Uptake of sustainable water management practices: Evidence from hotels in Nakuru County, Kenya

Mary Karemeri[1*]
Charles Wambu[2]

[1*]mkaremeri@mku.ac.ke

[2]ckamau@cuk.ac.ke

[1]Mount Kenya University, [2]The Cooperative University of Kenya, [1,2]Kenya

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ABSTRACT

Water is scarce, and hotels use large quantities of it for their activities. The efficient water management practices in hotels are therefore essential to achieving their sustainability in the future. The aim of this study was to examine the uptake of sustainable water practices by hotels in Nakuru County. Nakuru is a tourism destination site due to natural features such as Lake Nakuru, Elementaita, and Naivasha. The county continues to experience widespread environmental degradation due to economic activities, with no exception of hospitality establishments. The hospitality industry is believed to contribute to the degradation of the environment due to high consumption of natural resources and waste production. The study was anchored on the extended metabolism model of the city. The research adopted a descriptive cross-sectional research design that involved both quantitative and qualitative methodologies in generating rich information to help fully explore the objective of the study. The target population consisted of 259 hotels registered within the categories of medium, large, and very large hotels, out of which a sample of 204 hotels was selected using the stratified random sampling method, and 204 hotels were sampled and done. Purposive sampling was used to sample 13 government and private officials associated with the hotel industry who participated in the study. Quantitative and qualitative data were obtained from respondents using survey questionnaires and interviews, respectively. Quantitative data was analyzed using descriptive statistics. Qualitative data was analyzed using NVivo software, and data was categorized into themes and presented in the form of narratives. Findings show that hotels reported high uptake of 91.2% on the policy on water conservation, 74.0% on rainwater harvesting and storage water policies, 72.1% on rainwater harvesting gutters and storage installed, and 72.5% on retrofitted water-saving measures. However, the findings of the study revealed low uptake: 9.8% on budget for supporting sound water management practices and 26.0% on capacity building for staff on sound water management practices policy. Emerging themes from qualitative data indicated that rainwater harvesting and storage is a sustainable practice that has been adopted by a majority of hotels in Nakuru. It is concluded that hotels in Nakuru are adopting sustainable water management practices. However, emphasis needs to be placed on policies to enhance the adoption of the practices, thus minimizing water waste through wastewater generated by hotels, hence promoting the sustainability of hotels. Hotel management should budget for and educate staff on sustainable water management practices to increase their adoption.

Keywords: Sustainable Water Management Practices, Sustainable Development, Sustainable Water Management Budget, Sustainable Water Policies, Uptake

I. INTRODUCTION

Hospitality industry is associated with increased diverse benefits and monetary profits. In addition, hotels are linked to creation of employment opportunities and income to its government such as foreign exchange earnings (Han et al., 2018). However, increased growth of hotels has increased concerns on the concept of environmental sustainability. Hotels increase demands for water for hospitality usage. Statistics indicate that on average, hotel guests in Barbados consume about 839 liters of water per night, and the average consumption of water per guest per night in Hong Kong, Singapore, Indonesia and Thailand is approximately 677 liters (Tirado et al., 2019). A number of hotel activities such as cleaning, cooking, washing, irrigation of lawns, swimming pools, and golf courses depend on large quantities of fresh water. Also, hotels increase the demand for water for drinking water (Tirado et al., 2019).

In addition, tourists are sensitive to water quality and reliability of the supply, and demands , and concerns of water shortage due to climate change is likely to give rise to conflicts amongst diverse socioeconomic and environmental sectors that rely on water such as agriculture, households, industries and environmental management systems (Bagur et al., 2019). Moreover, increased consumption of water by hospitality establishments will translate to increased volumes of waste water to the environment, hence polluting water bodies and harming the environment (Nthiga, 2018).

One of the basic environmental responsible management in hotels is on taking up measures to conserve water (Han et al., 2018). Hotels can contribute to enhancing sustainable water use and preserve local economy by uptake of efficient water use and encourage sensitization of staff and guests on water saving measures (Bagur et al., 2019). More

so, hotels can uptake green water practices such as installation of water saving equipment's such as low flow faucets and showerheads, encouragement of guests to re-use linens and towels, regular fixing of water leaking pipes, use of treated waste water in lawns and gardens for irrigation (Nthiga, 2018).

Uptake of sustainable water management practices by hotels will help hotels minimize its negative impact on the environment in matters waste water pollution and reduce urban demand utilities for water. In addition, hotels will reduce the strain on operational related costs related to increased volumes of water consumption by hotels thus increasing financial benefits (Jamaludin & Yusof, 2013). Moreover, hotels adoption of sustainable water practices will increase their competitive advantage as they will meet the demands of tourists on quality and reliable water supply without causing exaggerated pressure and overexploitation of water as a natural resource (Tirado et al., 2019).

In Kenya, majority of chained hotels have adopted water conservation practices (Nthiga, 2018). In Mallorca, there is moderate uptake of water saving innovations, with simple water saving innovations more widely implemented than advanced innovations (Tirado et al., 2019). In Nakuru County, reports have showed that it's a tourist attraction site with Lakes Nakuru and Naivasha renowned tourists' destinations. In addition, the county has continually experienced widespread environmental degradation linked to economic activities, population growth and expansion of industries and hospitality industry is not exempted due to its increased demand for natural resources such as water for urban utilities and resulting waste production. Environmental management practices adopted by hotels in Nakuru are not well noted, thus the need for the study (Nthiga, 2018). Report findings on assessment done amongst Kenya's hotel industry indicate low uptake of green practices by urban hotels despite their enrollment to the sustainability agenda. The low uptake of green practices questions the membership of urban hotels to sustainability agenda and the extent of uptake of green practices and how it relates to the sustainability agenda. Research on uptake of green practices in hotel sector is still inconclusive and specific focus mainly is on the environmental dimension of sustainability and on hotels in ecologically sensitive areas (Kamunzyu et al., 2024). This study sought to assess the uptake of sustainable water management practices; sustainable water management policies, sustainable water trainings and sustainable water management practices budget in star rated and non-rated hotels in Nakuru County, Kenya.

1.2 Research Objective

To examine the uptake of sustainable water practices by hotels in Nakuru county

II. LITERATURE REVIEW

2.1 Theoretical Review

2.1.1 The Extended Metabolism Model of the City

Extended metabolism model was developed by Newman, (1999), the model posits that sustainable city annual objectives and indicators include: energy and air quality whose indicators include: reduction in energy use, deceased cost of energy, increase use of natural energy and renewable energy such as solar, reduction in air pollution, minimal emission of greenhouse gases, achieving health standards in relation to the quality of air, reduced fuel consumption by vehicles, reduce the number of emission-deficient vehicles, reduction of complains from households on noise related issues. Water, materials and waste are a further annual objective whose indicators include: reduction in water using activities, improving the quality of water standards, increase sewerage and industrial waste treatment plants to reuse waste materials, reduce waste disposal and industrial waste to rivers or oceans, reduce building material consumption especially timber, reduce paper packaging consumption, reduction in solid waste by adopting recycling procedures, and enhance utilization of organic waste to soil and food production (Newman, 1999).

Green practices contribute to sustainability of cities. These cities have healthy dwellers, create employment opportunities, income generating activities from formal and informal employment, education opportunities, good housing conditions, leisure activities, accessibilities of the cities are enhanced because of connectivity through proper infrastructure development, urban design quality and community development. In addition, sustainable cities will produce minimal solid, liquid, toxicity, and sewage waste. Moreover, the cities will reduce air pollution, greenhouse gases emissions, and heat and noise pollution, It is evident that green practices contributes to more liveable cities (Newman, 1999).

The scholars have applied this model (the extended metabolism model) to city level. However, authors of the model suggest that this framework can be applied at business level and in this case the hotels which are the biggest drivers of urban sustainability. Moreover, the model compares the indicators for use of resources, waste, and livability among different cities and can identify cities that can contribute to policy discussions on sustainability (Newman, 1999).

Hospitality industries are the biggest threats to urban sustainability. Hotels are linked to increased water, energy and unsustainable goods consumption. Due to its increased consumption, hotels discharge significantly large amount of raw and solid waste (Abdou et al., 2020). Hotels are linked to about 60% carbon dioxide emissions (Upadhyay & Vadam,

2015). Carbon dioxide emissions from hotels are a consequence of fossil fuel combustion. Carbon dioxide results in environmental damage, for example atmospheric and water pollution, climate change and soil erosion (Tugcu & Topcu, 2018).

Figure 1
Modified Extended Metabolism Model adapted from Newman (1999)

The city model of extended metabolism model is linked to the research objectives of the study: to examine the uptake of sustainable water practices by hotels in Nakuru County in that the uptake of sustainable water management practices reduces the water consumption rate thus reducing the volumes of waste water emissions to the environment. Reduction in waste water volumes implies that the hotels will be contributing to the cities becoming more livable and enhancing sustainability of the cities.

2.2 Empirical Review

The authors Tirado et al. (2019) assessed water saving measures implemented in hotels in Mallorca, Spain. The findings of the study revealed that simple water saving measures implemented were use of low flow water devices (66.1%), low flush toilets (64.4%), and use of efficient irrigation systems (53%) and the least implemented simple innovations was installation of infrared taps (8.5%). In addition, the findings of the study revealed that some of the advanced innovations include: use of adjustable water systems (50.8%), water leakages systems (45.8%), and use of submeters in water intensive areas (32.2%). However, the findings revealed that the least popular advanced innovations were collection and utilization of rain water (17%) and reuse of wastewater for irrigation (10.2%). The study was however conducted in Spain and findings in Nakuru might not reflect the situation in Spain because Spain is a developed country while Nakuru is a developing country that might just have the simple water saving practices and not the advanced practices.

In yet another study, Pereira et al. (2021), assessed sustainability practices in Luxury hotel in Arrabida Natural Park in Portugal. The findings of the study revealed that hotels have adopted practices that help in water conservation. Some of these practices include: use of low flow taps in kitchens and showers, use of toilets with installed flushing cisterns with a specified quantity of water for flushing, the water conservation practices have had a significant improvement in reduction of water consumption; before implementation of water conservation practices, approximately one thousand litres of water were used to prepare a meal, after installation approximately 200-250 litres of water are used to prepare a meal. In addition, the use of reusable water bottles has reduced the number of water bottles used in the hotels from 500 bottles per month to approximately 70 bottles of water. Water for irrigation of the gardens the hotels have adopted the use of water from the well. However, this study did not use inferential statistics to show the influence of hotel water management practices on operational cost of hotels, as the authors used only descriptive statistics. Hence,

need for other studies to examine the influence of hotel water management practices on operational performance of hotels. This study findings are consistent with the findings of Tirado et al., (2019) on the implementation of low flow water taps and use of low flush toilets.

A similar study by Zengeni et al. (2013) assessed perceptions hotelier's on green tourism impact on cost of operating Harare hotels in Zimbabwe. The findings of the study revealed that water is expected to be use in almost all activities of the hotel. All respondents agreed that hotels in Zimbabwe are reliant on national authority for water. In addition, the study revealed that water accounted for the highest operation costs. Further, the study revealed that the green practice that should be stressed on to reduce operational cost is decreasing the number of times linens and towels are changed. The findings indicated that 79% of respondents agreed that reduction in the number of times of changing linens and towels would decrease the operating costs while only 21% were neutral on how reduction of the number of times linens and towels were changed. The findings of this study are consistent with the study of Pereira et al., (2021) that revealed that hotel activities such as cooking and laundry are heavily dependent on water and various water management practices have been adopted by hotels in Portugal. Zengeni et al. (2013) study used purposively sampling where the sample was selected on basis of a certain criteria. The findings might be biased and for this reason, the intended study seeks to use stratified random sampling to select the study participants to reduce incidences of biasness by giving equal chances of participation in the study.

In another study, Jamaludin and Yusof (2013) assessed green practices in Malaysian Island resorts. It was established that some of the best green practices that Island resort resorts include: natural ventilation with low impact design, program to preserve the reefs, proper management of waste water, reduced waste and mechanisms of management, collection of rain water and sea water desalination, consideration of the natural topography layout and vegetation design, recovering, replanting, assisting the community in the neighbourhood, environmental training and programming of eco-park, utilization of biomass energy, trees and shrubs replanting, utilization of harvested rain water, system of wetland cleansing, reuse and adjustments of materials for other purposes. It was established that use of rain water harvesting was due to lack of resource for fresh water. These green initiatives are essential in operational performance as they give the operators financial advantages as these best practices are creative practices that enhance reuse and modification of materials for other activities. Using natural wetland plants to clean up grey and black waters is a practice that has promoted the wetland to become a purification system. The study was qualitative in nature as case studies were conducted amongst three hotels in Malaysia. The findings of Jamaludin and Yusof (2013) are supported by Pereira et al. (2021) and Zengeni et al. (2013) who also found out that reuse of linens such as bedsheets and towel is a common water management practice adopted in hotels. Findings from these studies might not show green best practices relationship to operational performance since outstanding themes are only discussed. It is on this point of view the study aims to establish links between green practices and operational performance in the hospitality industry in Nakuru County of Nakuru County, Kenya.

In a different study, Bagur et al. (2019) assessed incentives and barriers linked to water-saving measures amongst hotels in Muga River Basin in Mediterranean. The authors used interview-based survey to obtain data on water saving mechanisms and their incentives and barriers in Muga river basin hotels. The findings showed that the joint measures to save water were: dual flush toilet systems, and improved reuse policies of towel and bed linen. However, findings indicated that lower hotels did not have dual-flush toilets. In addition, replacement of bathtubs with showers was also another common water saving measures amongst these hotels. Use of save water signs or cards in bedrooms and other key areas was yet another water saving measure that was adopted by a number of hotels. Salt water pool conversion from the traditional chlorinated pools was also other water saving measures for swimming pools. Installation of shower shut off timers or sensors were also used in these hotels. Use of more efficient irrigation systems (sprinklers or computerized irrigation systems) was adapted among hotels with gardens. It was established that the main incentive to adoption of water saving measures was to reduce operating cost- as they enhance reduction of hotel's water foot print resulting to reduced water and energy costs. Another factor that influenced water saving measures was environmental awareness. Lack of investment capacity was the most reason why hotels did not implement water saving measures. In addition, lack of awareness about water shortage problems in the near future and the potential impact on the hotels was the other reason why hotels did not implement water saving measures. The findings of the study are consistent with the study of Pereira et al. (2021), Jamaludin and Yusof (2013), and Zengeni et al. (2013) The study used descriptive statistics- percentages to report on the water saving measures that have been adopted by hotels and the factors influencing the adoption and restricting the adoption. Relationship between water saving measures and operational performance (operational cost reduction) is not clear as the study lacks inferential statistics that shows the existence or non-existence of the relationship. Thus, the need to conduct the proposed study on green practices amongst hospitality industry within Nakuru County to examine the relationship between water saving measures and operational performance (cost reduction) using both descriptive and inferential statistical analysis.

In addition, Sadi and Adebitan (2014) assessed waste water recycling in the hotel sector. One objective examined how treatment of waste water in the hotel can be utilized profitably. The study revealed that recycled waste

water may be used to cultivate a small vegetable garden, car wash, for toilets flushing, and water a mini golf course in the hotel. In addition, the water can be used for irrigating landscape, fire protection and air conditioning. Waste water recycled can be used to set up income generating activities such as car wash laundry and can also be used to cut down on cost by nurturing a mini vegetable garden- cost of purchasing vegetables is reduced, and reduced water consumption units by reusing the water for flushing toilets, and irrigating the environment. However, the study was conducted in Bauchi metropolis three-star hotel and findings from this study may not reflect the situation in Nakuru County because of the difference in geographical context. Further, the study did not use inferential statistics to examine the relationship of waste water recycling and profitable use. Hence, the need to conduct the proposed study to examine waste water recycling influence on operational performance of hotels in Nakuru County.

More so, the authors Han et al. (2018) assessed water conservation and waste reduction management influence on increasing guest loyalty and green practices in Vietnam. The findings of the study revealed that water conservation hotel management practices have a significant influence on hedonic value (B=0.295; $p<0.01$) (Han et al., 2018). Water conservation practices influencing customer loyalty translates that customer will frequently visit the hotel and this will translate to more income hence improving on its operational performance. The findings of the study thus revealed that water conservation measures add value- financial value and cost saving value to hotel thus increasing operation performance of hotels.

Moreover, Nthiga (2018) assessed water conservation practices uptake in hotels in Nakuru County, Kenya. The study's findings revealed that quite a number of water management practices were adopted in the hospitality industry in Nakuru. These practices include: reuse of bed sheets (51%), creating awareness to employees on water management practices through trainings (73.7%), and repairing water leaking taps (87.4%). Some water management practices that have not been fully adopted include: using rainfall water to flush toilets (13.7%), engaging in waterless car wash procedure (27.4%), and reuse of towels (35.8%). The findings of Nthiga (2018) are supported by Bagur et al., (2019) and Pereira et al., (2021) who also found out that use of low flow toilets is one of the water management practices adopted in hotels. Although Nthiga (2018) is of the opinion that rain water harvesting practices has not been implemented, Jamaludin and Yusof (2013) study revealed that rain water harvesting has been implemented by hotels in Malaysian Islands. On the other hand, water management practices on harvesting rain water are not seen to be practiced. The water management practices adopted in the hotels influences performance in the sense that the hotels are not over dependent on county government water or water vendors thus reduction of water bills. \

On sustainable water management trainings, Si et al. (2020) examined sustainable practices of selected tourist resort in Dasmarinas city. The results of the study revealed that there were low employee training practices of the resort on employee engagement on environmental initiative (M=2.4026), practice sustainability in the resort (2.7662), and environment program such as tree planting (M=2.05919). This study was conducted in Philippines and was not specific on the water management trainings offered to the employees. Findings might not reflect the situation in Nakuru County, Kenya.

Omune et al. (2021) assessed the environmental management practices implemented by hotel sector in Kenya. The study adopted a cross-sectional census survey research design. Survey questionnaire were used for data collection. The study targeted 70 hotels in Kenya classified as three to five-star hotels. The results of the study revealed that 58.08% hotels trained their staff on water usage to minimize water consumption. This study however, targeted three to five star rated hotels in Kenya which might have budget set aside for training their staff on sustainable water management practices. The current study will assess trainings in rated and non-rated hotels and findings might differ.

III. METHODOLOGY

This study used cross-sectional survey research design. This design was suitable because it involved both quantitative and qualitative methodologies in generating rich information to help fully explore the objective of the study. The study targeted 259 hotels in selected areas in Nakuru. Krejcie and Morgan's sample determination table was used to determine the sample size that would provide an accurate representation of the population. The table determined the appropriate sample size would be 204 hotels. Data was collected using questionnaires and semi-structured interviews. The questionnaire targeted hotel general managers. The stratified random sampling technique was used to select the number of questionnaire respondents from three categories. The participants were categorized into three non-overlapping categories of very large, large and medium hotels. The semi-structured interviews targeted 13 government and private officials associated with the hotel industry. There were thirteen government and private officials purposively sampled. The government and private officials were selected based on their expertise in sustainable water management practices and in the hospitality industry. Items in the questionnaire were analysed using descriptive statistics such as frequencies and percentages. Interviews were grouped according to the study objectives and presented in form of narratives. The study took a variety of ethical guidelines into account. Authorization for research was obtained from all

pertinent government agencies. Informed consent of respondents was observed. Respondents were guaranteed anonymity and confidentiality of the data collected about the hotels.

IV. FINDINGS & DISCUSSION

4.1 Demographic Results

4.1.1 Gender

Majority of the respondents (67.2%) were male, while (32.8%) were female as indicated in Figure 2 below. This shows that a majority of hotel managers were male. This might be attributed to managerial role demanding nature making men dominate more in the sector compared to women. These findings are consistent with the findings of Omune et al. (2021) which revealed that a majority (54%) of hotel managers were male with 46% female hotel managers.

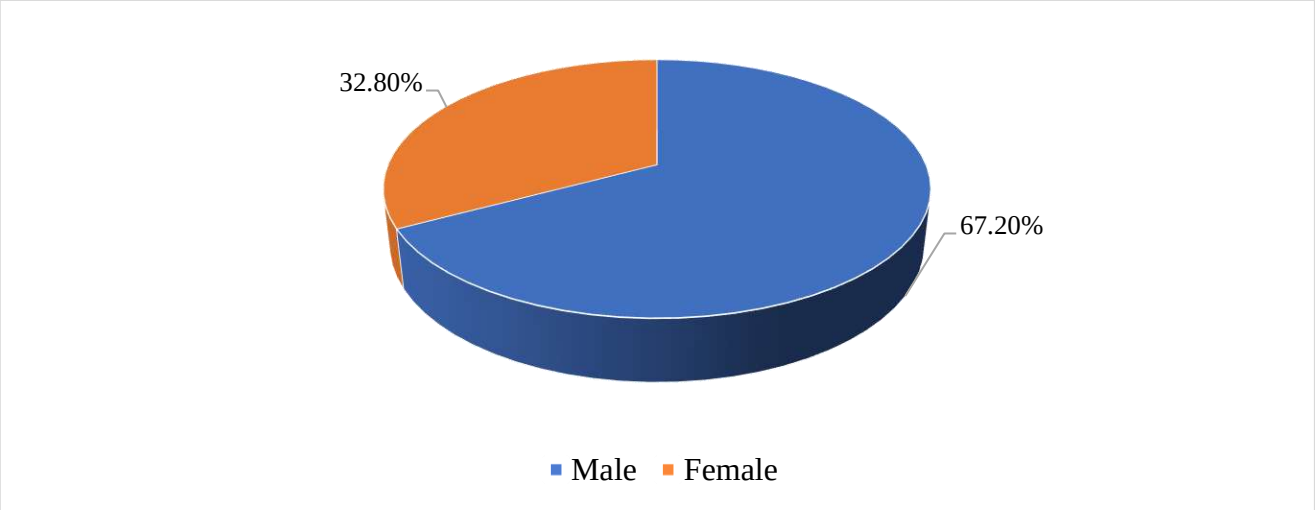

Figure 2
Gender of Respondents

4.1.2 Education Level

As indicated in Figure 3 below, a majority of respondents (96.1%) had attained tertiary education, while (3.9%) had secondary education. The possible explanation is that, hotel managers require basic knowledge and skills for better hotel management. This might imply that; hotel managers can be trained on green practices and get the concept right for hotels since they have basic education. These findings are consistent with the findings of Omune et al. (2021) which revealed that majority (48%) of hotel managers had attained bachelor's degree.

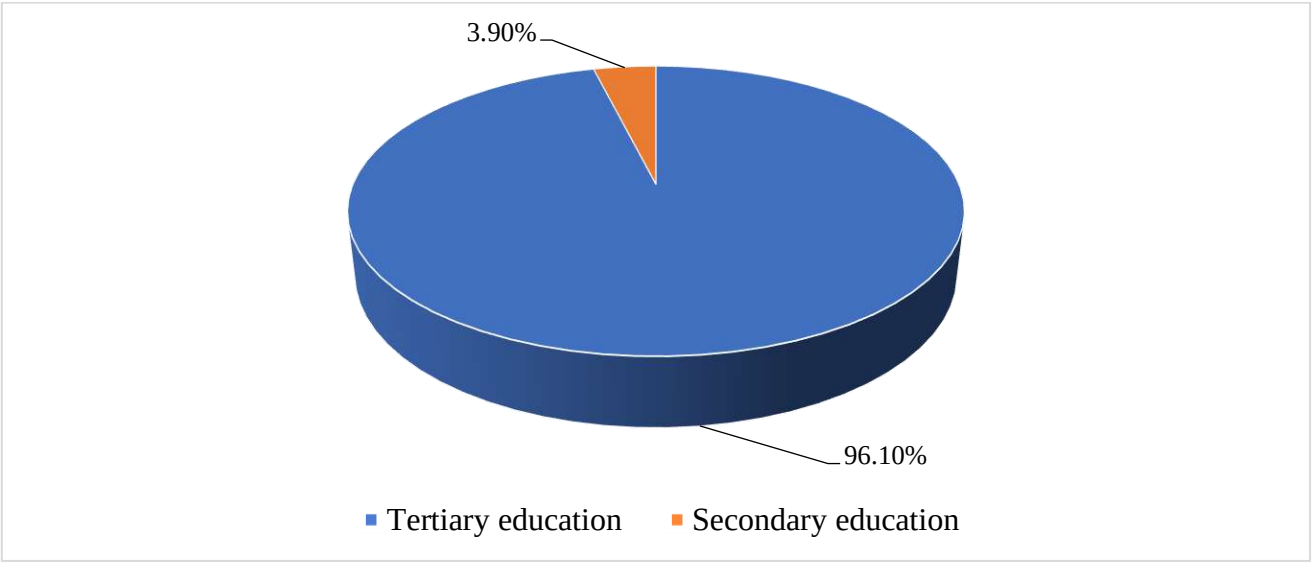

Figure 3
Highest Education Level Attained

4.1.3 Uptake of sustainable water management practices

The objective of the study was to assess the uptake status of sustainable water management practices by star rated and non-rated hotels in Nakuru County, Kenya. The goal was to establish the extent to which sampled hotels had adopted sustainable water management practices with specific focus on uptake of sustainable water management practices policies, budget and capacity building. Table 1 presents key statistics regarding respondents' scores on this variable.

Table 1

Uptake of Sustainable Water Management Practices

Variable	Categories	(%)
Uptake of Sustainable Water Management Practices Policy		
Policy on water conservation	Yes	91.2%
	No	8.8%
Specific water policies		
Rain water harvesting and storage	Yes	74.0%
	No	26.0%
Reuse of waste water	Yes	58.3%
	No	41.7%
Recycle of waste water	Yes	27.9%
	No	72.1%
Use of shower heads instead of bath tubs	Yes	77.0%
	No	23.0%
Budget for Uptake Sustainable Water Management Practices		
Budget for supporting sound water management practices	Yes	9.8%
	No	90.2%
Capacity Building for Uptake of Sustainable Water Management Practices		
Staff awareness on hotels policy on sound water management practices	Yes	26.0%
	No	74.0%
Hotel manager participation in specific environmental sustainability trainings		
Water saving/water management practices	Yes	22.1%
	No	77.9%
Waste water management practices	Yes	12.3%
	No	87.7%
Waste water recycling	Yes	8.3%
	No	91.7%

4.1.4 Uptake of Sustainable Water Management Practices Policy

Table 1 summarizes the descriptive statistics of the uptake of sustainable water management practices. Participants were asked to indicate if their hotel have a policy to promote sound water management. Results reveal that 91.2% participants indicated that their hotel have a policy that supports sound water management practice whereas 8.8% indicated that their hotel did not have a policy on sound water management practices. The possible explanation to this finding might be hotel managers have drafted sustainable water practices policies to reduce their water demands hence cutting down on operational costs related to water services. These findings are consistent with the findings of Omune et al. (2021) which revealed that a number of hotels have adopted a number of water conservation practices an indication that there might be policies influencing the high uptake of water sustainability practices.

The respondents were asked to indicate specific policies in their hotels that promote water conservation or sound water management practices. Figure 4 below shows specific sustainable water policies adopted. 74.0% hotels had policies related to rain water harvesting and storage, 58.3% hotels had policies related to reuse of waste water, 27.9% hotels had policies related to recycle of waste water, and 77.0% hotels had policies related to use of shower heads instead of bathtubs. Water policies related to rain water harvesting and storage had the highest representation while policies on recycling of waste water had the least representation. The possible explanation for these findings might be water resource is an important resource and should be harnessed for usage because of its scarcity hence high representation of rain water harvesting policy and waste water recycling is quite an expensive affair thus it might be the reason for its low representation as a water policy. This finding might imply that hotels might produce increased waste water to the environment thus promoting unsustainable practices. These findings are consistent with the findings of Nthiga (2018) which revealed that a majority (68%) of hotels had installed low flow shower head systems.

This view also received support from key informants who shared that:

"*Quite a number of hotels in Nakuru have implemented measures to reduce their water foot print, … have implemented harvesting and storage of rain water and use of rain water for hotel activities*" (Interviewee 1)

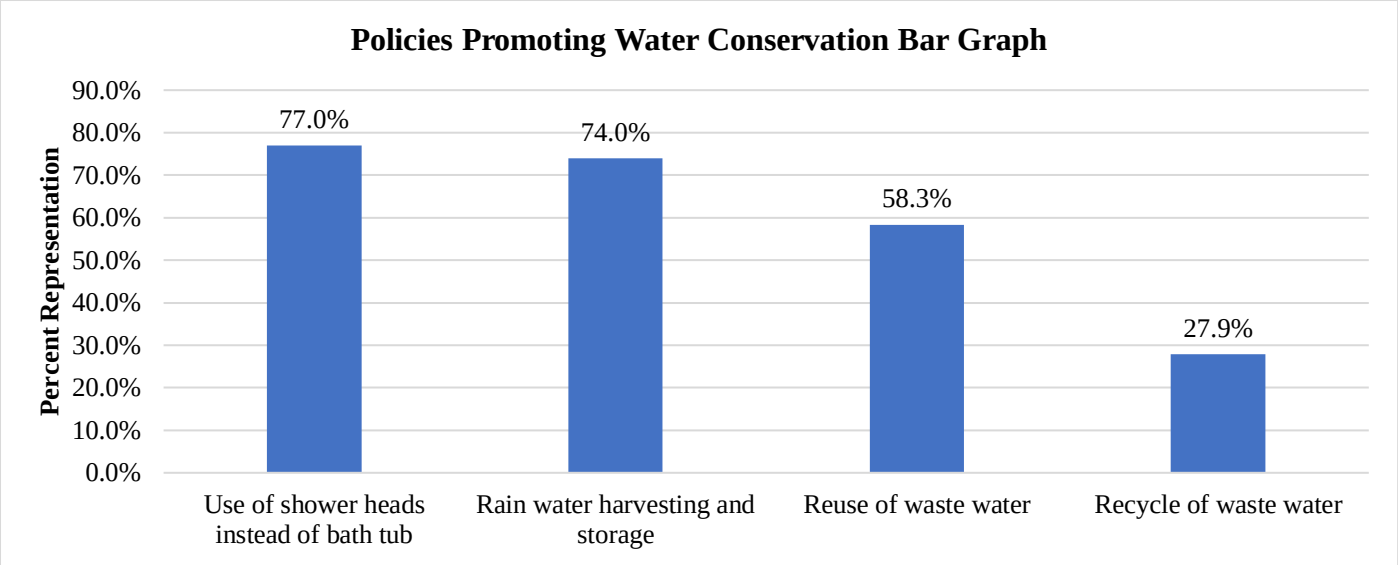

Figure 4
Specific Sustainable Water Management Policies

4.1.5 Budget for Uptake of Sustainable Water Management Practices

Participants were asked to indicate if their hotel have a budget for supporting sound water management practices. As indicated in table 1 above, results showed that 9.8% hotels have a budget supporting sound water management practices whereas 90.2% hotels did not have a budget for sound water management practices. The plausible explanation to this finding might be the cost implications associated with supporting sound water management practices. This finding might imply that there is minimal water efficiency to the hotels due to low investments in budgets for supporting sound water management practices. These findings are consistent with the findings of Bagur et al.(2019) which revealed that lack of investment capacity was a barrier in hotels implementation of water saving measures. In support of budget related issues as a challenge for uptake of sustainable water management practices, one of the interviewees stated that:

"*First is the cost like now if it is harvesting water, there is always buying the tank itself, another thing is if you are doing the borehole, the borehole is not that cheap because also this water might also be salty and so it needs also another technology to purify the water so that another cost.*" (Interviewee 3).

4.1.6 Capacity Building for Uptake of Sustainable Water Management Practices

Participants were asked to indicate if their hotel organized activities to create awareness to their employees concerning the hotels policy on sound water management practices. As shown in table 1 above, the results of the study revealed that 26.0% hotels organized activities for their employees on hotels policy on sound water management practices whereas 74.0% hotels indicated that they did not organize activities to create awareness to their employees concerning sound water management practices policy. The possible explanation to this finding might be the cost implications related to sound water management practices where experts must be involved. This finding might imply that hotel employees are not well informed on sound water management practices thus might not be implementing these practices in their hotels and this might affect the efficiency in water use within the hotels. These findings are consistent with the findings of Bagur et al. (2019) which revealed that a majority (60%) of staff are not aware of water shortages problems and potential impact on hotels in the future. Need to create awareness on uptake of sustainable water management practices was highlighted in the interviews as one of the respondents stated:

"…*inadequate awareness on water conservation practices might act as barriers.*" (Interviewee 12).

Yet another respondent echoed that staff training on uptake for sustainable development by stating that:

"*Information; they need to be trained; they need to have good information that will help. And of course, we need to capacity build and create awareness on this particular need so it's now upon the government and non-governmental actors to help hotels on getting this information passed across.*" (Interviewee 4).

More so, participants were asked to indicate the specific trainings their staff on water management practices and conservation. As illustrated in Figure 5 below, results of the study revealed that 27.0% hotels trained their staff on water saving measures. 26.6% hotel trained staff on regular checks on water leakages and fixation of broken pipes,

16.7% hotel trained their staff on tapping rain water, 11.3% hotels train staff on reuse of water for other hotel activities, 9.8% hotels train their staff on recycling of waste water for other hotel activities. 8.8% hotels train their staff on fixing water automated water taps, and 6.4% hotels trained staff on use of reusable napkins. Staff training on water saving measures was highly represented at 27.0% and the plausible explanation to this finding might be its more of warnings that is done often rather than official training. Use of napkins that can be reused had the least representation at 6.4% and the explanation to this finding might be limited know-how of the availability of reusable napkins thus limited trainings on the same. This finding might imply that the hotel staff are increasing dependent on ground and surface water resources making hotels unsustainable due to their increasing water demands for usage. These findings are consistent with the findings of Omune et al., (2021) which revealed that a majority (58.08%) of employees were trained on minimal water usage to minimize consumption rate of water.

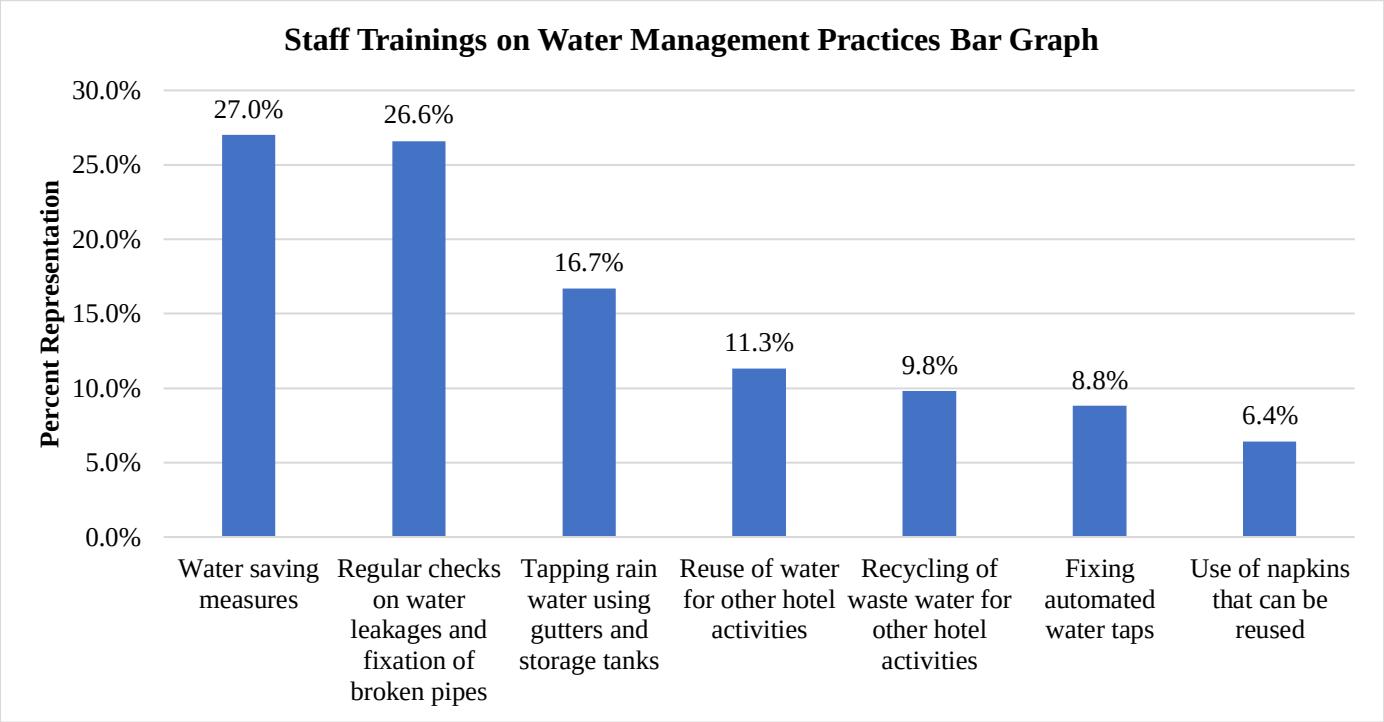

Figure 5
Staff Trainings on Specific Sustainable Water Management Practices

4.1.7 Managerial trainings on Sustainable Water Management Practices

Moreover, participants were asked to indicate if in the last one year they had participated in any environmental sustainability trainings related to water saving/water management practices. The results of the study as indicated in table 1 above, showed that 22.1% respondents had participated in environmental sustainability trainings related to water saving/water management practices while 77.9% respondents had not participated in water saving/ water management trainings. In addition, the respondents were asked if they had participated in waste water management practices. The findings of the study indicated that 12.3% respondents had participated in trainings related to waste water management practices while 87.7% respondents had not participated in trainings related to waste water management practices. Further, the respondents were asked to indicate if they had participated in waste water recycling trainings. The results revealed that 8.3% respondents have participated in waste water recycling trainings whereas 91.7% had not participated in waste water recycling trainings. The possible explanation to this finding might be there are low training opportunities for hotel managers on hotels water saving practices, waste water management practices and waste water recycling due to cost implications. The possible implication might be the hotels water demands for ground water resources and surface water resources might be way too high having a negative impact on sustainability as well as efficiency. These findings are consistent with the findings of Si et al. (2020) which revealed that staff had received limited training on water saving measures on employee engagement on environmental initiative (M=2.4026), practice sustainability in the resort (2.7662), and environment program such as tree planting (M=2.05919)

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

According to the study results, there is low uptake of sustainable water management practices; that is sustainable water management budget and trainings. In addition, the results revealed high uptake of sustainable water management practices policies. Hotel management with other relevant stakeholders from government and non-governmental organizations especially dealing with sustainable development issues can offer a forum to educate hotel staff on sustainable water management practices, and relevance of uptake of sustainable water management practices in reducing waste water pollution, thus promoting sustainable development. Reduction by hotel demands for ground water and surface water resources to reduce operational costs related to water bills thus increasing profits. To effectively implement sustainable water management practices policies, hotels should increase their budget for sustainable water management practices.

5.2 Recommendations

The government and non-governmental agencies should partner with the hospitality industry to offer trainings to hotel staff on sustainable water management practices. The government should formulate policies that subsidize sustainable water facilities such as rain water harvesting water tanks and gutters, infrared water taps, low flow shower heads, taps and toilets to enable hotel owners to retrofit their water systems to water saving systems. The government can also consider advanced trainings on use of grey water for irrigation through reuse and recycling of grey water.

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