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Cornell Hospitality Report

Environmental Sustainability in the Hospitality Industry:
Best Practices, Guest Participation, and Customer Satisfaction

by Alexandra Bruns-Smith, Vanessa Choy, Howard Chong, Ph.D., and Rohit Verma, Ph.D.

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School of Hotel Administration



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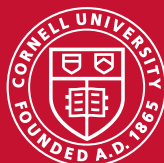
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EXECUTIVE SUMMARY

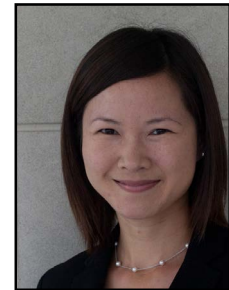
Certain sustainability practices could be considered nearly universal in the lodging industry, based on a study of 100 resorts in the United States. Among the common green practices are water conserving fixtures and linen-reuse programs. A separate survey of 120,000 hotel customers finds that guests are generally willing to participate in sustainability programs, but the presence of green operations still do not override considerations of price and convenience in selecting a hotel. Additionally, the study finds an increased willingness to participate when hotels offer incentives, such as loyalty program points, for participating in environmental programs. Although the link between environmentally sustainable programs and improved customer satisfaction is weak compared to standard drivers like facilities, room, and food and beverage quality, hotels are increasingly expected to maintain sustainability programs as a regular feature of their business. At the same time, the study did find that environmentally sustainability programs do not diminish guest satisfaction. Consequently, the decision regarding which programs to implement should rest on cost-benefit analysis and other operating considerations.

ABOUT THE AUTHORS



Alexandra Bruns-Smith is a sophomore at the Cornell School of Hotel Administration. Originally from Saint Louis, Missouri, Alexandra is interested in studying sustainable hospitality and health care management. She is a Hunter R. Rawlings III Cornell Presidential Research Scholar (RCPRS) and will continue to conduct research in the field of sustainable hospitality. She believes that this area of research is critical for hotels to stay profitable and viable in a world that is increasingly environmentally-aware. “

Vanessa Choy is a specialist in customer experience research for CX Act, a CX Solutions Company. As a senior account manager with CX Act, she works with client teams to clarify business and research objectives, and is responsible for managing and ensuring the successful delivery of research projects. Vanessa started her career in marketing research with Synovate Hong Kong, and has worked for clients across the Asia Pacific region. A large part of her work involved research studies in China, where she was stationed for a year. Vanessa holds a Master of Management in Hospitality from Cornell University’s School of Hotel Administration and a Bachelor of Business from Nanyang Business School, Singapore.



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The authors would like to thank **J.D. Power** (a CHR Friend) for providing the customer database that was the basis of several of the findings presented in this report.

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by Alexandra Bruns-Smith, Vanessa Choy, Howard Chong, and
Rohit Verma

The hotel industry's long-established and continuous effort to control costs through such sustainable practices as limiting water and energy use has been given additional impetus as consumers have become interested in having hotels reduce their resource consumption and address their impact on the environment. Despite years of conservation efforts, hotels' energy and resource use is still considerable—but that also opens the way to further sustainability efforts, which have the double benefit of saving money and benefiting the environment.

Hotel operators are well aware of the potential benefits of sustainability, and many of them publicly promote resource conservation. Marriott, for example, has achieved several certifications for its environmental efforts, and in 2011 was named the “greenest” hotel company in the U.K.¹ In addition to Marriott’s Environmental Public Policy Statement, which outlines several resource-reduction goals over a ten-year period, the company advertises that it was the first major hotel company to build a LEED-certified hotel in the U.S. and support conservation efforts on a domestic and global scale.

Hilton Worldwide also publicizes its environmental sustainability efforts. In its 2009 Corporate Responsibility Report, for instance, Hilton set a goal of reducing waste by 20 percent and water use by 10 percent by the end of 2013. Hilton exceeded those goals, reducing waste by 24.9 percent and water reductions by 10.2 percent. (The firm’s energy and carbon reduction goals proved more elusive.) Thus, decreasing water and energy use can cut utility costs for a hotel while also showing its commitment to corporate stewardship and decreasing its drain on the surrounding environment.

Although hotels’ sustainability efforts are essential for saving energy and resources, a key element of any green program is guests’ reaction and participation. After a review of industry best practices, this report documents the sustainability programs of 100 top resorts in the U.S. (in terms of the number of sustainability programs in place) and then focuses on guests’ view of the broader lodging industry’s sustainability programs. This report is one in a series of reports and roundtable proceedings published by the Center for Hospitality Research (CHR) that have examined the links between environmental sustainability, financial and market performance, guest satisfaction, and resource efficiency. Others in this series are listed at the end of this report. This paper describes some of the best practices pursued by resort operators, related to water, energy, and waste reduction, and explores the relationship between sustainability programs, guest participation, and customer satisfaction.

Background and Past Research

In this section of the report we discuss best practices related to energy, water, and waste reduction, as identified in numerous research studies, followed by research related to market and financial performance. Given that electricity typically accounts for 60 to 70 percent of a hotel’s utility costs, it’s worthwhile to reexamine the industry’s conservation efforts. The hospitality industry spends about \$3.7 billion on energy annually. EnergyStar estimates that a 10-percent decrease in energy consumption by a typical full-service

¹ “Marriott International Named “Greenest” Hotel Company in UK”, <http://news.marriott.com/2011/06/marriott-international-named-greenest-hotel-company-in-uk.html>, viewed 19 March 2014.

hotel would have the same financial impact as increasing average daily room rate by \$1.35.² Water use is a large part of the energy bill. A typical hotel uses 218 gallons of water per day per occupied room, according to the California Department of Resources Recycling and Recovery, primarily for restrooms, laundry, and landscaping. As just one example of the link between water conservation and energy reduction, at Caesars Palace in Las Vegas, Eric Dominguez, corporate director of engineering, utilities, and environmental affairs at the property, found that reducing water use by 7 percent resulted in savings of \$135,000 to \$218,000 in natural gas bills per year used to heat the water.³

Energy Best Practices

As solar photovoltaic systems have become more practical, solar energy has become one way hotels have been able to cut costs while using “green” energy. Studies have found that solar panels can generate around 25 percent of the energy that a hotel needs to operate.⁴ Reducing solar gain is also important. In tropical areas solar control film, a polyester layer used to coat windows, is highly beneficial, because it can be retrofitted into existing hotels at low cost and has been shown to save hotels 155kWh of electricity per year.⁵ Simply orienting a building to capture (or avoid) insolation can save on energy use.⁶

Even something as simple as updating the heating system used in hotel swimming pools can save money. Although this practice has not been widely adopted, switching to an air-to-water heat pump from a conventional heating system (typically, heat from electronic sources or a condensing boiler) can save 50 percent of the energy used and reduce greenhouse gas emissions by 12,000 kg.⁷ Where natural gas is available, hotels can replace electricity with gas as a source of energy for the laundry and catering services, reducing the hotel’s environmental impact, measured

² “Hotels: An Overview of Energy Use and Energy Efficiency Opportunities”, <http://www.energystar.gov/buildings/sites/default/uploads/tools/SPP%20Sales%20Flyer%20for%20Hospitality%20and%20Hotels.pdf>, viewed 7 April 2014.

³ B. Howard, National Geographic website, <http://news.nationalgeographic.com/news/energy/2014/02/140224-hotels-save-energy-with-push-to-save-water/>, viewed 7 April 2014.

⁴ E. Bader, “Sustainable Hotel Business Practices”, *Journal of Retail and Leisure Property*, Vol. 5 Issue 1 (2005), pp. 70-77.

⁵ W.W. Chan, L.M. Mak, Y.M. Chen, Y.H. Wang, H.R. Xie, G.Q. Hou, and D. Li, “Energy Saving and Tourism Sustainability: Solar Control Window Film in Hotel Rooms”, *Journal of Sustainable Tourism*, Vol. 16 Issue 5 (2008), pp. 563-574.

⁶ Yong Han Ahn and Annie R. Pearce, “Green Construction: Contractor Experiences, Expectations, and Perceptions”, *Journal of Green Building*, Vol. 2, No. 3 (Summer 2007), pp. 106-122.

⁷ Wilco Chan and Joseph C. Lam, “Energy-saving Supporting Tourism Sustainability: A Case Study of Hotel Swimming Pool Heat Pump”, *Journal of Sustainable Tourism*, Vol. 11 Issue 1 (2003), pp. 74-83.

through greenhouse gas emissions, by approximately 40 percent.⁸ This estimate is based on the findings that laundry and catering services constitute 30 to 40 percent of hotels' energy consumption.

Water

Hotels' comprehensive water reduction efforts have shown considerable benefit. Water can be aerated, reduced in pressure, and recycled as a means to reduce water waste. One of the most popular ways that hotels have reduced water consumption is replacing current appliances with water-efficient ones, including laundry facilities, toilets, showers, and faucets. One study showed that installing low-flow showerheads and aerated faucets saved \$1.50 per room per month for one hotel, and using water-efficient toilets saved the same hotel 180,000 gallons of water per year.⁹ Greywater recycling systems that reuse wash water have also been shown to trim approximately 23 percent of the total water consumption of some hotels. The payback period of these systems is around 14 years, but this number may vary according to the country. Guests who responded to an in-room questionnaire about the low-flow toilets were greatly satisfied.¹⁰ It has also been found that water-saving notices in bathrooms that encourage customers to regulate their water use are effective. Another measure commonly adopted by hotels is localized irrigation systems in gardens.¹¹

Waste Reduction

The hotel industry has a long history of waste reduction, notably, recycling and composting. Recycling is a popular practice, perhaps because many recycling methods have a short payback period and can yield significant savings.¹² In addition to recycling, a study of Vietnamese hotels (as just one example) found that composting organic waste to produce fertilizer could be effective if a good system was in use and employees were educated in its use.¹³ Hotels also have reduced disposal of FF&E, for example, by giving old furniture to charities or selling used equipment. Some hotels have switched to

refillable dispensers for bathroom amenities, but others repurpose their tiny amenity containers by donating them to shelters and charities. One study found that most hoteliers are more willing to enact small-scale waste reuse practices rather than larger practices that would require changes on an operational level.¹⁴

Market and Revenue Impact

Guests are not the only market that hotels consider in their sustainability programs. Investors also value sustainability, because of the favorable impact on a hotel's long-term value. Given that increased revenue is the chief driver of hotel value, hotels must overcome consumers' reluctance to pay extra for green practices. Hilton's Scandic has addressed this issue by setting a strategy of branding a 95-percent biodegradable room, and charging a 10-percent higher room rate. Guest demand for this room is higher than for standard rooms. In addition, Scandic has extended its environmental efforts to every one of its properties, especially involving the efficient management of water, energy, and waste.¹⁵ Another hopeful sign is that 45 percent of guests who responded to a survey at the Statler Hotel in Ithaca, New York, said they would be willing to pay a higher room rate for hotel sustainability initiatives.

Several CHR reports have demonstrated the importance of sustainability certification in gaining favorable guest notice, including ISO 14001 and LEED. A study of over 2,000 independent hotels in Spain by Segarra-Oña, Peiró-Signes, and Verma found that hotels that have implemented the ISO 14001 environmental standards displayed stronger sales and earnings before taxes and depreciation than those that were not certified.¹⁶

The LEED certification system's new v4 scorecard is specifically designed for the hospitality industry and is intended to create incentives for new lodging construction that meets sustainability criteria. A recent study of 93 LEED certified hotels found that the certified hotels displayed better financial performance than a larger sample of non-certified ones.¹⁷ While the 93 certified hotels had a slightly lower occupancy rate, they had a higher average daily rate (ADR), which translated into greater revenue.

⁸ V. Filimonau, J.E. Dickinson, D.K. Robbins, and M. Hujibregts, "Reviewing the Carbon Footprint Analysis of Hotels: Life Cycle Energy Analysis (LCEA) as a Holistic Method for Carbon Impact Appraisal of Tourist Accommodation," *Journal of Cleaner Production*, Vol. 19 No. 17/18 (2011), pp. 1917-1930.

⁹ S. Alexander, "Green Hotels: Opportunities and Resources for Success," (Portland, OR: Zero Waste Alliance, 2002).

¹⁰ M. Gonzalez and C.J. Leon, "The Adoption of Environmental Innovations in the Hotel Industry of Gran Canaria," *Tourism Economics*, Vol. 7, No. 2 (2001), pp. 177-190.

¹¹ *Ibid.*

¹² Bader, *op.cit.*

¹³ D.N. Trung and S. Kumar, "Resource Use and Waste Management in Vietnam Hotel Industry," *Journal of Cleaner Production*, Vol. 13, No. 2 (2005), pp. 109-116.

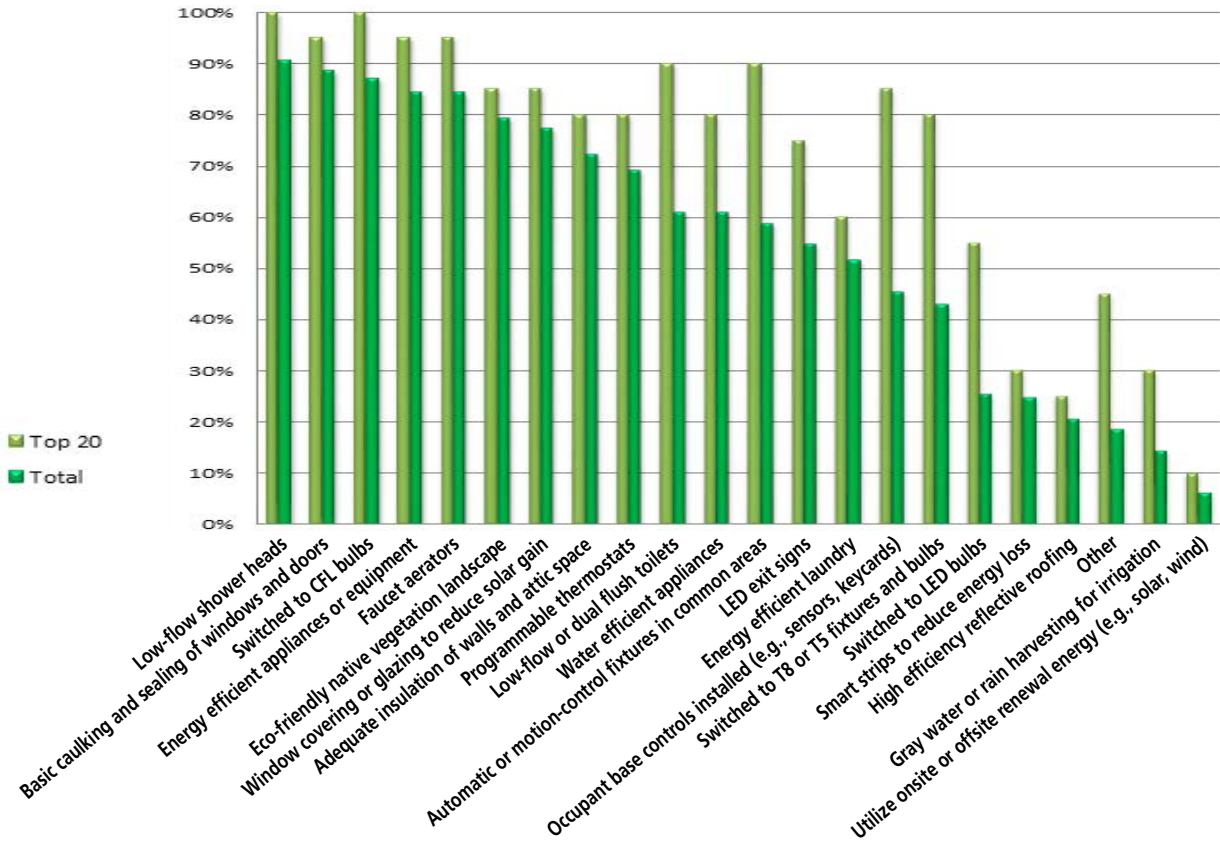
¹⁴ Hatem R. Radwan, Eleri Jones, and Dino Minoli, "Managing Solid Waste in Small Hotels," *Journal of Sustainable Tourism*, Vol 18, No 2 (2010), pp. 175-190.

¹⁵ Bader, *op.cit.*

¹⁶ M. Segarra-Oña, A. Peiró-Signes, and R. Verma, "Environmental Management Certification and Performance in the Hospitality Industry: A Comparative Analysis of ISO14001 Hotels in Spain," *Cornell Hospitality Report*, Vol. 11, No. 22 (2011).

¹⁷ M. Walsman, R. Verma, and S. Muthulingam, "The Impact of LEED Certification on Hotel Performance," *Cornell Hospitality Report*, Vol. 14, No. 15 (2014).

Environmental sustainability programs of selected U.S. resorts



Note: The top 100 resorts are those with the greatest number of green initiatives, drawn from a large consortium of U.S. resorts. The top 20 are the resorts with the highest number of green programs among the 100.

More important, two years after gaining LEED certification, the 93 hotels had a mean ADR of \$20 higher than the non-LEED hotels.

Customer Satisfaction Impact

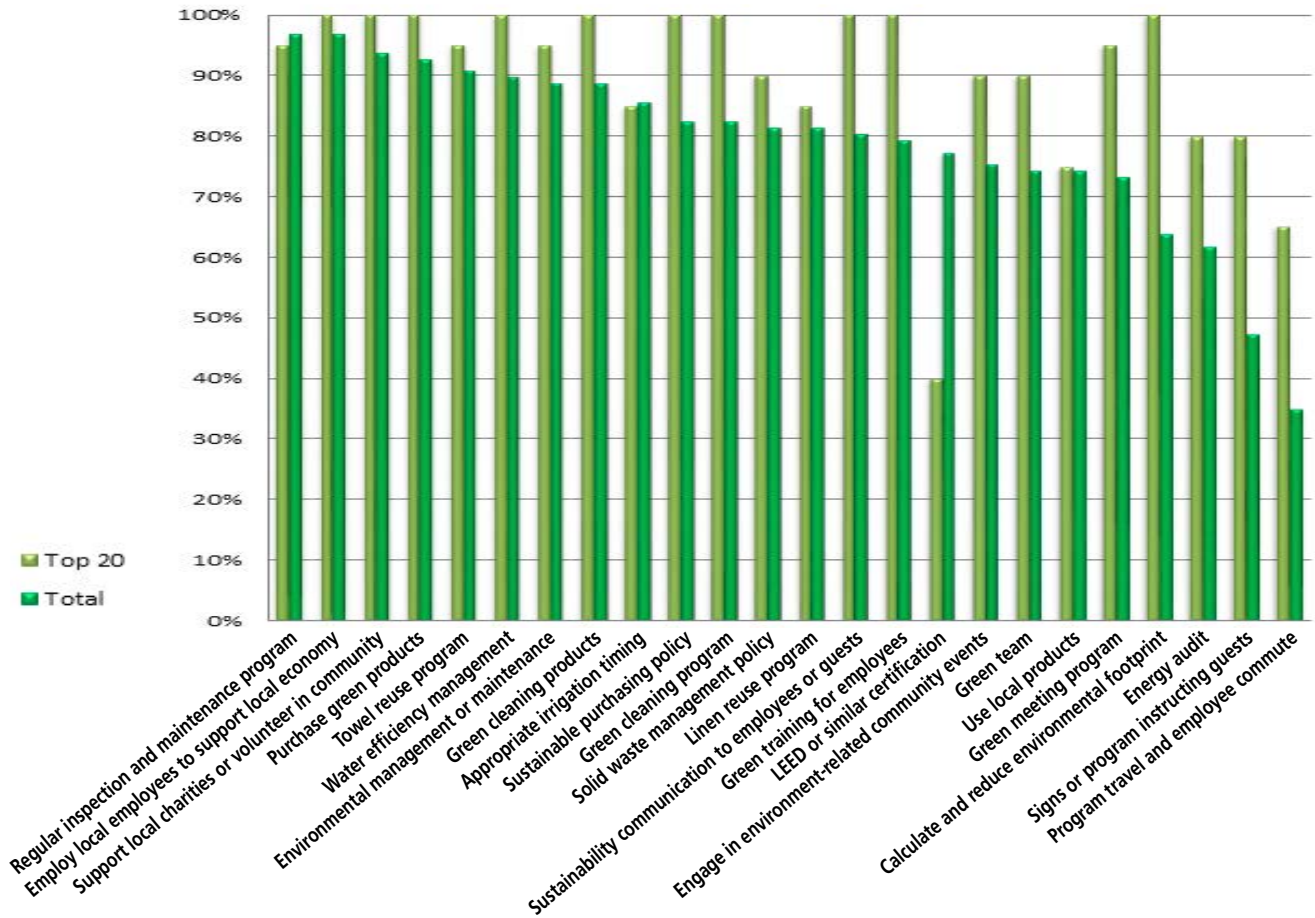
Guest satisfaction with hotels’ sustainability programs is seen as essential for their success. An early study determined that hotels might not have found an effective way to alert guests to their green operations. In that 2003 study, Jameson and Brownell noted that while many hospitality companies spend substantial time and money on environmental initiatives, they were not getting the support, recognition, and respect they deserved for their efforts.¹⁸ Based on their study of 90 hospitality organizations, those researchers developed

¹⁸ D. Jameson and J. Brownell, “Telling Your Hotel’s “Green” Story: Developing an Effective Communication Strategy to Convey Environmental Values”, *Cornell Hospitality Tools*, Vol. 3, No. 2 (2003).

a CHR tool that provides practical guidelines to help hospitality firms develop effective communication strategies to explain their environmental initiatives to employees, guests, and other important audiences.

On a more positive note, in the earlier mentioned study of Statler Hotel guests, Susskind and Verma tested the effects on guest satisfaction of reduced television power levels and alterations in bathroom lighting in the hotel’s guest rooms. The Statler Hotel is a four-diamond property operated by the Cornell School of Hotel Administration as both a commercial hotel and as a student teaching laboratory, and guests would not be shy in stating their opinions about guest room changes. However, in this study, guests either did not notice or were supportive of such energy-conservation measures represented by a reduction in the power of the guest room television LCD displays, and installation of light emitting diodes (LEDs) lamps in some rooms. (This was the study in

Environmental and social practices of selected U.S. resorts



Note: The top 100 resorts are those with the greatest number of green initiatives, drawn from a large consortium of U.S. resorts. The top 20 are the resorts with the highest number of green programs among the 100.

which respondents said that they would be willing to pay more to support a hotel’s sustainability initiatives.)

Although studies from the general sustainability and marketing literature suggest that consumers do value environmentally sustainable products (although with limits), we believe that the relationship between hotel’s environmental sustainability-related initiatives and customer satisfaction measures reported by hotel guests remains uncertain. Several years ago, Markower noted that surveys consistently find consumers are “concerned” about their environmental impact and are willing to pay more for green operations. However, when it comes to actually booking the room, price, convenience, and quality still rank highest in purchase decisions, with environmental attributes ranking down the list, just above convenience. As Markower notes, “Products and

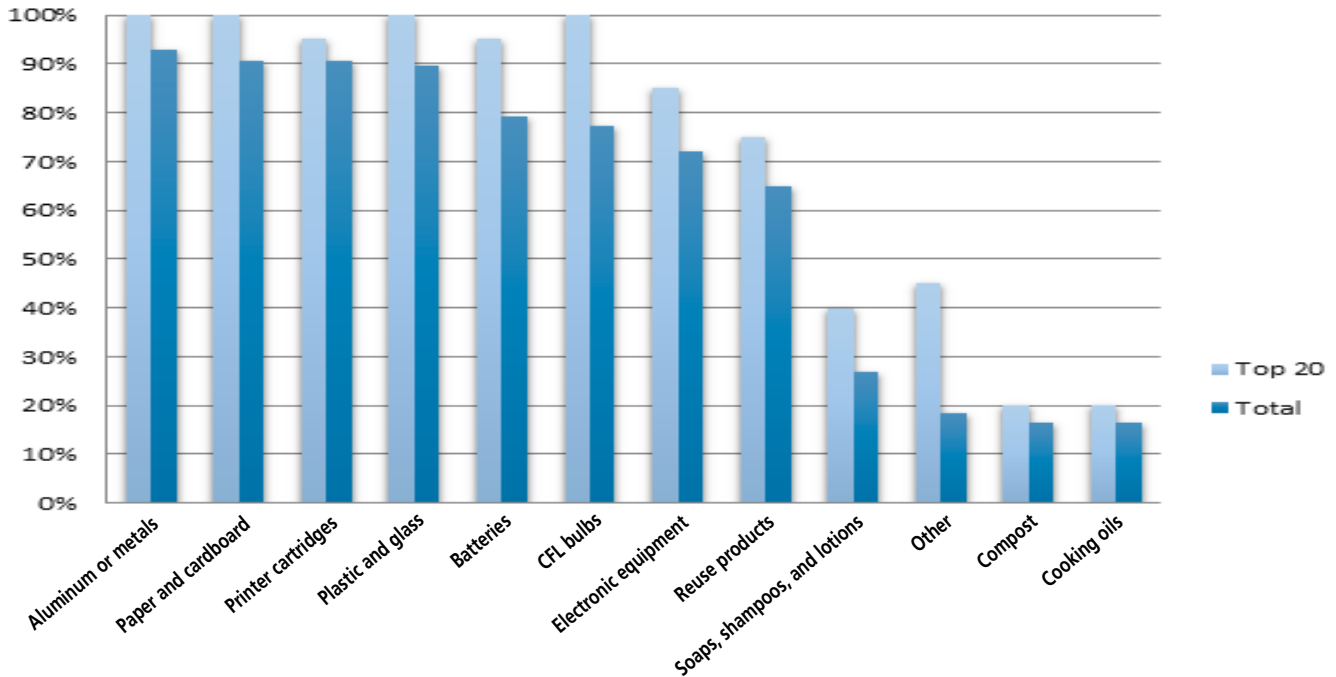
services need to be more than merely greener—they need to be better.”¹⁹ To address this issue, this study first establishes where the resort segment of the industry stands in terms of sustainable practices, and then presents a survey that addresses whether guests at greener hotels are more satisfied overall.

Research Methods

Research objectives. This research project had two primary goals. First, we wanted to document the best sustainability practices as they stand in the U.S. resort industry. Second, we wanted to understand the relationship between envi-

¹⁹ J. Makower and C. Pike, *Strategies for the Green Economy: Opportunities and Challenges in the New World of Business* (New York: McGraw-Hill, 2009).

Recycling and reuse programs of selected U.S. resorts



Note: The top 100 resorts are those with the greatest number of green initiatives, drawn from a large consortium of U.S. resorts. The top 20 are the resorts with the highest number of green programs among the 100. Based on resorts' self-reports.

ronmental sustainability initiatives, guest participation, and customer satisfaction. We hypothesize that a hotel's environmental sustainability programs lead to higher degrees of customer engagement as measured by participation in those programs. Our overall goal is to gain an indication of the effect of "green operation" on overall customer satisfaction.

Research approaches. To explore the resort segment's best practices related to energy, water, and waste reduction, we partnered with one of the largest consortiums of resorts within the United States, which operates approximately 2,000 resorts within the United States and more than 3,000 around the world. The organization provided the research team with a database that contained environmental sustainability practices at the top 100 resorts, ranked according to their green initiatives. It should be noted that the green initiatives described in Exhibit 3 are self-reported. Furthermore, members of the research team visited the five highest rated resorts located in different parts of the United States to observe the best practices and also interview managers.

In the second part of the study, we analyzed nationwide survey-based data from J.D. Power (a corporate friend of CHR) from their North American Hotel Guest Satisfaction Index (GSI) Study, which has about 40,000 annual observa-

tions. To learn about guest participation and satisfaction in sustainability programs for over 89 hotel brands, we draw from a broad survey of 120,000 customers in the J.D. Power database over a period of five years, 2006 through 2010. The GSI survey includes over 100 survey questions and measures of customer satisfaction related to various programs, facilities, and amenities offered by hotels, including environmental sustainability measures.

The respondents are randomly selected from across the United States and represent a balanced sample of hotel customers for all large national brands. Screening questions are presented early in the survey. Respondents are asked to indicate the hotel where they most recently stayed, and the majority of the remaining questions relate to this specific hotel stay. Later, the survey asks the respondents whether the hotel has conservation programs that are environmentally friendly. If the survey respondent answers yes, they are then asked several follow-up questions. Finally, the survey asks the respondents to rate their overall experience. The hotel property's brand and hotel segment, as well as the survey respondent's socioeconomic characteristics are also included within the data set.

Reasons given by guests for hotel selection

Primary Reason for Hotel Choice	2006	2007	2008	2009	2010
Convenience or location	36.3%	35.2%	34.3%	34.0%	31.4%
Price	19.5%	18.9%	20.4%	19.8%	19.9%
Previous experience	18.9%	17.7%	16.1%	16.9%	17.1%
Rewards program	8.1%	9.9%	12.6%	11.7%	13.8%
Reputation	5.2%	4.9%	5.3%	5.6%	5.6%
Recommendation	4.6%	4.3%	4.1%	4.2%	4.4%
Package deal	3.9%	3.6%	3.2%	3.2%	3.3%
Environmentally friendly	0.0%	0.2%	0.5%	0.5%	0.6%

Note: Based on a data provided by J.D. Power from a survey of 40,000 U.S. consumers.

There are two important characteristics to the data set that should be kept in mind for this analysis. First, data are self-reported and thus should be interpreted as the customer's perception. Second, the question on green program participation does not specify which program a respondent participated in, so this is treated as a yes-no question. If the customer identifies five green programs, for instance, we are not able to discern which programs they participate in.

Best Practices Results

The results of the resort survey are shown in Exhibit 1 and Exhibit 2. As we can see in Exhibit 1, most resorts have already taken advantage of the "low hanging fruit" initiatives such as installing low flow shower heads, changing to CFL bulbs, and installing programmable thermostats. As expected, the top 20 resorts in the database show a higher percentage of initiatives than the mean, and this percentage tends to be bigger for more expensive and complicated actions.

These resorts have adopted both back-of-the-house and customer-facing approaches. Certain equipment and practices appear to have become effectively standard (e.g., towel reuse programs, supporting local charities, purchasing green products). The one item that seems to be missing among the top 20 properties is LEED or similar certification programs. Well over three-quarters of the full sample of 100 properties are certified, but only eight of the top 20 properties reported being certified. Just as top resorts can operate as independent properties, it appears that certification, valuable though it may be, is not necessary for a property to demonstrate its environmental responsibility. LEED or similar certification can be interpreted in many ways, however, and this may

explain the high variation between all resorts and those in the Top 20.²⁰

Although most of the resorts maintain reuse and recycle initiatives, the results are uneven, depending on the materials involved (Exhibit 3). Recycling of metals, paper, and plastic are commonplace for the top-100 resorts. At the same time, composting, recycling, or reuse is not as common for cooking oils, soaps, and shampoos.

Guest Participation and Satisfaction

Despite rising concerns for the environmental sustainability, the J.D. Power survey results show that one thing has not changed with regard to guests' hotel booking decisions. Less than 1 percent of travelers would consider a hotel's green practices as a primary consideration when choosing hotel rooms (Exhibit 4), and convenience, together with price and previous experience, overrides other considerations.

Participation Is Strong

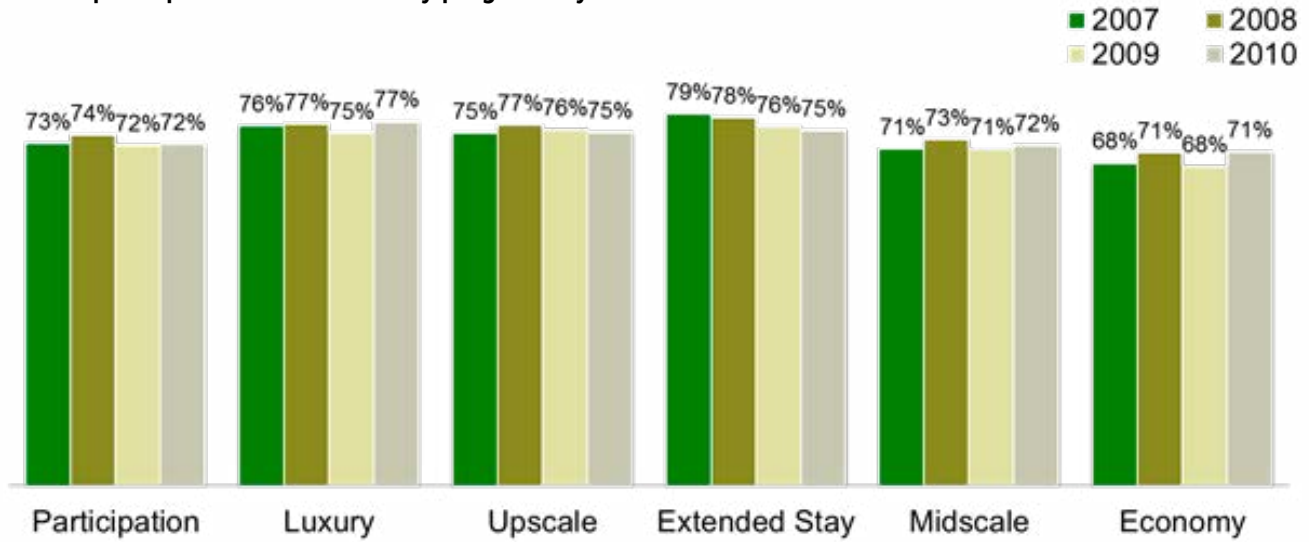
Even if guests are not considering green programs when they book a room, it is encouraging to note that close to three quarters of guests surveyed participate in green programs when they are offered at the hotels (Exhibit 5). That said, we can see little change in the rate of participation over the five years of this survey. The stability in participation could point to a gap between what is currently offered and what travelers want from hotels in terms of green offerings.

Comparing the different levels of participation by guests in various hotel segments in Exhibit 5, we see a slightly greater level of participation reported by guests in

²⁰ Interested readers should see discussion of LEED and ISO 14001 in: Walsman *et al.*, *op. cit.*; and Segarra-Oña *et al.*, *op. cit.*

EXHIBIT 5

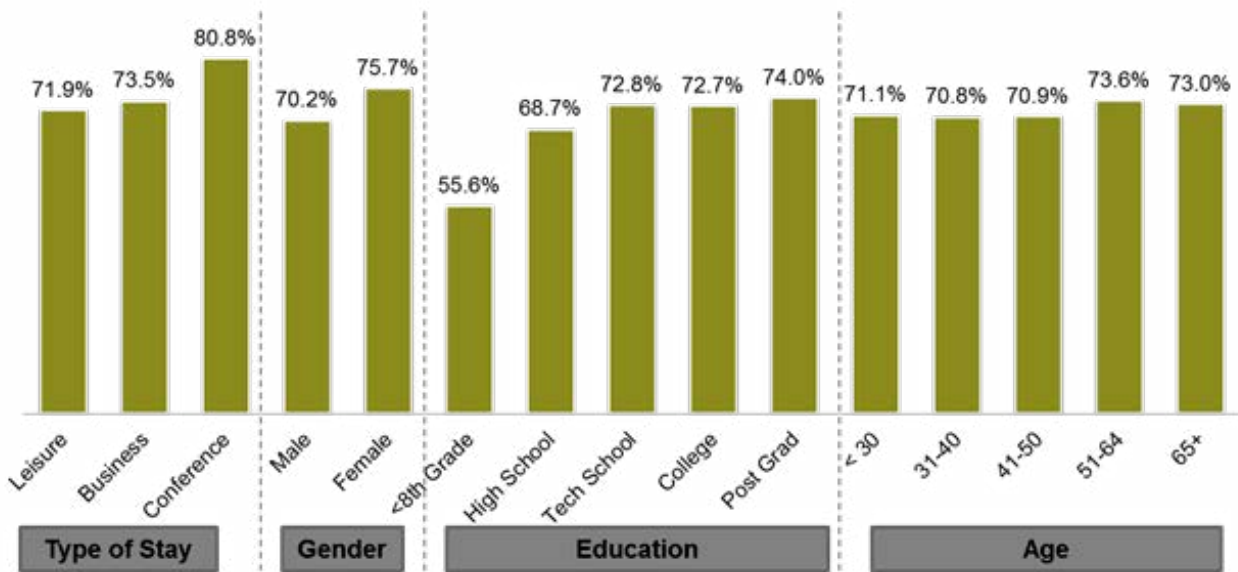
Guest participation in sustainability programs by hotel chain scale



Note: Based on a data provided by J.D. Power from a survey of 40,000 U.S. consumers.

EXHIBIT 6

Guest participation in sustainability programs by guest segment



Note: Based on a data provided by J.D. Power from a survey of 40,000 U.S. consumers.

Effects of sustainability programs on guests' perception of environmental responsibility

	Upscale		Limited Service		Economy		All Segments with 6 segment dummies	
	coeff	std err	coeff	std err	coeff	std err	coeff	std err
Recycling	0.09*	0.034	0.04	0.034	0.24*	0.085	0.08*	0.019
CFL installation	0.01	0.031	0.07*	0.029	0.09	0.071	0.06*	0.017
Water saving fixtures	0.23*	0.033	0.12*	0.032	0.29*	0.079	0.18*	0.019
Other	-0.03	0.151	-0.19	0.169	0.29	0.288	0.07	0.087
Linen and towel reuse	-0.09*	0.029	0.00	0.028	0.12*	0.062	-0.02	0.016
Special parking	0.00	0.070	0.02	0.081	-0.12	0.182	-0.03	0.041
Green cleaning products	0.24*	0.040	0.26*	0.039	0.23*	0.094	0.25*	0.022
Suggest ideas	0.20*	0.035	0.10*	0.035	0.14	0.088	0.14*	0.020
Use recycled materials	0.11*	0.043	0.18*	0.041	0.20*	0.094	0.16*	0.023
Use alternative energy	-0.17*	0.074	-0.11	0.091	-0.01	0.209	-0.16*	0.046
Indoor plants	0.11*	0.032	0.15*	0.032	0.18*	0.084	0.15*	0.018
Air-conditioning refridge	0.21*	0.044	0.22*	0.041	0.31*	0.094	0.23*	0.024
Segment dummies	n/a		n/a		n/a		yes	

Note: Based on a data provided by J.D. Power from a survey of 40,000 U.S. consumers. Dependent variable is environmental responsibility, on a scale of 1 (low) to 7 (high). *denotes significance at 95-percent confidence level.

the extended stay, luxury, and upscale segments than in the midscale and economy segments. Looking at the demographic profile of participants in Exhibit 6, travelers who are more highly educated claim to be more active participants in hotels' sustainability programs, as do those who are older and female. The results also capture the apparent interest of meetings and conference guests in hotels' green programs. Other studies have indicated that meeting planners include hotels' carbon footprints as part of their hotel selection process.²¹

The survey gives a strong indication that travelers who do not participate in hotels' green programs would be willing to do so if they were given incentives. Although many guests' green behavior is motivated by their personal beliefs, the survey found that others would respond to rewards, including frequent guest points or food vouchers. More than 80 percent of guests who are not currently participating (about one-third of those responding) state that they would take action if rewards were offered. That would bring the total participation percentage from its current level of the low 70s to more than 90 percent. Some hotels have already

²¹ HyunJeong "Spring" Han and Rohit Verma, "The Future of Trade-shows: Evolving Trends, Preferences, and Priorities," *Cornell Hospitality Report*, Vol. 14, No. 13 (2014).

experimented with incentives. A few years ago the Crowne Plaza Hotel in Copenhagen, Denmark, offered a free meal to guests who would generate 10 watt-hours of electricity on the gym bicycle.²² Starwood has added an innovative twist to its the towel and linens reuse program at many hotels by rewarding customers' participation with a \$5 voucher for food and beverage or a similar amount of loyalty points.

Green Programs and Guest Satisfaction

Offering sustainable programs does increase guest satisfaction, but the effects are modest, as shown in Exhibit 7, which shows the statistical effects by segment and overall. For all segments combined, the programs that touch the guests personally seem to have the highest impact on perceptions of environmental responsibility, namely, green cleaning products (+0.25), environmentally friendly air conditioning (+0.23), and water saving bathroom faucets and toilets (+0.18). Interestingly, alternative energy had the most negative association with environmental responsibility (-0.16), and that negative association was higher in the upscale segment than in the lower-priced segments.

Controlling for three satisfaction indexes (namely, guest room satisfaction, food and beverage satisfaction, and hotel

²² BBC News, news.bbc.co.uk/2/hi/8621038.stm, 14 April 2010.

EXHIBIT 8

Effects of individual sustainability programs on guests' overall satisfaction

	Upscale		Limited service		Economy		All Segments (except economy) with dummies	
	coeff	std err	coeff	std err	coeff	std err	coeff	std err
Recycling	0.00	0.03	0.03	0.03	0.06	0.08	0.02	0.02
CFL installation	0.00	0.03	-0.01	0.02	-0.08	0.07	-0.02	0.01
Water saving fixtures	-0.01	0.03	0.03	0.03	0.14	0.07	0.03	0.02
Other	0.16	0.14	0.06	0.15	-0.36	0.27	0.09	0.08
Linen and towel reuse	0.01	0.03	0.05*	0.02	0.09	0.06	0.05*	0.01
Special parking	-0.04	0.06	-0.09	0.07	0.06	0.16	-0.05	0.04
Green cleaning products	0.03	0.04	0.00	0.03	-0.06	0.09	-0.01	0.02
Suggest ideas	0.03	0.03	0.00	0.03	0.01	0.09	0.01	0.02
Use recycled materials	0.05	0.04	-0.01	0.03	-0.11	0.09	0.00	0.02
Use alternative energy	-0.06	0.07	-0.05	0.08	-0.14	0.18	-0.04	0.04
Indoor plants	0.04	0.03	0.04	0.03	0.05	0.08	0.02	0.02
Air-conditioning refridge	0.05	0.04	-0.04	0.03	-0.13	0.09	-0.01	0.02
Guest Room Satisfaction	0.36*	0.01	0.35*	0.01	0.36*	0.02	0.36*	0.01
F&B Satisfaction	0.25*	0.01	0.19*	0.01	0.15*	0.01	0.21*	0.00
Hotel Facilities Satisfaction	0.42*	0.01	0.42*	0.01	0.50*	0.02	0.43*	0.01
Constant	-0.29*	0.06	0.40*	0.05	0.15*	0.07	0.25*	0.03

Note: Based on a data provided by J.D. Power from a survey of 40,000 U.S. consumers. Dependent variable is overall customer satisfaction. *denotes significance at 95-percent confidence level.

facilities satisfaction), Exhibit 8 shows relationships that can be interpreted as the isolated effect of green programs, with these other factors held constant. We note that the economy segment is excluded from the overall measure in Exhibits 8 and 9.

As an alternative statistical measure, we look at how customer perception of environmental responsibility (rather than individual programs) is associated with overall satisfaction. We find that environmental responsibility does significantly affect satisfaction (+0.09), but again the effect is small. As Exhibit 9 shows, an increase in environmental responsibility of 2 to 4 points is needed to give the same impact on satisfaction as a single point increase in hotel facilities, guest room satisfaction, or food and beverage satisfaction.

Discussion and Conclusions

Based on these surveys, the most effective and widely used environmentally sustainable best practice among resorts is towel and linen reuse programs. Ninety-one of the 100 resorts we surveyed and all but one of the top 20 environmentally sustainable resorts have a towel and linen reuse

EXHIBIT 9

Effects of guest perception of sustainability programs on overall satisfaction

	All segments (except economy) with dummies	
	coeff	std err
Customer Perception of Environmentally Responsibility	0.09*	0.00
Guest Room Satisfaction	0.34*	0.01
F&B Satisfaction	0.20*	0.00
Hotel Facilities Satisfaction	0.42*	0.01
Constant	0.04	0.03

Note: Based on a data provided by J.D. Power from a survey of 40,000 U.S. consumers. Dependent variable is overall customer satisfaction. *denotes significance at 95-percent confidence level.

program in place. These are well received by guests across the industry, with 79 to 88 percent of guests participating (depending on which segment). Guests were also highly favorable to the use of water-saving fixtures, which were in use by 90 of the 100 resorts and again all but one of the top 20 resorts. This shows a strong link between the best practices that are already being utilized by hotels and those programs that are most preferred and used by guests.

In contrast, the link between environmental sustainability and guest satisfaction is modest, to say the least, despite the prevalence of environmentally sustainable programs and

the relatively high guest participation in many of those programs. The traditional drivers of satisfaction (room, facilities, and food and beverage quality) still overwhelm the effects of green operations. That said, green programs do not diminish guest satisfaction, so hotels may consider their cost-benefit analysis, potential for improved employee relations, and reduced risk in addition to “green” satisfaction to determine whether these investments are beneficial. Finally, it seems that many green investments are now considered to be a more or less standard aspect of hotel operation, regardless of cost or satisfaction considerations. ■

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