applied the ‘3R’ concept: Reduce, Reuse and Recycle.

Food waste management in BRL efficiently processes food waste into a valuable resource. The resort converts food waste into organic fertiliser for gardening, as shown in (Figure 3). Garbage enzymes produced during the process can be used as an alternative to bleach and other cleaning compounds. BRL uses this by-product to clean their drainage systems. In addition to this, staff will collect all recyclable items. The funds gained from recycling are then used for waste management in BRL (Figure 4).

Figure 4. Food waste management in BRL.
Source: Used with permission from Borneo Rainforest Lodge (2016)
Food waste management in BRL efficiently processes food waste into a valuable resource. The resort converts food waste into organic fertiliser for gardening, as shown in Figure 4. Garbage enzymes produced during the process can be used as an alternative to bleach and other cleaning compounds. BRL uses this by-product to clean their drainage systems.

BRL has applied the ‘3R’ concept: Reduce, Reuse and Recycle. In line with its green tourism objectives, BRL staff will collect all recyclable items. The funds gained from recycling are then used for waste management in BRL (Refer to Figure 5 and Figure 6). In 2015, Malaysia produced 36,000 tonnes of solid waste and 8,000 tonnes food waste every day. Unfortunately, only 5 percent of it is recycled (Lim et al. 2016, p. 5-28). In 2014, BRL staff made 120 mud balls and put them into the septic tank in order to destroy the ammonia nitrogen found in human waste, and enhance the rate of decomposing organic matter. According to Zuraini et al. (2010), the EM mud balls were adopted locally as one of the environmental solutions toward reducing water pollutants and thus improving water quality in rivers and drains. In addition, fermented kitchen waste is mixed into compost, which is also used in the nursery for enriching planting and forest reclamation (Henry 2016; Borneo Rainforest Lodge 2016).

**Figure 5.** Food Waste Management Process in BRL
Source: Used with permission from Borneo Rainforest Lodge (2016)

(c) Waste Water Treatment

As BRL is located alongside the Danum River, which flows through Sabah’s largest protected lowland rainforest, the management has to take wastewater disposal into consideration. BRL has implemented Effective Microorganism (EM) technology in treating its wastewater since 2010. In 2014, BRL staff decomposing organic matter. According to Zuraini et al. (2010), the EM mud balls were adopted locally as one of the environmental solutions toward reducing water pollutants and thus improving water quality in rivers and drains. In addition, fermented kitchen waste is mixed into compost, which is also used in the nursery for enriching planting and forest reclamation (Henry 2016; Borneo Rainforest Lodge 2016).
(d) Local Produce and Community Participation

Apart from efficient energy and waste management, BRL also provide organic products for their visitors. All of the toiletries are made naturally with 100 percent pure coconut oil, vegan and safe for all skin types (Henry 2016). Figure 5 shows the toiletry products used by BRL. BRL also use eco-friendly insect repellent, which is also beneficial to the environment (Borneo Rainforest Lodge 2016). Helping the community to improve their livelihood,

![Figure 5. Organic toiletries in BRL.](image)

**Figure 6.** Organic toiletries in BL.
Source: Used with permission from Borneo Rainforest Lodge (2016)

BRL buys all the green toiletry products directly from the local community (Henry 2016). In addition, locally produced products are also sold at the Gift Shop (Borneo Rainforest Lodge 2016). BRL’s example in these regards demonstrates that green tourism helps support sustainability for the economy, community and ecology.

Conclusion

Good environmental management practices can both attract and create awareness among tourists regarding the importance of environmental sustainability in the tourism industry. In the case of BRL, the green practices they have adopted have helped to attract a growing number of travellers who want to support green establishments. Tourists who visit BRL not only embrace the beauty of nature with a lot of exciting tourism activities, but they
are also exposed to green tourism awareness. By becoming one of the prominent tourism operators in the Malaysian green industry, BRL have grown their business while ensuring Malaysia’s beautiful environment stays healthy and intact for generations to come. With the government’s support, it is hoped and suggested that green tourism practices are adopted and implemented by all hotels and resorts in Malaysia, with a view to sound environmental practices that enhance hotels’ allure rather than decreasing it.

Notes

*Yahaya Ibrahim* is a Senior Professor and former Vice Chancellor of Universiti Sultan Zainal Abidin (UniSZA). He received his PhD in Development Studies from Universiti Malaya, Kuala Lumpur, Malaysia in 2002. His research interest is on community development, green environment, consumer behavior and eco-tourism. Email: ya@unisza.edu.my

**Yusnita Yusof** is a lecturer at Universiti Sultan Zainal Abidin, Malaysia where she obtained her Doctoral study in the field of Tourism Management. Her research interest is on environmental management, green initiatives, sustainability, tourism and hospitality management; and consumer behavior in hotel industry. Email: yusnitayusof@unisza.edu.my

References

Alexander, S., and Kennedy, C. (2002). *Green Hotels: Opportunities and resources for success*. Portland, OR: Zero Waste Alliance.

Al–Shourah, A. A. (2007). *The relationship between environmental management practices (emp) and hotel performance: Emp drivers and the moderating role of perceived benefits*. PhD dissertation, Universiti Sains Malaysia, Pulau Pinang.

ASEAN (2013). *ASEAN tourism standards* [online]. Available at: www. aseantourism.travel/media/files/20130111081324_asean_tourism_standards_book.pdf [Accessed 1 February 2017].

Bohdanowicz, P. (2005). European hoteliers’ environmental attitudes: Greening the business. *The Cornell Hotel and Restaurant Administration Quarterly, 46*(2), pp. 188-204. doi: 10.1177/0010880404273891
Borneo Rainforest Lodge (2016). *Green Activities* [online]. Available at: www.borneonaturetours.com/www/brl_greenactivity.aspx [Accessed 1 February 2017].

Budeanu, A. (2005). Impacts and responsibilities for sustainable tourism: A tour operator’s perspective. *Journal of Cleaner Production*, 13(2), pp. 89-97. doi.org/10.1016/j.jclepro.2003.12.024

Butler, J. (2008). The compelling “hard case” for “green” hotel development. *Cornell Hospitality Quarterly*, 49(3), pp. 234-244. doi: 10.1177/1938965508322174

Chan, W., Wong, K. and Lo, J. (2009). Hong Kong hotels’ sewage: Environmental cost and saving technique. *Journal of Hospitality & Tourism Research*, 33(2), pp. 329-346 doi: 10.1177/1096348009338525

Chong, H. G., & Verma, R. (2013). Hotel sustainability: Financial analysis shines a cautious green light. *Cornell Hospitality Report*, 13(10), pp. 1–15.

Claver-Cortes, E., Molina-Azorin, J. F. Pereira-Moliner, J. and Lopez-Gamero, M.D. (2007). Environmental strategies and their impact on hotel performance. *Journal of Sustainable Tourism*, 15 (6), pp. 663-679. doi: 10.2167/jost640.0

Dodds, R., and Joppe, M. (2001). Promoting urban green tourism: The development of the other map of Toronto. *Journal of Vacation Marketing*, 7(3), pp. 261–267. doi:10.1177/1096348009338525

Edwards, T. J. (2004). *Making Tourism Sustainable. Environmental Incentives for Sustainable Tourism: A Renewed Strategy for Tourism Development in Small Island Developing States*. Port of Spain: Trinidad and Tobago.

Erdogan, N. and Tosun, C. (2009). Environmental performance of tourism accommodations in the protected areas: Case of Goreme historical national park. *International Journal of Hospitality Management*, 28(3), pp. 406-414.

Faulk, E. S. (2000). *A survey of environmental management by hotels and related tourism businesses*. PhD dissertation, University of St. Gallen, Switzerland.

Faulkner, B., Mascardo, G., and Laws, E. (2000). *Tourism in the 21st century: Lessons from experience*. London: Continuum.
Forte, J. (1994). Environmental-friendly management in hotels. In: B. Taylor et al., eds., Environmental Management Handbook. London: Pitman Publishing.

Furqan, A., MatSom, A. P. and Hussin, R. (2010). Promoting green tourism for future sustainability. Theoretical and Empirical Researches in Urban Management, 8 (17), pp. 64-74. doi: 10.1002/1522-1970(200101/02)3:13.0.CO;2-Q

GHA (2013). What are green hotels? [online]. Available at: http://www.greenhotels.com/whatare.htm [Accessed 1 February 2017].

Han, H., Hsu, L. T., and Sheu, C. (2010). Application of the Theory of Planned Behavior to green hotel choice: Testing the effect of environmentally friendly activities. Tourism Management, 31(3), pp. 325–334. doi.org/10.1016/j.tourman.2009.03.013

Hassan, H., and Nezakati, H. (2014). Green Tourism Practices in Malaysia. In: Selected Issues in Hospitality and Tourism, pp. 24–36. Serdang, Selangor: Universiti Putra Malaysia Press 43400.

Heisterkamp, M. (2009). Guests expect more from green programs. Hotel & motel management: Green [online]. Available at: www.hotelmanagement.net/heisterkamp [Accessed 1 February 2017].

Kasim, A. (2004). Socio-environmentally responsible hotel business: Do tourists to Penang Island, Malaysia care? Journal of Hospitality & Leisure Marketing, 11(4), pp. 5–28. doi: 10.1300/J150v11n04_02

Kirkpatrick, D. (1990). Environmentalism: The new crusade. Fortune, 12, pp. 44-52.

Klepsh, S., and Schneider, J. (2012). Sustainable Hotel Practices and its Influence on Consumer Buying Behavior. BA. dissertation, Modul Vienna University.

Laroche, M., Bergeron, J., and Barbaro-Forleo, G. (2001). Targeting consumers who are willing to pay more for environmentally friendly products. Journal of Consumer Marketing, 18(6), pp. 503-520. doi: 10.1108/EUM0000000006155

Lim, W. J., Chin, N. L., Yusof, A. Y., Yahya, A. And Tee, T. P. (2016). Food waste handling in Malaysia and comparison with other Asian countries. Journal of Hospitality & Leisure Marketing, 11(4), pp. 5-28.
Malaysian Ministry of Housing and Local Government (1988). *Action plan for the beautiful and clean Malaysia (ABC Plan)*. Kuala Lumpur: Ministry of Housing and Local Government.

Manaktola, K., and Jauhari, V. (2007). Exploring consumer attitude and behaviour towards green practices in the lodging industry in India. *International Journal of Contemporary Hospitality Management*, 19 (5), pp. 364-377. doi: 10.1108/0959610710757534

Meade, B. (2011). *Top 5 Environmental Management Strategies Affecting Your Hotel’s Bottom Line* [online]. Available at: http://hotelexecutive.com/business_review/483/top-5environmental-management-strategies-affecting-your-hotel%E2%80%99s-bottom-line [Accessed 1 February 2017].

Mensah, I. (2004) *Environmental management practices in US hotels* [online]. Available at: www.hotel-online.com/News/PR20042nd/May04EnvironmentalPractices.html [Accessed 1 February 2017].

Millar, M. and Baloglu, S. (2008). Hotel guests’ preferences for green hotel attributes [online]. *Hospitality Management-Conference Proceedings*. Available at: http://repository.usfca.edu/hosp/5 Paper 5 [Accessed 1 February 2017].

Ministry of Tourism and Sports of Thailand. (2011). Tourism Best Practices. In: *The 5th UNWTO Asia/Pacific Executive Training Program On Tourism Policy And Strategy*, Brunei Darussalam.

Mohamed, B. (2008). *Pelancongan lestari*. Kuala Lumpur: Dewan Bahasa dan Pustaka.

Nesadurai, N., (1999). *The 5R Approach to Environmentally Sound Solid Waste*. Paper Presented in Seminar on “Local Communication and the Environment” organized by EPSM, 24-25th Oct., 1998 Shah’s Village Hotel, 1999.

News Desk (2014). *ATF Sokong Pelancongan Hijau* [online]. Available at: utusansarawakonline.com/news/10629/ATF-sokong-pelancongan-hijau [Accessed 1 February 2017].

Penny, W. Y. K. (2007). The use of environmental management as a facilities management tool in the Macao hotel sector. *Facilities*, 25 (7-8), pp. 286-295. doi: 10.1108/02632770710753325
Ras Melaka (2011). *Industri pelancongan dan perhotelan hijau* [online]. Available at: rasmelaka.blogspot.com/2011/01/industri-pelancongan-dan-perhotelan_31.html [Accessed 1 February 2017].

Roper, T. (2005). Small Island States and the Clean Development Mechanism (CDM). *RECIEL*, 14 (2), pp. 108-116.

Sabah Tourism Board (2017). *Tourism Statistic* [online]. Available at: www.sabahtourism.com/business/statistic [ Accessed 1 February 2017].

Siti Nabiha, A. K., Mahadi, R., Amran, A., Abdul Wahid, N., Abustan, I. dan George, R.A. (2010). A Field Survey on the Green Performance of Selected Resorts in Malaysia. *Proceedings of the 2010 International Graduate Tourism Research Conference 2010*, K.L. Malaysia, pp: 24-35.

South West, T. (2013). **Towards 2015- Shaping Tomorrow's Tourism** [online]. Available at: http://www.swtourismalliance.org.uk/documents/q/category/about-us-docs/towards-2015/5/ [Accessed 1 February 2017].

Tchobanoglous, G., Theisen, H., and Vigil, S. (1993). *Integrated solid waste management: engineering principles and management issues* [online]. Available at: McGraw-Hill Science/Engineering/Maths [Accessed 1 February 2017].

Tourism Malaysia (2011). *Tourism Today*. *Quarterly Issue*. Kuala Lumpur: Ministry of Tourism and Culture Malaysia.

Tourism Malaysia (2015). *Exciting discoveries made easy! Malaysia: An introduction*. Kuala Lumpur: Tourism Malaysia and Ministry of Tourism Malaysia.

Treasury (2007). *Laporan ekonomi 2007/2008* [online]. Available at: http://www.treasury.gov.my/pdf/ekonomi/le/0708/bab3_0708.pdf [Accessed 1 February 2017].
Trenkner, U., and Dias, P. (2014). *Integrating Solar Thermal in Building – A Quick Guide for Architects and Builders*. UNEP.

United Nation World Tourism Organization (UNWTO) (2014). *Tourism highlights: 2014 edition*. Madrid: World Tourism Organization.

Wildlife Highlands Ocean Air (2016), *Danum Valley Field Center Accommodation and Tours* [online]. Available at: http://www.whoaadventures.com/package/danum-valley-field-center-accommodation-and-tours [Accessed 1 February 2017].

Wolff, C. (2008). *Second Nature*. Lodging Hospitality, 64 (2), 24-26.

Zuraini Z., Sanjay G. and Noresah M. S. (2010). *Effective microorganism (EM) technology for water quality restoration and potential for sustainable water resources and management*. Proceeding of the 2010 International Congress on Environmental Modelling and Software Modelling for Environment’s Sake, Fifth Bienniel Meeting, Ottawa, Canada.