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Environmental management practices among coastal beach hotels in Kenya

Peter Onyonje Osiako*
Faculty of Economic Sciences
Kaposvár University
7400, Guba Sandor Utca 40, Hungary
Email: peterosiako78@gmail.com

Harshavardhan Reddy Kummitha
Faculty of commerce, Hospitality and tourism
Budapest Business School
Budapest – 1054, Hungary
Email: harshavardhankummitha@gmail.com

Corresponding author*

Abstract

Environmental management is today becoming an essential aspect of the operations of tourism businesses globally to the point that a number of environmental initiatives have been put in place by tourism developers. "Green" accommodation images have become a powerful operational tool in attracting and retaining more guests and in achieving cost reduction measures. However, there seems to be a gap in monitoring outcomes of such initiatives. The objective of this study was to identify environmental management practices adopted by beach hotels on the Kenyan coast and establish factors that limited adoption of environmental management practices. Data was gathered through questionnaire surveys distributed to a stratified sample of 32 star-rated beach hotels. Frequencies, percentages and chi-square analyses revealed that the general level of adoption and implementation of environmental management practices was below average and that there was no significant relationship between hotel star category and extent of adoption of environmental management practices. Environmental management practices related to energy conservation and water conservation were adopted by the majority of the hotels in the study. This was possibly driven by profit motives. The principle of "reduce, reuse and recycle" was yet to be fully adopted by the hotels. In future, enhanced capacity building, all stakeholders' collective involvement and closer monitoring by relevant environmental agencies are recommended as the most appropriate approaches towards achieving environmental sustainability through hotel development in this tourist destination.

Keywords: Adoption, best practices, environmental initiatives, green accommodation, sustainability.

Introduction

The hotel industry being one of the fastest growing and the largest resource-consuming industries in the world uses substantial amounts of energy, water and non-durable products (Erdogan & Baris, 2007). It has been observed that the legislation regulating environmental practice is becoming harsher by imposing severe penalties on non-compliant organizations (Ervin et al., 2012; Patton & Worthington, 2003). A steady growth in tourism in Kenya since her independence in 1963 has led to an increase in the number of accommodation facilities with varied environmental effects. Currently, tourism is Kenya's second largest Gross Domestic Product

(GDP) earner. The Kenyan Government's commitment towards developing the country's tourism on a sustainability basis is indicated in several recent policy and strategy documents. The documents prescribe the principles, objectives, standards, indicators, procedures and incentives for the development, management and marketing of tourism on sustainable basis (Kenya Tourism Board, KTB, 2016). Tourism in Kenya is developed under specific legislative and regulatory frameworks through Government ministries, departments and agencies provides. The National Environmental Management Authority (NEMA) is the environmental regulatory body, established by the Act of Parliament, under the Environmental Management and Coordination Act (EMCA) number 8 of 1999. It is the principal instrument of government in the implementation of all policies relating to the environment. Kamau, (2005) observes that Kenyan environmental law standards are considerably lower than those in Western European countries. He attributes this to substandard substantive law, a lack of legal enforcement, and a preference given to industrial growth as opposed to a clean environment. To achieve the Kenya Vision 2030, the government of Kenya is developing two Coastal townships, Diani and Kilifi, into vibrant tourist resort cities (GoK, 2007). It has earlier been observed that in order to realize sustainable tourism development in Kenya, the role played by the accommodation sector should be significant and that accommodation managers should seriously consider mitigating their negative impacts on environment (Irandu, 2006). This, will go a long way in enhancing the long-term viability of the environment on which tourism thrive.

Accommodation Sector on the Kenyan Coast

The spatial pattern of Kenya's tourism appears to be highly concentrated (Kenya National Bureau of Statistics, KNBS,). Going by accommodation space available, virtually all tourism is situated along the coast, in Nairobi and within a few protected areas as wildlife tourism. The Kenya's Economic Survey report of 2016 on tourism performance shows that the coast region exceeded the rest of the other nine zones in terms of hotel bed-nights available (Table 1). This region is rich in tourism resources and fragile ecosystems, necessitating the need to develop tourism with emphasis on environmental sustainability. Hotels along the Kenyan Coast have been associated with varied environmental problems suggesting that hotel managers could be focusing mainly on maximizing profits, without putting measures in place to safeguard environmental integrity (Beja, 2010). A few studies have examined hotel operations on the Kenyan coast in relation to sustainability.

Table 1. Hotel Bed-Nights Available in Kenya by Zone, 2012-2016

ZONE	2012	2013	2014	2015	2016
Coastal-Beach	3,132.6	2750.3	2527.7	2113.8	2286.3
Coastal-Other	260.0	124.0	95.9	116.6	197.2
Coastal-Hinterland	88.7	125.5	133.2	108.4	177.5
Nairobi-High class	1145.0	1175.3	1119.1	1014.9	1076.3
Nairobi-Other	490.5	455.7	388.0	378.0	445.1
Central	526.0	622.2	686.3	583.6	691.6
Masailand	443.7	473.0	479.5	491.6	655.5
Nyanza Basin	252.1	345.3	357.7	487.8	325.4
Western	464.3	454.1	433.3	448.8	493.6
Northern	57.8	71.2	60.9	135.1	100.0
Total Available	**18849.6**	**18292.2**	**19877.7**	**20187.2**	**21258.5**

Source: KNBS, 2016

A study by Muthini et al., (2003) established solid waste types and quantities from six popular beach hotels in Mombasa and Diani. They examined factors and processes that affect solid waste management in the Kenya Coast region and provided baseline data on quantities of waste generated in coast hotels. They determined the mean per-capita waste generation rates. Irandu, (2006) used the hospitality sector's view to assess the sustainability of tourism on the Kenya's coast by collecting the views of hotel managers or owners and employees and finding out the positive and negative impacts of tourism along the coastline. This study revealed "serious environmental degradation and social ills associated with tourism related developments". He recommends better integration of the local population into the tourism process.

Masau and Prideaux, (2003) on the other hand, examined the perceptions of overseas visitors to Kenya towards the impact of the hotel sector on the environment. Half of the respondents were of the view that Kenya's wildlife parks were managed on a sustainable basis, while two thirds felt that the hotels had some impacts on the environment. The findings also confirmed that there was willingness among the tourists to pay a premium for environmental friendly products and services including accommodation. Another study by Kimeu (2015) sought to investigate how waste management practices affected hotel operational performance and determine their implementation by hotels in Mombasa County. The study established a moderate effect of waste management on hotel operational performance. However, the four studies relating to hotel sector and the environment on the Kenyan coast fail to reveal attempts made by stakeholders in the sector to promote environmental sustainability. This leaves a gap in literature concerning environmental practices adopted by the hotel sector on the busy Kenyan coastal area. Also, there is need to ascertain the challenges that constrain the attainment of best environmental practices in these hotels.

Literature Review

Hotels' environmental impacts and management efforts

It is argued that, the way a hotel is managed largely influences its impacts (Buckley, 2010). Mensah, (2006) has indicated that the majority of hotels have adopted environmental management practices in the field of energy and water conservation because these are cost-cutting measures which have implications on profitability. In responding to the growing global concerns associated with environmental issues, measures put in place include recycling, reducing and re-using linen and towels (Page, 2009). Gardner (2010) recommends a wide range of practical options for eco-friendly hotels with respect to power, water and waste management. Most environmental audits carried out in hotels relate to waste reduction, waste reuse and waste recycling, energy efficiency, water conservation, indoor air quality, education on environmental conservation, partnership with/sponsorship of other environment stakeholders (Chan & Lam, 2001; Faulk, 2000).

Waste Management

On Waste Management, Azila (2004) observes that a typical hotel solid waste comprises 46% food and non-recyclables, 25% paper, 12% cardboard, 7% plastic, 5% glass and 5% metal. He adds that approximately 47% of hotel's waste water can be recycled, while reducing and reusing these materials could also serve as a side revenue-earning practice from payments made by scavengers and recycling firms. As pointed out by Karl, et al. (2009), it is important that hotels collect and separate wastes, including hazardous waste. Reducing is an important step towards improving an establishment's sustainability and financial performance as has been demonstrated

some studies (Kimeu, 2015; Muthini, et al., 2003). Internationally, Marriott's University of Maryland College Inn and Conference Centre saved US$600 by reducing 108 tonnes of annual waste between 2007 and 2008. At Kingfisher Bay Resort and Village (KBRV), in Queensland Australia, waste is separated, compacted and sent to the mainland (Faulk, 2000). Studies have also demonstrated that grey water re-use is an effective way to reduce water usage as well as to significantly save costs (March & Orozco, 2004). One of the Novotel and Hotel Ibis Homebush Bay in Sydney Australia reduced its portable water consumption by 50% through a dual-piping system (Hotel Online, 2002).

Energy Efficiency

There is evidence that hotels are engaging in energy-saving measures which range from the use of compact fluorescent bulbs to shutting down unused appliances Chan and Lam (2002). Patton and Worthington, (2003b) give an example of the Saunders Hotel which uses thermopane windows to reduce energy costs. The Intercontinental Hotels Group managed to reduce energy consumption in 2009 by purchasing a capacitor bank thereby realizing a return of investment of 18 months (Faulk, 2000). For hotels in hot and humid tropical climate, it is necessary to provide year round air-conditioning Xuchao et al., (2010). Some hotels operate and maintain their own chiller plants while others share cooling systems. In most Singapore hotels, public areas like lobby and restaurant are usually conditioned with constant air volume (CAV) or variable air volume (VAV) systems, whereas fan coil units (FCU) are often used to serve guest rooms (Xuchao et al., 2010). Kingfisher Bay Resort and Village (KBRV), in Queensland Australia has invested in friendly architectural design and use of fluorescent bulbs, thus allowing for minimal energy consumption (Mensah, 2009). Kasim (2009) attests to the fact that energy saving air conditioners devices like inverters are not popular due to the fact that it is a new technology and takes time for widespread implementation. He further adds that hotels can save energy by using motion sensors.

Employee and Customer Involvement

UNWTO (2013) encourages training and capacity building regarding sustainability issues as an important aspect that influences the hotel's approach to environmental management. According to Fenwick (2007), employee involvement in environmental management is important for development and maintenance of sustainability performance, through staff environmental training, environmental communication and advocacy. Karl et al., (2009) point out the need for environmental education for guests and encouraging guests to accept recycling while staying at a hotel. Deloitte's survey of 2008 showed that hotel clients are becoming increasingly concerned about the environment, a move that is raising the bar on what is expected from lodging companies in terms of environmental responsibility (Deloitte, 2008).

Water Conservation

Regarding water conservation, dual flush toilets and toilet tanks with less than 9 liters of water and low flow sink aerators or water restricting devices can serve well in the hospitality sector (Kasim, 2009). Other simple initiatives taken to conserve water include restricting water pumping to certain times of the day, installing low-pressure showers and promoting the use of recycled water and rain water. Such measures help hotels and game lodges to co-exist with water-starved communities, livestock and wildlife especially in dry areas (Ecotourism Kenya, 2016). Growing of trees also helps to protect water catchment areas and this succeeds well especially when local communities are involved. Another critical water management measure is encouraging guests to re-use towels (Page, 2009).

Limitations to Adoption of Environmental Practices

Hotels often site lack of support systems to encourage environmentally friendly practices as a reason for not practicing a larger number of environmental initiatives despite being aware of their environmental responsibility (Kasim, 2009). In an earlier study involving small and medium hotels in Kuala Lumpur, Malaysia lack of clear and adequate knowledge about environmental management by managers was cited, and most hotels did not go beyond practices that reduce their water and energy (Kasim, 2005). There is lack of efficient monitoring mechanism by appointed government agencies to ensure compliance with existing policies, laws and regulations on environmental management (Mensah, 2009). Another hindrance is the perception that environmental action might affect the assurance of exceptional service quality consequently lowering guests satisfaction (Kasim & Scalat, 2007). Some hotels do not see the benefits of incurring extra costs and resources just to get labels or certificate like ISO 14001 and green labels (Siti-Nabiha et al., 2011).

Environmental Certification and awards

Environmental certifications and awards (Hassan & Ibrahim, 2012) are direct indicators of certain achievements regarding environmental performance of hotels. There are several international award schemes and certifications in place to recognize environmental management efforts in hotels (Mensah, 2009). In Kenya, the Kenya Tourism Federation in partnership with Kenya Tourist Board have organized the “Kenya Tourism Award” with the goal of recognizing and encouraging best practice in responsible tourism in the country. This is in addition to annual the Eco-Warrior Award, offered by Ecotourism Kenya in collaboration with other tourism stakeholders in Kenya.

Methodology

This study employed cross-sectional survey design. It was carried out among star-rated hotels found on the Kenyan coastal area. Kenya is the area of land bordering the Indian Ocean, stretching from the Kenya’s border with Somalia in the north to the Kenya-Tanzania border in the south, about 402 kilometers (250 miles) in length. Major beach resort on this coast are Malindi, Watamu, Kilifi, Shanzu, Jomo Kenyatta, and Nyali, all to the north of Mombasa City and Shelly, Tiwi and Diani beaches to the south of Mombasa Island. Over one hundred (100) accommodation facilities are found on this Coast, most of them lining up the beach front along the sandy beaches. They can loosely be grouped into the categories of beach resorts, cottages, guest houses, villas, hotels, sea lodges, clubs, retreat centres and apartments. Of these facilities, forty-seven (47) are star-rated by the Tourism Regulatory Authority (TRA) and they are the ones that formed the sampling frame for this study.

Two coastal townships, Kilifi and Diani have been earmarked for development into tourist resort cities by the Kenya Government as part of the country’s Vision 2030 flagship projects. The coast has the highest concentration of tourist hotels and other alternative tourist accommodation facilities in the country and has diverse species of terrestrial and marine fauna and flora in conservation parks. The current study targeted star-rated hotels operating on the Coast of Kenya. The Ministry of Tourism and Wildlife in Kenya (MTW), through the Tourism Regulatory Authority (TRA), maintains a gazetted list of classified hotels with a total of forty-seven (47) star-rated hotels in the Kenya Coast (GoK, 2016).

Table 2: Sample size of Hotels

Rating	No. Of Hotels	Total Rooms	Total Beds	Sample Obtained
Five-Star	6	913	1682	6
Four –Star	13	1987	3875	8
Three-Star	14	786	1786	10
Two-star	14	864	1639	8
Total	47	4389	8502	32

Source: GoK, 2016

Sampling and Data Collection

This study relied on primary data. The data was obtained by means of questionnaires from hotel managers of sampled star-rated hotels after ethical aspects were considered. All the hotel managers of star-rated hotels in the coast region totaling forty-seven (47) as at January 2017 were targeted. The TRA (2016) list of classified hotels in the coastal region served as the sampling frame. The study considered to survey all these classified hotels (the whole population). Stratified random sampling method was used to select the hotel managers (Table 2). The criterion for the strata was the hotel classification system generated by the TRA. As indicated in Table 2, the strata were five-star, four-star, three-star, and two-star. The TRA list excludes One-star, guest-houses and budget hotels and therefore, they were left out of this survey. To obtain the data, the researcher employed a questionnaire which had three parts: Part one elicited information on the deliberate efforts made by hotels to promote environmental sustainability in their operations. The second part of the questionnaire sort the information on characteristics of the hotel establishments and their managers, while the third part inquired the manager's demographic information. The questionnaire yielded both qualitative data. Questions in the survey measuring the respondents' level of agreement or disagreement with the proposed statements were answered using a five-point Likert Scale. The scale ranged from 1, representing "not at all" to 5, representing "to a very great extent."

Data was collected between the month of January and March 2017 from the general managers. However, where this was not possible, those working in the capacities of operations manager, environmental manager, chief engineer, housekeeping supervisor or landscape manager filled the questionnaire. They were deemed to be generally concerned and had knowledge about the environmental issues in the hotels. Since the questionnaire was quite detailed, the respondents were required to fill it at their convenient time. Some hotel managers were not co-operative and therefore did not fill the questionnaire. Others accepted the questionnaires but it took quite an effort to collect the completed questionnaires. Therefore, at the end of the exercise a sample of thirty-two managers was achieved, those who completed and returned the questionnaire. Percentages and frequencies were used to compare the level of environmental practices among the hotels while Chi-square test technique was used to establish the difference in environmental management practices among the various categories of hotels. The relationship was tested at $P<0.05$. The data collected from the field was edited, coded and processed using the Statistical Package for Social Sciences (SPSS) PC version 25. For easy comparison, the hotels were categorized into four on the basis of star classification.

Discussion and Findings

A four-page questionnaire was used to gather information on environmental management practices as perceived by hotel managers of the classified hotels. Fifteen hotel managers did not

take part in the survey. Thus the survey involved a total of thirty-two (32) hotel managers. This constituted a fair 68% response rate.

Table 3 ***Category and Rooms of Hotels Sampled***

Variable	Frequency	Percentage
Star Category		
2	8	25
3	10	31
4	8	25
5	6	19
Number of rooms		
< 30	8	25
30 – 59	11	34
60 – 89	9	28
90 – 119	5	16
120 – 149	3	9
150 +	11	34

n=32
Source: Fieldwork, 2017

The majority of the hotels (31%) were of three-star category, 25% were of 2-star and 4-star categories each while 19% were of 5-star category (Table 3). 34% of the hotels had over 150 rooms. The same percentage applied to those with between 30 and 59 rooms. This was closely followed by 28 % and 25% which had 60 -89 and less than 30 rooms respectively. Some 16% had 90-119 rooms while 9% had between 120 and 149 rooms. The high number of rooms indicated that there was fairly large scales of operations and high visitor numbers expected or handled in most of the hotels in the Coast. Such a situation was likely to significantly impact on the environment given the quantities of resources needed by these hotels and the amount of wastes likely to be produced. Forty-four percent (44%) of the hotels had been in operation for over twenty years while 31% had been in existence for 11-15 years (Table 4). 6% of the establishments had less than five years in operation. In this study, no relationship was established between the age of the hotels and their level of adoption of EMPs ($\chi^2 = 3.945$, Df = 3, significant at $\alpha = 0.05$).

Table 4: Years of Operation of Hotels Source: Fieldwork, 2017

Years of Operation	Frequency	Percentage
Less than 1	0	0
1-5	2	6
6-10	6	19
11-15	4	12
16-20	6	19
20+	14	44
Education level of respondents		
Level	**Frequency**	**Percentage**
Secondary/high school or less	0	0
Technical/vocational	8	25
4-year college/university	20	63
Post Graduate school	4	12
Compliance with Institutional Environmental Requirements		
Area of Compliance	**Frequency**	**Percentage**
Having an environmental policy	22	69
Disclosing Environmental Policy to authorities	16	50

Conducting EIA and regular EA	22	69
Participating in eco-rating programmes	18	56

n=32

The largest proportion of respondents (63%) had attained four-year college/university education followed by 25% who had technical/vocational training while 12.5% of the managers had post-graduate training (Table 4). These levels of education show that respondents were literate enough and able to understand environmental issues. They should be able to learn, read, understand and comply with any issue relating to environmental concerns.

Environmental Management Practices and Compliance

An amount of 69% of the hotels claimed to have an environmental policy statement. Some 63% of these were 3-5 star hotels compared with 6% of the 2-star category who had an environmental policy in place. This suggests a higher commitment by 3-star to 5-star hotel categories than those in the lower grade. According to Claver-Cortés et al., (2007) and Mensah (2009), formal adoption of a written policy statement is the first and most important step towards environmental action in any hotel. Concerning compliance with environmental regulations and legislations, hotels in this area had not fully obliged. 69% conducted Environmental Impact Assessment and environmental audit (EA) as required by NEMA. There also seemed to be a lack of an effective monitoring mechanism by NEMA and the local government authority, which enabled the managers to flout these and other regulations. Possibly, this non-compliance could also be due to the new NEMA regulations introduced recently, requiring hotel establishments to pay KES 5,000 application fee for an effluent disposal license to the national environmental authority and another KES100, 000 for the long-term license. As observed by Beja (2010) this license fee could be prohibitive for small establishments, which could be a possible reason for non-compliance.

Food Waste, Water and Sewage management

Responses showed that food waste and sewage, which are the main types of waste generated by hotels, were to a large extent disposed of inappropriately. Food waste was mostly dumped in garbage bins or at disposal sites (56%) while 38% of hotels recycled or fed it to animals. None of the leftover food was composted (Table 5). Food waste at disposal sites is an environmental hazard. It is likely to attract flies, primates, dogs and other scavengers rendering the sites unhealthy. Heaps of such waste are also be stinky apart from being an eye-sore in a tourist destination. It was clear that recycling was not popular among accommodation facilities in this area possibly because of lack of technical know-how and recycling plants as pointed out by Beja (2010).

Table 5: Waste Disposal Practices in Hotels

Form of waste	Disposal methods	Frequency	Percentage
Food waste	Recycling/animal feed	12	38
	Garbage site	18	56
	Open space	2	6
Waste water	Soak away system	32	100
	Sewage plant	0	0
	River/stream	0	0
Sewerage	Cesspit	28	88
	Sewerage plant	0	0
	Soak away system	4	12

n=32
Source: Fieldwork, 2017

Large proportions of waste water were drained into soak pits by all the hotels (100%). This is a fairly environmental friendly way of disposing of waste water. As waste water (pre-treated grey water or black water) percolates through the soil from the soak pit, small particles are filtered out by the soil matrix and organics are digested by micro-organisms. However, a soak pit does not provide adequate treatment for raw wastewater and the pit usually clog quickly. The soak pits should be used for discharging pre-settled black water or grey water.

It would be better if hotels could re-use this waste water (after treating it) to irrigate their flower gardens or to flush toilets as recommended by March and Orozco (2004). Since lack of a sewage treatment was a major problem in the study area, the great majority of them (88%) discharged their sewage into cesspits (Table 5). The cesspits were then periodically emptied by privately owned exhauster tankers and dumped at unspecified sites. Meanwhile, NEMA's requirement for the hotels was to obtain effluent discharge licenses before discharging their treated wastes in soak pits that can be emptied regularly by exhauster trucks, construction of a modern sewerage system in the region. The modern sewerage treatment plant for a hotel could cost between KES 2.5 million and KES 100 million (Beja, 2010).

Energy and Water Efficiency

Electricity obtained from the Kenya Power Company's mains supply was used by all the facilities (Table 6). The same applied to the use of liquid petroleum gas (LPG), diesel, petrol and wood fuel/charcoal. However, the extent of use of these sources of energy differed among the hotels. 44% of them used the energy from the mains supply to "a very great extent" while 50% used it to "a great extent."

This indicated that hotels heavily depended on Kenya Power as the main supplier of the electric energy used. This source is recommended especially because much of it is from an environmentally clean and renewable source.

Table 6: Energy and Water Efficiency Practices

Energy Efficiency Practices	Frequency	Percentage
Unsustainable sources		
Using Hydro-electricity (HEP)	32	100
Using diesel	32	100
Using LPG	30	94
Using wood fuel/charcoal	32	100
Sustainable sources		
Using solar energy	8	25
Using biogas	0	0
Using wind energy	0	0
Installed solar hot water system	8	25
Using fluorescent light	30	94
Installed energy efficient burners	14	44
Avoiding power generators	6	19

Water Efficiency Practices

Water Efficiency Practices	Frequency	Percentage
Harvested rain water for use	8	25
Re-used linen / towels	20	63
Installed low-flow shower heads	16	50
Installed dual-flush toilet	10	31

Alternative Means of Obtaining Water	Frequency	Percentage
Bore hole	30	94
Stream/River	4	13
Main pipeline supply	20	63
Water vendors (Bowsers)	12	38

n=32

Source: Fieldwork, 2017

On unclean energy sources, most responses from the respondents, (69%) indicated the use of diesel and petrol "to some extent" while 30% used them "to a great extent." Possibly, they use them to run hotel vehicles and power generators used when there is interruption in the mains power supply. Generally, these are unclean sources of energy because they emit harmful pollutant fumes into the environment when the fuels burn. In addition, the engines that burn these fuels, especially power generators, produce noise which can be disturbing in a serene tourist destination. Wood fuel/charcoal was used only "to some extent" by all the hotels (Table 6) of all the categories. This indicated that the hotels, to an extent, contributed to deforestation and possibly even to climate change in the area of study.

It was further evident that the most recommended environmentally-friendly forms of energy were of minimal use by hotels in Kenya's coast. Only 25% had attempted to tap solar energy for use and the use was only "to some extent," as indicated by all the hotels that harnessed it. Biogas, wind energy, tidal energy and wave energy, which had a great potential in this area had not been tapped at all. As asserted by Gardner (2010), these are the most recommended sustainable sources of energy for hotels. Less than half (44%) of the hotels had installed modern energy-saving cookers. Higher adoption of sustainable sources of energy could lead to a cleaner environment, reduced disturbance to landscape, wildlife and vegetation in this destination, and the energy is renewable (Gardner, 2010).

On water efficiency, only 25% of the respondents harvested rain water for use (Table 6). This could be mainly because most of the hotel buildings at the coast are roofed with organic palm-frond roof material which could not tap clean water for use. Therefore, water for use was mainly obtained from the government's main pipeline supply (87%), and from boreholes sunk by some individual hotels (94%). 38% of hotels also obtained extra water from bowsers and from nearby rivers/streams (13%). On a positive note however, commendable initiatives had been taken to reduce water use as demonstrated by 63% of the hotels that encouraged guests to re-use bed linen and towels (Table 6). 50% of the hotels had installed low-flow shower heads, as recommended by Page (2009). However, only 31% had dual flush toilets designed to check on water use in toilets.

Involvement in Environmental Programmes

All the options available for enhancing environmental education and awareness creation had not been fully exploited by coastal hotels (Table 7). Most of them (75%) attested to have programmes in place to sensitize their employees on environmental issues, with 50% having such programmes for their guests as well.

Table 7: Involvement of environmental programme practices

Maintaining Indoor Air Quality

Indoor Air quality practices	Frequency	Percentage
Using ceiling fans	11	69
Using air conditioners	16	100

Spraying air fresheners	11	69
Involvement in Environmental Programmes		
Environmental Programmes	**Frequency**	**Percentage**
Educating guests on environmental issues	16	50
Educating employees on environmental issues	24	75
Educating local community on environment	4	13
Supporting environmental groups in cash or kind	16	50
Involved in environmental research	12	38
Participated in eco-award Programmes	18	56
Pollution Control: Air, Land and Water		
Pollution Control Practices	**Frequency**	**Percentage**
Avoiding dry cleaning	10	63
Use bio-degradable soaps	8	50
Avoiding chemical on pests and weeds	1	6

n=32
Source: Fieldwork, 2017

Only 13% made any effort to educate and create environmental awareness for the local people. It appeared that there was indeed a need for enhancing these programmes, and for a wider full adoption of these practices especially targeting guests and the local community. This programmes could greatly boost the efforts towards attainment of sustainable tourism development in the whole destination as recommended by Karl, *et al.,* (2009). Although Fenwick (2007) recommends local population sensitization on environmental issues, it is likely that coastal hotels found it more expensive and cumbersome to reach out to them than it was to reach their employees and guests. There also seemed to be limited collaboration between hotel operators and conservation agencies in the area of study. Half of them supported environmental groups in cash or kind (50%), and 38% were involved in environmental research initiatives.

This calls for enhanced concerted effort of all hoteliers in partnership with conservationists and community groups towards boosting environmental conservation. Hotels that participated in eco-award, certification or accreditation programmes for performances related to environmental goals represented 56%. The majority of these (55%) were of the 4 and 5 star categories showing that hotels at higher grades attempted to subscribe to such programmes than lower grades. The awards contested included the following: Top Hotel Award by Holidaycheck.com, Travelife Award by the Travelife Sustainability System, TUI Environmental Champion Award, Kenya Tourism Award by KTF and KTB, and Eco-Warrior Award by Ecotourism Kenya. As Font (2002) and Weaver and Lawton (2010) have observed, there is a great environmental advantage when tourism facilities participate in such programmes related to environmental goals. Participation by all hotels in Kenya's Coast could significantly promote environmental performance.

Air Quality, Land and Water Pollution Control

A great amount of energy used by the hotels to maintain the quality of air indoors was indicated by the extent to which they used ceiling fans (69%) and air conditioners (100%) to achieve this (Table 7). Probably due to the perennial hot and humid conditions of the Kenyan coastal climate, the hotels could not keep their guests comfortable without artificially cooling the rooms. In spite of this, it would be more appropriate if they could install automatic temperature regulators to ensure only occupied rooms had their coolants switched on, and that the coolants switch off automatically when the rooms were vacated. To achieve this, guest rooms could be fitted with key-card control systems that shut off power when a guest leaves his/her room as recommended by Karl, *et al.,* (2009). Another viable way could be to maximize the application of cross-ventilation options in designing the hotel inner spaced. Cross ventilation works by taking advantage of high

and low pressure zones created by wind to draw fresh air through a building. The key issue is to have open windows (or vents) on opposite sides of the structures (Atkinson et al., 2009) Most of the hotels in the area of study (69%) used air fresheners, meaning that great quantities of hydro-carbons fumes, harmful to humans and depletive to the ozone layer, were released to the environment. These could also be minimized or totally avoided if the more environmental-friendly cross-ventilation options were adopted by hotels (Gardner, 2010).

Majority of the hotels (94%) used chemicals to control pests while fewer (12%) used chemicals to control weeds (Table 7). Half of those (50%), claimed they used non-degradable soaps, while 37% did dry cleaning at their premises. Soaps and chemicals used as pesticides and in dry cleaning processes are harmful to the environment especially when they drain into water bodies or when they percolate into the soil. They may cause deaths of organisms or get into their tissues and food chains with far-reaching adverse ecological implications. Responses indicated to a higher level of smoke and other fumes from hotels were left to escape to the atmosphere through chimneys without going through any smoke filters. On a positive note, however, towels, old cloth and beddings, if not used as mopping rags, were donated to charitable organizations and needy people, or they were given to employees for their use. Metal, glass and plastic cans were sold to scrap dealers, water companies and wine agencies while electronic wastes were sold to scrap dealers. Generally, these are recommendable ways of disposing of such waste (Gardner, 2010).

Extent of Adoption of Environmental Management Practices

Responses indicated that hotels undertook some of these environmental management practices and not others. Popular among the environmental management practices identified were: use of fluorescent lighting (94%); disposal of sewage in cesspits (88%) and waste water by means of a drainage soak away system (100%). Employees were educated on environmental conservation by 75% of the hotels; 63% avoided dry cleaning while 62% re-used bed-linen and towels to conserve water. On the other hand, a greater majority of the facilities were not practicing the following: conducting environmental education for the local community (13%); supporting environmental research (38%); installed dual flush toilets (31%); using energy saving burners (44%) harvesting rain water (25%) and recycling left-over foods (38%).

In general, more of these establishments engaged in activities geared towards conservation of energy and water. Probably, this is due to the fact that such practices have implication on the level of profitability of the hotels. This is as Faulk (2000) observed that, the priority action areas for environmental management programmes are water, waste and energy management. Hand and machine washing were preferred to dry-cleaning, possibly because the latter is usually more expensive. This practice may save the environment from adverse impacts arising from the dry cleaning process.

Hotel Characteristics and Levels of Environmental Management Practices

The differences in the percentage of hotels in the various categories implementing environmental management practices is presented in Table 8.

Table 8: ***Percentage of Hotels Having Adopted the Twenty-One EMPs***

	Percentage Adoption in Hotel Category			
Environmental Management practice	**2- Star**	**3- Star**	**4 – Star**	**5 - Star**
Recycling wastes	25	60	75	67
Purchasing supplies in bulk	50	80	75	100
Feeding food left over to animals	25	40	0	67
Using fluorescent light	75	100	100	100

Installing solar hot water system	0	20	25	67
Avoiding power generators	25	20	25	0
Harvesting rain water for use	25	20	25	33
Using biodegradable soaps	25	40	75	67
Installing low-flow shower heads	0	40	75	100
Educating guests on environment	25	20	75	100
Supporting environmental org.	25	60	50	67
Having an EM policy	25	80	75	100
Avoidance of Chemicals	0	0	0	0
Not using air fresheners	0	20	50	67
Participating in eco-certification	25	40	75	100
Re-using linen and towels	25	40	100	100
Disclosing EP to authorities	25	40	75	67
Avoiding dry cleaning	50	60	75	67
Avoiding sinking boreholes	25	0	0	0
Installing dual flush toilets	0	20	50	67
Sponsoring research on environment	25	20	50	67

n=32

Source: Fieldwork, 2017

To establish these differences, a list of twenty-one (21) environment-friendly practices was used as a benchmark to determine the relationship between hotel category and extent of involvement in sound environmental practices (Table 8). Larger establishments (4-star and 5-star) were found to have adopted and implemented more of the sound environmental management practices than smaller ones did, (2-star and 3-star). The levels of adoption of EMPs by the various categories of hotels were also compared (Table 9). By using the environmental practices listed in Table 8, hotels that practiced one to seven (1-7) were considered to have a low level of adoption, eight to fourteen (8-14) a medium levels and hotels that practiced fifteen to twenty-one (15-21) were considered to have a high adoption level of the EMPs. From the comparison, a 75% of 2-star hotels fell in the low level bracket. The same low levels of adoption applied to 40% of 3-star and 25% of 4-star hotels. No hotel in the 5-star category had low levels of adoption of EMPs. While no hotel in the 2-star category had high levels of adoption, the adoption levels of only 20% of 3-star facilities and 50% of 4-star facilities could be described as high. Yet an overwhelming 67% of 5-star hotels could be described as having high levels of adoption.

Table 9: ***Hotel Category and Level of Adoption of EMPs***

	Hotel category				
Level of adoption	**2 Star**	**3 Star**	**4 Star**	**5 Star**	**Total**
Low adoption	6(75%)	4(40%)	2(25%)	0(0%)	12(37.5%)
Medium adoption	2(25%)	4(40%)	2(25%)	2(33%)	10(31.25%)
High adoption	0(0%)	2(20%)	4(50%)	4(67%)	10(31.25%)
TOTAL	8(100%)	10(100%)	8(100%)	6(100%)	32(100%)

$\chi^2 = 7.517$, Df = 6, $\alpha = 0.05$

This suggests that the higher the class of a hotel, the greater the level of adoption of environmental management practices. Alvarez et al. (2001) has observed that larger hotels have been at the forefront of environmental management. Possibly this is because larger hotels normally have more resources, the latest technology and more qualified human resources, than the smaller ones, and are able to more easily adopt sound environmental management practices. In addition, larger hotels are more likely to have better management structures in place, than the smaller ones have, to effectively handle environmental issues.

Comparing hotels by categories, a greater percentage in the 4-star and 5-star categories was found to have adopted most of the EMPs at a rate of 64%. However, the statistical evidence of a relationship between listed hotel category and levels of adoption of environmental management practices was not significant ($\chi^2 = 7.517$, Df = 6, $\alpha = 0.05$) as show in Table 9. However, in terms of the general level of adoption by all the categories of accommodation facilities, a greater percentage of them all (37.5%) fell in the low levels of adoption, while medium level and high level of adoption were each represented by 31.25%. The 31.25% levels of adoption of EMPs by majority of hotels revealed that operations in hotels at the Coast were yet to fully conform to sustainable environmental tourism practices. Therefore, more environmental-related initiatives still have to be undertaken by hotel operators to raise this general level of adoption from 37.5% to above average and towards attainment of full adoption.

Factors Limiting Adoption of Best Practices

Major limitations to the adoption of best practices were evident from the survey responses as follows: financial constraints (87%), ignorance of the legal and policy requirements on environmental management (38%), poor adoption of latest technology on sustainable practices (25%) and lack of sufficient sensitization on environmental issues (31%). Poor infrastructure, and land tenure were also cited as limitations, represented by 13% and 25% of the respondents respectively.

The 87% response rate shown above could suggest that majority of the hotel managers were of the view that the revenue realized from their operations were not adequate to be sufficiently invested on the improvement of their environmental performance. Evidently, there is lack of a high expenditure priority to the improvement of environment and hotel managers think it is only wise to undertake such responsibilities after spending on issues directly related to their core business or mandate. As indicated above, a significant percentage of the managers also seemed to indicate that they were ignorant of the legal and policy requirements on environmental management. Conceivably, they think they may not be having enough knowledge on environmental aspects to fully take responsibility of safeguarding their immediate environment.

To address these limitations therefore, forums should be organized by environmental stakeholders on environmental education and sensitization especially for hotel managers. Nicolaides (2015) stresses that there should be broader stakeholder inclusivity in the dealings of an organization so as to benefit society in general. By citing land tenure as a challenge to environmental best practices, it appeared that some of the hotels were operating on pieces of land they had been leased. It was possible therefore that that managers of these facilities avoided heavily investing in elaborate environment-related projects such as sewerage systems on their premises because their lease periods were unsustainable. The problems of poor infrastructure in the area and poor adoption of latest technology on environmental management could be attributed to the developing nation status of the country in general.

Conclusion

In conclusion, there is a great potential for attainment of environmental sustainability on Kenya's coast through hotel operations as indicated by the attempts made by hotel managers to adopt sound environmental practices. This is in spite of the apparent ignorance and disregard of some of the managers of environmental management principles and practices. Enhanced capacity building and all stakeholders' participation with closer monitoring by relevant environmental agencies could be the most appropriate approaches towards achieving environmental

sustainability through hospitality development in this tourist destination. Environmental management practices in the field of energy and water conservation were adopted by the majority of the hotels in this area. The greatest percentage of the establishments sampled (37.5%) had low levels of adoption and implementation of environmental management practices. The principle of reduce, reuse and recycle was yet to be fully adopted by the hotels and was not as popular as it is in developed countries.

Overall, appropriate waste management and recycling programmes were lacking in most of the hotels. Therefore, most of the waste they generated was not treated but dumped into the environment posing the environmental problem earlier observed by Irandu (2009). The number of hotels that participated in eco-award programmes was just slightly above the average. While there were two major tourism awarding schemes for best practice in Kenya, there are over one hundred eco-labels for tourism and hospitality worldwide, associated with environmental performance (Font, 2002). Hotels in Kenya's Coast could do well to subscribe to these. A significant number of hotels appeared to flout certain existing legal requirements like conducting regular EIA, submitting EP to relevant authorities, avoiding free range dumping of refuse and conducting of environmental audits. This suggests a lack of an effective monitoring mechanism by the relevant governing agencies, on hotels and other business operations in the study area. Major limitations to the adoption of best practices among hotels on the coast were related to finances, awareness, technology and sufficient sensitization on very critical environmental issues.

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