February 2014

Best Management Practices in Green Lodging Defined and Explained

Leonard Anthony Jackson
University of Memphis, lenanjack@gmail.com

Follow this and additional works at: https://digitalcommons.fiu.edu/hospitalityreview

 Part of the Hospitality Administration and Management Commons

Best Management Practices in Green Lodging Defined and Explained

Abstract

Best management practices in green lodging are sustainable or "green" business strategies designed to enhance the lodging product from the perspective of owners, operators and guests. For guests, these practices should enhance their experience while for owners and operators, generate positive returns on investments. Best management practices in green lodging typically starts with a clear understanding of each lodging firm's role in society, its impact on the environment and strategies developed to mitigate negative environmental externalities generated from the production of lodging goods and services. Negative externalities of hotel operations manifest themselves in energy and water usage, waste generation and air pollution. Hence, best management practices in green lodging are dynamic, cost effective, innovative, stakeholder driven and environmentally sound technical and behavioral solutions that attempt to ameliorate or eliminate the negative environmental externalities associated with lodging operations, while simultaneously generate positive returns on green investments. Thus, best management practices in green lodging should reduce lodging firms' operating costs, increase guest satisfaction, reduce or eliminate the negative environmental impacts associated with hotel operations while simultaneously enhance business operations.

INTRODUCTION

Increased awareness of the negative environmental impacts of business operations has underscored the need for firms to rethink their corporate strategies and management processes and incorporate sustainability initiatives as integral strategic components. This revolution in corporate strategic thinking has been driven largely by the fact that society as a whole has become more demanding of firms about their social and environmental responsibilities to stakeholders. Consequently, it has become common practice for firms, especially those that are publicly traded, to be evaluated not only on financial performance but also performance on social and environmentally sustainable initiatives. Hence, sustainability practices and reporting which encompass concepts such as green practices, corporate social responsibility, and environmental reporting have become the norm for today's leading corporations. This is despite the fact that several jurisdictions have not mandated or regulated adoption of such practices (Dobin, 2009).

Although implementation of sustainability practices such as green lodging remains largely voluntarily, adoption by firms continues to grow and has been driven by two distinct perspectives-*ethical* and *economic*. Ethical perspectives purport that businesses owe moral and ethical obligations to society and should conduct business in socially responsible ways since it's the "right thing to do". Conversely, the economic perspective asserts that firms adopting and implementing sustainable initiatives develop better corporate reputations which generate shareholder wealth through increased profits (Porter & Kramer, 2006). In conjunction, firms are increasingly embracing and adopting sustainability initiatives since they can influence the outcome of stakeholder-firm relationship decisions. This is especially the case for consumer, (Del Mar Garcia de los Salmones, Crespo, & Rodriguez del Bosque, 2005), and employee relationships decisions (Backhaus, Stone, & Heiner, 2002; Greening & Turban, 2000).

Currently, there appears to be nascent stakeholder interest in green lodging. As such, like most industries, the lodging industry has made significant strides towards embracing and incorporating sustainable or green practices into all facets of operations, strategic planning, marketing and supply chain management. To date, such adoptions have yielded mixed results. Some firms have succinctly articulated their sustainability efforts and have achieved success as indicated by their attainment of industry awards and other positive stakeholder responses. Conversely, other willing adopters have struggled with articulating the concepts of sustainability in meaningful and profitable ways, and are often guilty of engaging in "greenwashing" or the practice of asserting sustainable claims or practices which cannot be independently substantiated (Karna, Juslin, Ahonen, & Hansen, 2001). It should be noted that while greenwashing is often used to deliberately mislead stakeholders (Self, Self, & Bell-Haynes, 2010), some firms, including lodging firms inadvertently engage in this practice due to ignorance about operationalization of sound green management concepts and practices.

Existing approaches to operationalizing sustainability practices through strategy development, implementation and measurements have centered around several theories and principles including: corporate governance; stakeholder responsibility; stakeholder wealth maximization; corporate social responsiveness; social accountability; social audits; triple bottom-line; corporate social performance and; corporate social responsibility as profit maximization (Savitz & Weber, 2006). Despite the availability of these principles and theories, a persistent challenge for several lodging firms remains how to succinctly define, interpret, implement, evaluate, measure and operationalize these concepts into a practical, applicable and meaningful "best practices" framework. Further, while lodging firms will acknowledge the need to incorporate green practices into business operations, a major challenge facing the industry as a whole is the ambiguity of what constitutes green lodging and its best management practices (Ayuso, 2006). Existing research on green practices in the lodging industry have generally defined the concept broadly as efforts undertaken to minimize negative environmental impacts. Missing from such broad definitions are the types of efforts that should be taken to mitigate negative impacts, and further, how to implement such efforts in ways that enable acceptance while simultaneously increase stakeholder value. Furthermore, research suggests that there is inherent need for information on how to

implement the best green practices (Nicholls & Kang, 2012). To this end, this research attempts to overcome the ambiguity associated with green lodging by offering a definition of the concept and a framework outlining how best management practices can be developed and maintained in this area. It is hoped that the framework can be used to provide guidance on green lodging implementation and management.

LITERATURE REVIEW

Adoption of sustainability practices by lodging firms has increased exponentially since the 1990's (Nicolls & Kang, 2012), and has generally focused on initiatives undertaken to minimize negative environmental impacts (Myung, McClaren, & Li, 2012; Rubinot & Ginnelloni, 2010). This increase has taken place despite the fact that firms' sustainability initiatives are often dismissed by stakeholders as public relations or publicity stunts (McPeak & Tooley, 2008). Furthermore, firms are often skittish about investing in such initiatives since there is lack of consensus regarding the relationship between firms' sustainability efforts and financial performance. For example, some researchers have reported positive linkages (Allouche & Laroche, 2005; Berman, Wicks, & Jones, 1999; De Bakker & den Hond, 2005; Johnson & Greening, 1999; Margolis & Walsh, 2003; Orlitzky, Schmidt, & Rynes, 2003; Preston & O'Bannon, 1997; Raihi-Belkaoui, 1992; Roman et al., 1999; Turban & Greening, 1997;Wu, 2006;), while others have reported negative linkages, (Bromiley & Marcus, 1989; Davidson, Chandy, & Cross, 1987; Davidson & Worrell, 1990). Still, others have found no significant linkages between sustainable initiatives and financial performance (Aupperle et al., 1985; Freedman & Jaggi, 1982). Nonetheless, adoption of sustainable practices by lodging firms remains a nascent issue driven by three distinct approaches: the *value approach* which postulates that sustainability initiatives create value by through generation of a loyal client base; the *social impact hypothesis* (Preston & O'Bannon, 1997), which suggests that since sustainable initiatives satisfy the needs and expectations of various stakeholders, they lead to better financial performance (has a positive influence on financial performance) and; the *trade-off hypothesis* (Preston & O'Bannon, 1997), which postulates that by increasing sustainability initiatives, firms will incur unnecessary costs which reduces profitability, and places them at a disadvantage when compared to less socially active firms (negatively influences financial performance). The increase of green initiatives by lodging firms is interesting since, as a whole, the lodging industry is not generally perceived or regarded as a major polluter, especially when compared to heavy or "smokestack" industries (Bohdanowicz, 2003; Faulk, 2000). Consequently, the industry has historically received little or no environmental scrutiny and is virtually unaffected by environmental regulations (Cespedes-Lorente, Burgos-Jimenez, & Alvarez-Gil, 2003).

In general, while consumers have expressed concern about the environment, this concern has not necessarily translated into purchasing or consumption of green products and services (Crane, 2000; Peattie, 1999; Wong, Turner, & Stoneman, 1996). One explanation for this finding is that consumers often perceive several green or eco-friendly products and services as expensive and unappealing when compared to similar non-green products and services (Johri & Sahasakmontri, 1998; Lubieniechi, 2002). Furthermore, consumers appear to be price sensitive when purchasing green products and services (Mandese, 1991), and are generally unwilling to pay a premium to utilize such products and services (Kasim, 2004; Manaktola & Jauhari, 2007; Wasik, 1992). Those that actually purchase green or environmentally friendly products and services must perceive the quality of such products and services as equal to, or exceed the utility provided by traditional non-green ones since customers are generally unwilling to accept a lower quality green product or service at a higher price (D'Souza, Taghian, Lamb, & Peretiatkos, 2006). Despite these findings, other empirical research found that for certain consumer segments, price is not important when deciding whether or not to purchase green goods and services. Instead, value appears to be more important for consumers in these segments and they are willing to pay a premium for green products because of the intrinsic value obtained (Boyce, 1992; Menges, 2003).

In the lodging industry, studies examining the adoption of green initiatives by hotels have yielded similar mixed results. Adoption of sustainability initiatives in this sector was found to: generate goodwill for hotels and were also found to be positively related to guest satisfaction and customer loyalty (Kassinis & Soteriou, 2003) and; increased the hotel's image and positively influenced visitation intentions and willingness to stay at green hotels (Han & Kim, 2010). However, green practices by hotels were also found to be a minor determinant in customers' choice of hotels (Robinot & Ginnelloni, 2010). Furthermore, while guests indicated they were in favor of green initiatives in hotels, they also indicated that factors such as price, service quality and the property's physical attributes were more important in their room purchase decisions (Kasim, 2007). Finally, while guests indicated positive attitudes towards green lodging initiatives, such attitudes do not typically translate into willingness to pay higher prices for lodging products and services (Lee, Hsu, Han, & Kim, 2010; Manaktola & Jauhari, 2007).

Corporate motives for adopting green or sustainable practices include: regulatory compliance; attainment of competitive advantage; stakeholder pressure; ethical concerns; critical events and senior management efforts (Lawrence & Morell, 1995; Winn, 1995). Bansal & Roth (2000) synthesized corporate motives for pursuing green initiatives by suggesting that such motives are driven by: the need to maintain *competitiveness,* or use of green initiatives to enhance profitability; *legitimization* or the company's desire for improvement based on established regulations, values, norms and beliefs and; *ecological responsibility,* or the need for the firm to meet its social obligations. Bansal and Roth (2000), also argued that motivations to "go green" are driven by three conditions: *issue salience*, or the importance that an organization places on ecological issues; *field cohesion*, or the strength of the organization's ties with its constituents and; *individual concern,* or the extent to which the organization's members value the environment and their propensity to act in the best interest of the environment.

Motives for adopting green initiatives in the lodging industry appear to be benefit and business driven. Thus, it appears as though lodging operations will make a justifiable business case for adopting green initiatives and will only adopt and implement initiatives if they are financially feasible, as indicated by their ability to increase customer satisfaction and generate positive returns on green investments. Consequently, lodging firms are likely to embrace and implement green practices if they result in: cost savings; competitive advantages; employee loyalty; increase customer satisfaction and retention; improvement in the hotel's ability to comply with, or circumvent government regulations and; minimize exposure to risks (Graci & Dodds, 2008). Therefore, while hoteliers recognize the need for the industry to be more environmentally conscious (Bohdanowicz, 2005), and display genuine concern about the environment and green initiatives (Cespedes-Lorente et al., 2003), such concern appears to be driven by the potential benefits derived from adopting environmental initiatives. This can be seen from the perspective that implementation of green initiatives often requires investments that are atypical to traditional hotel core operational competencies (Kasmin, 2004), and hence, from a business standpoint, such investments must be justifiable and result in economic benefits and advantages for the lodging facility. Hence, the most important benefit appears to be cost savings (Cheyne & Barnett, 2001; Graci & Dodds, 2008; Gonzalez-Benito & Gonzalez-Benito, 2005; Lynes & Dredge, 2006; Rivera, 2002). In fact, financial savings as a result of reduced costs obtained from green initiative adoptions are one of the most important factors that determine whether or not firms implement environmental initiatives (Graci & Dodds, 2008). Thus, adoption of green practices by hotels have generally been those that require relatively low investments and operating costs, while simultaneously generate savings particularly in energy and water usage (Gonzalez & Leon, 2001).

In general, green practices in the lodging industry have typically centered on mitigating the negative environmental effects associated with energy and water usage, indoor air quality and waste generation (Priego & Palacios, 2008). Energy usage and consumption in hotels differs from other commercial facilities because of the vast number of facilities-guestrooms, restaurants, kitchens, on-premise laundry, recreational facilities, and

guest support service centers.   Annual consumption of energy by hotels has increased steadily at a rate of between 25-30% each year (Lawson, 1998), and lodging facilities collectively rank amongst the top five in terms of commercial buildings energy usage (Balaras, 2003). Electricity is by far the most widely used source (60-80%), followed by natural gas and fuel oil (American Hotel & Lodging Association, 2001). However, hotels can reduce energy costs by as much as 20% without any major or significant investment through energy conservation strategies. This 20% reduction in energy expense can be equated to a 5% increase in sales for some hotels (O'Hanlon, 2005).

The lodging industry uses approximately 154 billion gallons of water on an annual basis (Davies & Cahill, 2000). Water utilization in hotels includes usage for sanitary purposes, recreation, cleaning, cooking, drinking and HVAC systems. Like energy, water use in hotels varies directly in relation to occupancy levels. Usage also varies based on the levels of service provided and whether or not the property has an on-premise laundry. However, in general, most of the water used by a hotel is consumed in guestrooms, which generally consumes between 33-44% of a property's total water usage, followed by the food and beverage production area-18-28%, public washrooms-15-17%, on-premise laundry-11-20%, pools 2-3% and HVAC systems 1-2% (Deng & Burnett, 2002). Linen usage affects the amount of water each property uses. For example, hotels that provide a high level of service typically use more linen than those that offer a lower level of service. Daily linen loads generally range from 5.6 lbs. per room occupied at budget hotels to 13 lbs. per room occupied at luxury hotels (Lawson, 1998).

Indoor air quality is also of importance in any green lodging program. This issue has gained significant attention in recent years and has been acknowledged by lodging managers as an area of important concern (Emblem, 2001; Hewett, 2001). Clean air practices are directly related to energy efficiency and will reduce exposure to health related liability while having a positive effect on employee and guest relations. The optimal conditions as they relate to indoor air quality for lodging facilities are addressed by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE standard 62), which describes ways in which a lodging facility can achieve acceptable indoor air quality (American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., 2005). Indoor pollution sources that release gases or particles into the air are the primary cause of indoor air quality problems. Typical indoor pollutants include inorganic gaseous compounds, particulates-(dusts, fibers, fumes, fogs and smoke), bio-aerosols-viruses, bacteria and fungi. Other sources of indoor air pollutants in hotels include: combustion sources such as oil, gas, kerosene, coal, and wood; building materials and furnishings as diverse as deteriorated asbestos-containing insulation; wet or damp carpet; cabinetry or furniture made from certain pressed wood products; products used for cleaning and maintenance; central heating and cooling systems and; humidification devices (Grieve, 1991).

The production of goods and services in the lodging industry generate vast amounts of waste which includes organic waste, oils and grease, cardboard and paper products, glass, plastics, aluminum products, metal items, appliances and furniture, building & construction materials, hazardous waste (batteries, solvents and paints, light bulbs and lighting fixtures, detergents, computer equipment and parts (monitors, central processing units, ink toners & cartages), linens and clothing items. Lodging operations that implement waste prevention measures can reduce purchasing costs and disposal fees, particular through adoption of recycling programs. Thus, waste prevention not only helps protect the environment and conserve natural resources, it also makes economic sense (Post, 1993).

METHODOLOGY

The research attempted to define and explain the best management practices in green lodging and present findings in an applicable and practical framework. Hence, an inductive approach that combined content analysis with interview data was deemed appropriate and was accomplished via a two-step approach. Content analysis was first conducted on secondary data to identify concepts and key themes in green lodging

management. The sampled literature was confined to: leading hospitality academic and professional journals; general management journals and; technical reports prepared by scholars and governmental agencies. Lodging firms' published corporate responsibility reports and corporate responsibility websites were also examined. Articles and reports were initially identified using the keywords *green practices*, *green lodging*, *green hotels, best practices in green lodging* and *sustainable lodging*. Articles utilized were found via EBSCOhost, Proquest and Google search engines and were considered for selection and further review if their content related to green or conservation practices for commercial facilities, particularly lodging facilities. The constant comparison approach was used to identify emerging patterns and key themes. Themes that emerged suggested that best management practices in green lodging are practices and procedures aimed at minimizing lodging facilities' impact on the environment through water conservation, energy management and conservation, indoor air quality control and waste elimination, management and control. Once the themes were identified, the second stage of data collection, the interview stage commenced. Interview questions were developed from the themes that emerged from the content analysis and interviews were conducted to verify the themes and obtain further insights into the best practices in energy, water management, waste management and indoor air quality management and control. This verification of the information obtained through content analysis was deemed important since technical reports, information obtained from firms' websites and research findings are often biased, and using multiple sources of information for verification purposes can reduce such biases.

The study utilized purposeful sampling and informants were selected for interviews based on the contribution they could make to the study. As such, twenty-three semi-structured interviews were conducted with professional from firms and economic sectors directly or indirectly associated with the lodging industry. These included: lodging professionals (13); lodging suppliers (4); energy management experts (3); waste management expert (1) and; water supply management experts (2). Collecting data from multiple firms as well as multiple business segments was deemed appropriate since it increased the reliability of the data. Lodging professionals who participated in the study were randomly selected from full-service hotels. Participating hotels were selected from California's and Florida's published list of certified green hotels. Both states (US) have stringent processes for evaluating lodging properties and awarding green lodging certifications. Green certified hotels were selected for inclusion in the study since informants from these properties were considered informed about the issue under investigation.   Full service hotels were selected since they offered a wide range of products and services and were deemed likely to have extensive facilities that adhered to green practices at the property level. Therefore, informants from these properties were likely to provide an abundance of information about to the best practices in green lodging. Selected hotels were contacted and the key informant(s) for each property's green management program identified, contacted and solicited for participation in the study. Lodging employees who were directly connected with their property' green lodging program were selected since they could purposefully provide information that would lead to a better understanding of the best practices in green lodging. Thus, key informants were selected based on their knowledge and experience with green lodging. Lodging suppliers and waste management experts were selected following leads generated from the lodging informants. These informants were selected and included in the study since hotels adhering to the principles of green lodging generally require preferred suppliers to package, transport and deliver supplies in an ecologically responsible manner. Energy and water management professionals were selected based on leads generated from their firms' website. These informants were included in the study since they provided critical information on the best green practices in their respective areas. These professionals were contacted directly via telephone and solicited to participate in this study. The interview questionnaire contained eight questions related to green lodging practices and were developed in direct relation to the main objective of the study: *What are the best management practices in green lodging?*
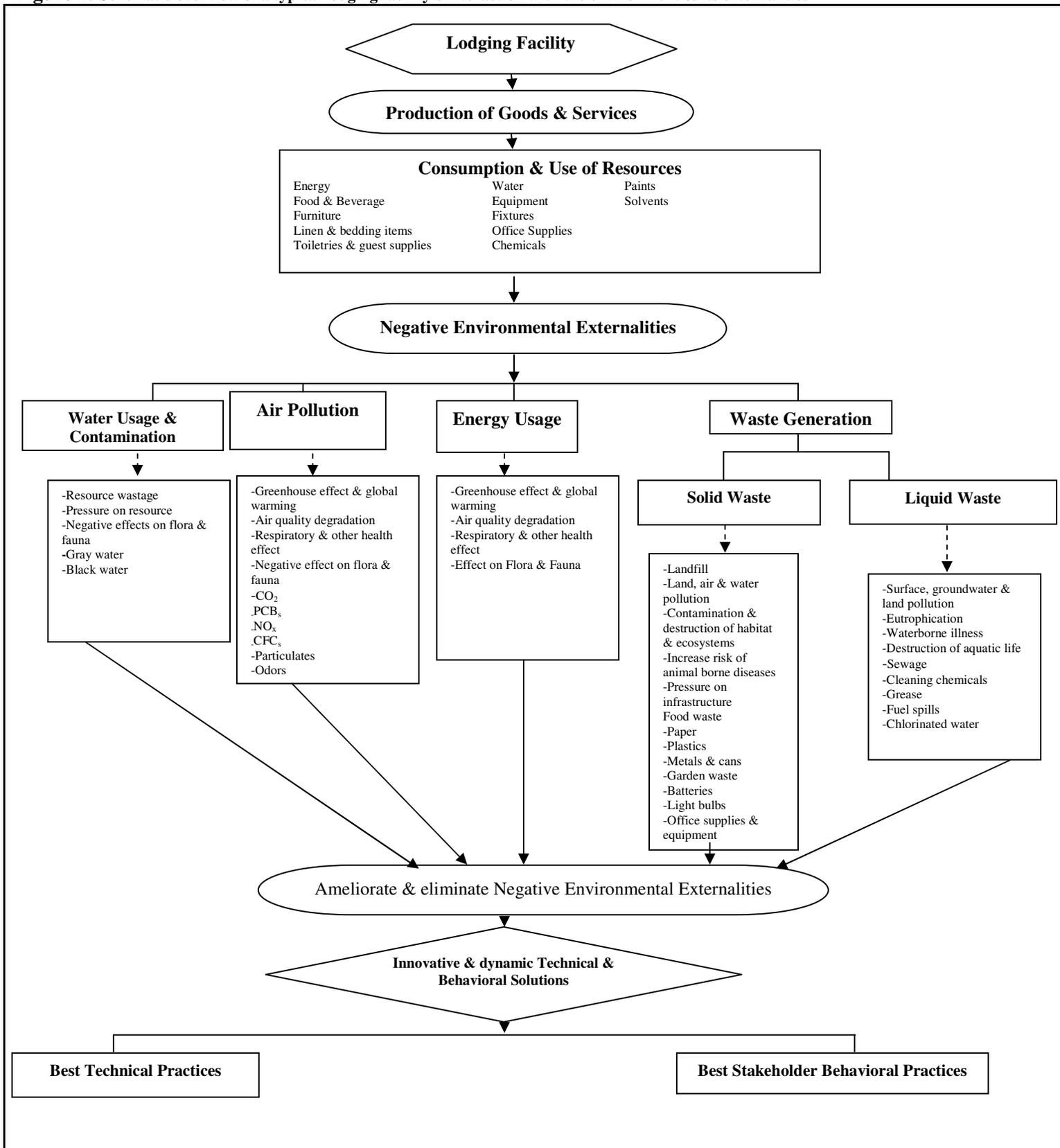
RESULTS AND DISCUSSION

Hotels are dynamic income producing assets that provide a wide range of services, and facilities to the traveling public. The provision of these services and facilities invariably generate negative environmental externalities. Findings suggest that the best management practices in green lodging are deliberate actions undertaken by lodging firms, their agents and relevant stakeholders to reduce or eliminate the negative environmental externalities generated by hotel operations. These externalities are usually demonstrated in energy and water usage, waste generation and air quality degradation. To be effective, best management practices in green lodging should be all-encompassing and should permeate throughout lodging firms' supply chain as well as all aspects of its service delivery processes. Further, success of green management practices is contingent on funded support at the operational and strategic levels of lodging firms. This suggests that best management practices in green lodging should be an important component of green adopters' corporate strategy. Findings also suggest that a full understanding and adoption of the best practices in green lodging requires a shift in attitudes, practices, behaviors and processes towards embracing and incorporating current "green" or environmentally responsible practices and procedures into all aspects of goods and services production, delivery, consumption and disposal. Thus, this implies that for most lodging facilities, the first step in developing or enhancing a green program starts with an examination of how the facility impacts the environment in which it operates and the negative externalities generated.

Lodging facilities are income producing entities and as such, they must install furniture, facilities, equipment and necessary fixtures in an effort to create an environment that is aesthetically pleasing, safe, secure and physically comforting for guests. Further, lodging facilities attempt to ensure that physical facilities, equipment, mechanical systems, service areas, attractions-both man-made and natural, and other supporting facilities are well maintained and offer guests the utility they desire. Such activities require resource inputs and usage which invariably generate effluents and other negative environmental externalities. Effluents, resource usage and externalities include: waste-both solid and liquid; consumption of energy-fossil and non-fossil; generation of air pollutants and; consumption and discharge of large amounts of water. Therefore, the overarching goal of best management practices in green lodging should be to ameliorate, mitigate, and eliminate these negative externalities through a combination of dynamic and innovative technical and behavioral solutions. This process is encapsulated in figure 1, which provides a schematic framework of a typical lodging facility's interaction with the physical environment. Figure 1 also suggests that lodging facilities require several different types of resource inputs to provide goods and services for their guests. The schematic framework suggests that best management practices in green lodging should be a combination of the best technical and innovative adoptions combined with behavioral practices or solutions aimed at ameliorating and eliminating the negative environmental externalities associated with lodging operations. Such practices should be adopted in a manner that will not compromise guest satisfaction and further, should be implemented and maintained in a financially feasible manner.

Best technical adoptions or practices refer to adopting and using fixtures, facilities, amenities, supplies, equipment, services and consumables that minimize or eliminate the negative environmental externalities associated with hotel operations. This entails ensuring that existing fixtures, facilities, amenities, supplies, equipment, services and consumables meet or exceed efficiency standards through proper maintenance and operation, or installing those classified or certified as green or eco-friendly. The study found that certification and classification of products and services appeared to be a source of contention and misunderstanding, which made it challenging for some respondents to definitively determine or assess whether or not products and services utilized at their properties adhered strictly to green or sustainable practices. This suggests that clarification of the different levels of certification is required. In general, there are three levels of certification for green products. These are: first-party certification, second party certification and third party certification.

Figure 1: Schematic overview of a typical lodging facility's interaction with the environment & its externalities

Lodging Facility

Production of Goods & Services

Consumption & Use of Resources

Energy   Water   Paints
Food & Beverage   Equipment   Solvents
Furniture   Fixtures
Linen & bedding items   Office Supplies
Toiletries & guest supplies Chemicals

Negative Environmental Externalities

Water Usage & Contamination

Air Pollution

Energy Usage

Waste Generation

-Resource wastage
-Pressure on resource
-Negative effects on flora & fauna
-Gray water
-Black water

-Greenhouse effect & global warming
-Air quality degradation
-Respiratory & other health effect
-Negative effect on flora & fauna
-CO_2
-PCB_s
-NO_x
-CFC_s
-Particulates
-Odors

-Greenhouse effect & global warming
-Air quality degradation
-Respiratory & other health effect
-Effect on Flora & Fauna

Solid Waste

Liquid Waste

-Landfill
-Land, air & water pollution
-Contamination & destruction of habitat & ecosystems
-Increase risk of animal borne diseases
-Pressure on infrastructure
Food waste
-Paper
-Plastics
-Metals & cans
-Garden waste
-Batteries
-Light bulbs
-Office supplies & equipment

-Surface, groundwater & land pollution
-Eutrophication
-Waterborne illness
-Destruction of aquatic life
-Sewage
-Cleaning chemicals
-Grease
-Fuel spills
-Chlorinated water

Ameliorate & eliminate Negative Environmental Externalities

Innovative & dynamic Technical & Behavioral Solutions

Best Technical Practices

Best Stakeholder Behavioral Practices

First party certification is self-certification and is based on an organization's internal assessment of its products and services. This type of certification therefore is not reviewed, certified or validated by any second or third independent body. If a lodging operation decides to procure goods and services that are first party certified, it behooves the operation to confidentially substantiate the supplier's claims and make every effort to ensure that the certification process adheres to ISO 14021(Environmental labels and Declarations), which sets the guidelines for independent certifications. *Second party* certification refers to assessment and certification of products and services by outside entities who are usually members of the same industry. Products and services may be second party certified based on one or more of its attributes. These certifications are usually conducted onsite or offsite. For example, carpets used by a hotel may be certified by the Carpet and Rug Institute based on its emission of volatile chemicals. Finally, *third party certifications* are conducted by independent, neutral parties based on predetermined criteria. These bodies have no affiliations with the product or service supplier and usually provide a set of transparent standards for all clients. Third party certifications are usually the most stringent of the three, and are conducted off-site. Caution should be exercised however when selecting certified products. It is advisable that lodging facilities use several different standards when developing their green programs since this will protect them if a particular standard established by specific bodies comes under scrutiny.

Best behavioral green management practices refer to concerted efforts by lodging operations to communicate all aspects of their property's green program to relevant stakeholders. The overarching purpose of this effort is to encourage stakeholders (*internal*-employees and *external*-guests, and suppliers of products and services) to modify existing behaviors and engage in practices that support the property's green goals. Findings suggests that elements of the behavioral best practices could be best addressed if each property develops its own green lodging program, germane to the property with serious consideration given to its facilities, location, and services offered. Hence, corporate green lodging programs should be modified to address each property's specific needs. Implementation of the best behavioral practices should start with communication of each property's program to its constituents, with the ultimate goal of obtaining "buy in". This can be accomplished through the development of a green team which should be charged with developing, interpreting, understanding, communicating and executing the property's green initiatives. This team should include members from all functional departments. Each team member should be encouraged to contribute to the property efforts by providing information about how they can change or maintain practices in their respective work areas and hence, contribute to the property's green objectives. Each property should also ensure that its green program is communicated to guests, and most importantly, develop ways to unobtrusively ask guests how they can modify (or maintain) their behaviors to assist the property in achieving its green objectives. Respondents noted that flyers and notices placed in guestrooms informing guests about the property's program and asking guests to modify their use of the property resources are good examples of such communication. Other methods used by respondents to communicate their properties' green program included information in guest books, media boards, in-house television, posters and brochures. However, caution should be exercised when developing "green messages" aimed at the property's guests. These messages should not be designed to elicit "environmental guilt" on the part of guests nor should they impose unnecessary burdens on guests.

Best Management Practices

As previously noted, best management practices in green lodging are the collective efforts of lodging operations to mitigate, ameliorate and eliminate the negative externalities of hotel operations which are usually demonstrated in energy usage, waste generation, air quality degradation, and water usage. As such, best green management practices should target specific areas within a lodging facility, prescribe the best practice for the area, highlight the reasons why the practice should be adopted and convey the benefits to relevant stakeholders. The following sections provides brief explanations of the best green management practices for energy usage and

conservation, preservation of indoor air quality, waste management and water usage and conservation. Due to space limitations, only samples of the best green management practices were provided for each category. These explanations are "primers", since exhaustive explanations are beyond the scope of this paper.

Energy

Energy usage and consumption in hotels differs from other commercial facilities because of the vast number of facilities-guestrooms, restaurants, kitchens, on-premise laundry, recreational facilities, and guest support service centers such as hotel operated business centers. The goals of best green management practices in energy should be energy conservation, energy savings, environmental protection and cost savings.   The main energy consuming systems in hotels are: heating air conditioning and ventilation, hot water production, lighting, electricity (lifts, etc.) and cooking. Consequently, energy management programs in hotels should focus on reducing energy consumption in these areas. Since energy is a controllable cost, a reduction in consumption will result in direct cost savings for hotels. For example, by choosing energy efficient equipment and fixtures as well as implementing and practicing sound energy conservation practices, hotels will reduce their energy expenses while at the same time contribute towards protecting the environment. This can be seen from the perspective that energy efficient equipment and fixtures consume less energy, thereby reducing the amount of electricity that must be produced. Since burning fossil fuel to generate electricity releases carbon dioxide, sulphur dioxide, and nitrogen oxides into the air (pollutants that contribute to smog, acid rain, and global climate change), a reduction in energy consumption will have the direct effect of a reduction of these gasses released into the atmosphere. Hence, these practices by hotels will directly reduce their carbon footprint while simultaneously generate savings.

Each green practicing lodging facility should develop a comprehensive energy management and conservation program. As previously noted, to be successful, this program should be communicated to the hotel's employees as well as its guests. This can be accomplished through the development of an energy management team which should be charged with communicating and implementing the property's energy goals to respective constituents.   This team should include members from all the functional departments of the hotel. In fact, the success of green lodging programs is contingent on all parties working in concert to manage and conserve energy. For example, since guestrooms are considered private spaces, guests might compromise a well-intentioned energy management program by engaging in practices that are not conducive towards energy conservation. A typical example could be guests leaving their lights and air conditioning on, as well as their doors open while they are away from their guestroom.   Hence, guests should be encouraged to dissuade from engaging in such practices through technical solutions (such as through door keys connected to each room's electricity system-which shuts appliances off once the key is removed) or through communication media. In addition, hotels can prevent such practices by installing fixtures and relevant equipment to prevent such practices. Finally, the best green practices in energy management should include all areas of the hotel where energy is utilized. This includes the building envelope, lighting, heating, ventilation and air conditioning (HVAC), housekeeping, property operations and maintenance, office area, food and beverage area, recreational area and water heating. Each area should be targeted, the best management practice highlighted, the reasons for implementing the practice highlighted and the benefits to the property and the environment highlighted and communicated to the respective constituents. Table 1 below provides a sample of the best management practices for energy management and conservation.

Air Quality

Indoor air quality is also of importance in green lodging management programs. This issue has gained significant attention in recent years and was acknowledged by lodging managers as an area of important

Table I: Sample Best Management Practices for Energy

Target Area	Practice	Reason	Benefit
Building Envelope	Install an eco-roof or white or reflective roofing.	An eco-roof or white or reflective roofing helps reflect heat and keeps buildings cool.	A roof with soil and plants can save the amount of energy necessary to heat and cool a building between 25 to 50 percent. This type of roof also aids in runoff and can save the property an average of $5 per square foot. These roofs also have twice the life expectancy of a normal roof.[1]
	Install energy efficient windows or add window film to windows to reduce energy loss and solar heat emissions through windows.	Films reduce cooling loads, improve shatter resistance, block up to 99 % of ultraviolet radiation, and reduce glare. [2] Window films can help reduce costly heat loss by reflecting indoor radiant heat back into the room. During the cooling season, even when drapes and blinds are closed, much of the sun's heat passes through the glass into the room. Window films can address this problem by reducing solar heat gain at the window.	Window films save energy by generally improving the balance of heating and cooling systems and by allowing HVAC downsizing. They are usually cost-effective where: Windows account for greater than 25 percent of the building's outer surface area. Energy efficient windows such as those that use window films can cut annual energy costs by up to 15 % [2]
Lighting	Use occupancy sensors to detect the presence or absence of people and turn lights on and off accordingly.	Occupancy sensors may reduce lighting energy consumption by 50 % or more in some circumstances. They are used most effectively in spaces that are often unoccupied, including some offices, warehouses, storerooms, restrooms, loading docks, corridors, stairwells, office lounges, and conference rooms.[3]	Occupancy sensors are anticipated to pay for themselves through cost savings in two years and result in a 20% savings in energy costs.[4]
Heating, Ventilation and Air Conditioning (HVAC)	Consider installing an Energy Management System.	An Energy Management System (EMS) allows operators to monitor the building's energy load. The most common use is monitoring the HVAC. EMS usually includes a computer, an energy management software program, sensors and controls, and in larger systems, a communications network.	An energy management system can save 4% to 10% on electric bills.[5]
Housekeeping	Limit the amount of hot water used for cleaning.	Limiting the amount of hot water used for cleaning will save water heating costs.	Savings are realized in both the short and long run. For example, the Sheraton Auckland hotel determined that 35% of their laundry energy needs came from washing, and the other 65% from drying. The hotel changed the temperature of their wash cycle and saved $2,000 in the first three months (which equals around $666 dollars per month and $22 per day).[4]
Office Area	Switch from inefficient, incandescent lighting to fluorescent wash lighting or LED specific workstation lighting. For general lighting, switch to (Compact fluorescents) CFL's. Use ENERGY STAR qualified bulbs. Use occupancy sensors in general office areas for both lighting and air-conditioning.	ENERGY STAR qualified bulbs use about 75 percent less energy than standard incandescent bulbs and last up to 10 times longer. Since they produce less heat, they are safer to operate and can cut energy costs associated with cooling7.	Compact fluorescents (CFLs) consume about 75% less electricity than incandescent bulbs.[6] They also Save about $30 or more in electricity costs over each bulb's lifetime[7].
Operations and Maintenance (O&M)	Check for water leaks and repair immediately.	Leaking faucets and pipes not only waste water but also add to the property's energy bill since hot water is wasted.	Checking for and fixing leaks can save money since water leaking at a rate of one drip per second can waste up to 1,661 gallons of water over the course of a year, and waste up to $35 in electricity or $35 in natural gas. Fixing drips is a cost effective and easy way to save energy [8].
Food& Beverage Areas	Implement a start-up and shut-down schedule for broilers, griddles, ranges, pasta cookers, rotisserie, conveyor ovens and fryers.	A start-up and shut down schedule can offer savings of .5 percent to 1 percent.	It is estimated that a gas broiler which is shut off for one hour each day can produce an estimated savings of $450 annually.[9]

1. Lindell, J. (2008). The Green Benefit from the Roof Down. *Executive Housekeeper Today*, 30(4) 13-24.
2. Florida Power & Light (n.d.). *Energy Advisor: Building Shell-Window Film*. Retrieved July 27, 2008, from htt://www.fpl.com/business/savings/energy-advisor/PA_7.html
3. Florida Light & Power (n.d.). *Managing Energy Costs in Limited Service Hotels*. Retrieved July 27, 2008, from http://www.fpl.com/business/savings/energy-advisor/CEA_home_frame.html
4. 10 Ways to Make your Hotel Greener. (2007). *Caterer & Hotelkeeper*, *197*(4499), 34-36.
5. Brodsky, S. (2005, December 12). The Heat is on: Energy Management can lead to Savings. *Hotel & Motel Management*, *220*(21), 7.
6. Michaels, S. (2008). Go green without hurting your bottom line. *Hotel & Motel Management*, 223 (5), 18.
7. ENERGY STAR (n.d.). *Energy Star: Energy Stewardship Action List.* . Retrieved July 28, 2008, from http://www.energystar.gov/index/cfm?c=small_business.sb_congregations_action_list
8. ENERGY STAR (n.d). Energy Star: Sink Faucet. Retrieved July 28, 2008 from http://www.energystar.gov/index/cfm?c=products.es_at_home_tips
9. Sanders, B. (2008). The Value of combined heat/power systems: Green Energy. *Hospitality Construction*, 3 (2), 72-76.

concern. Clean air practices are directly related to energy efficiency and will reduce exposure to health related liability, and can have a positive effect on employee and guest relations. The optimal conditions as they relate to indoor air quality for lodging facilities are addressed by the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (ASHRAE standard 62), which describes ways in which a lodging facility can achieve acceptable indoor air quality (American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc., 2005). This document can be used by hotels as a guide when developing the best practices in air quality management.

Indoor pollution sources that release gases or particles into the air are the primary cause of indoor air quality problems. Typical indoor pollutants include inorganic gaseous compounds, particulates-(dusts, fibers, fumes, fogs and smoke), bioaerosols-viruses, bacteria and fungi. Sources of indoor pollutants in hotels include combustion sources such as oil, gas, kerosene, coal, and wood; building materials and furnishings as diverse as deteriorated, asbestos-containing insulation, wet or damp carpet, and cabinetry or furniture made of certain pressed wood products; products for cleaning and maintenance; central heating and cooling systems and humidification devices. Hence, best practices in indoor air quality control should address the issue of clean air supply, how it is conditioned and how contaminants are removed using ventilation and air-conditioning systems.   Table 2 provides a sample of best practices for indoor air quality management.

Waste Reduction

The production of goods and services by hotels generate vast amounts of waste which includes organic waste, oils and grease, cardboard and paper products, glass, plastics, aluminum products, metal items, appliances and furniture, building & construction materials, hazardous waste (batteries, solvents and paints, light bulbs and lighting fixtures, detergents, computer equipment and parts (monitors, central processing units, ink toners & cartages), linens and clothing items. Lodging operations that implement waste prevention measures can reduce purchasing costs and disposal fees. Hotels can also offset disposal costs by adopting recycling programs.   Thus, waste prevention by hotels not only helps protect the environment and conserve natural resources, it also makes economic sense.

Best waste management practices should be designed to reduce waste at their source. They should also encourage recovery, reuse and recycling which ultimately prevent pollution and reduce or eliminate treatment and disposal cost. Each lodging facility's recycling program should be specifically designed to accommodate the hotel's operational procedures and structural design. Best waste management practices should also include methods of communicating the property's waste management practices to guests. This can be accomplished through guest books, media boards, in-house television, posters and brochures. It should be noted that guests are often familiar with recycling at their homes and places of employment and are likely to continue the process when they stay in hotels. However, it should also be noted that the most effective method for reducing waste is to prevent it in the first place. Consequently, a property's waste management program should include eco purchasing which can further reduce the hotel's waste stream. Table 3 below presents a sample of the best management practices in waste management.

Water Conservation

Water use in hotels includes uses for sanitary purposes, recreation, cleaning, cooking, drinking and HVAC systems. Like energy, water use in hotels varies directly in relation to occupancy levels. Usage also varies based on the levels of service offered and whether or not the property has an on-premise laundry. Best

Table 2: Sample Best Management Practices in Air Management

Target Area	Practice	Reason	Benefit
Atrium & other public and other indoor public spaces.	Grow native plants in atriums and public spaces.	Studies have shown that the atmosphere in indoor spaces filled with houseplants typically contains substantially cleaner air and 50 to 60 percent fewer mold spores and bacteria. One tree can filter up to 60 pounds of pollutants from the air every year. Native plants are more pest resistant and healthier.[1]	Plants can naturally filter indoor air while at the same time add to the aesthetics of the property. Native plants are also more pest resistant and healthier, thus requiring less fertilizers and pesticides. Long-lived, hardier vegetation can save money by lowering labor costs and money spent on maintenance supplies.
HVAC and Indoor Air Filtration	Clean air conditioning coils every 6 months during peak cooling or heating season. Clean permanent a/c filters weekly. Change disposable air conditioner filters every 3 months. "Tune-up" your heating, ventilation and air-conditioning (HVAC) system before heating and cooling seasons with an annual maintenance contract. Scheduled cleaning and maintenance should be followed vigorously. Upgrade to high-efficiency particulate air (HEPA) filters in air handlers. Use carbon filters in smoking rooms. Use Merv8 or higher filters at 295 feet per minute according to ASHRAE 52.2.[3]	Even an ENERGY STAR qualified system will decline in performance without regular maintenance and cleaning.	Proper maintenance of HVAC and air filtration systems greatly improves indoor air quality. Further, properly maintained HVAC and air filtration systems reduce utility costs and help to ensure that the systems last longer.
Moisture Control & Remediation	Address and control water, humidity and moisture problems as soon as they are discovered. Moisture can be introduced and infiltrate into the guest rooms in the following ways: Unconditioned ventilation air is delivered directly into the guest room through the HVAC unit. At part or low sensible loads or in situations where the unit cycles on and off, the air-conditioning unit will not dehumidify the air adequately to remove the excess moisture. • Outdoor humid air infiltrates through openings, cracks, gaps, shafts, etc. because of insufficient space pressurization. • Moisture migrates through external walls and building elements because of a vapor pressure differential. • An internal latent load or moisture is generated.	Water damaged materials such as walls, paper, beddings, carpet, etc., can develop harmful mold growth within 48 hours. The key to preventing mold is moisture control. Humidity should be no greater than 60 % and ideally between 30 and 50 %.	Moisture and humidity control is critical to ensure satisfactory air quality and to minimize costly mold and mildew problem in hotels. Removing water vapor from the air is the most feasible way to control mold and mildew, particularly when the problem spreads to walls and carpeting.
Cleaning Supplies and Equipment	Choose non-toxic products and products that are biodegradable. Avoid products with DETA, a common builder that exhibits poor ready biodegradability. Select products that are not formulated with carcinogens or reproductive toxins. Choose pump-style sprays instead of aerosols-they generally emit fewer VOCs. Avoid secondary packaging (except for concentrates) and aerosol cans. Aerosols often have high VOC content in their propellants, are flammable and contribute to global warming. Use steam cleaning wherever possible.	Cleaning products emit chemicals and odors. Particulates become airborne during cleaning (e.g., sweeping, vacuuming) and contaminants are released from painting, caulking and lubricating. Frequency of maintenance is insufficient to eliminate airborne contaminants.	Good air quality is an important component of a healthy indoor environment. Good indoor air quality (IAQ) enhances occupant health, comfort, and workplace productivity. This means that air is introduced and distributed adequately, airborne contaminants are controlled. Properties can gain a marketing advantage if they are known to offer a healthy and pleasant indoor environment. Failure to respond promptly and effectively to IAQ problems can have consequences such as: increasing health problems such as cough, eye irritation, headache, and allergic reactions, and, in some rare cases, resulting in life-threatening conditions (e.g., Legionnaire's disease, carbon monoxide poisoning), reducing productivity due to discomfort or increased absenteeism accelerating deterioration of furnishings and equipment, as well as creating negative publicity that could put properties at a competitive disadvantage.

1. GreenScapes: Environmentally Beneficial Landscaping. Retrieved July 28, 2008 from http://www.ape.gov/osw/partnerships/greenscapes/pubs/brochures.htm
2. ENERGY STAR (n.d.). *Energy Star: Energy Stewardship Action List.* . Retrieved July 28, 2008, from http://www.energystar.gov/index/cfm?c=small_business.sb_congregations_action_list
3. ENERGY STAR (n.d.) Indoor Air Package. Retrieved July 28, 2008 from http://www.energystar.gov/ia/partners/bldrs_lenders_raters/downloads/IAP_Specification_041907.pdf

Table 3: Sample Best Management Practices Waste Management

Target Area	Practice	Reason	Benefit
Convention and meeting	Encourage "paperless" transactions whenever possible. The sales department can process and store client files electronically, instead of printing hard copies to store in paper files. Provide client materials such as interactive floor plans of the meeting space, in electronic form via the hotel's website. Provide meeting invoices on a single compact disc. Use in-room iConnect computer system for attendee surveys. Accept Banquet Event Orders electronically.	This practice saves paper, ink and toners.	The property will save in its stationary costs and reduce the amount of waste generated.
Electronic Waste	Develop a waste reduction plan for electronics. These items should be recycled or donated. E-Waste is waste generated from electronic equipment. New technology is making E-waste the fastest growing waste stream in the country. Most items that we have today will be obsolete in three to five years. Some of the items that fall in to this category are land-line telephones, PDAs, cellular phones, computers, keyboards, monitors, hand-held video games, calculators, TVs, VCRs, DVD players, tape recording machines, cameras, video cameras, two-way radios, fax machines, copiers and printers.	Electronics contain materials such as lead which potentially can be harmful to the environment if disposed of improperly. All lodging properties use several types for electronics which must be disposed periodically.	Recycling of items such as toners not only lighten the toxic load on the environment but can often result in rebates and discounts from various manufacturers. Further, energy and other resources do not have to be used to manufacture these items. Donating used electronics will generate goodwill for the property.
Food & Beverage	Donate used cooking oil.	Donating used cooking oil is a good way for food and beverage operations to dispose of form of waste. This used oil can be recycled and used to make other products such as bio diesel and animal food. It also represents a way for properties to contribute to a new and growing trend in conservation. For example, several jurisdictions have companies that will collect used cooking oil and process it into biodiesel.	Donating used cooking oil can provide savings for a property. For example, one restaurant chain reported savings of $100,000 in haulage and other disposal charges[1].
	Encourage a philosophy that supports the purchase and use of local, organic and sustainable farming.	Supporting the use of locally grown and produced food items helps to protect the environment and helps the growth of the local economy.	Locally grown items may be less costly due to lower transportation cost. Some industry publications estimate that the average meal travels approximately 1,500 miles before it reaches your table. Eliminating air travel and shorter transit distances drastically reduces the amount of fossil fuel consumed in bringing foods from farm to table.
Guestroom	Donate or reuse left over guest use items or amenities.	Guest use items such as discarded clothing or leftover bottles of shampoo, lotions, bar soap and little left on the roll toilet paper to charities such as, homeless and abuse shelters, and churches. Reuse items if the seal is not broken. Mattresses may also be donated.	Donating items reduce the amount of waste and will generate goodwill for the property in the community.
	Designate a recycling can or receptacle in guest room for recyclable items or a specific area in the room for placing recyclables	If the property has a recycling program in place, receptacles must be made available for guests to place recyclable items.	This can save time since housekeeping staff will not have to sift through waste for recycle items. In addition, this practice is also safer.
Office Area	Develop a waste reduction and recycling program for office paper and cardboard items.	Office areas generate a tremendous amount of paper related waste. Items to consider for recycling: copier paper, file folders, self-adhesive notes, and boxes. Reuse envelopes for internal routing or use inter-office envelopes. Reuse paper that is clean on one side for messages / scratch pads / draft reports. Reuse file folders. Breakdown and recycle corrugated boxes.	A waste reduction and recycling program will reduce the amount of waste generated by the property's office areas. In addition, having a recycling program in office areas will ensure that discarded items will be placed in the appropriate recycle containers, thereby reducing the need for sorting plastics corrugated materials, paper, cardboard and other materials.
General	Encourage and follow an eco-purchasing program	Following an eco-purchasing program will help the property close the recycling loop. Purchase paper products that use post-consumer recycled content: letterhead, stationery tissues, toilet paper, paper towels, writing and computer paper, office supplies and other equipment.	Following such a program results in less waste being generated since packaging will be minimized.

1. Williams, M. (2008, April 14). 'Green' Kitchen Equipment A Boost to Mother Earth, Operator Bottom Lines. *Nation's Restaurant News*, *42*(15), 8-26.

practices in water conservation require the communication of each hotel's water conservation policies to it's the staff and the property's guests. Further, faucets and piping systems must be checked constantly for leaks. It should also be noted that water used or consumed by the property is released back into the sewage system and should be properly treated before it is released. Best management practices in water management should be geared towards reducing wastage and increasing efficiency for example through use of water efficient bathroom fixtures which can generate savings on water and sewer bills with no loss of comfort to guests. Activities aimed at achieving these objectives will benefit the facility through direct cost savings realized through decreases in water bills, electricity costs, sewage bills and chemical costs. Best management practices in water usage should also emphasize water conservation through behavioral, operational, or equipment changes. Some of these changes are inexpensive to implement and have significant impacts in water conservation. For example, a property's linen and towels reuse program can save a property significantly through reduced labor and laundry expenses. Table 4 provides a sample of the best management practices in water management.
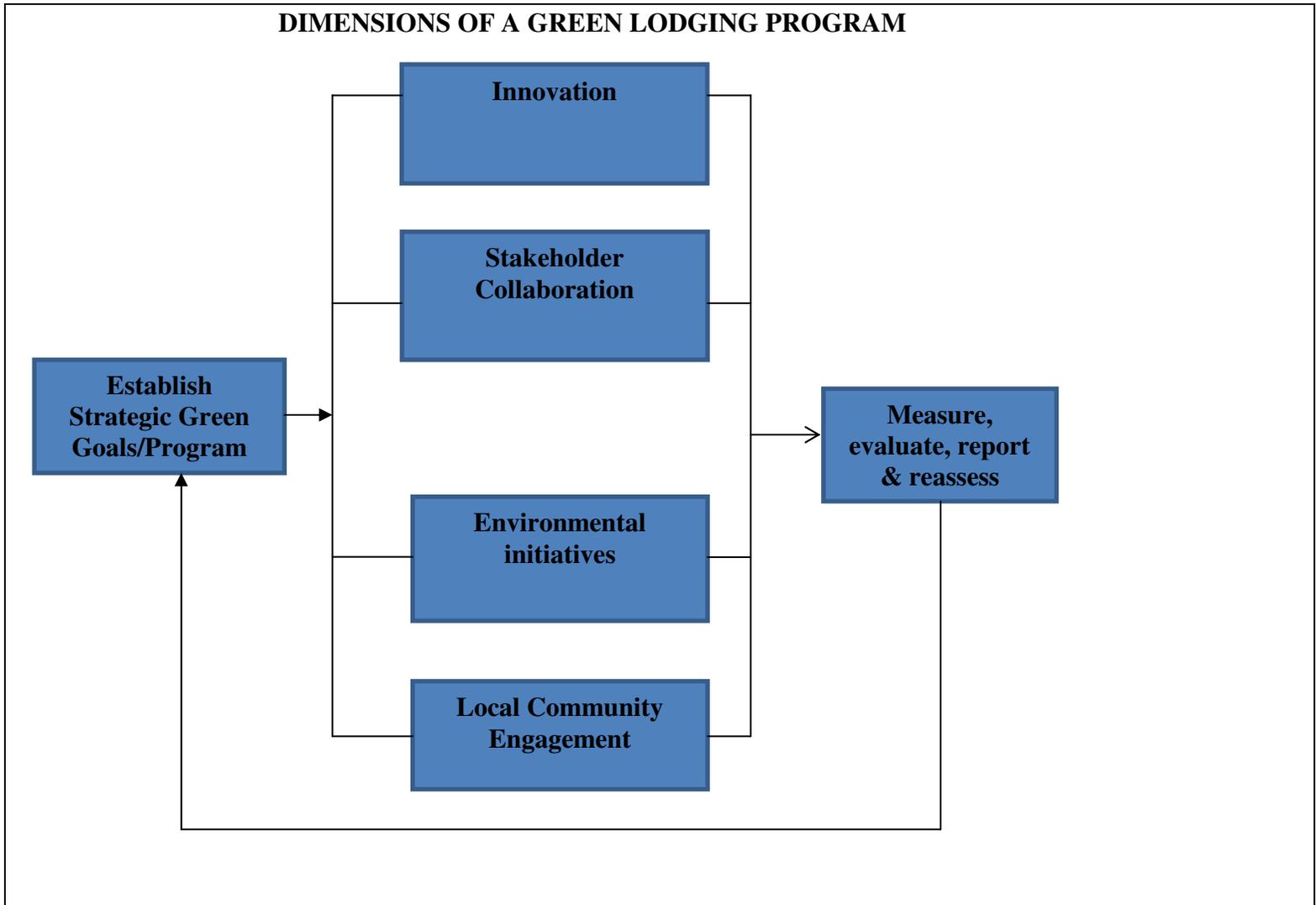
Dimensions of a green lodging program

Best practices green lodging program should follow a unique and dynamic stakeholder driven approach that centers on four key dimensions: *innovation* -development, design and adoption of innovative concepts, technologies, green and sustainable products and services that support the property's green efforts; *collaboration*-with all stakeholders along the supply chain to secure cost effective green products and services; *environment*-practices and policies aimed at advancing environmentally sustainable practices; and *community*-strategies and tactics aimed at engaging local communities and stakeholders within the local community such as suppliers. For example, using goods and services produced by the local community can aid the property's green efforts by reducing its carbon footprint. Each lodging property should evaluate its green program based on internal and external benchmarks. For example outcomes could be measured against the GRI reporting initiatives, ISO 14000 standards and ISO 9000 standards in conjunction with established internal goals. Since effective green lodging is a dynamic process that constantly incorporates current available best practices into operations, goals and outcomes should be constantly evaluated, updated, assess and revised to ensure current best practices are incorporated and put into practice. Further, as previously noted, it is advisable that lodging firms use multiple standards to assist in their green management development since this would protect them in the event that a particular standard comes under scrutiny. Results of a green lodging program should also be measured and reported to stakeholders. This is important since increasingly, lodging stakeholders are asking lodging firms to provide tangible evidence about green initiatives prior to entering into business relationships. Furthermore, tangible results will substantiate the firm's green claims. Figure 2 below encapsulates the dynamic stakeholder driven approach to best green practice implementation and management.

Table 4: Sample Best Management Practices in Water Management

Target Area	Practice	Reason	Benefit
Food & Beverage Area	Reuse gray water	If local code allows, reuse gray water (rinse water not contaminated with chemicals) to water plants. Water from steam tables and used ice are especially good for reusing.	Reusing gray water minimizes resource use and saves in irrigation and watering costs.
	Use ENERGY STAR approved dishwashers	Commercial dishwashers that are ENERGY STAR approved are on average 25 percent more water-efficient than standard models[1].	Each ENERGY STAR qualified commercial dishwasher can save businesses energy about 90 MBtus, and an average of $850/year on their energy bills. In addition, businesses can expect to save more than $200/year and 52,000 gallons/year due to reduced water usage[1].
Housekeeping	Choose Energy Star approved commercial washers.	ENERGY STAR approved washers use less water than other washers.	Using ENERGY STAR qualified clothes approved washers cost less compared to other types of washers. These washers use 55% less water than standard washers. They can result in savings of more than $100 per washer per year, on average.
Front of the house	Install water efficient urinals or waterless urinals in public restrooms.	Water efficient urinals use less water than traditional urinals. Water efficient urinals are models that that use one gallon or less per flush. Waterless urinals eliminate the need for a significant amount of water to be used for flushing.	Low flush units save a property in utility costs since it uses less water per flush. Several water utility companies offer very good advice and incentives to help you choose and install the right model. Waterless urinals can save a significant amount of water and provide for better hygiene in restroom settings.
Guestroom	Replace toilets with low-flow toilets.	Toilets purchased after 1994 should be low-flow and use less than 1.6 gallons per flush. To verify, look for a stamp or sticker (UPC or IAPMO) which indicates the gallons per flush. If you have the old-style toilet, modifications can be made to lower the amount of water used.	Toilets fitted with these devices can save four gallons or more per flush, translating into annual savings of over 30% and reduce water usage by as much as 50% [2]. In addition, several jurisdictions offer rebates for installations of low flow toilets.
	Set up a linen reuse program.	The most popular water conservation option for guestrooms is a linen reuse program. Informational cards should be available in the guestroom and in the bathroom stating the hotels linen reuse policy.	The standard for hotels that have a linen reuse policy is to only change sheets every three days unless the guest requests that the sheets be changed or the housekeepers notice that the sheets need changing. Towels that are hanging on the racks shouldn't be changed. This practice not only saves water but also energy, and labor hours.
Landscape/Grounds	Maximize mulching	Mulch keeps moisture in the soil, moderates soil temperature and reduces erosion and weeds. Good mulching will reduce the amount of watering required to keep plants watered. Keep a 2-to-3-inch layer of organic mulch over the roots of trees and shrubs and in plant beds. Create self-mulching areas under trees so leaves can stay where they fall. Use by-products or alternative mulches such as pine bark, eucalyptus and melaleuca, or use recycled mulches when available from your community.	Mulching flower beds, shrub beds and trees has several benefits. It helps the soil absorb water, allows water to better penetrate plants root systems, reduces unwanted weed growth, and insulates plants from changes in temperature. As the mulch decomposes, the organic content of the soil is increased. Mulch also increases the attractiveness of areas.
General	Check and repair leaks on a regular basis.	Leaks, both inside and outside leaks, outside leaks can increase the water bill substantially.	Leaky pipes and faucets can waste gallons of water and cost a property dearly. For example, hot water leaking at a rate of one drip per second can waste up to 1,661 gallons of water over the course of a year, and waste up to $35 in electricity or $35 in natural gas [3]. Fixing drips is a cost effective and easy way to save energy.

1. ENERGY STAR (n.d.). Energy Star: Commercial Dishwashers. Retrieved July 28, 2008 from http://www.energystar.gov/index/cfm?c=comm._dishwashers.pc_comm_dishwashers.
2. United States Environmental Protection Agency. (2000, September). *Wastewater Technology Fact Sheet: High Efficiency Toilets* (US Environmental Protection Agency. Rep. No. 832-F-00-047). Washington, DC: United States Environmental Protection Agency.
3. ENERGY STAR (n.d.) Energy Star@ home tips. Retrieved July 28, 2008 from http://www.energystar.gov/index.cfm?c=products_at_home_tips

Figure 2: Dynamic Green Lodging Implementation & Best Management Practices Framework

DIMENSIONS OF A GREEN LODGING PROGRAM

```
                        ┌─────────────────┐
                        │   Innovation    │
                        └─────────────────┘

                        ┌─────────────────┐
                        │   Stakeholder   │
                        │  Collaboration  │
                        └─────────────────┘
┌─────────────┐                               ┌─────────────────┐
│  Establish  │                               │    Measure,     │
│Strategic Green│ ───►                     ──►│ evaluate, report│
│Goals/Program│                               │   & reassess    │
└─────────────┘                               └─────────────────┘
                        ┌─────────────────┐
                        │  Environmental  │
                        │   initiatives   │
                        └─────────────────┘

                        ┌─────────────────┐
                        │ Local Community │
                        │   Engagement    │
                        └─────────────────┘
```

SUMMARY AND CONCLUSION

Best management practices in green lodging are sustainable or green strategies designed to improve the lodging product from the perspective of owners, operators and guests while simultaneously reduce or eliminate a lodging facility's negative impact on the environment. The motives of owners and operators are typically profit driven while lodging customers seek reasonable value driven prices, convenience, comfort, innovation, appropriate design, and safety and security. Hence, best management practices in green lodging should be a component of guests' experience, and should not be developed with the intention of making such practices the primary reason why guests utilize the lodging facility. In this same context, hotels like other income producing entities have resource constraint, and as such, best management practices in green lodging should make sound business sense. Hence, these practices should be developed if tangible evidence suggests that there will be positive return on green investments. The "voice" of the customers should also be incorporated into the best green management practices. Hence, green lodging programs should be designed to enable seamless adoption by customers, as opposed to implementation methods that elicit "consumer environmental guilt".

Nonetheless, industry wide, there appears to be nascent interest in green lodging. The industry as a whole has made significant strides towards embracing and implementing sustainable or green practices into every facet of

operations, strategic planning, marketing as well as supplier and customer relationships. This impetus towards sustainable and green practices within the lodging industry has been driven by potential cost savings and societal pressure.   Best green management practices are property specific, dynamic, deliberate and concerted stakeholder value driven efforts by lodging firms aimed at reducing or eliminating the negative environmental externalities associated with hotel operations. Since the negative externalities manifest themselves in energy usage, water usage, waste generation and air quality degradation, best practices should be developed around these four areas and should be designed to eliminate or reduce externalities in these areas in cost effective ways. This is usually achieved through adoption and implementation of innovative technical practices or solutions in conjunction with behavioral modification by stakeholders.

In the case of energy usage, best management practices should include energy conservation practices and policies developed and designed to help the property save energy, choose energy efficient facility designs, select and install energy efficient fixtures and equipment. These actions should generate savings for the hotel and improve guest satisfaction. The overarching goal of best practices in indoor air quality management is to minimize or eliminate the sources that lead to poor indoor air quality. This includes using ecofriendly chemicals, equipment and installing appropriate filtration systems. These measures can have the positive effect of reducing the property's exposure to risks associated with poor indoor air quality.   Hotels invariably generate a tremendous amount of waste in the production of goods and services. Best management practices in waste reduction for lodging properties should be designed to reduce waste at their source through programs such as eco purchasing. A property's waste management program should be communicated to its respective constituents and should encourage recovery, reuse and recycling. These actions can have a net savings effect for lodging firms. Best green management practices in water usage and management should be geared towards reducing wastage and increasing overall usage efficiency. This can be achieved through use of water efficient equipment and fixtures as well as through direct and indirect behavioral modification.   Implementation of best practices for water usage and management by lodging facilities can have the incremental benefit of direct long and short term cost savings.

Successful and effective implementation of the best management practices in green lodging requires: targeting each functional area of a lodging facility, develop the best practices for green lodging implemented for the specific area, highlighting the reasons for the best practices; establishment of clearly defined green goals; selecting and adopting innovative green techniques, facilities, products and services; establishing sustainable environmental initiatives germane to the lodging facility and its location; collaboration and communication with internal and external stakeholders; engagement with the community in which the lodging facility operates and; measuring, evaluating, reassessing and reporting outcomes of green management programs. Adopting and implementation of green practices should be accomplished with minimal negative impact of the facility's financial performance or its guests. As such, green initiatives should only be implemented if they enable lodging firm to achieve excellence in guest satisfaction while achieving financial objectives of increased sales or reduced costs.   Finally, the best management practices in green lodging should be geared towards enhancing the lodging firm's corporate responsibility (CR) initiatives, and not towards directly enhancing its public relations (PR) program.

References

Allouche, J., & Laroche, P. (2005). A Meta-Analytical Investigation of the Relationship between Corporate Social and Financial Performance. *Revnue de Gestion des Ressources Humaines*, *57*(1), 8-41.

American Hotel & Lodging Association. (2001) Energy Management and conservation guide. East Lansing, MI. American Hotel & Lodging Association.

American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc. (2005). *Ventilation for Acceptable Indoor Air Quality* (ASHRAE). Atlanta, GA: American Society of Heating, Refrigerating and Air Conditioning Engineers-Standards Committee.

Aupperle, K., Carroll, A., & Hatfield, J. (1985), "An empirical examination of the relationship between corporate social responsibility and profitability", *Academy of Management Journal,* Vol. 28 No. 2 pp. 446-463.

Ayuso, S. (2006). Adoption of voluntary environmental tools for sustainable tourism: analyzing the experience of Spanish hotels. *Corporate Social Responsibility and Environmental Management*, *13*, 207-220.

Backhaus, K. B., Stone, B. A., & Heiner, K. (2002), "Exploring the Relationship between Corporate Social Performance and Employer Attractiveness", *Business & Society*, Vol. 41 No. 3, pp. 292-318.

Balaras, C. A. (2003, January). Editorial. Xenios Newsletter.

Bansal, P., & Roth, K. (2000). Why companies go green: a model for ecological responsiveness. *Academy of Management Journal*, *43*(4), 717-736.

Berman, S., Wicks, A., & Jones, T. (1999), "Does Stakeholder of Orientation Matter? The Relationship between Stakeholder Management Models and Firm Financial Performance", *Academy of Management Journal*, Vol. 42 No. 5 pp. 488-506.

Bohdanowicz, P. (2003). A Study of Environmental Impacts, Environmental Awareness, and Pro-Ecological Initiatives in the Hotel Industry (Doctoral dissertation, Royal Institute of Technology, 2003). Dissertations Abstracts International, 1-225.

Bohdanowicz, P. (2005). European hoteliers' environmental attitudes: greening the business. *Cornell Hotel and Restaurant Administration Quarterly*, *46*(2), 188-204.

Boyce, R. R. (1992). An experimental examination of intrinsic values as a source of the WTA-WTP disparity. *American Economic Review*, *82*, 1366-1373.

Bromiley, P., & Marcus, A. (1989), "The Deterrent to Dubious Corporate Behavior: Profitability, Probability, and Safety Recalls", *Strategic Management Journal*, Vol. 10 No. 3 pp.233-250.

Cespedes-Lorente, J., Burgos-Jimenez, J. D., & Alvarez-Gil, M. J. (2003) Stakeholders' environmental influence. An empirical analysis in the Spanish hotel industry. *Scandinavian Journal of Management,* 19(3), 333-358.

Cheyne, J., & Barnett, S. (2001). The Greening of accommodation. Stakeholder perspectives of environmental programs in New Zealand hotels and luxury lodges. *Journal of corporate citizenship*, 1, 115-126.

Crane, A. (2000). Facing the backlash: green marketing and strategic re-orientation in the 1990s. *Journal of Strategic Marketing*, 8(3), 277-296.

D'Souza, C., Taghian, M., Lamb, P., & Peretiatkos, R. (2006). Green products and corporate strategy: an empirical investigation. *Society and Business Review*, 1(2), 144-157.

Davidson, W. N., & Worrell, D. L. (1990). A Comparison and Test of the Use of Accounting and Stock Market Data in Relating Corporate Social Responsibility and Financial Performance. *Akron Business and Economic Review*, *21*(3), 7-19.

Davidson, W. N., Chandy, P. R., & Cross, M. (1987), "Large Losses, Risk Management and Stock Returns in the Airline Industry", *Journal of Risk and Insurance*, Vol. 54, No. 1 pp. 162-172.

Davies, T., & Cahill, S. (2000, March). Environmental implications of the tourism industry (Discussion Paper 00-14). Washington, DC: Resource for the Future.

De Bakker, F. G., & Den Hond, F. (2005). A Bibliometric Analysis of 30 Years of Research and Theory on Corporate Social Responsibility and Corporate Social Performance. *Business and Society*, *44*(3), 283-317.

Del Mar Garcia de los Salmones, M. A., Crespo, H., & Rodriguez del Bosque, I. (2005). Influence of Corporate Social Responsibility on Loyalty and Valuation Services. *Journal of Business Ethics, 61*(4), 369-385.

Del Mar Garcia de los Salmones, M. A., Crespo, H., & Rodriguez del Bosque, I. (2005). Influence of Corporate Social Responsibility on Loyalty and Valuation Services. *Journal of Business Ethics*, *61*(4), 396-385.

Deng, S., & Burnett, J. (2002). Water use in hotels in Hong Kong. *Hospitality Management*, 21, 57-66.

Dobin, D. (2009). Greenwashing harms entire movement. *Lodging Hospitality*, *64*(14), 42-46.

Emblem, E. S. (2001) Hospitality Group: separate IAQ standard needed. ASHRAE Journal, Hospitality Issue: 17-20.

Faulk, E. S. (2000, September). *A survey of environmental management by hotels and related tourism businesses*. Paper presented at the OIKOS PhD Summer Academy 2000, St. Gallen, Switzerland.

Freedman, M., & Jaggi, B. (1982), "Pollution Disclosures, Pollution Performance and Economic Performance", *Omega*, Vol. 10 (2), pp. 167-176.

Freedman, M., & Jaggi, B. (1982), "Pollution Disclosures, Pollution Performance and Economic Performance", *Omega*, Vol. 10 No.2, pp. 167-176.

Gonzalez, L., & Leon, C. J. (2001). The adoption of environmental innovations in the hotel industry of Gran Canaria. *Tourism Economics*, *7*(1), 177-190.

Gonzalez-Benito, J., & Gonzalez-Benito, O. (2005). An analysis of the relationship between environmental motivations and ISO 14001 Certification. *British Journal of Management*, *16*(2), 133-148.

Graci, S., & Dodds, R. (2008). Why go Green? The business case for environmental commitment in the Canadian hotel industry. *Anatolia: An International Journal of Tourism and Hospitality Research*, *19*(2), 251-270.

Greening, D. W., & Turban, D. B. (2000), "Corporate Social Performance as a Competitive Advantage in Attracting a Quality Workforce", *Business & Society,* Vol. 39 No 3, pp. 254-280.

Grieve, P. W. (1991). Measuring ventilation using tracer gases. Brochure. Denmark: Bruel & Kjaer.

Han, H., & Kim, Y. (2010). An investigation of green hotel consumers' decision formation: developing an extended model of the theory of planned behavior. *International Journal of Hospitality Management*, *28*, 659-668.

Hewett, M. J. (2001). There must be a compelling reason. *ASHRAE Journal, Hospitality Industry Issue*, 17-19.

Johnson, R., & Greening, D. (1999), "The Effects of Corporate Governance and Institutional Ownership Types on Corporate Social Performance", Academy *of Management Journal*, Vol. 42, No. 5 pp. 564-576.

Johri, L. M., & Sahasakmontri, K. (1998). Green marketing of cosmetics and toiletries in Thailand. *Journal of Consumer Marketing,* 15(3), 265-281.

Karna, J., Juslin, H., Ahonen, V., & Hansen, E. (2001). Green Advertising: Green wash or a true reflection of marketing strategies? *Greener Management International*, *33*(1), 59-70.

Kasim, A. (2004). Socio-Environmentally Responsible Hotel Business: Do Tourists to Penang Island, Malaysia Care? *Journal of Hospitality and Leisure Marketing*, 11(4), 5-28.

Kasim, A. (2007). Corporate environmentalism in the hotel sector: evidence of drivers and barriers in Penang, Malaysia. *Journal of Sustainable Tourism*, *15*(6), 680-699.

Kasmin, A. (2004). Socio-environmentally responsible hotel business: do tourists to Penang Island, Malaysia care? *Journal of Hospitality & Leisure Marketing*, *11*(4), 5-28.

Kassinis, G. I., & Soteriou, A. C. (2003). Greening the service profit chain: the impact of environmental management practices. *Production and Operations Management*, *12*(3), 386-403.

Lawrence, A. T., & Morell, D. (1995). Leading-edge environmental management: Motivation, opportunity, resources and processes. In D. Collins & M. Starik (Eds.), *Special research volume of research in corporate social performance and policy, sustaining the natural environment: empirical studies on the interface between nature and organizations* (pp. 99-126). Greenwich, CT: JAI Press.

Lawson, F. (1998). Hotels & Resorts: Planning and Design (4th Ed.). Oxford, UK: Butterworth.

Lee, J. S., Hsu, L., Han, H., & Kim, Y. (2010). Understanding how consumers view green hotels: how a hotel's green image can influence behavioral intentions. *Journal of Sustainable Tourism*, *18*(7), 901-914.

Lubieniechi, S. A. (2002). Romanian consumers' behavior regarding organic food. *British Food Journal*, 104(3/4), 337-344.

Lynes, J. K., & Dredge, D. (2006). Going Green: Motivations for environmental commitment in the airline industry. *Journal of sustainable tourism*, *14*(2), 116-138.

Manaktola, K., & Jauhari, V. (2007). Exploring consumer attitude and behavior towards green practices in the lodging industry in India. *International Journal of Contemporary Hospitality Management*, *19*(5), 364-377.

Mandese, J. (1991). New study finds green confusing. *Advertising Age*, 62(45), 1-56.

Margolis, J. D., & Walsh, J. P. (2003). Misery Loves Companies: Rethinking Social Initiatives in Business. *Administrative Science Quarterly*, *48*(2), 268-305.

McPeak, C., & Tooley, N. (2008). Do Corporate Social Responsibility Leaders Perform Better Financially? *Journal of Global Business Issues*, 2(2), 1-6.

Menges, R. (2003). Supporting renewable energy on liberalized markets: green electricity between additionally and consumer sovereignty. *Energy Policy*, *31*, 583-596.

Myung, E., McClaren, A., & Li, L. (2012). Environmentally related research in schjolarly hospitality journals: Current status and future opportunities. *International Journal of Hospitality Management*, *31*(4), 1264-1275.

Nicholls, S., & Kang, S. (2012). Green initiatives in the lodging sector: are properties putting their principles into practice? *International Journal of Hospitality Management*, *31*, 609-611.

O'Hanlon, A. (2005) Managing Energy: A Strategic Guide for Hotels (Sustainable Energy Ireland). Dublin, Ireland: Begley Hutton.

Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate Social and Financial Performance: A Meta-Analysis. *Organization Studies*, *24*(3), 403-441.

Peattie, K. (1999) Trappings versus substance in the greening of marketing planning. *Journal of Strategic Marketing,* 7(2): 131-148.

Porter, M., & Kramer, M. (2006, December). Strategy & Society: The link between competitive advantage and corporate social responsibility. *Harvard Business Review*, *84*(12), 78-91.

Post, J. (1993). The greening of the Boston Park Plaza Hotel. *Family Business Review*, 6(2), 131-148.

Preston, L. P., & O'Bannon, D. P. (1997). The Corporate Social-Financial Performance Relationship: A Typology and Analysis. *Business and Society*, *36*(4), 419-429.

Priego, M., & Palacios, C. A. (2008). Analysis of environmental statements issued by EMAS-certified Spanish hotels. *Cornell Hospitality Quarterly*, *49*(4), 381-394.

Raihi-Belkaoui, A. (1992), "Executive Compensation, Organizational Effectiveness, Social Performance and Firm Performance: An Empirical Investigation", *Journal of Business Finance and Accounting,* Vol. 19 No. 1, pp. 25-38.

Robinot, E., & Ginnelloni, J. L. (2010). Do hotels "green" attributes contribute to customer satisfaction? *Journal of Service Marketing*, *24*(2), 157-169.

Roman, R. M., Hayibor, S., & Agle, B. R. (1999). The Relationship between Social and Financial Performance. *Business and Society*, *38*(1), 109-125.

Rubinot, E., & Ginnelloni, J. L. (2010). Do hotels' green attributes contribute to customer satisfaction? *Journal of Service Marketing*, *24*(5), 333-360.

Savitz, Andrew, and Karl Weber. *The Triple Bottom Line.* San Francisco: Jossey-Bass, 2006.

Self, R., Self, D., & Bell-Haynes, J. (2010). Marketing tourism in the Galapagos Islands: Ecotourism or greenwashing? *The International Business & Economics Research Journal*, *9*(6), 111-125.

Wasik, J. (1992). Green marketing: marketing is confusing, but patience will pay. *Marketing News*, 26(21), 16-18.

Wong, V., Turner, W., & Stoneman, P. (1996) Marketing Strategies and Marketing Prospects for Environmentally friendly consumer products. *British Journal of Management,* 7(3): 263-281.

Wu, M. (2006). Corporate Social Performance, Corporate Financial Performance and Firm Size: A Meta-Analysis. *Journal of American Academy of Business, Cambridge*, *8*(1), 163-171.