

Energy, Water and Waste Management in the Accommodation Sector of Tamale Metropolis, Ghana

Conrad-J. Wuleka Kuuder^{1,*}, Ernest Bagson², Vida Mintah Prempeh³, Abu Mumuni¹, Raymond Adongo¹,
Esther Ekua Amoako¹

¹University for Development Studies, Dept. of Ecotourism and Environmental Mgt, Nyankpala Campus, Tamale, Ghana

²University for Development Studies, Dept. of Community Development, Wa Campus, Ghana

³Sunyani Polytechnic, Dept. of Tourism and Hospitality, Sunyani, Ghana

Abstract This study was aimed at identifying environmentally friendly practices adopted by accommodation facilities in Tamale Metropolis. From time immemorial environmental problems have been associated with the operations of accommodation facilities worldwide. In this regard, measures and initiatives have been put in place in recent times to minimize the effects of the accommodation sector on the environment. What is the effort of the accommodation sector in the Tamale Metropolis and Ghana holistically in this regard? A total of 42 facilities were sampled from 68 registered hotels in the Metropolis for the study. The data collection tool used was questionnaire. Parameters of concern centered on water conservation, energy conservation, waste management and corporate social responsibility. From the study, it was realized that only 8% had environmental policies in place. Close to 97% of the facilities did not live up to their corporate social responsibilities. However, about 60% used low flow shower heads while 97% used treated water to irrigate gardens and lawns. The use of energy saving bulbs as well as towel and napkin reuse were popular practices observed. Based on the above, training programmes are recommended for hotel operators and employees on environmental management practices.

Keywords Tamale Metropolis, Hotels, Environmental Practices, Environmental Management

1. Introduction

Management of the environment has become a critical issue to the hotel industry in recent times in the wake of calls for a more responsible tourism development and the growing environmental awareness among tourists, associations, organizations and governments. This has led to the evolution of the green hotel movement which has become a new trend in the hospitality industry. As a new trend, environmental management has been vigorously pursued especially by multinational hotels. This has given birth to international and regional initiatives, certification schemes and award of eco-labels which have been used to encourage development of less damaging and environmentally friendly hotels as well as educating the customer.

In this light, it is therefore important that environmental management in hotels be placed in the framework of sustainable development since this will always result in a sustained tourism industry. Environmental management practices in hotels are usually geared towards energy conservation, water conservation, reduction of waste and

establishing good relations with local communities. It is as a result of cost savings that waste management, energy and water conservation have become popular environmental management practices, as managers have come to the realization that they could save on their water and energy bills if they adopt good conservation practices [29][36].

It has been realized that sound environmental management is beneficial to all hotels as it results in profitability, customer retention, improved corporate image and cost savings among others. In spite of the apparent positive impacts of hotels on the overall development of countries, they also exert pressure on the environment of destinations sometimes with dire consequences. Most of the studies on the impacts of hotels on the environment have been conducted on coastal and island resorts [29].

The growing environmental consciousness in the industry can be attributed to government regulation, changing consumer demand, advocacy and initiatives by Non-governmental Organizations (NGOs) and ethics by professional associations among others [27]. Environmental management has now gained popularity and consequently has been recognized by many hotels worldwide through efforts put in by various associations, for example, International Hotel Environment Initiative (IHEI) [32], [28], [33], [31].

W. Y. K. Penny [31] refers to environmental management

* Corresponding author:

kwuleka@uds.edu.gh (Conrad-J. Wuleka Kuuder)

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in simpler terms as a process and practice introduced by an organization for reducing, eliminating and ideally preventing negative environmental impact arising from its undertaking. In the same vein, the Environmental Protection Agency (EPA) of Ghana also posits that environmental management is “a process by which the collection of policies, structures, resources, systems and processes are brought to mutual interplay for the achievement of clearly defined environmental policy directives”. With particular reference to environmental management within the tourism and hospitality in Accra, Ghana, [32] is quoted as saying that “it is a process adopted by hotel management which helps them to monitor the hotel’s activities and implement appropriate programmes to reduce the negative impact of an individual hotel on the environment”.

Environmental Management in hotels is not only concerned with output of the operations that damage the environment, but of significant importance is the input of resources as well as all systems and processes involved in the operation of accommodation facilities. According to [24] the benefits of environmental management include; increased profitability, improved customer satisfaction, improved employee satisfaction, improved relationships with local communities, improved public relations and competitive advantage. Environmental management also helps improve the image of destinations and reduce operational costs. The goal of environmental management is protecting and preserving the environment and this has become increasingly important in the face of resource shortages, increasing costs and undesirable changes in climate and the environment [8].

Hotels can be divided into different categories but the service remains the same, although the range and level of service differs from hotel to hotel. The hotel industry uses large amounts of energy resources for functions such as transportation, laundry, food service and air-conditioning, while it also releases waste in several other different forms.

P. Bohdanowicz [7] states that growth and progress of the hotel industry in tourism destinations depends on ongoing accessibility of natural resources. Hotels are enormous “consumers” of natural resources and hotel guests are often much less concerned with conserving resources such as water and power when they are away from home. Hotel operations therefore impact the environment in many different ways [38]. D. Kirk [25] again points out that many hotels and restaurants which are located in areas of natural beauty and historic significance, have a delicate eco-balance. It is not only the location of the hotel that affects the environment but also the amount of luxury and comfort provided by hotels to the customers to attract them to the destinations. More luxury and comfort can be associated with greater consumption of water, power and other resources and ultimately result in higher generation of waste depending on the presence or otherwise of environmental management practices in the destination. N. Tzschentke et al [35] found out in their research that hotel managers in Vancouver viewed the hotel’s impact on the environment as a great concern and some regarded it as their only concern.

To have environmentally friendly hotel management operations, hotels need to first formulate environmental policies.

The hotel industry in Ghana has experienced rapid growth since the structural adjustment programme of the mid 1980’s. This rapid growth is in response to the growing opportunities offered by the investor friendly climate coupled with the stable political terrain in the country and to some extent the oil find. It is on record that international tourist arrivals rose from 399,000 travellers in 2000 to 802,779 in 2009 while tourism receipts rose from US\$386m in 2000 to US\$1.6152bn in 2009. Similarly, the number of hotels also increased from 1,345 in 2005 to 1,775 in 2009 [16]. According to the Ghana Ministry of Tourism and the National Tourism Development Plan 1996-2010, the total number of international tourist arrivals was expected to rise from 802,779 in 2009 to 1,062,000 in 2010 [16] and this invariably means more demand for overnight stays in accommodation facilities. With specific reference to tourism and accommodation development, it has been noted that the northern parts of the country which includes Tamale, suffers from a locational disadvantage (peripheral area) and invariably has only 7% of the national hotel accommodation stock. The northern, compared to the southern sector of Ghana is said to have entered the hotel accommodation business quite late and there is relatively low involvement in the sector by foreigners [1],[2]. Notwithstanding this late entry however, it is worth assessing the “collective impact” that these facilities exert on the environment in the Metropolis, hence the study.

1.1. Problem Statement

The tourism industry is one of the world’s largest and fastest growing industries and since travel for purposes of tourism is synonymous with an overnight stay in hotels, environmental management in hotels is key and obviously an important step towards achieving sustainable tourism development. In Ghana, the tourism industry is growing at a rate of about 3.5% per annum and the hotel sector in general has experienced a rapid growth in response to the growing opportunities offered by prudent macro-economic policies [16]. According to records at the Ghana Tourism Authority, Tamale Metropolis has the largest number of hotels and guest houses in the northern region accounting for 68 out of the total of 92 in the region [17]. The growth in hotels within the metropolis has sparked some concerns about their impact on the environment. This is in view of the fact that the benefits of tourism culminating in the springing up of these accommodation facilities are often accompanied by some negative environmental and social impacts. Among these impacts are revenue leakage from communities, air, noise and water pollution, degradation and depletion of natural resources, biodiversity loss, energy problems and social vices, encroachment and its accompanying problems, cultural and heritage related problems such as pseudo arts and cultural shock, sewage disposal problems among others.

The hotels form a large part of the tourism industry and

even some authors equate tourism to accommodation development[2]. Concerns have been raised about the detrimental impacts of hotels on social and natural environments. Hotels are also resource intensive and in order to reduce their negative impacts, it is imperative to adopt environmentally friendly activities in their management[19]. The literature is clear on environmental management practices and initiatives by hotels in North America, Europe and Asia[29] but worth mentioning is also the fact that some studies have been done in the developing world[13],[6] and in Ghana in the Greater Accra Region[29] but not much is known about environmental management practices in hotels in specifically an underdeveloped and deprived region like the Northern Region and Tamale Metropolis for that matter. This study therefore intends to explore the environmental management and responsible tourism practices in hotels in the Metropolis. The ultimate aim of the study is to identify environmental management practices adopted by hotels in the Tamale Metropolis while seeking specifically to: Identify activities in hotels within the metropolis that are unsafe to the environment and to find out environmentally friendly management initiatives adopted by hotels in the Tamale Metropolis.

2. Environmental Management Practices in Hotels

The hospitality industry has been traditionally considered one that does not have a great impact on the natural environment compared to such industries as gas and oil and other consumer product manufacturing industries. However, the hotel, in particular generates much more negative environmental impacts than the public perceives, consuming a vast amount of local and imported non-durable goods, energy and water, as well as emitting a large amount of carbon dioxide[26],[8].

As an emerging business strategy in the hospitality industry, environmental management has attracted much interest from industry practitioners as well as scholars. Though there are several environmental management practices, this study focuses on energy and water conservation and waste management.

2.1. Energy Consumption and Efficiency

Energy saving has been considered one of the most significant areas of environmental management in the hotel industry because hotels in general consume considerable amount of electricity and fossil fuel energy in various operational areas. According to the U.S Environmental Protection Agency (EPA), reducing energy use by 10 percent across the hospitality industry would save \$285 million[30]. It is reported that the potential for energy saving through green practices such as replacing light bulbs with energy efficient ones has been estimated at 10-25 percent depending on the age and size of the hotel[8].

Based on literature reviewed on various studies on energy

management practices of accommodation facilities, energy management practices include the following: implementing renewable energy programmes such as the use of wind power, solar power and run-off river power, adoption of automated (computerized) energy control systems, installation of energy-efficient laundry equipments, use of digital thermostats to control guestroom energy consumption, installation of occupancy sensors (which automatically turn the lights out when guests leave the room), reduction of air-circulating equipment through implementation of smoke-free policies, use of energy star-qualified products, installation of triple-glazed windows or reflective glass to save energy for heating and cooling, replacement of outdoor and exit signs with Light Emitting Diode (LED) signs and use of waste heat from the power generators[21][28][8][30][14][22][34][20]

Hotels are immense energy users and for instance their operations require the use of energy on a daily basis for 24 hours, irrespective of seasonality, number of guests and location[12][23]. Hotel operations are made up of small operations which provide goods and services to satisfy guest needs. Energy is required to maintain the tools which are used to carry out the functions efficiently and to maintain the flow of guests[18]. The energy consumed by hotels is used for space heating, cooling, ventilation, hot water, lighting, laundry, kitchen, recreation and other miscellaneous uses. However, it has been found that the energy consumption patterns of hotels are different around the world[11]. According to a study which compared energy consumption in hotels in Europe and America, European hotels consume about 39 billion Kilo watts of energy annually, half of which is consumed in the form of electricity[11]. For example,[18] found that hotels in New Zealand used up to 75% of electricity as their main source of energy and also used other energy sources like coal (12%), LPG (9%), petroleum fuel (3%) including natural gas and wood (1%). Several researchers have also provided examples of hotels' consumption habits and types of energy consumed. P. Bohdanowicz[7] reveals that the use and consumption of different forms of energy by hotels lead to the release of harmful gases such as CO₂ into the atmosphere and this enhances air pollution and global warming. The harmful gases said to be emitted by hotels due to consumption of different energy resources is estimated at 160 and 200 kg of CO₂ per m² of room floor area, depending on the type of fuel used to generate electricity[25][9][7].

S. Becken et al[5] also opined that it is important to know the fuel type that is used to generate energy for the sector. A study conducted by[12] and[10] in Hong Kong and a similar one by[28] in the Greater Accra Region of Ghana show that hotels operate on three types of energy namely electricity, gas and diesel. S. Becken et al[5] further noted that within the New Zealand accommodation sector, hotels are large energy users in terms of per visitor night and annual usage. Based on this pattern of energy consumption, it is clear that the hotel sector could make a major positive contribution to the environment by taking some measures to reduce energy

consumption which will, in return, reduce pollution and resource depletion.

2.2. Water Consumption and Efficiency

Hotels may have high water consumption depending on each hotel's accommodation capacity, standard and the type of facilities and services provided[7]. A. Kasim[23] noted that luxury hotels in particular consume large amounts of water for leisure purposes such as swimming pools, spas and golf course irrigation. As reported by[24], the use of water in a hotel is extensive and this utilization include cold water for kitchen, drinking, laundry, for circulation in air conditioning, hot water for guest bathrooms and circulation for space heating.

Water conservation practices of hotels include; use of water-efficient devices such as Low-flow or infrared-activated faucets, low-flow showerheads, low-water-volume toilet, sink aerators, and Energy Star qualified cooking devices, institution of a linen reuse programme, regular fixing of toilet and bath leaks, use of water-efficient laundry equipment and dishwashers, placing water metres in guestrooms to track usage, adoption of water saving campaigns in kitchens such as washing dishes when there are full loads or not using running water to wash vegetables and adopting water-efficient or xeric gardening.[21][24][28][8][30][14][34][20][22].

Research has provided data on daily water consumption by tourists. In Spain, a tourist consumes 0.88 cubic meters (880 litres) of water per day as compared to a local Spaniard who consumes an average of 0.25 cubic meters (250 litres) per day. Similar consumption patterns have been recorded in the Mediterranean regions where 0.40 cubic meters (400 litres) of water are consumed by a tourist in comparison with 0.07 cubic meters (70 litres) per person per day[23]. Furthermore, it has also been estimated that the consumption of water by guests in a hotel per night will depend on several factors like the hotel standard and facilities. For example,[23] again found out that in a high standard hotel organization, the hotel room would require 396 gallons (1,499 litres) of water per day, which is enough to support 14 local people. It is further estimated by[7] that the standard consumption pattern of hotel guests would range between 170 and 360 litres of water per night.

Water consumption at these rates without monitoring or control will likely lead to water shortages. Another impact of hotels on water is contamination. Wastewater from hotels, if not properly managed could lead to pollution of water bodies[25][23].

2.3. Waste Generation and Management

The generation of waste by hotels is one of the visible effects that a hotel has on the environment. A. Kasim[23] states that it is not the size of the hotel that makes the difference but also the type of functions being held at the hotel and other important events taking place at a particular time. Waste generated by hotels does not only increase their operational costs but contribute to resource depletion. There is a variety of waste produced by hotels including paper, food, metals, plastics, aluminium and glass. N. Erdogan and E. Baris[14] conducted a study to examine environmental practices implemented by Turkish hotels and found out that paper and food waste were the greatest amounts of waste generated by the hotels. The food and beverage service area in particular generates various solid and organic wastes such as packaging, food waste, aluminium cans, glass, bottles, corks and cooking oils. A. Kasim[23] estimated that hotel waste consists of 46% of food waste, 25.3% of paper, 11.7% of cardboard, 6.7% of plastics, 5.6% of glass and 4.5% of metal waste. As again reported by[23], hotel waste is on a much larger scale as compared to waste generated by households.

Previous research has indicated that the level of hotels' commitment to waste sorting and recycling varies, depending on regulatory pressures and local government's support.

For example, European hotels actively implement waste sorting and recycling programmes in offices and kitchens, but not in guestrooms[8][14] while Ghanaian hotels are less committed to recycling programmes, with only 17 percent adopting recycling programmes in Accra[28]. N. Erdogan and E. Baris[14] pointed out that working with local governments and recycling firms can significantly promote waste sorting and recycling activities among hotels. Literature on studies on the accommodation sector indicates the following practices concerning waste management have been adopted by hotels. Placing recycling bins in front and back-of-house areas, purchasing used or recycled-content products, adopting a donation programme (leftover guest amenities, old furniture, appliances and food), composting organic kitchen waste, using refillable amenity providers such as swimming pools, providing reusable items such as cloth, napkins, glass and cups, grinding left over guest soaps to use as laundry detergent, purchasing food items and cleaning chemicals in bulk containers as well as recovering used cooking oil and food waste[21][26][28][8][30][14][22][34].

3. Study Area and Methods of Data Collection

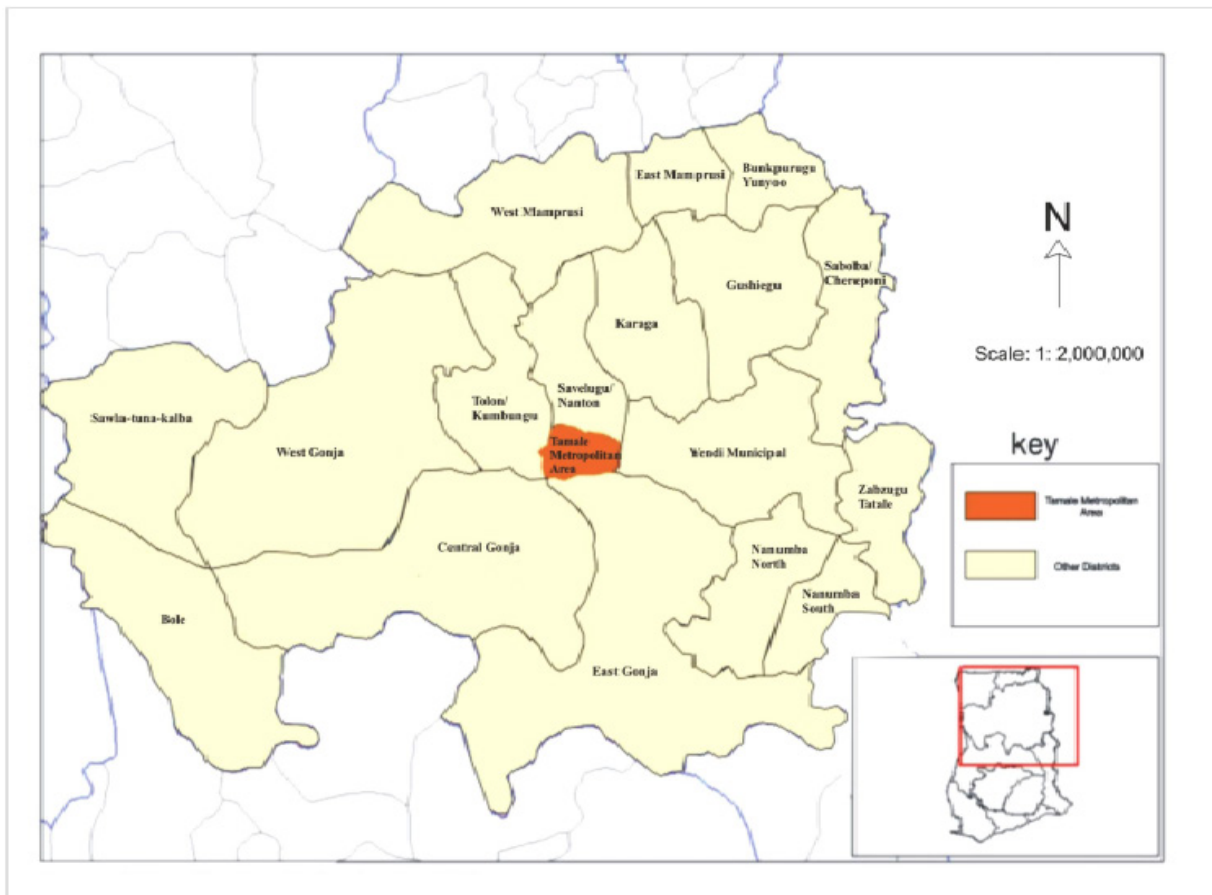


Figure 1. Map of Tamale Metropolis

The study was carried out in Tamale Metropolis, in the Northern Region of Ghana. The Northern Region is the largest in terms of land size in Ghana. Tamale is the administrative capital of the northern region and is about 600km north of the capital city, Accra. Tamale Metropolis is bordered to the north by Savelugu and Kumbungu Districts and to the West by Sanerigu and Tolon Districts. It is also bordered to the East by Yendi Municipal, to the south by Central and East Gonja Districts (see Figure 1). It is a major business town of the northern part of Ghana and plays host to a number of regional branches of financial institutions, NGO's, educational facilities, a teaching hospital which serves as a referral point for the northern parts of Ghana including southern Brong Ahafo Region. The Cup of African Nations (CAN) 2008 which was hosted by Ghana also brought in infrastructural improvements in Tamale with the construction of an ultra-modern sports stadium accompanied by improvements in the hospitality sector which witnessed the springing up of many hotels and guest houses. The main economic activities include trading, auto mechanics/engineering works, building construction/masonry, spinning and handicraft works including farming, sheabutter (cooking oil) extraction and *dawadawa* (local medicinal spices) processing. The town is considered one of the fastest growing in West Africa with current estimated population of about 537,986 people [15]. The Metropolis is also the tourism "gateway" to the northern parts of Ghana owing to the

existence of an 'array' of facilities such as an airport, tour operators, tour guides associations and some magnificent attractions within the northern region such as the Songnyili Project (traditional home stay project), the Larabanga Ancient Mosque and the Mole National Park.

3.1. Research Instruments

The data collection instrument used was questionnaire employing open ended and close ended questioning structures [3]. Questions were 'woven' around the objectives to make the aim of the study achievable. The first five questions on the questionnaire sought information on the characteristics of the surveyed facilities with regard to the category/ grade of the facility, respondents' position in the facility among others. The second part of the questionnaire was to ascertain whether the facilities had environmental policies. The remaining part required respondents to indicate the various environmentally friendly practices adopted by their hotels.

3.2. Sampling

Secondary data was collected from the Northern Regional Office of Ghana Tourism Authority (GTA,) to help ascertain the total number of accommodation facilities in Tamale Metropolis. From the data obtained, there were 68 registered accommodation facilities with the GTA in the Tamale Metropolis with grades ranging from, hostel and budget to

2-star facilities. The grading of these facilities is shown in Table 1 below. Those who responded to the questionnaire were the managers/managerses (25) or their assistants (17).

Table 1. Grades of facilities/Population/Sample

| Grade of Facility | Number | Sample |
|-------------------|--------|--------|
| Hostel | 5 | 2 |
| Budget | 39 | 20 |
| Guest house | 12 | 8 |
| 1-star | 3 | 3 |
| 2- star | 9 | 9 |
| Total | 68 | 42 |

Source: GTA, Tamale Regional Office/Authors’ construct (2012)

Based on this grading, all the 1-star and 2- star hotels were purposively sampled due to the fact that they had a greater

impact on the environment. Stratified random sampling was however used to sample 2 hostels out of 5, 8 guest houses out of 12 and 20 budget facilities out of 39 to obtain an overall sample size of 42 facilities. The sampling procedure for the stratified random method involved writing the names of each category in folded sheets and the lucky dip method was used to pick up close to half or more than half of the facilities in each grade. Since the sample size of 42 is more than half of the total (68), it was considered representative. Table 1 shows the population and sample. Simple frequencies and percentages were used to analyze the data collected from the field.

4. Results

4.1. Environmentally Friendly Practices

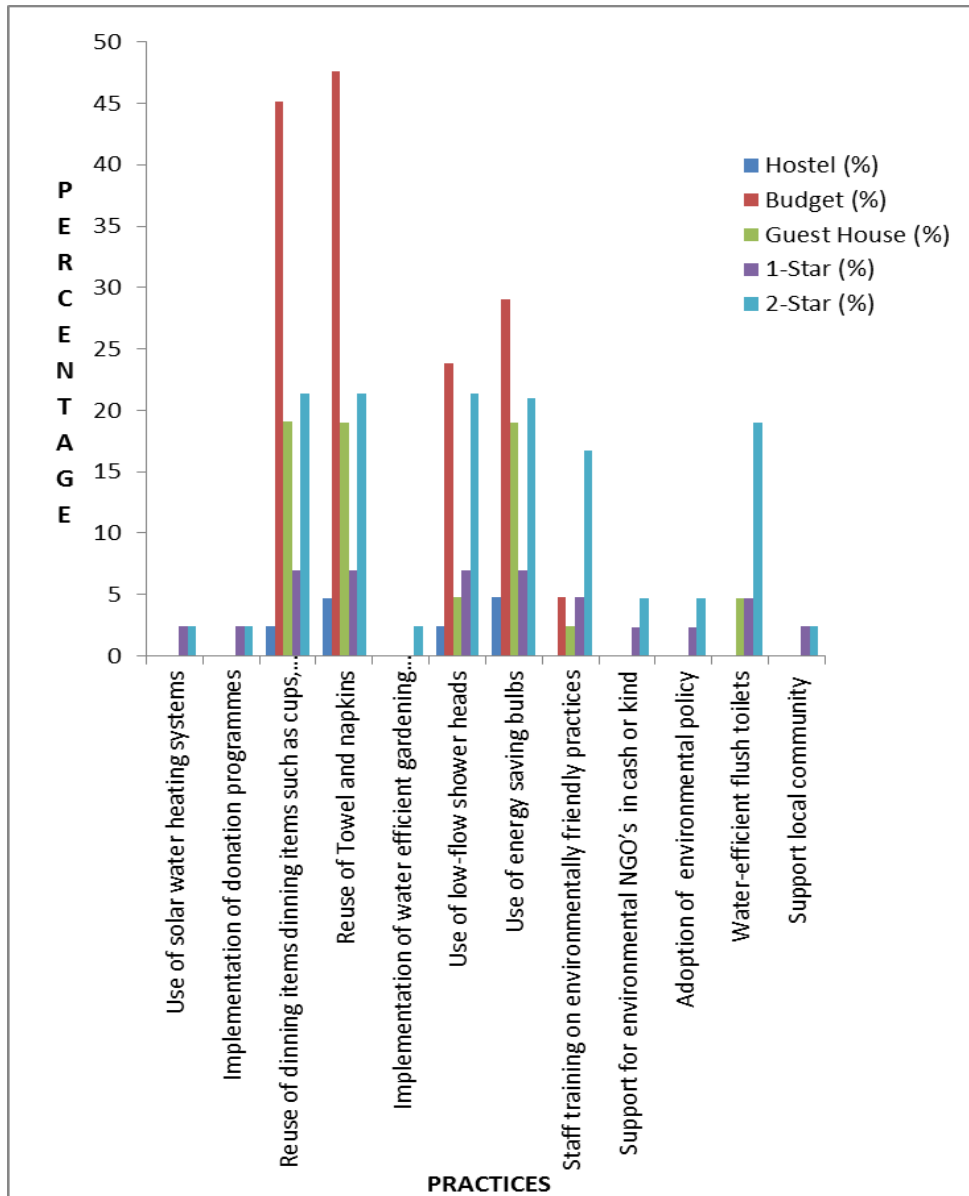


Figure 2. Environmentally friendly practices

Figure 2 above shows some environmentally friendly practices that were considered in the study of the facilities surveyed. The main practices included energy conservation, water conservation, waste management and support for locals and NGO's towards environmental programmes. The research conducted centered on these areas of environmental concern.

Two of the facilities surveyed representing 8% had environmental policies in place. The two (2-star) and one 1-star facilities claimed to have this in place. These policies basically revolved around promoting pro-environmental behavior like sorting of waste before disposal. Coincidentally, the 1-2 star hotels had the largest number of rooms and employees probably in line with [28] who opined that only larger hotels seem to be at the forefront of environmental management. About 92% of the respondents did not have an idea about environmental management systems and these same facilities did not have environmental policies.

Close to 20 of the facilities surveyed representing 48% were located in areas where proper drainage systems were absent hence effluent waste was not properly disposed off. Solid waste such as office paper and toilet roll were also burnt in the open within facility precincts. These practices by the facilities are sources of air pollution and could also lead to an outbreak of cholera. The study revealed the most popular environmentally friendly practices adopted by the facilities surveyed were; use of energy saving bulbs, reuse of towel and napkin, use of reusable items such as ceramic cups and plates and training of staff on environmentally friendly practices such as water conservation, energy conservation and waste management. This trend may be due to the fact that all accommodation facilities would want to cut down operational cost to make profit and remain competitive [35]. On energy saving, 3% of the facilities surveyed had central control systems for their lighting and air conditioners which enabled them put off these facilities when guests are not around.

The use of alternative energy sources such as LPG and solar power was also observed in a few facilities. Only about 5% of the facilities surveyed used solar water heating systems. Use of reusable items such as ceramic cups and plates, spoons, and ladles was practiced by 95% of the facilities. Water conservation was an area that most of the facilities gave much attention to probably because it is a cost saving measure. Sixty percent (60%) of the facilities surveyed had low-flow shower heads fixed in their bath facilities. However, the irony was that about 98% of the facilities surveyed still used treated water to irrigate gardens and lawns. About 98% of the facilities surveyed did not live up to their social responsibilities of assisting the locals and NGO's towards environmental management programmes.

The use of energy saving bulbs as well as towel and napkin reuse which are all environmentally friendly were common among the facilities. However, environmentally friendly initiatives such as recycling of waste, installing of solar water heating systems, composting of organic waste,

donation programmes among others were virtually absent. The least practiced conservation and waste management practices were composting of waste (3%), solar water heating systems (5%), donation programmes (5%) and helping locals in environmental issues through donation of cash and materials as well as public education on environmental management (3%). On water conservation, 3% of the managers reiterated the need for their guests to have a nice and enjoyable bath, hence not much attention was paid to the type of shower heads fixed in their facilities.

All respondents indicated that recycling was not their priority and that the technology was not easily accessible consistent with [29] findings in a similar study in Greater Accra Region of Ghana. About 5% of the respondents also admitted hotels and customers in Ghana and Tamale Metropolis for that matter had not reached the stage of environmental sensitivity and that it was a gradual process.

5. Conclusions

The study was carried out to identify activities in hotels within the metropolis that are unsafe to the environment and to equally find out environmentally friendly management initiatives adopted by the hotels. The use of energy saving bulbs, reusable dining items such as cups, plates and spoons as well as towels and napkins were the most popular practices. Other environmentally friendly practices such as use of energy saving bulbs including reuse of towels and napkins which were identified among these facilities were noted to be aimed at reducing cost and attracting or satisfying guests. Environmental initiatives such as recycling of waste, composting of organic kitchen waste and support for environmental agencies were the least popular practices among the accommodation facilities sampled.

From the study it can also be concluded that about 97% of the facilities surveyed do not live up to their social responsibilities of assisting the locals and environmental agencies and NGO's towards management of the environment. In addition, 92% of the facilities had no environmental policy. However, the study was an exploratory one and did not go much further to identify reasons why particular environmental management practices were either adopted or not adopted by these facilities.

6. Recommendations

Based on the findings of the study it is recommended that the Ghana Tourism Authority (GTA), Environmental Protection Agency (EPA) in conjunction with the Tamale Metropolitan Assembly (TAMA) and other bodies tasked with enforcing environmental standards should organize training programmes for managers and employees of accommodation facilities on environmentally friendly management practices as identified in the study. These training programmes will help sensitize them on their moral and social responsibilities with respect to the environment

and communities in which they operate.

Secondly, education of guests on environmental issues should be incorporated into operational and management policies of the facilities since they are major players in the sector and the failure to include them could lead to little or no positive results. This can be accomplished through brochures, posters and signs. Guests could be educated on issues such as water and energy conservation, respect for local culture, proper disposal of waste among others.

Finally, management of accommodation facilities should be assisted with recycling technologies by government and trade associations.

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