SUSTAINABLE HOTELS – ENVIRONMENTAL REPORTING ACCORDING TO GREEN GLOBE 21, GREEN GLOBES CANADA / GEM UK, IHEI BENCHMARKHOTEL AND HILTON ENVIRONMENTAL REPORTING

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Summary

The ever increasing environmental loads generated in/by the built environment, and their growing diversity call for more effective measures aimed at reducing the ecological footprint of buildings. In the tourism industry, hotels account for a significant amount of the overall pollution generated by this sector. The potential of implementing more sustainable practices in the hotel sector requires the availability of reliable tools for assessment and benchmarking of hotel environmental performance. A number of such tools have been developed by international environmental organizations, branch associations and even hotel corporations. The various schemes differ with regard to geographical/climatic areas covered, types of hotel facilities included, detail of environmental information required, benchmarking methods, user-friendliness and implementation cost.

In this paper, four reporting and benchmarking schemes (three of them Internet-based) will be presented and compared, followed by a discussion of their relevance and usefulness for the hotel sector. The tools investigated were developed by different types of organizations, which is reflected by the variety of approaches taken and areas covered. They include Green Globes 21 (GG21), the Green Globes Canada (GGC), International Hotel Environmental Initiative (IHEI) benchmarkhotel, and Hilton Environmental Reporting (HER).

Developing and making available reliable tools for benchmarking environmental performance are important steps in the quest for sustainability in hotel facilities.

1. The Concept of Sustainability in the Hotel Industry

In light of the growing environmental degradation, society is becoming increasingly aware of the need of adopting and enforcing more effective measures of environmental protection. Sustainable development, including the development of a more sustainable built environment, has thus become a vital priority and a veritable challenge of our time. The issue of sustainability should be addressed at all levels, in cooperation with policy makers, academia, industry, the general public and many other stakeholders. A number of factors indicate that the hotel industry has an important responsibility in this process.

1.1 Global Hotel Industry and the Environment

Although hotels typically represent less than 5% of a nation's building stock (Bohdanowicz et al., 2004), the global hotel industry, comprising over 300 000 facilities, constitutes one of the most important sectors of the tourism industry (Olsen et al., 2000). Hotels provide accommodation to half of all national and international visitors (EC, 1998), which, in Europe alone, account for 160-200 million international visitors per year (WTO, 2004). Due to the high level of resource utilization (energy, water, consumables) in hotel facilities, the environmental footprint of hotels is typically larger than those of other types of buildings of similar size (Rada, 1996).

According to Perrera et al. (2003), the entire American lodging industry (including hotels, dormitories and other accommodation facilities) was estimated to consume 55.6 TWh of energy/year in 2000, while the corresponding figure for European facilities was 39 TWh (CHOSE, 2001). The prevalence of fossil-fuel generated power translates into commensurate emissions of carbon dioxide, particulates, nitrogen and sulphur oxides, and other air pollutants, both locally and globally. It is estimated that a typical hotel releases between 160 and 200 kg of carbon dioxide per m^2 of room floor area annually, depending on the fuel used to generate electricity, heating, or cooling (Chan and Lam, 2002). Bohdanowicz (in press) estimates that European hotels emit more than 10 megatonnes of CO_2. There is no collective data for hotel water consumption on a global, or a European scale, but according to Davies and Cahill (2000) tourists in the American lodging industry consume approximately 174.88 million m^3 of water annually. Most of the water consumed is released in the form of sewage, requiring adequate treatment. Since hotels are large users of consumer goods, waste generation is one of the more visible impacts the hotel industry has on the environment. According to an IHEI (2002) estimate, a typical hotel produces in excess of 1 kg of waste per guest-day, which, for a typical facility, results in many tons of waste each month. These figures illustrate the urgent need for more environmentally sound practices and products in the hotel industry.

1.2 Sustainable Development of the Hotel Industry

Until quite recently, the hotel industry has been rather oblivious of the extent of environmental damage caused by its services and operations. The last two decades, however, have brought about an increased environmental awareness among the general public, the emergence of social environmental movements, and the development of the concept of "green consumerism". This has eventually spurred growing criticism of existing tourism/hotel practices. In the recent past, environmental responsibility has been receiving more attention in the hotel industry and is now increasingly becoming a corporate issue. However, in order to achieve greater environmental responsibility, proper implementation tools and strategies are necessary. The primary instruments of action include the enforcement of relevant laws and regulations (health and safety requirements, planning and building regulations, laws relevant to water utilization, waste generation and the release of emissions), the levying of environmental taxes (e.g. based on the amount of water and energy used), as well as voluntary standards. The latter are generally less binding, and provide guidelines indicating specific levels of environment-related performance that ought to be achieved. Certification and labelling schemes offered internationally, nationally or locally by industrial organizations, governmental and non-governmental institutions are increasingly growing in popularity. In order to assist hoteliers in running more environmentally responsible businesses, branch associations, NGOs, academic communities and hotel companies themselves continue to develop guidelines, manuals and training modules.

Hoteliers are increasingly aware that the environment and its protection are crucial to hotel industry development and performance. As reported by Bohdanowicz (in press), and Bohdanowicz et al. (in press), there is a growing number of examples showing that pro-ecological initiatives are being developed and pursued at various levels, typically upon the initiative and under the stewardship of top management. The availability of facility-specific data (at the required level of detail), and access to information on relevant best practice are essential for assessing and benchmarking the environmental performance of hotel facilities.

2. Environmental Reporting and Benchmarking

2.1 Environmental Audits

In recent years, hotel companies are increasingly being evaluated by the degree of their environmental and social commitment and achievements rather than only by their financial performance. In this context, industry benchmarking is gaining attention and continuing to develop (Wöber, 2001). Performing an audit is the first step in facility performance evaluation. The American Hotel and Lodging Association (2001) recognizes two main audit types: historic (based on past performance), and diagnostic (focused on improvement possibilities). An audit includes investigating the system, its efficiency and impact exerted on the surroundings, followed by proposing areas of possible improvement. The variables collected can be

quantitative or qualitative. Information is collected on energy, water and chemicals consumption, as well as waste generation, as recorded by monitoring systems including electric power, water flow, and indoor temperature/humidity meters. Additional data is obtained from electric/gas/oil bills, turnover and occupancy records, data on investment within local communities, etc. Information relevant to pro-environmental measures and social initiatives at the destination is collected by way of questionnaires/interviews with staff and managers and other stakeholders.

The most commonly used environmental indicators provide information on *resource consumption* (water, electricity, energy, and fuels, such as coal, oil, gas, biofuels, renewable energy, as used in hotel facilities or related transportation), and *weather conditions* - to allow for a comparison of energy consumption as related to climatic conditions (e.g., outdoor temperatures, heating and/or cooling degree days); *consumption of consumables* (chemicals, consumer products, food etc.); *emissions* (to air, water, and soil) and *waste generation*; *information on supply chain characteristics*; *significant changes to facility structure and systems* (affecting resource consumption); and *specific activities at the facility* (exhibitions, congresses and conferences).

Economic indicators provide information on *the number of customers served; turnover; types and quantities of jobs created; interaction with local supply chains*; as well as *costs and benefits to local communities.* Socio-cultural indicators relate to *host communities participation in decision-making processes, local employment opportunities; other benefits/costs to the local community; local access to infrastructure and services; freedom from oppression, mistreatment and violence*; and *local community and guest satisfaction.*

2.2   Environmental Benchmarking

Facility audits and proper monitoring systems are necessary pre-conditions to facility benchmarking. Benchmarking is a new management tool, gaining popularity as an extension of already existing quality programmes in businesses. According to Wöber (2001) "benchmarking is a systematic procedure of comparative measurement with the objective to achieve continuous improvement". The main aim of benchmarking is to compare operational efficiency and environmental impact within facilities having a similar portfolio and to indicate possible improvements in business activity, processes and management by establishing more efficient operational standards. Wöber (2002) distinguishes two levels of benchmarking: internal – within a company, between different departments, or sections; and external – comparing with other organizations at different levels: *competitive benchmarking* (with rivals in the same industry), *best practice benchmarking* (with non-competing firms), and *sector benchmarking* (comparing with specific sectors or industries). Benchmarking typically involves the analysis of processes within one's own business and those in other businesses, the comparison between the two, and, eventually, the development of measures aimed at closing performance gaps identified. Comparisons are typically performed at baseline and best practice levels. The success of benchmarking in recent years can be related to its direct implications on financial benefits and increased environmental awareness. As a highly motivational process, benchmarking encourages company managers to improve environmental performance and thereby increase their profitability.

A number of environmental reporting/benchmarking tools for hotels have been developed by international environmental organizations, branch associations and even hotel corporations. The various schemes differ with regard to geographical/climatic areas covered, types of hotel facilities included, detail of environmental information required, benchmarking methods, user-friendliness and implementation cost. They all, however, aim at helping hotel managers in evaluating hotel performance from an environmental perspective, and, generally, offer solutions based on the data collected. In this paper, four reporting and benchmarking schemes (three of them Internet-based) will be presented and compared, followed by a discussion of their relevance and usefulness for the hotel sector. The tools investigated were developed by different types of organizations, reflected by the variety of approaches taken and areas covered.

3.   Green Globe 21

The Green Globe 21 (GG21) scheme is one of the first self-regulation systems and currently the most widely recognized initiative within the travel and tourism industry. It was launched in 1994 by the World Tourism and Travel Council (WTTC) and the International Hotel and Restaurant Association (IH&RA) as a result of the 1992 Earth Summit in Rio. It is based on the principles of Agenda 21 and ISO-type standards. The Green Globe 21 initiative is dedicated to improving the environmental performance of all travel and tourism companies, regardless of size, sector, location or level of environmental activity. Currently four operational standards have been developed: the GG21 Company Standard; the GG21 Community Standard; the GG21 International Ecotourism Standard; and the GG21 Design and Construction Standard (GG21, 2005).

3.1   Reporting Scheme: Criteria and Procedure

Green Globe 21 uses a series of earthcheck™ quantitative indicators to benchmark the key aspects of environmental and social performance of an enterprise in a sector of the travel and tourism industry (Scott et al., 2004). The results of indicators for a particular type, activity, market and location of an enterprise are compared with the relevant baseline and best practice levels. These level values are developed for each country and type of facility based on the data published worldwide in industry surveys and audits, case studies and design handbooks. Furthermore, the indicator benchmark values are normalized based on regional and national data on resource consumption and environmental practices to allow for the

establishment of reasonable performance targets. The performance levels for earthcheck[TM] indicators are continuously reviewed and updated. Recognizing variations within the types of services delivered and markets targeted, accommodation facilities were divided into five separate sub-sectors: business hotels, vacation hotels, motels, bed and breakfasts and motels. The *Green Globe benchmarking user guide* can be purchased for US$20 (AUD$30), while the cost of joining the GG21 scheme varies from US$225 to over US$6000 depending on the size and operational scale of the enterprise (GG21, 2003)

Accommodations are benchmarked according to seven core earthcheck[TM] indicators (Scott et al., 2004):

1. Presence of sustainability policy (yes-no).

2. Energy consumption (MJ/guest-night, all types of energy consumed have to be reported).

3. Potable water consumption (kL/guest-night).

4. Solid waste production (m^3 of landfilled waste/guest-night).

5. Social commitment (total number of employees with their primary address within a 20 km distance from the work place/total number of employees, %).

6. Resource conservation (weight of eco-labelled paper purchased in kg per year/total weight of paper purchased in kg per year, %; recognizing varied availability of eco-labelled paper in the world, paper with recycled content can be considered).

7. Chemicals use (total weight of biodegradable active chemicals use in kg per year/total weight of active chemicals used in kg/year, %; it includes cleaning chemicals and land applied chemicals, and guidelines used to determine the biodegradability are provided).

For energy and water consumption, baseline and best practice levels are adjusted to the climatic conditions of the location. Companies following the Green Globe 21 benchmarking scheme are required to register with GG21 and pay a fee. They then receive a full set of guiding materials and can proceed with the monitoring process. The values for all indicators must be reported annually to Green Globe 21 by the hotel company.

3.2   Benchmarking Report

On behalf of Green Globe, Earth Check Ply Ltd independently assesses the reports submitted and produces an analysis of performance against appropriate baseline and best practice levels (Scott et al., 2004). The enterprises evaluated are provided with an assessment of the indicator outcomes similar to that presented in Figure 1. No extra information is provided to the company on improvement potential or saving options. If the company desires to be certified with Green Globe 21, the third party assessment performed by a certified body is required.
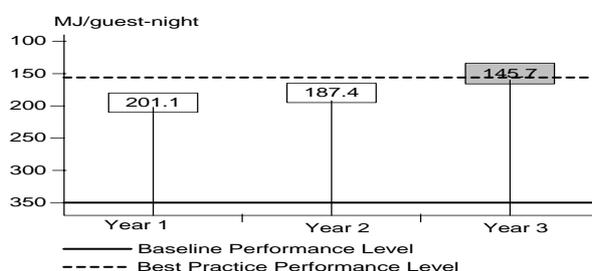

Figure 1   Example of earthcheck[TM] energy indicator and benchmark for accommodation (Scott et al., 2004)

4.   Green Globes Canada / GEM UK

Green Globes Canada (GGC) was developed in Canada with the support of federal and provincial ministries and public utilities, while GEM was developed in the UK by the RICS Foundation and Faber Maunsell. The GGC/GEM UK is a self-assessment tool based on BREEAM/Green Leaf, aimed at helping building owners and managers to monitor and assess the performance of their buildings and benchmark it against best practice criteria. The tool also suggests corrective and improvement actions. Currently, Green Globes assessment schemes are available in 3 countries: USA – Green Globes Design; Canada – Green Globes for Existing Buildings, Green Globes Design and Green Globes Fit-Up; and the UK – GEM for Existing Buildings. In this paper, Canadian Green Globes for Existing Buildings will be analyzed.

4.1   Reporting Scheme: Criteria and Procedure

The Green Globes audit criteria are based on the internationally accepted Building Research Establishment Environmental Assessment Method (BREEAM), and BREEAM Canada, as published by the Canadian Standards Association (CSA) (Green Globes Canada, 2005). Canadian Green Globes for Existing Buildings is available for two types of buildings: Offices and Multi-Unit Residential Buildings (MURBs). The latter has been used to evaluate the performance of hotel facilities. Building performance is compared to facilities with similar properties contained in a database. The assessment is performed on-line (www.greenglobes.com) for US$200 (CAN$250) per building assessment (Green Globes Canada, 2005). This fee includes data input,

compilation of a report, access to a hard-copy report, as well as the possibility to update this report and access the database and online resources throughout one year.

The assessment questionnaire is divided into 7 modules and requires the input of the following information (Green Globes Canada, 2005):

1. Building information (building location, year of construction, size, types of tenancies and services provided, number of occupational units and occupants, type of building management).

2. Energy. Energy consumption (monthly quantities and prices for electricity and gas for the given year); energy features (lighting, boilers, controls, hot water, building envelope, green electricity and utilization of renewable energies); energy management (energy policy, audits, monitoring and performance targets, training, budgeting, energy metering and sub-metering, regular and preventive maintenance); transportation (access to public transit and provision of bicycle storage facilities, carpooling).

3. Water. Water consumption (monthly quantities and prices for the given year); water conservation (water-saving features, landscape irrigation, water-cooling towers); water management (audits, monitoring and performance targets, leak detection systems).

4. Resources. Waste reduction and recycling (waste reduction and recycling facilities, composting, reuse of building materials in construction or demolition, monitoring, reduction plans and targets); site (environmental site assessments, remediation and ecological enhancement).

5. Emissions. Air emissions (NO_x emissions, boiler control and upgrades, monitoring, analysis of flue gases); ozone depletion (refrigerant type, phase out plans for ozone depleting refrigerants, leak detection and recovery, refrigerant inventories and storage); water effluents (protection of floor drains, roof drains disconnected from sanitary or combined sewers, non-toxic cleaning supplies, landscaping practices, minimization of glycol loss); hazardous materials (asbestos, radon, PCBs, storage tanks, lead and bacteria in drinking water); hazardous products, health and safety (storage and handling of hazardous materials, pesticides, Health and Safety Committee, complaints investigation and resolution protocol).

6. Indoor Environment. Indoor air (type and characteristics of ventilation and air filtration systems; humidification, cooling towers, measures to control pollutants at source, dwelling unit indoor air quality, IAQ management, training, monitoring and auditing); lighting (features and management); noise (levels and acoustic privacy).

7. Environmental Management. EMS documentation (strategic planning, performance targets, action plans, training, regulatory compliance, continuous improvement); purchasing policy (environmental purchasing, contract procurement and energy efficient equipment); emergency response (risk assessment and emergency response procedures to chemical spills, asbestos, accidental CFC release); tenant awareness (communications to occupants regarding environmental initiatives in the building and ways they can contribute to energy conservation, waste reduction and the improved handling of toxic products).

There are on average 75 questions, most requiring a simple yes-no response. Only questions concerned with resource consumption require an input of monthly data for a given 12 month period. The questionnaire can be completed in 2 to 3 hours.

4.2   Benchmarking Report

Following the completion of the questionnaire a report is generated. It contains the building eco-ratings in the area of energy, water, resources (waste and site), indoor environment and environmental management (Figure 2). These quintile ratings compare the investigated building to others that have been assessed previously.
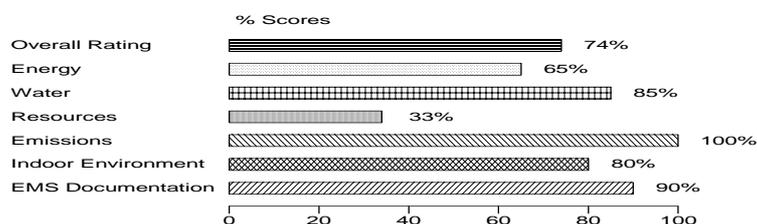
Figure 2   Report with percentage scores achieved by a hotel facility in Stockholm (own analysis) according to Green Globes

The report additionally highlights the achievements made, and suggests improvements for the building, including information on the potential of saving energy and water. Finally, links to information on building systems and management are also provided. The building can subsequently be certified through third part verification.

5.   IHEI benchmarkhotel

In response to the demand shown by hoteliers, the International Hotels Environmental Initiative (IHEI) in cooperation with WWF-UK and funding from Biffaward, developed its own, Internet-based environmental

benchmarking tool - benchmarkhotel. The tool was launched in September 2001. A number of IHEI hotel member groups including Hilton International, Marriott International, Scandic Hotels AB and Six Continents Hotels assisted in the tool development by providing data and testing the tool to ensure its usefulness for various types of hotels (Hooper et al., 2001).

5.1 Reporting Scheme: Criteria and Procedure

Currently the benchmarking scheme is available for three types of hotels (luxury full-service, mid-range full-service, and small and budget) located in three climate zones (temperate, Mediterranean and tropical). Only hotels that match the given characteristics can expect to obtain accurate results. Hotel performance in terms of resource consumption is compared with that of similar hotels worldwide. The assessment is performed on-line (www.benchmarkhotel.com) at an annual registration cost of US$210 (GBP120).

The assessment questionnaire consists of 6 modules and requires the input of the following information for the period of 12 months (benchmarkhotel, 2005):

1. Hotel profile and operation characteristics (total hotel area, number of guest rooms available, room occupancy records, guest-nights records, guest covers served, employee covers served, presence of swimming pool and on-site laundry - including the weight of linen in kg per occupied room per day).

2. Energy management (total energy consumption and costs – electricity and fuels).

3. Potable water consumption (total potable water consumption and costs, all water provided by the water company and any potable water generated on-site - drawn from a well or purified in a plant).

4. Waste minimization (volume or weight of non-hazardous waste sent for landfill disposal or dumped, exclusive of recycled and hazardous waste; costs of disposal; information on recycled and composted wastes).

5. Waste water quality (biochemical oxygen demand – BOD of waste water discharged to sewer/treatment plant; volume of waste water produced in m^3).

6. Green purchasing (a list of all purchases of chlorine bleach, and volume of CFCs consumed).

All data collected is confidential and not accessible to anyone except the hotelier entering it.

5.2 Benchmarking Report

Following the completion of the questionnaire, a report is generated. benchmarkhotel calculates the volume/quantity of resources consumed by the hotel and, compares it (confidentially) with resource consumption of similar businesses, and established practices worldwide (Table 1).

Table 1 Water performance report generated by benchmarkhotel (benchmarkhotel, 2005)

	Excellent	Satisfactory	High	Excessive
Target Benchmark (m^3/guest-night)	less than 0.48	from 0.48 to 0.54	from 0.54 to 0.88	greater than 0.88
Your Hotel's Score (m^3/guest-night)		0.49		
Potential Saving (currency used to enter data)	at least 6497 in currency used to enter data	between 0 and 6497 in currency used to enter data		

This tool also calculates the financial and resource savings that can be achieved by improving the environmental performance of a facility, and suggests measures aimed at reducing resource consumption.

6. Hilton Environmental Reporting - HER

Hilton Environmental Reporting (HER) is a scheme developed by the Hilton International, a company operating over 400 hotels worldwide. It is based on experience from 7 years of resource consumption reporting at the Scandic hotel chain. To help in keeping track of resource usage and its variation over time a measurement system called SUS (Scandic Utility System) was developed and implemented (Bohdanowicz et al., in press). When Scandic was acquired by Hilton International, efforts were undertaken to develop a more sophisticated version of SUS applicable to all Hilton International facilities. As a result, HER was launched globally in February 2004.

6.1 Reporting Scheme: Criteria and Procedure

HER is available on the Hilton Intranet and on the Internet (www.hiltonher.com) and accessible to authorized team members only. Two levels of reporting and three separate forms are used (HER, 2005):

1. Hotel profile – updated whenever hotel characteristics change (basic facility information: brand, city, year of construction, floor area, number of floors, number and types of rooms, restaurants and kitchens; additional services, i.e. health club, pool, jacuzzi, on-site laundry, landscaped grounds; types and locations of mechanical systems i.e. air conditioning, combined heat and power (CHP) units, cooling towers, solar energy systems; a list of central suppliers, including those environmentally approved).

2. Environmental data – on a monthly basis (environmental initiatives carried out, number of environmental awards received, number of reportable environmental incidents and environmental legal actions, inventory of cleaning chemicals used; quantity of unsorted, sorted and hazardous waste produced and their individual costs, types of recycled materials; vehicle fleet, and number of low emission vehicles, quantity and types of fuels consumed; types and quantities of refrigerants used).

3. Resource consumption data – on a monthly basis (consumption of electricity, district heating and cooling energy, and the energy mix used; proportion of electricity used for heating and that produced by on-site CHP units; fuels for heating and other purposes i.e. oil, propane/butane, town gas, LPG; consumption of water; heating and cooling degree days; expenses relevant to resource consumption and engineering/maintenance).

In response to some of the problems experienced with using SUS, a number of innovative solutions were incorporated into HER. First, an automatically generated e-mail message reminds key team members of upcoming report deadlines and provides a direct link to the electronic report form. Next, when a form for a new month is created, the latest reported values are automatically filled in, to reduce the risk of incorrectly entered data. To safeguard the validity of the information collected each general manager receives monthly an executive feedback report with the overview of resource consumption and environmental status of the hotel. For additional safety and quality assurance of the process, the system is being reviewed by an external company (Acona Ltd), and in Sweden, the environmental manager at the company headquarters performs periodical checks on the data submitted.

6.2   Benchmarking Report

A number of reports can be obtained from HER. Individual hotel performance is compared with data for the same month of the previous year, and also to performance of Hilton hotels in the same country and worldwide as presented in Figure 3.
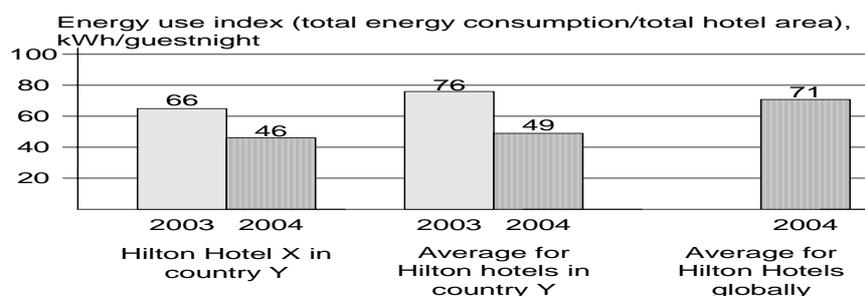

Figure 3   Energy usage report generated by HER – illustrative purpose only (HER, 2005)

The system is user-friendly and the graphical presentation of the data facilitates the communication of the environmental message to hotel team members. So far, the aim of this initiative has been to collect data and establish a database on resource utilization at Hilton International facilities. In the future it may be used for creating a more sophisticated internal benchmarking tool.

7.   Schemes comparison and conclusions

The reporting tools investigated were developed by different types of organizations, reflected by the variety of approaches taken and areas covered. A short comparison of the schemes is presented in Table 2.

Table 2 Comparison of the four reporting schemes

	Green Globe 21	Green Globes Canada	IHEI benchmarkhotel	HER
Climatic zones	Accounted for by temperature calculations	Canada	Temperate, Mediterranean, tropical	Accounted for by heating/cooling degree days
Different types of hotels	Not specified	Not primarily intended for hotels	3 categories	Not specified
Building characteristics, engineering systems	Not considered	Considered in detail	Mostly indirectly included in the hotel categories	Considered in some detail
Resource consumption	Only within the facility (building)	Only within the facility (building)	Only within the facility (building)	Within facility and related to transportation
Periodical reporting /benchmarking	Annual	Monthly for 12 months	Annual	Monthly
Level of detail	Low	High	Low	Moderate/high
Level of expertise from	Low	High	Low	Moderate/high

person performing the analysis				
Report	Graph	Graph and comments	Table	Graph
Benchmarking	Against country baseline and best practice	Against other buildings in the database	Against other hotels in the database and literature data	Against other Hilton hotels in the country and worldwide
Indication of saving possibilities	No	Yes	Yes	No
Cost	US$ 20 (guidelines only)	US$ 200	US$ 210	No fees – internal costs only

The benchmarking tools developed by Green Globe 21 (GG21) and IHEI are relatively simple to use, but they do not consider information relevant to building characteristics or the systems installed. By contrast, the Green Globes Canada (GGC) tool focuses in detail on a wide range of building characteristics and requires a high degree of user competence. HER is a very sophisticated tool for data collection, but stops short of providing suggestions relevant to savings potential or recommendations on system improvements. The GGC and IHEI schemes have limited applicability outside the narrow climate zones indicated.

The general conclusion of this paper is that the hotel industry is in need of a reliable and universally applicable tool for reporting and benchmarking environmental performance. The necessary work should be carried out in cooperation with various sectors of the hotel industry, academia and authorities.

References

American Hotel and Lodging Association 2001, Energy management and conservation guide. Washington DC, USA.

benchmarkhotel 2005, IHEI benchmarkhotel web site available at http://www.benchmarkhotel.com, 7.01.2005.

Bohdanowicz P. European hoteliers' environmental attitudes: greening the business, Cornell Hotel and Restaurant Quarterly (in press).

Bohdanowicz, P., Simanic, B., Martinac, I. 2004, Sustainable hotels – eco-certification according to EU Flower, Nordic Swan and the Polish Hotel Association, In Proceedings of the Regional Central and Eastern European Conference on Sustainable Building (SB04), Warszawa, Poland.

Bohdanowicz, P., Simanic, B., Martinac, I. Environmental training and measures at Scandic Hotels, Sweden. Tourism Review International (in press).

Chan, W.W., Lam, J.C. 2002, Prediction of pollutant emission through electricity consumption by the hotel industry in Hong Kong. Hospitality Management 21, pp. 381–391.

CHOSE 2001, Energy savings by combined heat cooling and power plants (CHCP) in the hotel sector. Report of the Commission of the European Communities, Directorate General for Energy, Stockholm, Sweden.

Davies, T., Cahill, S. 2000, Environmental implications of the tourism industry. In Resources for the Future, Washington, USA.

European Commission 1998, Facts and figures on the Europeans on holidays 1997-1998. European Commission Directorate General XXIII, Brussels, Belgium.

Green Globe 21 2003, Green Globe 21 global fee structure 2003. Green Globe Asia Pacific, Australia.

Green Globe 21 2005, Green Globe 21 web site available at http://www.greenglobe21.com, 6.01.2005.

Green Globes Canada 2005, Green Globes Canada web site available at http://www.greenglobes.com, 6.01.2005.

HER 2004, Hilton Environmental Reporting internal web site available at http://www.hiltonher.com, 26.02.2005.

Hooper, S., Tantram, J, Gaywood, A. 2001, Benchmarking tool identifies £400m potential environmental cost savings for hotels, available at http://www.iblf.org/ , 6.01.2005.

International Hotel Environmental Initiative 2002, Hotels care: Community action and responsibility for the environment. IHEI, London, UK.

Olsen, M.D., Zhao, J., Sharma, A., Choi, J.-G. 2000, Leading hospitality into the age of excellence: Expansion, competition and vision in the multinational hotel industry 1995-2005. An IH&RA White Paper on the Global Hospitality Industry. International Hotel and Restaurant Association, Paris, France.

Perera, O., Hirsch, S., Fries, P. 2003, Switched on – Renewable energy opportunities in the tourism industry. United Nations Environmental Program Publication, Washington DC, USA.

Rada, J. 1996, Designing and building eco-efficient hotels. Green Hotelier Magazine 4, pp. 10-11.

Scott, J.A., Beckenham, T., Watt, M. 2004, Travel and tourism industry benchmarking methodologies. Green Globe 21, Earth Check Pty Ltd.

Wöber, K.W. 2002, Benchmarking in tourism and hospitality industries. Vienna University of Economics and Business Administration, CAB International, Austria.

Wöber, K.W. 2001, Benchmarking for tourism organizations - an eGuide for Tourism Managers. National Laboratory for Tourism and eCommerce.

World Tourism Organization (WTO) 2004, Tourism market trends - 2003 edition, world overview and tourism topics. WTO, Madrid, Spain.