# The Development of a Green Practice Index for the Malaysian Hotel Industry

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## Abstract

In recent years, the hotel industry has recognized the need to have more environmentally friendly operations. The main focus, however, has been on improving environmental management practices in developed countries. Furthermore, most attempts to develop assessment tools for green practices have come from such countries as well, which have a different socio-economic situation from developing countries. Therefore, to capture a more accurate picture of environmental management practices from the developing country context, specifically a Malaysian context, the authors in this paper created an index to measure the level of green practices among Malaysian hotels. Doing so, however, resulted in a search for green index development methods. This lead to the discovery that existing tools such as the Delphi method were not appropriate tools that could be used to develop a Malaysian green index. To address the above, the authors propose a green index development method that can be used for a Malaysian and developing country context. Hence, in this paper, the method of developing a green practice index for the Malaysian hospitality industry, the differences and advantages of this method compared to the commonly used Delphi method and finally the Malaysian Green Practice Index for the hotel industry are presented.

*Keywords:* environmental management practices, green practice index development, hotel industry, tourism environmental index.

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## Introduction

Tourism is a rapidly growing industry that contributes positively to the economic growth of a country but can also lead to negative impacts on the natural environment and society. The hospitality sector, one of the largest sectors in the tourism industry, has a major role to play in ensuring that at a minimum, operations do not adversely impact the environment. Hotel operations are not considered environmentally friendly due to the high volume of water usage (laundering) and also high energy consumption (heated pools, lighting, air-conditioning) and waste generation (usage of disposable items) (Gustin and Weaver, 1996).

Hotels, as experienced by other businesses, are facing various external pressures (from communities, competitive forces and also governmental regulations) that push for environmentally friendly practices (Kasim, 2007, Al-shourah 2007). In addition, the increase in environmentally mindful tourists reveals a future trend that could jeopardise the industry if environmental matters are not addressed. Moreover, commitment to environmentally friendly practices could lead to better organisational performance as indicated by several researchers (see Molina-Azori´n et al., 2009).

Given that environmentally friendly practices are not a matter of voluntary actions (selflessness) but are vital to ensure organisational survival (Gustin and Weaver, 1996), it is essential for hotels to have proper standards or benchmarks for environmental management practices. There is a need to assess the level of environmental performance within key sectors of the tourism industry especially the hospitality industry and identify the actions needed to ensure the future sustainability of the industry. There are various international certifications for green practices in the hospitality sector such as the Green Globe and Eco-Management and Audit Scheme (EMAS) indexes among others. These indexes can be used by hotels to benchmark and assess their green practices against generally accepted practices. Green Globe[1] , an environmental certification standard created by the World Travel and Tourism Council, translates the principles of Agenda 21 and other sustainability related international standards and agreements into practical actions for travel and tourism businesses and their supply chain partners.  Regionally, in South East Asia, there are also several widely known voluntary based environmental initiatives. For example, the Asia-Pacific Economic Cooperation (APEC) and Pacific Asia Travel Association (PATA) institutions adopted the Code for Sustainable Tourism in 2001, an eco-code intended for all types of tourism related organizations. The code is designed to spur tourism growth which is fully responsible to natural environments, social needs and cultural sensitivities. Additionally, the Thai Hotels Association (THA) created an environmental certification, the Green Leaf[2], with the help of various NGOs and other organizations in 1998. The

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[1] Green Globe Standards is a collection of 337 compliance indicators applied to 41 individual sustainability criteria. The applicable indicators vary by type of certification, geographical area as well as local factors. The Green Globe Standard is reviewed and updated twice per calendar year. Source: http://greenglobe.com/green-globe-certification-standard/

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Green Leaf Program is a competitively designed program that encourages greater environmental initiatives among Thai hotels.

However, there are currently no certifications or benchmarks that cater specifically to the Malaysian hotel industry. External assessment of the hospitality sector in Malaysia is still largely based on service quality. While international certifications are useful in providing general guidelines and benchmarks for hotels, these can sometimes be difficult to tie in with the needs and context of a specific country. As such, a relevant and country specific environmental certification or benchmark is greatly required in order to promote sustainable tourism development. A structured and comprehensive framework, i.e., a country specific green practice index could be used to evaluate the environmental practices of hotels in Malaysia and further encourage widespread adoption of feasible environmental practices. Nevertheless, there are been no systematic attempt to construct such an index or any applicable guideline to begin such an endeavour. Therefore, the purpose of this paper is to illustrate the process of developing a green practice index suitable for the hotel industry in Malaysia. The development of such an index is hoped to enhance awareness about the importance of improving environmental performance in the hotel industry.

## Environmental Management Practices in the Hospitality Sector

In the context of the hotel industry, environmental management can be seen as the management influenced adoption of a continuous process by which a hotel's activities are monitored and suitable programs and activities implemented to reduce the negative impact on the environment (Mensah, 2006). Faulk (2000) declared that the first step towards a total quality environmental management system is the initial situation analysis of the organization's environmental practices to assess operational impacts, current attitudes and communications practices. Environmental practices which drive operations, programs and activities are the essential components in an environmental management system that seeks to protect, enhance and reduce the organization's impact on the environment.

However, focusing solely on environmental impact is not enough. Tourism should lead to the development of physical, economic and socio-cultural infrastructures that translates into regional development (Gartner, 1996). As such, research on the importance of the environment to the tourism industry is not complete without the inclusion of general development and more particularly, sustainable development issues. Understanding the impact of tourism on the environment should involve examining multi-disciplined development (Dearden, 1997) and needs to include both social and economic concerns (Ott, 2003). The implication is that the environment covers a wide range of dimensions and relates not only to social involvement in the local community but also economic issues relating to organizational interactions with customers and other stakeholders.

In Malaysia, research on environmental management practices in hotels is limited with most studies having a focus on specific areas like environmental awareness and im-

pact, environmental management practices of small and medium sized hotels and elements influencing environmental responsibility. For example, Kasim (2009) explored the awareness and attitudes of small and medium hotel managers in Kuala Lumpur (Malaysia) towards environmental management. She found that there was a lack of adequate knowledge about environmental management and most hotels did not go beyond practices that reduced their water and energy costs. The lack of environmental actions was due to the perception that such actions might affect the assurance of exceptional service quality and consequently lower guests' satisfaction (Kasim and Scarlat, 2007).

Besides, environmentally concerned managers might be led to prioritize the economic interests of the hotel while suppressing their eco-centric beliefs in the absence of formalized environmental structures and empowerment (Hemingway, 2005; El Dief and Font, 2010). This phenomenon can be seen from a study by Kasim (2005) about factors influencing environmental and social responsibility in the hotel sector in Penang, Malaysia. The study found that the lack of support systems to encourage environmentally friendly practices resulted in minimal practicing of environmental initiatives even though managers were aware of the need for responsibility towards the environment.

In addition, Hong (1985) studied the social and environmental impact of tourism in general but his review on the Malaysian situation was especially focused on the negative social impact of tourism. Another study by Abdul Rahim and Abd. Samad (2010) focused on studying an issue connected to the welfare of the elderly and disabled in Malaysian hotels and resorts, an issue connected to the social aspect of the index developed in this paper. However, as the study only focused on facilities for the elderly and disabled, it was therefore not a comprehensive assessment of social practices. Other works of research on environmental issues in Malaysia concentrated on water, energy, pollution and conservation issues but were not specifically conducted in the hotel industry.

## Green Index Development Methods in the Hospitality Sector

One of the commonly used index development methods in the hospitality sector is the Delphi technique. The first step in the Delphi process normally begins with an open ended questionnaire distributed to obtain specific information about a topic from Delphi panelists (Custer, Scarcella, & Stewart, 1999). The panelists are customarily experts in the area to be investigated. However, when basic information about the topic is available, a common modification of the first step in the Delphi process is to use a structured questionnaire that is based on extensive review of literature (Kerlinger, 1973). Researchers use the collected information from the first questionnaire to prepare a well-structured questionnaire that becomes the survey instrument for the second step (Hsu & Sandford, 2007).

In the second step, each participant then has to answer or rank items to establish priorities in the well-structured questionnaire that was prepared based on information provided in the first step (Hsu & Sandford, 2007). Sometimes, panelists are asked to

provide reasons for the ranking so that consensus can start to form and actual outcomes presented (Jacobs, 1996). The third step involves a few more rounds of questionnaires. These questionnaires list the remaining items with ratings, opinions and items achieving consensus. In each round, panelists are asked to specify the reasons for remaining outside the consensus (Hsu & Sandford, 2007). During the feedback of responses, participants have the opportunity to modify their responses with anonymity (McKenna, 1994). The number of rounds depends on the number needed to achieve consensus, whereby most Delphi studies find that there is no significant added value with more than three rounds (Clayton, 1997). The fourth and last step is achieving consensus in the final round.

A number of studies in the hotel industry have used this technique to construct survey instruments or indexes. Le et. al. (2006) conducted a study using a modified Delphi approach to identify factors influencing intent to adopt environmentally friendly practices in Vietnamese hotels. First, a list of practices was created using existing programs from different sources like the Nature and Ecotourism Accreditation Program from Australia, the Ecotourism Program from Costa Rica and the 'Green Hotel' criteria from the Hyatt Corporation. Second, this list was examined by two expert panels in a semi-Delphi method. The panelists in the first expert panel were selected from Australia, the United States and Malaysia based on their knowledge and experience in sustainable tourism projects. There were three rounds of reviews to select practices thought to be relevant to Vietnam with commonly selected practices sent back to the researchers after each round.

Consequently, a list of 56 practices were compiled and used for review by the second expert panel. The second batch of panelists consisting of five Vietnamese experts (from academic institutions, the government (tourism) and business organizations) was asked to identify important items that could have been left out and also asked to eliminate items not relevant in a Vietnamese context. The first round resulted in reduction of the 56 practices to 35 practices which were further reduced to 15 practices after the second round. These 15 practices were used in a preliminary questionnaire which was pilot tested twice among 30 hotel managers. This last step to finalize the survey instrument resulted in minor changes to wording (Le et. al., 2006).

Besides the Deplhi approach, there are also other methods used by researchers to create their own environmental management index or survey instrument. An example of other methods used can be found in a study by Zeng et. al. (2010) to identify the determinants of sustainable development in the area of coastal eco-tourism. To develop the survey instrument, first, policies and regulations related to the topic were reviewed. Second, experts and practitioners from the eco-tourism and service industry were interviewed and asked for suggestions to establish the criteria to set specific items. Finally, the researchers decided on 47 items to be included in their survey instrument based on their two step approach.

El Dief and Font (2010) also used a similar method without the interviews to study the reason some Red Sea hotels were more environmentally proactive than others. As

there was no environmental management practices standard for Red Sea hotels, statements relating to environmental management in general organizational greening literature as well as a number of aspects specifically related to hotels was obtained from literature review. Based on the literature, items were chosen by the researchers to provide a balanced combination of various aspects of environmental management. Twelve practices were finally included in the survey instrument to evaluate a hotel's degree of commitment to each practice.

## Malaysian Green Index Development Method

This section explains the development process of the Malaysian Green Index presented in this paper which consists of five main steps. The first step involved constructing the green index based on a review of environmental practices and policies of selected countries in the Asia Pacific region and the identification of common attributes, practices or indicators applied by hotels in various countries.  The second step involved using case studies to validate the index while the third step was to revise the green index. This was followed by pilot testing the revised index and the last step was to finalize the index.

### Step One: Formulating the Green Index based on a Literature Review of Environmental Management Systems, Policies and Common Green Indicators

The process of developing the green practice index started with a literature review to understand international environmental policies and the concept of environmental management. A country's policy, laws and legislations are among the most coercive forces present in an environment and give the government direct power to control the preservation of the environment. Hence, it was necessary to identify the mandatory requirements of the region and country to include in the list of indicators for the environmental index. The concept of sustainable development exerts considerable pressure in the development of environmental policies among South East Asian (SEA) countries, namely, Malaysia, the Philippines, Thailand, Singapore and Vietnam. The majority of SEA countries have adopted the primary concept of sustainable development to formulate their codes of ethics, guidelines and master plans.

As such, policies, laws, regulations, systems and practices imposed and adopted by selected countries in South East Asia were reviewed. The selected countries consisted of Thailand, the Philippines, Singapore and Vietnam. It was important to review the laws and policies in the region because of the possible relevance to the Malaysian hotel industry. Most countries have tourism master plans that are very similar to each other in terms of environmental policies to achieve sustainable tourism development.

In addition, common indicators and practices found by Cruz (2003) and Mensah (2006) were studied and used in the development of the index. Literature from Cruz (2003) and Mensah (2006) was reviewed to identify environmental indicators from Ghana and other regions. Mensah (2006) studied hotels in the Greater Accra Region

(GAR) of Ghana, one of the only countries in Africa that actively incorporates sustainable practices as a result of the increasing environmental problems caused by the hotel industry (1996 Tourism Development Plan, Ghana). Ghana is unique in that the Ghana Tourist Board makes it mandatory for hotels (with more than 40 rooms) to obtain a permit from the Environmental Protection Agency before issuing the licence to commence business. This permit is only given after the hotel submits an Environmental Impact Assessment. As such, many hotels in Ghana are required to consider the environmental impact of operations and implement EMPs.

The study by Mensah (2006) found that the most common EMPs of hotels in Ghana were, in descending order, use of energy efficient light bulbs, reusing of linen and towels, training staff to be eco-friendly, use of eco-friendly cleaning products, supporting the local community, use of energy efficient appliances, use of low-flow shower heads or sink aerators and encouraging guests to be eco-friendly. The more popular practices were those that were cost efficient resulting in reduced water and electricity bills.

Similarly, Cruz (2003) successfully summarized indicators gathered from the UNEP, South Africa's Responsible Tourism, Fair Trade in Tourism, English Tourism Council, Green Globe, WSSD, Trousdale and Gentoral and other sources. The laws and policies reviewed and the common indicators and practices found by Cruz (2003) and Mensah (2006) enabled the researchers to compile a list of indicators and attributes to start developing the trial index. The common green attributes of North and South American hotels listed on green websites were analyzed after that.

### Common Attributes Applied by Hotels in the Americas

Common practices applied by hotels in North and South America were also found to be an appropriate source to identify elements of sustainable tourism development. It was possible to recognize a pattern of green practices by reviewing selected hotels in the two continents. The identification of green attributes found in the hotels located within the two continents was essential as these hotels were acknowledged to be among the forerunners of the sustainable tourism campaign.

Attributes were collected from North and South American members of the Green Hotels Association (GHA). The GHA was chosen based on its status as one of the premier hotel associations in the world. Additionally, it has received many environmental related awards, including the 1996 "E" for Excellence Environmental Award from the Executive Board of the Travel Council of the World and the 2001 Environmental Award from the American Society of Travel Agents (ASTA), the world's largest and most prestigious association of travel professionals. From the website of the GHA, 22 hotels within the two continents were selected to ascertain their EMPs. Websites of 16 hotels from the North American continent and 6 from the South American continent was visited and each green attribute (practice) applied was noted and listed. The results indicate that of all the attributes practiced by the 22 hotels, 25 green attributes were more frequent. The common green attributes identified are listed in Table 1.

**Table 1. List of Common Green Attributes of Hotels in the Americas**

| Common Green Attributes (GA) |
| --- |

1.  Conserve heat e.g. use solar.
2.  Conserve water e.g. Low flush composting toilets, constructed wetlands for grey water.
3.  Install eco-friendly lighting e.g. skylights and skytubes installed to conserve energy.
4.  Reduce oil/gas carbon emissions.
5.  Use bio degradable cleaning agents e.g. non toxic/biodegradable cleaning supplies, use natural cleaning products.
6.  Source food locally.
7.  Mention green/eco issues on Website.
8.  Conserve/care for wildlife in our area.
9.  Compost waste food.
10.  Recycle wherever possible e.g. recycles lake water on lawns for natural fertilization and moisture.
11.  Use renewable natural furnishings e.g. reused thrift/vintage furnishings, hire eco-conscious interior designer
12.  Offer local employment.
13.  Instruct staff in green practices.
14. Property is totally organic/surrounded by organic properties e.g. eco education centre, sustainable materials were used in the building itself and the items in the rooms, have an organic garden, environmentally friendly and ecologically sustainable, Natural health products. Iridology, nutritional, herbal consultations available.

15. Fresh fruit, flowers and eggs from the property.

16. No VOC paint.

17. Fans installed in room and windows open for fresh air.

18. Use reclamation building materials.

19. Include green room info packs.

20.Certification

21. Alternative Energy Resources e.g. Solar, Wind.
22. No smoking in the cottage. No pets allowed. Absolutely No Fishing, Hunting, Motorboats, Snowmobiles or ATVs.
23. Eco Permaculture Features include: solar panels, adobe construction, composting toilets, recycling, roof water collectors, gray water systems, organic gardens, community education and aid work, reforestation, erosion control.

24. Nursery of endemic trees, herbs, and flowers.

25. Promotion of ecological slow-food farming and consumption.

The analysis of the literature review and identification of common indicators from various sources resulted in the construction of a framework for the green index. This trial index was then used to assess the comprehensiveness of environmental management practices in Malaysian hotels. The literature review revealed that environmental indicators did not only have to measure environmental sustainability but could also determine social and economic impact of tourism on the host community. Thus, to construct a holistic index, the researchers included not only the environmental dimension but also the social and economic dimensions as well. As a result, 78 indicators or practices were compiled and categorized into three major areas of assessment:

Section A) Economic Impact;
Section B) Environmental Impact – containing four sub-sections;
        i)      Waste
       iii)     Water
       iii)     Energy
       iv)     Using natural resources sustainably
Section C) Social Impact - containing two sub-sections;
       i)      Maximizing local benefit: Increasing linkages and reducing leakages
       ii)     Assisting local marketing and product development

### Step Two: Case Studies for Validation

In order to validate the index, case studies were conducted to test the compatibility of the chosen indicators with the Malaysian socio-economic context. Case studies were conducted based on an explorative approach to provide in-depth information on the subject and to determine the feasibility of the index. The hotel industry was selected as the main subject due to the vital role played by this industry and its connection to the environment. The identification and selection of Malaysian hotels deemed suitable for the case studies was achieved by reviewing websites with information on hotels that were recipients of environmentally friendly awards and hotels that were members of environmentally friendly institutions.

First, the review of a website listing environmentally friendly hotels was conducted at www.environmentallyfriendlyhotels.com. The Malaysian hotels listed on this website were identified as potential case studies. Second, hotels in Malaysia that had received environmentally friendly awards at a national (i.e. the Prime Minister Hibiscus Award) or international level (i.e. ASEAN Green Award and Virgin Holidays Responsible Tourism Awards) were reviewed. Third, Malaysian hotels that had participated or was a member of environmental NGOs (such as the Business Council for Sustainable Development in Malaysia (BCSDM), Malaysian Nature Society (MNS), and Environmental Management and Research Association of Malaysia (ENSEARCH)) were identified.

Following this, a list of potential hotels were compiled and narrowed to ten subjects (three city hotels and seven resorts) located in three different Malaysian states. These hotels were managed by either local or international management companies and had

either local or foreign ownership. The selected hotels fulfilled all the criteria of being environmentally friendly hotels and among these was a leading Malaysian hotel that had a formal environmental management system. In addition, the interviewees included General Managers; a Director of Engineering; a Hygiene, Sanitation & ESH Manager (Environment, Safety & Health Management Representative); a Fire & Life System Manager; a Director of Communications; a Marketing Communication Executive; a Housekeeping Manager; and an Operational Staff. The diverse positions and ranks were crucial in order to achieve a wider perspective and obtain more in-depth information on the suitability of the indicators in a local Malaysian context. The list of people interviewed for the development of the index can be found in Table 2.

**Table 2. Interviewees during the development of the Green Practice Index**

| Hotel | Management of the hotel | Ownership | Type of Hotel | Job Position |
|-------|------------------------|-----------|---------------|--------------|
| A | Prof. Management Group (PMG) | Malaysian | Northern-Resort | G.M, Landscape Mngr. & Operational Staff |
| B | PMG | Malaysian | Northern-Resort | Training Manager |
| C | PMG | Foreign | Northern-Resort | General Manager, Chief Engineer, Landscape Manager |
| D | Owner is the manager | Malaysian | Northern-Resort | Asst. Mngr. for Landscape Pool and Sustainable, Housekeeping Supervisor |
| E | PMG | Foreign | Northern-Resort | Special Project Manager |
| F | PMG | Malaysian | Northern-Resort | Communication Director and Chief Engineer |
| G | Owner is the manager | Joint Venture | Northern-City Hotel | Housekeeping Mngr., Marketing Communication Executive |
| H | PMG | Malaysian | Northern-Resort | Safety Manger |
| I | PMG | Malaysian | West Coast-City Hotel | Env., Safety, Health Mgmt Rep.& Engineering Dept. Manager |
| J | PMG | Malaysian | West Coast-City Hotel | Director of Engineering |
| K | PMG | Malaysian | East Coast-Resort | Chief Housekeeping Executive |
| L | PMG | Malaysian | East Coast-Resort | General Manager |
| M | PMG | Malaysian | East Coast-Resort | Chief Engineer, Landscape Manager, Technician |
| N | PMG | Foreign | West Coast -City Hotel | Chief Engineer |
| O | PMG | Malaysian | West Coast –Resort | Director of Engineering |
| P | PMG | Malaysian | Southern-Resort | Senior Landscape Superintendent, Housekeeping Manager, Maintenance Supervisor. |
| Q | PMG | Foreign | Southern-City Hotel | Head of Electrical and Engineering Department |
| R | PMG | Malaysian | Southern-Resort | Head of Maintenance Department |

### *Step Three: Revising the Green Index*

The results from the case studies provided significant input about the weak and strong points in the index. Information acquired from the interviews resulted in the inclusion of more visible and conclusive indicators that captured actual information about implemented practices. One of the hotels was selected as a model of reference for the revised index due to outstanding environmental practices, policies and awards compared to the rest. The hotel, part of an international chain, had systematic control of its practices and a sound environmental management system in place. In addition, other hotels were also instrumental in providing information about new practices that were eventually incorporated into the index in the form of additional indicators.

Besides this, the first index was found to be too broad as it did not provide relevant examples of the Malaysian environment. The previous index also did not capture the rate of occurrence for some practices, as in whether it was a one off event or a recurring practice. Also, the extensiveness of practices was not examined in detail. For example, use of energy efficient devices in one of the ten hotels studied was found only in the lobby but not in other areas. An equal score for two hotels with energy efficient devices used in varying degrees would not be an accurate reflection of actual practices. As such, the index was modified to measure extensiveness (specifying areas such as guest room, lobby, toilets, etc) for some practices. In addition, indicators that were found to be unsuitable for the context of Malaysian hotels were removed from the index.

Furthermore, some practices that should have been included as indicators were not found in the index. For example, there was no indicator related to facilities for disabled guests or employees which is an important aspect of being a socially responsible hotel. The previous index also had a number of overlapping indicators that were similar in content. These were taken out and some indicators reworded to provide a more accurate index. Finally, some indicators were found to be better suited under a different category than originally placed. The Economic Impact section was changed to Internal Practice as it was found to be a more appropriate category for most indicators placed under it. Internal practice is considered an important element of environmental management systems as it relates to the organization's culture, management direction and policies. Without internal practices that incorporate elements of sustainability, environmental practices are not likely to be implemented widely in the hotel. Even though the Economic Impact section had been replaced, it was still an important aspect of sustainability that needed to be assessed. Hence, the Economic Impact section was combined with the Social Impact section to form a new section. Indicators related to Economic Impact were then added to the new section, the Socio-Economic Impact section. Once the three sections were finalized, some indicators got transferred to different sections to reflect the different dimensions more precisely.

Data gathered during the case studies provided the information needed for the modification of the green index, whereby 24 indicators (Environmental Impact 13 indicators and Social Impact 11 indicators) were removed and 34 indicators (Economic impact 9 indicators, Environmental Impact 22 indicators and Social Impact 2 indicators) were

added to the index. The modifications were based on real issues present in the actual Malaysian hotel and resort environment. Relevant issues included actual green practices, different environmental perceptions, local and national policies, corporate policies and targets, local customs and behaviour, financial conditions, new technology adaptations, owner's awareness and tourist demands. All these factors were integral in determining the appropriate adjustments needed to construct a practical green index for hotels in Malaysia.

### Step Four: Pilot Testing the Revised Index

A second round of case studies was then conducted to pilot test the modified green index. Similar to the first round of case studies, this round was also based on an explorative approach to provide detailed information for data collection. In order to get a good idea of the actual levels of EMPs adoption, case studies were randomly selected this time compared to the previous selective process of choosing hotels recognized for their EMPs. The random selection of hotels was restricted to hotels with a minimum rating of three stars. This criterion was fixed as hotels with low ratings were known to have only basic amenities, minimal furnishings and a small number of rooms. Many environmental practices require large sums of initial capital that are unavailable to hotels with lower ratings. Furthermore, such hotels focus mainly on profit and surviving in the industry due to stiff competition. Hotels with higher star ratings were in a better position to implement environmental practice as they most probably had management structures that could incorporate environmental concerns as well as sufficient funds to adopt green practices. Besides that, even though the number of larger hotels were less than the number of small and medium hotels, the impact of larger hotels were significantly greater due to the huge amount of resources used.

Requests to conduct interviews were faxed to randomly selected hotels (with ratings of three stars and above) in three different states in Malaysia. The requests included an equal number of resorts and city hotels. However, only hotels that responded positively were selected as case subjects. Although many interview requests were sent out, most hotels were not responsive and so were not part of the pilot testing. The responsive hotels used in the pilot testing comprised of eight hotels (six resorts and two city hotels). These hotels had either local or foreign ownership but were all managed by a professional group.

Similar to the first round of case studies, the different interviewee positions again provided input and a broad overview of environmental management practices in Malaysian hotels. The interviewees included General Managers; a Director of Engineering; a Housekeeping Manager; a Senior Landscape Superintendent; a Head of Maintenance Department; a Head of Electrical and Engineering Department and various other positions.

### Step Five: Finalizing the Green Index

The pilot testing of the revised index found that it was better suited to the Malaysian context compared to the trial index. However, further changes were needed to make

the revised index more relevant. First, new practices were discovered again during the pilot testing which were incorporated into the index as indicators. For example, it was found that heating systems that utilized heat from the chiller's compressor were prevalent among the case hotels. Second, certain indicators were removed as these were not practiced by any of the case hotels and thus were unlikely to be practiced by other Malaysian hotels. For example, the indicator for low flow shower heads was eventually excluded from the index as it was not feasible for Malaysian hotels, where guest satisfaction would be affected without high pressure shower heads.

Third, certain indicators with percentages were also deleted as the information was either confidential or unavailable in all hotels visited. Fourth, similar to the first revision, there were also some indicators that were transferred into different sub-sections to reflect each section more accurately. For example, the eco-permaculture indicator that was previously in the energy section was found to be an indicator that directly revealed how a hotel was using resources sustainably.

Altogether, the second revision for the index resulted in a combined total of eight indicators being removed (Internal Practice: three indicators, Environmental Impact: three indicators and Socio-Economic Impact: two indicators). Through this index development process, the researchers identified the potential sources of indicators for best practices to review and select. This information was collaborated with interviews in selected hotels to substantiate and amalgamate the index before finally developing into a green practice index that has a high potential fit within the context of Malaysian hotel industry. The final index has three main sections and six sub-sections that include the different dimensions of sustainability and elements of environmental management systems. The three main sections that were finalized in the first revision were maintained in the final index as:

Section A) Internal Practice;
Section B) Environmental Impact – containing four sub-sections;
       i)      Waste
      ii)     Water
     iii)    Energy
     iv)    Using natural resources sustainably
Section C) Socio-Economic Impact - containing two sub-sections;
       i)      Maximizing local benefit: Increasing linkages and reducing leakages
      ii)     Assisting local marketing and product development

Section A relates to Internal Practice and includes questions on the culture and policies of hotels. To have good environmental management practices, the internal policies of hotels need to inculcate such behaviour among staff, suppliers and guests. As such, this part of the index looks at training provided to staff, information given to guests on green issues, adoption of formal environmental policies like ISO 14000, criteria for choosing vendors and other related indicators.

Section B is connected to the environmental impact of hotels and encompasses four areas as listed above. The water sub-section includes the availability of water restrictor devices, dual flush toilets, toilet containers using 9 litters of water or less, harvesting of rain water, encouraging guests to save water and other similar indicators. The energy sub-section is associated with indicators such as the use of energy efficient devices, encouraging guests to save electricity, use of timers, usage of gas instead of fossil fuel, utilization of motion sensors to converse energy and others. Waste reduction indicators include activities like composting, recycling practices, reusing of linen, purchasing in bulk, using eco-friendly products and others. Finally, the sub-section on using natural resources sustainably incorporates items like having an organic garden, use of sustainable trails, use of alternative energy sources, use of soft transport and others.

The last section, Section C, looks at both the social and economic impact of the hotel. This is further divided into two sub-sections. The first sub-section is maximizing local socio-economic benefits which includes items like providing equal opportunity employment, educating the local community, allocation of non-smoking areas and others. The second sub-section is about assisting with local marketing and product development which comprises items like encouraging guests to participate in local customs, sponsoring research on environmental issues in the local community, buying local produce and others.

Furthermore, the final green practice index also includes an additional page to obtain information on the profile of a hotel. This section was added to acquire general information about a hotel's background in order to interpret the data better. Questions relate to the hotel type, hotel rating, management of the hotel, ownership of the hotel, number of rooms, origin of guests and others. In addition, there are three additional open-ended questions at the end of the index to collect detailed responses about a hotel's major achievements in green practices, its critical obstacles and the reason a hotel would continue to implement green practices in the future. The final green practice index can be found in Table 3.

## Table 3. Final Green Practice Index

| | Green Attributes | YES | NO | N/A | Examplee/ Activities | Comment |
|---|---|---|---|---|---|---|
| **A** | **Internal Practice:-** | | | | | |
| 1 | Existence of visitor information centers which includes environmental practices | | | | | |
| 2 | Employ specific personnel in charge of environmental management | | | | | |
| 3 | Benchmarking of environmental performance conducted | | | | | |
| 4 | Investment in human resource development for environmental management includes: | | | | | |
| | » In-house environmental management training program for staff. | | | | | |
| | » Send staff for external environmental management training program. | | | | | |
| 5 | Include green info packs in: | | | | | |
| | » Guest room | | | | | |
| | » Other (Staff room, lobby, garden, etc) | | | | | |
| 6 | Adopt environmental policy (exp: ISO 14000 series) or any corporate policy regarding environmental and sustainable management systems. | | | | | |
| 7 | Instruct staff to switch off all unnecessary devices (lamp, refrigerator, air-conditioner, T.V, etc.) after cleaning the room or after guests have left the meeting room or office | | | | | |
| 8 | Encourage vendors or suppliers to incorporate environmental management systems or policies in their company | | | | | |
| 9 | Preference for vendors or suppliers who have EMS certified programs | | | | | |
| 10 | Have an environmental management committee or representatives | | | | | |
| 11 | Send or have an environmental representative to work with local communities (exp: authorities, NGOs, other parties) | | | | | |
| 12 | Participate in any environmental awards, competitions or EMS programs with other parties. | | | | | |
| 13 | Compliance with best environmental practice guidelines in designing, planning and construction of buildings. | | | | | |
| 14 | Engaged a consultant in guiding the hotel to practice a correct and systematic environmental management system | | | | | |
| 15 | Set up a foundation or allocate funds yearly in the budget for: | | | | | |
| | » CSR | | | | | |
| | » Nature Conservation | | | | | |
| | | | | | | |
| | **Total out of 18 indicators** | | | | | |

| B | Environmental Impact:- | | | | | |
|---|---|---|---|---|---|---|
| I | Water | | | | | |
| 1 | Install dual flush toilets at:- | | | | | |
| | » Guest room toilet | | | | | |
| | » Other facilities (Eg: staff, lobby, swimming pool) | | | | | |
| 2 | Install toilet bowl water tanks which are 9 liters or less at: | | | | | |
| | » Guest room toilet | | | | | |
| | » Other facilities (Eg: staff, lobby, swimming pool) | | | | | |
| 3 | Use low-flow sink aerators at:- | | | | | |
| | » Guest room toilet | | | | | |
| | » Other facilities (Eg: staff, lobby, swimming pool) | | | | | |
| 4 | Conserve water by recycling rain water (Exp: watering flowers and trees, laundry) | | | | | |
| 5 | Recycle grey water (Exp: for watering garden flower and trees) | | | | | |
| 6 | Install water restrictor devices on sinks at:- | | | | | |
| | » Guest room toilet | | | | | |
| | » Other facilities (Eg: staff, lobby, swimming pool) | | | | | |
| 7 | Encourage guests to participate in water conservation by reducing water consumption (exp: putting guides or stickers, etc.) | | | | | |
| | | | | | | |
| | Total out of 11 indicators | | | | | |
| | | | | | | |
| II | Energy | | | | | |
| 1 | Use energy efficient devices (Exp: light bulbs) at:- | | | | | |
| | » Guest room | | | | | |
| | » Other (Staff room, lobby, garden, bar/lounge etc) | | | | | |
| 2 | Utilize motion sensors to conserve energy at:- | | | | | |
| | » Guest room | | | | | |
| | » Other (Staff room, lobby, garden, bar/lounge etc) | | | | | |
| 3 | Install solar panels for hot water heaters at:- | | | | | |
| | » Guest room toilet | | | | | |
| | » Other (Staff room, lobby, garden, bar/lounge etc) | | | | | |
| 4 | Use energy saving air conditioner devices (exp: inverters) at:- | | | | | |
| | » Guest room | | | | | |
| | » Other (Staff room, lobby, garden, bar/lounge etc) | | | | | |
| 5 | Encourage guests to participate in energy conservation by setting air-conditioner at around 24C$^0$ or higher. | | | | | |
| 6 | Use fans installed in open areas (Exp: lobby, lounge, etc.) | | | | | |
| 7 | Use gas instead of fossil fuel in the boiler system | | | | | |
| 8 | Heating system utilizes heat from the chiller's compressor | | | | | |
| 9 | Use timers (a device installed for setting time) to control the duration of electric appliances such as air-conditioners, fans and lamps in certain areas of the hotel:- | | | | | |
| | » Guest room | | | | | |
| | » Other (Staff room, lobby, garden, bar/lounge etc) | | | | | |
| 10 | Use key card slots to activate energy in the guest rooms | | | | | |

| 11 | Use new environmentally friendly efficiency chillers at:-<br>» Guest room<br>» Others (Exp: Kitchen, Cafeteria, Bar etc.) | | | | | |
|---|---|---|---|---|---|---|
| 12 | Use double glassed windows to reduce sun heat and noise | | | | | |
| 13 | Encourage guests to participate in energy conservation by switching off electrical items (Exp: lamps, T.V. etc) before leaving the room or when not using it. | | | | | |
| | | | | | | |
| | **Total out of 19 indicators** | | | | | |
| | | | | | | |
| **III** | **Waste** | | | | | |
| 1 | Presence of facilities to manage and minimize:-<br>» Solid Waste<br>» Liquid waste | | | | | |
| 2 | Compost food leftover and/or garden waste turned into organic fertilizer. | | | | | |
| 3 | Use eco-friendly cleaning products | | | | | |
| 4 | Recycle and reuse disposed objects such as (broken furniture, wood, bathtub, wine bottle, trunk and etc.) | | | | | |
| 5 | Practice waste sorting by placing recycle bins categorized into kitchen waste, paper, glass, plastics, aluminum cans at:-<br>» Kitchen<br>» Cafeteria/Bar<br>» Hotel compound<br>» Other (Staff room, garden, office etc) | | | | | |
| 6 | Used cooking oil not thrown away but sold to other parties | | | | | |
| 7 | Use recycled paper for printing (eg: internal memo, guest info, etc) | | | | | |
| 8 | Use recycled paper to produce brochures | | | | | |
| 9 | Education to practice recycling and waste sorting programs given to:-<br>» Staff<br>» Guests | | | | | |
| 10 | Reduce usage of laundry detergent by encouraging guests to reuse:-<br>» Linen<br>» Towels | | | | | |
| 11 | Products purchased in bulk to reduce packaging | | | | | |
| | | | | | | |
| | **Total out of 17 indicators** | | | | | |
| | | | | | | |
| **IV** | **Using natural resources sustainably** | | | | | |
| 1 | Use of local materials (where sustainable) and local architecture on a scale that does not create a negative aesthetic impact | | | | | |
| 2 | Extent of soft transport usage (cycle routes, walking trails) | | | | | |
| 3 | Use of sustainable trails and hides | | | | | |
| 4 | Conserve/care for wildlife in the area | | | | | |
| 5 | Cultivate an organic nursery or garden | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 6 | Fresh fruit, flowers and eggs from the property | | | | | |
| 7 | Eco Permaculture Features include: -<br>» Reforestation<br>» Erosion control (Exp: Placing of rocks) | | | | | |
| 8 | Alternative Energy Resources Eg: Solar, Wind | | | | | |
| | | | | | | |
| | **Total out of 9 indicators** | | | | | |
| | | | | | | |
| **C** | **Socio-Economic Impact** | | | | | |
| **I** | **Maximizing local socio-economic benefits: Increasing linkages and reducing leakages** | | | | | |
| 1 | Employment of locals for operational staff:-<br>» 0% - 25%<br>» 25% - 50%<br>» 50% - 75%<br>» 75% - 100% | | | | | |
| 2 | Employment of locals for management staff:-<br>» 0% - 25%<br>» 25% - 50%<br>» 50% - 75%<br>» 75% - 100% | | | | | |
| 3 | Provide equal employment opportunities (Exp: for those with disabilities) | | | | | |
| 4 | Existence of partnerships for the exchange of information, skills and technology relating to sustainable tourism (e.g. access to resource centers on best practices) | | | | | |
| 5 | Educate local communities about environmental practices. (exp: having an expo, speech on environmental sustainability in schools, turtle release event)<br>» One off program<br>» Recurring program | | | | | |
| 6 | Provide facilities for those with disabilities:<br>» Guests<br>» Employees | | | | | |
| 7 | Allocation of no smoking sections in:-<br>» Specific areas: _____<br>» Whole hotel | | | | | |
| | | | | | | |
| | **Total out of 16 indicators** | | | | | |
| | | | | | | |
| **II** | **Assisting with local marketing and product development** | | | | | |
| 1 | Engaged directly and/or with other parties (Exp: NGO's or corporate) to support and/or help local communities with cash or benefits in kind. (Exp: Village or School Adoption, Tsunami fund, etc.)<br>» Please state type of activity : _____<br>» One off program<br>» Recurring program | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2 | Encourage guests to participate in local customs and traditions. (Exp: participating in home stays, respecting local traditions (dances, etc), participating in local sports)<br>» Please state type of activity :_____<br>» One off program<br>» Recurring program | | | | | | |
| 3 | Sponsored research on an environmental issue in the local community | | | | | | |
| 4 | Food is sourced locally:-<br>» 0% - 25%<br>» 25% - 50%<br>» 50% - 75%<br>» 75% - 100% | | | | | | |
| 5 | Provide business opportunities for locals in hotel or guest related activities (Eg: tour guides, cultural shows, etc.) | | | | | | |
| | **Total out of 10 indicators** | | | | | | |
| | **Total out of 100 indicators** | | | | | | |

## Discussion

The approach used in this paper is different from the Delphi technique, a commonly used technique in Index Development. Although widely used to form consensus on a certain topic, the Delphi technique had a number of problems when it came to the specific context of this study. An attempt to obtain the opinions of experts was made during the development of the draft index in this paper; however it was found that there was a lack of experts who were knowledgeable in all aspects of environmental management practices in the Malaysian hospitality industry. Hence, this was one of the reasons why the Delphi technique was deemed unsuitable during index development and a more exploratory approach was adopted. While the Delphi technique focuses on 'what could or should be'; the development process of the index in this paper is more exploratory as with other surveys that seek to find out 'what is' (Miller, 2006).

The development of the green index in this paper can be summarized into five main steps. The first step began with a literature review of environmental management systems, policies, sustainable tourism initiatives and international environmental certifications. Next, to ensure greater reliability, a list of common indicators or practices used by the hotel industry in different world regions were identified and used to compile the index. This varies from the first step in the Delphi technique which utilizes an open ended questionnaire to obtain specific information from experts. As construction of the trial green practice index was based on literature review, it is similar to the first step in a modified Delphi technique which involves the development of a questionnaire from extensive review of literature if basic information is available. However, this research adopted a more explorative approach for the index development (in the second and fourth step) as it was found that there was a lack of academic experts

knowledgeable in all aspects of environmental management in Malaysia that could be used during the initial development stage.

The use of case studies for validation in the second step of index development shows the exploratory nature of this method as opposed to the second step in the Delphi technique which is the construction of a well-structured questionnaire based on information provided by experts in the open ended questionnaire. Delphi panelists are then asked to answer the questionnaire, rank items and provide reasons for the ranking to establish priorities in this second step. The use of experts in the Delphi technique implies that focus is on what should be practiced based individual opinions instead of what is being practiced and actually implemented. By testing the practicality of the index in seven resorts and three city hotels using separate interviews, no pressure existed for interviewees to be consistent with generally accepted opinions as with the Delphi process.  The opinion of one interviewee in a case study was not shared with others but instead was used separately to test the index. By using third party industry experts from actual sample  case hotels make the index more applicable to the Malaysian hotel industry and minimise the possibility of biasness as was possible with the Delphi method. Case studies also provided in-depth data collection and information on actual practices implemented. The relevancy of the indicators chosen and their compatibility in a real Malaysian socio-economic context was also determined based on real examples or practices in Malaysian hotels and resorts.

The third step in the index development process was to revise the green index based on the case studies conducted in the second step. In the Delphi method, the third step involves few more rounds of questionnaires to obtain consensus; with ratings, opinions and items achieving consensus listed in each round. Panelists are asked to specify reasons for remaining outside consensus and can modify their responses accordingly. This can lead to excessive focus on reaching consensus and selection of general practices that might not be relevant to the unique situations of individual countries. However, the green index developed in this paper utilized case studies that enabled the discovery that the index was too general and did not include practices relevant to the Malaysian context. Modification of the index was based on results from interviews that captured actual information obtained and new practices found. Furthermore, measurement of the rate of occurrence and extensiveness of practices was not found in the trial index. To increase the consistency of the index, an international hotel chain was selected to become a model of reference for the revised index. Based on all the information obtained from the case studies, a modified index was developed that was more compatible to the Malaysian Hotel Industry compared to the trial index developed from literature.

For the Delphi method, the fourth and final step is when consensus is achieved among panelists. This can happen after several rounds of questionnaires but usually no more than three rounds are needed to achieve consensus. The fourth step in the index development process was the pilot testing of the revised index conducted on newly selected hotels. The advantage of a second round of case studies as opposed to more rounds of questionnaires to obtain consensus was that greater reliability could be achieved when

more field testing is done. For example, new indicators were discovered and irrelevant indicators taken out in this step. Hence, the index development process provided very detailed findings that resulted in a comprehensive index with better applicability to the Malaysian context compared to the general consensus that would have been obtained using the Delphi technique.

The fifth and last step in the index development process was to finalize the green index based on information obtained during the pilot testing. The result of the index development process is a green practice index that has a higher suitability to the Malaysian context compared to one constructed using the Delphi process. The method used in the development of the index in this paper and the differences between that method and the Delphi technique are shown in Table 4.

**Table 4. The difference between the Malaysian Green Index Development process and the Delphi technique of obtaining consensus**

| Malaysian Green Index Development Method | Delphi Technique |
|---|---|
| **Step 1: Construct Green Practice Index**<br><br>Index constructed based on literature review of environmental management systems, policies and common green indicators or practices applied. | **Step 1: Establish Themes**<br><br>Open ended questionnaire to obtain specific information from Delphi panelists.<br>Modified 1st Step: If basic information is available, a structured questionnaire based on extensive review of literature is used instead. |
| **Step 2: Conduct Case Studies**<br><br>Interviews conducted at selected case hotels and resorts to validate the index and ensure reliability. | **Step 2: Assess Themes and Place in Rank Order**<br><br>Well structured questionnaire developed based on the information provided in the first step. Participants answer, rank items and provide reasons for the ranking to establish priorities during this round of data collection. |
| **Step 3: Revise Green Index**<br><br>Interviews provide significant input about the weak and strong points of the index resulting in modifications based on the context of Malaysian Hotel Industry<br><br>**Step 4: Pilot Test Revised Index**<br><br>A second round of case studies to assess actual adoption of environmental management practices in Malaysian hotels and resorts. | **Step 3: Assess Ranking and Re-rank**<br><br>Few more rounds of questionnaires until consensus is achieved. Each round of questionnaire has ratings, opinions and items achieving consensus listed. Panelists asked to specify reasons for remaining outside consensus and are able to modify their responses based on anonymous comments from other panelists. Note: Usually, there are no more than three rounds. |
| **Step 5: Finalize Green Index**<br><br>Feasible indicators with high compatibility to the Malaysian socio-economic context are selected based on second round of interviews to finalize the green practice index. | **Step 4: Consensus achieved**<br><br>Panelists have achieved consensus and further rounds would not add significant value. The results are then obtained from this consensus. |

## Conclusion

The index development process in this paper provided detailed findings that resulted in a comprehensive index. This was due to the inclusion of specific knowledge from many industry experts based on different areas of interest and specialization. It is hoped that the Malaysian Green Index developed in this paper would be utilized by Malaysian hotels to assess their green practices. Such an index would be better suited for this country and the adoption of indicators in the index would be more feasible compared to indicators in indexes created in developed countries. The use of appropriate avenues (such as hotel associations and the government) will facilitate widespread adoption of this index among hotels in Malaysia. As voluntary assessment among Malaysian hotels increase, enhanced sustainable tourism development in Malaysia will be possible.

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