

GREEN TOURISM FOR SUSTAINABLE REGIONAL DEVELOPMENT IN EAST COAST ECONOMIC REGION (ECER), MALAYSIA

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Abstract: Rapid growth of tourism industry is negatively affected mother nature as record shows that this industry contributes 5% of global greenhouse gases (GHGs) emission. In realizing this worrying fact, Green Tourism has gained its popularity as one of the measures to address the issue. Moreover, Green Tourism practices will lead to positives growth of tourism industry. In general, Green Tourism has significant orientation with local culture and natural environment, involves efficient use of energy and water, improves waste generation systems, and creates employment opportunity. Available evidence also shows that Green Tourism contributes towards sustainable regional development. In the context of Malaysia, tourism industry plays an important role for vibrant economic progress as it is the second largest foreign exchange earning sector. For this reason, the Malaysian Government has given special attention in establishing Green Tourism concepts in peculiar to the East Coast Economic Region (ECER) which consists of three states and one district namely Kelantan, Terengganu, Pahang and District of Mersing in Johor. The region is well-known for its rich natural assets such as - un-spoilt beaches, serene, coral-ringed islands as well as lush rainforests, cool clean rivers, recreational forest and calming highlands. All of these assets could be preserved by implementing Green Tourism practices. The aim of this study is to explore the potential of Green Tourism in the ECER. The study attempts to analyze the considerable issues and strategies in Green Tourism development in the region. The data for

analysis in this study is perceived from the secondary sources. Based on the analysis, there are a number of potentialities remain in this region for Green Tourism development which includes suitable tourism resources and activities, forest and protected areas, economic driver, growth of tourism sector, poverty reduction, appropriate tourism stakeholders and limited natural disadvantages. However, there are also some challenges to be tackled such as carbon emission, water consumption, waste management, less of biological diversity and management of cultural heritage. Identifying green tourism assets, ensuring sustainability, effective marketing, community participation and prevent negative environmental impact could be suitable strategies in order to deal with those challenges. Malaysian government indeed can implement appropriate policies, regulations and guidelines to boost Green Tourism development in the ECER. Strong cooperation between Federal and State authorities are needed in facilitating such efforts. Besides that, capacity building program to train human resources and local people that involve in Green Tourism should be also taken into consideration to support its implementation.

Keywords: ECER, Environment, Green Tourism, Malaysia, Regional Development

INTRODUCTION

Tourism is the largest and fastest service sector in the world today. This sector represents 5 per cent of world Gross Domestic Product

(GDP) and contributes to about 8 per cent of total employment. International tourism is accounting for 30 per cent of the world's commercial services export or 6 per cent of total exports. Tourism is top export earners for 60 countries in the world. It is also the main foreign exchange earning source for half of least developed countries (LDC) and one-third developing countries (Green Economy, 2011). Rapid growth of tourism industry is contributing to environmental pollution and other negative impacts. Record shows that tourism is contributing 5% of global greenhouse gases (GHGs) emission (UNWTO, 2008; UNEP, 2008). Without denying its importance to economic growth, tourism industry has to be more green and sustainable to avoid environmental degradation and to ensure its vibrant growth. Hence, there is a need to change unsustainable patterns of tourism practices such as excessive use of water consumption, discharge of untreated water, waste generation, damage of local biodiversity and ecosystem, and threats to local cultural traditions and built heritage.

Green Tourism becomes famous tourism segments in the globe to overcome negative impacts and sustain the economic well beings of tourism. In general, Green Tourism involves efficient energy and water use, improves waste generation system, creates employment opportunity and significant orientation with local culture and natural environment. Various studies have shown that tourists are influenced by sustainability and environmental considerations during their traveling. According to Trip Advisor survey on worldwide tourists in 2007, 38% liked environmentally-friendly tourism, 38% have had stayed at environmentally-friendly accommodations and 34% were willing to pay more for environmentally-friendly accommodations (Pollock, 2007). International Ecotourism Society (TIES) (2005) shows that maximum numbers of international tourists are attracted by social, cultural and environmental issues of tourism destinations and willing to pay local environmentally friendly accommodations. Rheem (2009) argues that about one-third of Americans tourists willing to pay additional costs for Green Tourism. Similar researches have also indicated that tourists are concerned with environmentally-friendly matters in their tourism destinations.

Green tourism was firstly introduced in Europe and generally used with rural tourism as interchangeably (Yamazaki, Oyama & Ohshima, 1997). In Asia, this tourism segmentation is become famous in a number of countries such as Japan and South Korea. The central Government of Japan is defining "green

tourism is leisure activities to enjoy the nature and culture of tourism destinations and interaction with local people in rural areas which have rich natural landscape" (The Ministry of Agriculture, 1992). Green tourism in Japan utilizes both the rural culture and nature of rural areas to attract the tourists (Kim et al., 2001). Meanwhile, South Korean Government has recognized high potential success of Green Tourism. In line with the recognition, the South Korean Government has established policy for its Green Tourism development. In this respect, Green Tourism pursues environmentally friendly development and aims to promote the values, traditions and culture of rural life (Kim, 1999).

Green Tourism practices have shown positive impacts on regional development. Current trend indicates that regional development is increasing its capacity in generating positive commercial outcomes for host communities (Getz, 2007). Thus, the issues of regional social and economic inequalities become key areas for improvement. Local government give emphasize on some competitive and comparative advantages for effective and appropriate regional development (Beattie, 2012). The sustainable regional development should be taken into account all dimension of sustainable development viz. economic, social and environment. The implementation of Green Tourism can spurs the regional economy by explicit and implicit income generation. Socially, Green Tourism is keeping cultural heritage of an area and creating employment opportunities for the local people. Moreover, Green Tourism can enhance environmentally friendly infrastructure development such as accommodations, roads, waste and water treatment plants and power plants.

Tourism is one of the largest earning sectors for Malaysia. Tourism industry effects positively on the Malaysian economy in increasing foreign exchange earners, and provides employment opportunities (Bhuiyan et al, 2011b). In this context, besides providing sufficient basic infrastructure, the Malaysian government has allocated explicit fund to boost its tourism industry (Bhuiyan et al, 2011a). Tourism is the second largest foreign exchange earning sector for the country after manufacturing. In terms of global inbound tourism receipts, Malaysia is ranked on the 16th in 2008 capturing around 2% of global market share (EPU, 2010). Malaysian Government has strong determination in mainstreaming tourism industry to generate its economic growth. This is part of its efforts to achieve high-income developed nation, inclusive and sustainable by 2020.

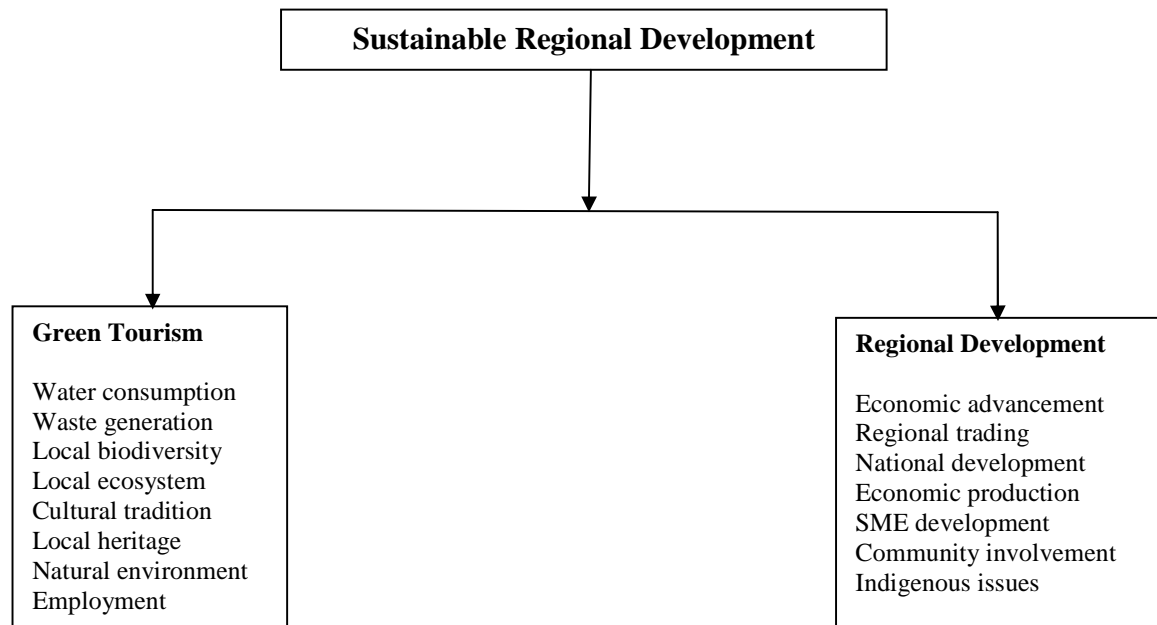


Figure 1: Sustainable regional development through green tourism
Source: Compiled by authors

Table 1: Forest Cover in the ECER

State	Total Land Area (ha)	Forested Area (ha)	% of Forested Area
Pahang	3,596,585	2,071,585	57.6
Terengganu	1,295,566	645,260	49.8
Kelantan	1,493,181	894,271	59.9
Total	6,385,332	3,611,116	56.6

Source: Technical Report (Environment) for the National Physical Plan

Table 2: Permanent Forest Reserves in the ECER by Forest Types

State	Inland Forest (ha)	Peat Swamp Forest (ha)	Mangrove Forest (ha)	Forest Plantation (ha)	Total Area under PFR (ha)
Pahang	1,396,787	97,406	2,786	24,043	1,521,022
Terengganu	538,730	13,819	1,295	3,817	557,661
Kelantan	625,843	0	0	3,844	629,687
Total	2,561,360	111,225	4,081	31,704	2,708,370

Source: Forestry Department, 2000

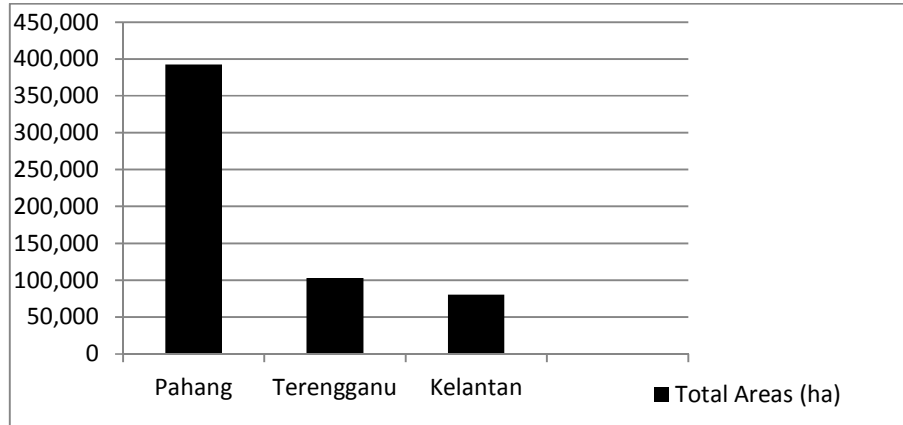


Figure 2: Protected Areas in the ECER

Source: Compiled from Department of Wildlife and National Parks, 1996

Table 3: Foreign Tourist Arrivals for the ECER, 2001-2006

Year	Kelantan ⁽¹⁾	Terengganu ⁽²⁾	Pahang ⁽³⁾
2001	650,276	142,041	1,625,200
2002	610,531	125,148	2,047,585
2003	561,572	97,743	354,681
2004	590,964	162,826	1,439,369
2005	621,705	197,952	1,325,425
2006	674,004	NA	2,918,234
AAGR (%)	6.53	1.91	8.02

Source: (1) Kelantan Tourist Information Centre; (2) Terengganu State Economic Planning Unit; (3) Fraser's Hill Development Corporation

Table 4: Domestic Tourist Arrivals for the ECER, 2001-2006

Year	Kelantan ⁽¹⁾	Terengganu ⁽²⁾	Pahang ⁽³⁾
2001	2,830,625	1,248,607	2,610,561
2002	3,514,674	1,276,671	3,211,828
2003	3,960,000	1,284,761	2,616,695
2004	4,266,286	1,418,141	3,464,233
2005	4,509,162	1,624,726	3,725,237
2006	4,212,247	NA	5,089,086
AAGR (%)	9.7	4.31	11.9

Source: (1) Kelantan Tourist Information Centre; (2) UPEN Terengganu; (3) Fraser's Hill Development Corporation

In view of this, Malaysian Government targets to improve Malaysia's position to be within top 10 tourism destination in term of tourists' receipts. The industry provides an important source of income, employment and economic growth to the country and it is projected that tourism sector will contribute RM115 billion in receipts and providing 2 million jobs in 2020 (EPU, 2010). In addition, under the Economic Transformation Program, Malaysia Government targets to achieve 36 billion tourist arrivals and RM168 billion in tourism receipts (PEMANDU, 2010). In line with the aspiration, Malaysian government is giving emphasize on several tourism segmentations such as ecotourism, green tourism, rural tourism and nature tourism. Apart from that, the government has given special attention in Green Tourism development as one of its regional development strategies in the country.

The East Coast Economic Region (ECER) consists of three states namely Kelantan, Terengganu and Pahang and District of Mersing in Johor. It covers 51% of the land area of Peninsular Malaysia and represents 14% of the national population. The ECER established under an Act of Parliament. This region is empowered to provide for coordination between Government entities in the promotion of trade, investment, tourism and development activities within this region. The region is well-known for its natural assets- unspoilt beaches, serene, coral-ringed islands as well as lush rainforests, cool clean rivers, recreational forest and calming highlands (Bhuiyan et al, 2011c). All of these attractions are suitable for Green Tourism development in the region. The study aims to explore the potential to green tourism development in the ECER. The study also attempts to analyzes issues and strategies of Green Tourism development in the region.

CONCEPTUAL FRAMEWORK

Green Tourism could contribute for sustainable regional development. Different indicators are in place in assisting decision-making processes in Green Tourism development. These include water consumption in proper way, discharge of unused water, minimum waste generation and recycling, preservation of local biodiversity and ecosystem, orientation with local cultural tradition and heritage, keeping the natural environment from pollution and creating employment opportunities for local people. Regional development has significantly improves the social cohesion, equal opportunities and development for local people. There are some indicators related to regional development, for instance area economic advancement, regional trading, national development, economic production, enhance Small & Medium

Enterprises (SME), community involvement and development, indigenous cultures, life style and traditions.

METHODS

The data for analysis in this study is perceived from the secondary sources such as policies, acts and regulations from relevant Ministries and Agencies of the Malaysian Government. Relevant published materials such as research reports, articles, books, annual reports as well as websites were also reviewed in order to accumulate secondary data.

RESULTS

Table 1 represents the forest coverage in the ECER. The region encompasses 60% of the forest areas in Peninsular Malaysia. In this respect, Pahang has the largest forested area (2,071,585 ha) among all the states in the Peninsula, followed by Kelantan (894,271 ha) and Terengganu (894,271 ha) respectively. Approximately 60% of Kelantan is covered with forest- the highest percentage in the Peninsula. This is followed by Pahang (57.6%) and Terengganu (49.8%).

Table 2 shows the permanent forest reserves in the ECER by forest types. Pahang posses highest forest areas (1,521,022 ha) in the ECER, followed by Terengganu (557,661 ha) and Kelantan (629,687 ha) respectively. Among the permanent forest reserves, inland forest is large portion (2,561,360 ha) followed by peat swamp forest (111,225 ha), mangrove forest (4,081 ha) and plantation forest (31,704 ha) respectively.

Figure 2 reveals the protected areas in the ECER. The largest protected areas situated in Pahang (392,570 ha), followed by Terengganu (103,082 ha) and Kelantan (80,377 ha) respectively.

Table 3 represents the foreign tourist arrivals in three east coast states during 2001-2006. The east coast states have displayed increasing trend in foreign tourist arrivals. The Average Annual Growth Rate (AAGR) of foreign tourists' arrivals is 6.53%, 1.91% and 8.02% in Kelantan, Terengganu and Pahang states respectively.

The east coast states have shown increasing trend in domestic tourist arrivals on the year 2006 than the year 2001. The AAGR of domestic tourist arrivals are 9.7%, 4.31% and 11.9% in Kelantan, Terengganu and Pahang states respectively. In the ECER, the highest number domestic tourists arrived in Pahang. On the other hand, Terengganu attracted lowest number of domestic tourists (Table 4).

Table 5: Additional Number of Accommodation Rooms in the ECER

Year	2005	2020	Additional Rooms Required
Kelantan	3,462	22,937	19,475
Terengganu	6,402	36,248	29,846
Pahang	21,295	70,947	49,652
Total	31,159	130,132	98,973

Source: Tourism Malaysia, 2007

The total estimated number of hotel rooms by 2020 is 130,132 with an additional requirement of 98,973 for the region. The additional requirement for rooms is 19,475, 29,846 and 49,652 for Kelantan, Terengganu and Pahang respectively until 2020 (Table 5).

DISCUSSIONS

The ECER is facing a number of development issues such as low household incomes, high levels of unemployment and poverty, poor transport and logistic support, inadequate infrastructure facilities and low rate of urbanizations. All these issues could hinder economic development of this region. As ECER is endowed with natural attractions, Green Tourism activities can be used as one of the vital tools to deal with those shortcomings. Green Tourism can lead to economic, social and environmental benefits for local communities in wide range (Mill and Morrison, 2006). Available evidences from secondary resources have indicated that there is some potentialities remain in this region for Green Tourism development.

Tourism resources

The ECER is full of various Green Tourism resources. These are mainland coastal beaches and islands, highlands, hills, mountains, lakes and waterfalls, parks, arts, crafts, culture and heritage. These resources can enhance green tourism activities in this region.

Tourist activities

Tourism activities such as sites for trekking, island trips, bicycling, diving, spa treatments are available in this region. These activities can offer employment and economic opportunities for the local people and also become attraction points for tourists.

Forest and protected areas

The ECER is consisting large portions of forest and protected areas in Peninsular Malaysia. These

invaluable forests areas can be seen as an asset to spur Green Tourism activities.

Economic driver

Green Tourism could stimulate economic progress in this region. Several development activities which regard to Green Tourism are currently occurring in this region, namely tourism destinations development, construct road and infrastructure, build hotel and other accommodations and improve transport facilities. These development activities contribute significantly in prospering economic growth in this region.

Growth of tourism sector

The tourists' arrival in the ECER is gradually increasing year by year. The average growth rate of foreign and domestic tourists' arrival were 5.495 and 8.64% respectively during the period of 2001-2006. This positive trend has positive influence on Green Tourism activities in this region.

Poverty reduction

The overall poverty rate of Kelantan, Terengganu and Pahang is 10.6%, 15.4% and 4% respectively in the ECER. The establishment of Green Tourism is potentially reducing the poverty in this region by creating employment opportunities and economic activities for the local people.

Tourism stakeholders

The effective tourism stakeholders are remaining in the ECER. Tourism stakeholders include tour operators, travel and tour agencies, accommodation suppliers, food and beverage personnel and training and educational institutions for providing skill personnel in tourism sector.

Limited natural disadvantages

Less occurring of largely natural disaster makes this region suitable for Green Tourism development.

In spite of the abovementioned advantages, there are also some challenges remaining in this region for the development of Green Tourism industry. These are,

Carbon emission

The tourism sector has important implications for carbon emissions and climate change for business growth. This sector is depending on fossil fuels and energy consumption for travel and accommodation of tourists. The growth rate of international and domestic tourist in the ECER will increase the carbon emissions as well as energy consumption and climate change effects. To reduce the carbon emission, preference will be given to energy intense transportations and energy saving accommodations (Peeters et al., 2010).

Water consumption

Tourism industry creates pressure on water use for agriculture, industry and urban domestic purpose. Tourism can decrease water quality of an area through the discharge of sewage and fresh water abstraction (Gosling, 2010). Agriculture and industry are main drivers for economic enhancement in the ECER. Water consumption in tourism sector can hamper agriculture and industry development in this region.

Waste management

Waste management is another concerning challenge for Green Tourism development in the ECER. According to UNEP (2003), every international tourist generates at least 1 kg of solid waste per day in the Europe and up to 2 kg per day in the USA.

Less of biological diversity

Large scale tourism development was affected biodiversity, local ecosystem, forests, coastal and mountain areas (UNWTO, 2010). Moreover, lack of integrate biodiversity in tourism areas will effects on natural environment, create conflict between destination authority and local people and reduce potentiality from the investors (UNEP, 2010). As biodiversity and ecosystem are main attractions in the ECER, preservation of the species is vital.

Management of cultural heritage

Tourism destinations are sometimes developed by outsiders who are not considering the traditional and indigenous communities of this area. This situation will create conflict between local communities and tourism destinations. During the last two decades, the Governments, NGOs and cultural groups have given more emphasized on tourism impacts over the vulnerable cultures (WTTC, 2010).

Green Tourism can be ensured sustainable tourism development as well as regional development in the

ECER. To ensure this development the following strategies may be followed.

Identifying Green Tourism assets

Existing Green Tourism resources in the ECER must be identified and carefully evaluated. A fruitful inventory is helpful in taking aspects with potential for development and weakness to be addressed by management practices.

Ensure sustainability

A sustainable approach is necessary for long-term Green Tourism development in this region. It helps to ensure minimize environmental degradation and socio-cultural conflicts, while maximizing socioeconomic benefits.

Effective marketing

Green Tourism products and promotion can be designed according to target markets. Positive images of Green Tourism destinations must be build up to attract the tourists.

Community participation

Community participation is necessary for sustainable Green Tourism development in any area. Local people expect opportunity to participate in the decision-making and planning process for green tourism development.

Prevent negative environmental impact

Green Tourism concerned with utilizing natural resources in minimum environmental negative impacts. Hence, Green Tourism development must occur by balancing of conservation and ecosystem in the ECER.

CONCLUSION

Green Tourism ensures environmentally friendly tourism development. This is helpful for sustainable tourism industry as well as enhancing local people well-beings. Many countries is giving emphasize on Green Tourism for sustainable regional development. Malaysian Government is not lagging behind in this aspect as a number of initiatives towards Green Tourism have been put in place. Malaysian government indeed can implement appropriate policies, regulations and guidelines to boost Green Tourism development in the ECER. Strong cooperation between Federal and State authorities are needed in facilitating such efforts. Besides that, capacity building program to train human resources and local people that involve in Green Tourism should be also taken into consideration to support its implementation.

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REFERENCES

- [1] Bhuiyan, M.A.H., C. Siwar, S.M. Ismail and R. Islam, 2011a. Potentials of Islamic Tourism: A Case Study of Malaysia on East Coast Economic Region. *Australian Journal of Basic and Applied Sciences*, 5(6): 1333-1340. ISSN 1991-8178
- [2] Bhuiyan, M.A.H., C. Siwar, S.M. Ismail and R. Islam, 2011b. The Role of Government for Ecotourism Development: Focusing on East Coast Economic Region. *J. Soc. Sci.*, 7: 557-564. DOI: 10.3844/jssp.2011.557.564
- [3] Bhuiyan, M.A.H., C. Siwar, S.M. Ismail and R. Islam, 2011c. Ecotourism Development in Recreational Forest Areas. *American Journal of Applied Sciences* 8 (11): 1116-1121. ISSN 1546-9239
- [4] Beattie, P.(2012). Premier of Queensland, Peter Beattie: government priorities.<<http://www.thepremier.qld.gov.au/govt-priorities/index.htm>>. Accessed on 09.04.12.
- [5] Economic Planning Unit (EPU) Malaysia. (2010). 10th Malaysia Plan 2011-2015, Economic Planning Unit, Prime Minister Department. Kuala Lumpur: Percetakan Nasional Malaysia Berhad.
- [6] Getz, D. (2007). *Event studies: Theory, research and policy for planned events*. Oxford, UK: Elsevier.
- [7] Gössling, S. (2010). Background Report (Water) prepared for the tourism chapter of the UNEP Green Economy Report.
- [8] Green Economy, 2011. *Tourism investing in energy and resource efficiency*. United Nations Environment Programme, 417-425.
- [9] Kim, B. 1999. A Study on Green Tourism in Japan. *Journal of Korean Institute of Forest Recreation* 3:1-13.
- [10] Kim, B., S. Han, and J. Lee, 2001 Comparative study on green tourism between Korea and Japan. *Korean Journal of Tourism Research* 16:83-103.
- [11] Mill, R., and Morrison, A. (2006). *The Tourism System*. Kendall/ Hunt Publishing Company. Fifth Edition.
- [12] Ministry of Agriculture 1992 Survey of Green Tourism on Urban Residents. Tokyo: The Ministry of Agriculture Forestry and Fisheries of Japan.
- [13] Peeters, P., Gössling, S., and Scott, A. (2010). Background Report (Tourism patterns and associated energy consumption), prepared for the tourism chapter of the UNEP Green Economy Report.
- [14] Performance Management and Management Unit (PEMANDU). (2010). *Economic Transformation Program*. Performance Management and Management Unit, Prime Minister Department. Kuala Lumpur: Percetakan Nasional Malaysia Berhad.
- [15] Pollock, A. (2007). *The Climate Change Challenge. Implications for the Tourism Industry*. The Icarus Foundation.
- [16] Rheem, C. (2009). *Going Green: The Business Impact of Environmental Awareness on Travel*. PhoCus Wright Inc.
- [17] UNEP. (2003). *A Manual for Water and Waste Management: What the Tourism Industry Can Do to Improve Its Performance*. Paris: United Nations Environment Programme.
- [18] UNEP. (2010). *Are you a green leader? Business and biodiversity: making the case for a lasting solution*. Paris: United Nations Environment Programme.
- [19] UNWTO. (2010). *Tourism and Biodiversity: Achieving common goals towards sustainability*. Madrid: World Tourism Organization.
- [20] UNWTO and UNEP. (2008). *Climate Change and Tourism, Responding to Global Challenges*. Madrid: World Tourism Organization and United Nations Environment Programme.
- [21] WTTC, (2010). *Travel & Tourism Economic Impact 2010: South Africa*. Economic Data Research Tool. World Travel and Tourism Council.
- [22] Yamazaki, M., Y. Oyama, and J. Ohshima, 1997. *Green Tourism*. Seoul: Ilshinsa.

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