THE CHALLENGES AND PROSPECTS OF THE ADOPTION OF SUSTAINABLE ENERGY IN HOSPITALITY BUSINESSES IN NIGERIA

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Abstract

Nigeria is largely dependent on fossil fuel despite its enormous sources of renewable energy. This study examines challenges facing Nigerian Hospitality industry as a result of over dependence on fossil fuel as energy source as well as the implications for the sustainable growth of the hospitality sector in Nigeria. The main objective of the study is to establish the drivers and barriers of corporate "greening in the Nigerian Hospitality and Tourism industry. The study identifies biogas, geothermal energy, advance technology in energy recovery and solar technology as alternative to fossil fuel. Lack of political will, finance, non-availability of a comprehensive environmental sustainability program, and absence of strong environmental management values were identified as factors inhibiting the adoption of renewable energy as alternative to fossil fuel in Nigerian Hospitality industry. The study recommends the use of renewable energy to mitigate environmental degradation so as to promote sustainable development of hospitality in Nigeria and that government should take a more responsive approach to facilitating the adoption of renewable energy plans for the industry..

Keywords: *biogas, fossil fuel, hospitality, renewable energy, hotel businesses in Nigeria*

1.0. INTRODUCTION

Climate change is a very big challenge to mankind (Munasinghe, 2011). The intensity and dimension of climate change has taken a new proportion in recent years as it now is characterized by extreme weather events such as extreme heavy rainfall, flood, and global temperature shifts (Alimonti et al, 2022). The year 2010–2019 had been adjudged the hottest decade recorded so far. Despite the lockdown arising from the COVID 19 pandemic leading to decrease in global emission in 2020, it is on record that the highest temperatures so far were recorded in 2020(Ogbodo and Ogbodo, 2021). From all indications, in relation to climate change, it seems the worst is yet to come as authorities have warned of impending situations which will include extreme heat waves, widespread hunger and drought, rising sea levels, and extinction. Evidently, climate change is affecting all areas of our lives (Howard-Grenville,et al., 2014).

There are many different ways in which the abundance of energy around us can be stored, converted and amplified for our use. Energy sources will play an important role in the world's future. The energy sources have been split into three categories namely; fossil fuels: examples here are coal, petroleum and natural gas; renewable energy sources: the renewable energy sources are solar, wind, hydroelectric, biomass and geothermal power; nuclear sources: the nuclear-powered sources are fission and fusion (Darmibas, 2006).

The Tourism and Hospitality industry is one of the largest industries of the world, responsible for US$6.5 trillion in economic activity, 10.3% of global GDP and 234 million jobs worldwide in 2006, which corresponds to 8.7% of total employment (Chen, 2021). Given the size of the industry, it has large impact on the environment, economies, cultures and societies in general. The hotels, motels and all the various forms of

accommodation comprise the largest sector of the industry, and it has been shown that hotels have the highest negative influence on the environment of all commercial buildings (Zolfani et al, 2018). According to estimations, an average hotel releases between 160 and 200 kg of CO 2 per square meter of room floor area per year and water consumption per guest per night is between 170 and 440 l in the average five-star hotel (Mbasera et al,2016). On average, hotels produce 1 kg of waste per guest per night (Bohdanowicz,2005).

It is not surprising then that in the last few years an increasing body of literature on hospitality and energy use has emerged, in which the industry has been seen as overlyrauf et dependent on fossil, thus judged to be responsible for the emission of greenhouse gases in a huge degree (Rauf et al, 2021; Kasim, 2006). Unfortunately, it seems the role of the industry in the context of greenhouse gas emissions will increase because the industry is growing worldwide, and that long-distance travel is increasing in popularity. The diversification from traditional mass tourism into an array of special interest-, nature- and activity-based tourism segments also potentially increases the demand for fossil fuels, and therefore green-house gas emissions (Becken and Simmons, 2005). Against this backdrop, countries like Nigeria looking towards tourism and hospitality for the purpose of diversifying our economy from being dependent on crude oil only need to examine the associated cost of the growth of tourism and hospitality and perhaps consider better ways of energy use and conservation. This study discusses the energy use of, and greenhouse gas emissions from tourism in Nigeria, and identifies methodological and practical issues that are of interest to seeking an energy inventory of tourism. The involvement of stakeholders in decreasing tourism's dependency on the input of fossil fuels is also outlined.

2.0. LITERATURE REVIEW & CONCEPTUAL ISSUES

2.1 An Overview of the Tourism and Hospitality Industry

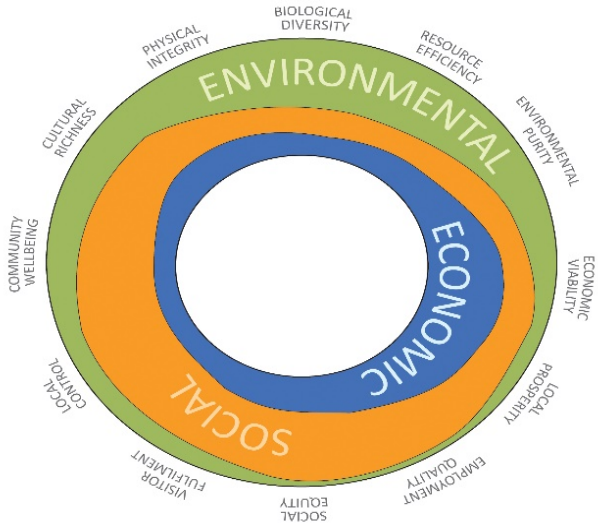
"Tourism comprises the activities of persons travelling to and staying in places outside of their usual environment for not more than one consecutive year for leisure, business or other purposes". The tourism and hospitality industry is diverse and includes restaurants, hotels, casinos, airlines, and tourist attractions. The hospitality industry includes accommodation, food and beverages, and tourism-related services. Different types of businesses concerned with the provision of services to visitors in a destination constitute the hospitality industry (Munasinghe et al, 2022). Therefore, amusement parks, meeting and convention facilities night clubs, golf courses, theme parks, water parks, resorts, motels, hotels, bed and breakfast, festival arenas and routes, bars, restaurants and other leisure and recreational activities within a destination could rightly be categorized as hospitality industry. Therefore, there would be no hospitality without tourism and without hospitality, the tourism industry will have a large gap arising from the absences of accommodation for tourists, absence of eating places like restaurant, convention and meeting venues (Rusu et al, 2014). Bigger part of the tourism and hospitality industry uses fossil fuels which in certain way pollute environment. Energy production and usage development is directed largely to fossil fuel sources in the Nigerian Hospitality industry (Newell, & Simms,2020). However, it is a fact that a shift towards renewable energy will be more environmentally friendly and sustainable. These energy sources use wind energy, water, sun energy, geothermal and biomass energy. Renewable energy sources like wind, solar and hydropower are unlimited, as they capture energy flows available from the natural environment (Timmons et al, 2014).

2.2 Sustainable Tourism and Hospitality

The term 'sustainability' came into the tourism and hospitality industry lexicon in the 1970s

when concerns were first raised about the environment and its overexploitation. Sustainability as it is used today in the industry was defined by the World Commission on Environment and Development in its report published in 1987 called Our Common Future. This report is better known as the Brundtland Report (WCED, 1987). The report defines sustainability as 'development that meets the needs of the present without compromising the ability of future generations to meet their own needs (Emas, 2015). At this point, it appears the focus was on the environment. However, in June 1992, the United Nations Conference on Environment and Development (UNCED) in Agenda 21added economic and socio-cultural aspects to the notion of sustainability (Majumdar, 2009). In 2002, the Johannesburg Summit broadened the definition of sustainable development even further by including the notions of social justice and the fight against poverty (Holliday et al, 2017). Ever since then, there are several attempts to define sustainability. However, a sustainable hospitality operation can be defined as a hospitality operation that manages its resources in such a way that economic, social and environmental benefits are maximized in order to meet the need of the present generation while protecting and enhancing opportunities for future generations (Jurowski, 2001). To put this in perspective and interrogate this definition further, we need to find out which resources used by the hospitality and tourism industry impact the society, economic profit and the environment directly. Sustainable hospitality operations or 'green hotels' aim at reducing their impact on the environment and society. The American association, Green Hotels, provides a more resource-oriented definition: 'green hotels are environmentally sustainable properties whose managers are eager to institute programs that save water, save energy and reduce solid waste while saving money to help protect our one and only earth (Kapiki, 2012) '. Given, the above, we see clearly that sustainable hospitality and tourism rest on a tripod of environmental, economic and socio-cultural responsibility.

Fig.2.1.



Source: https://tourismlandscapes.wordpress.com/sustainable-tourism/

2.3 Energy Use in Nigeria

Energy plays a vital role in the economic growth, progress, and development of nations. Uninterrupted energy supply is a vital issue in Nigeria today. It is posited that the economic growth of the country crucially depends on the long-term availability of energy from sources that are affordable, accessible, and environmentally friendly. Security, climate change, and public health are closely interrelated with energy (Giwa et al, 2017). Energy is inevitable for poverty alleviation and the production of goods and services. Energy is required to provide basic needs such as cooked food, a comfortable living temperature, lighting, the use of appliances, piped water or sewerage, essential health care , and transport (Oyebode,2018). Energy propel productive activities such as agriculture, commerce, manufacturing, industry, and mining. The implication is that, a lack of access to energy contributes to poverty and deprivation and can contribute to the economic decline (Uyigue, et al, 2007). Energy and

poverty reduction are not only closely connected with each other, but also with the socioeconomic development, which involves productivity, income growth, education, and health. An estimate put it that more than 1.6 billion people live without access to electricity and 2.4 billion people are without modern energy services for cooking, cooling and heating globally. (Kaygusuz,2011). The Nigerian energy sector had been bedeviled by corruption and governance issues thus and negatively impacting the sector. Despite being one of the planet's largest oil exporter and being blessed with a huge oil reserve, Nigeria still import petroleum products and kerosene. (Akinyemi et al, 2017). An estimated 60-70% of the Nigerian population does not have access to electricity (Utazi, 2014). Despite Nigeria's steady access to fossil based and renewable energy sources, its per capita electricity has been among one of the lowest in Africa. Energy is an important factor in all the sectors of any country's economy (Igbinovia, 2014).. The standard of living of a given country can be directly related to the per capita energy consumption. The per capita energy consumption is a measure of the per capita income as well as a measure of the prosperity of a nation.

A National Energy Policy was approved by the Federal Government of Nigeria in 2003 with the ultimate goal of optimal utilization of the nation's energy resources, both conventional and renewable, for sustainable development. The policy articulated amongst other things the extensive development of electric power with a view to make reliable electricity available to75% of the population by 2020 as well as broadens the energy options for electricity generation (Shaaban and Pentirin, 2014). In 2006 with the assistance of UNDP, a renewable energy master plan was produced for Nigeria with a major aim of articulating a road map for national development through the accelerated development and exploitation of renewable energy. The master plan is to provide a comprehensive framework for renewable energy by expanding access to energy services to Nigerians, raising standards of living especially in the rural areas, stimulating economic growth, employment, and empowerment, reducing environmental degradation and health risk, particularly to vulnerable groups such as women and children (Akuru and Okoro, 2010). The purpose behind this is to have a shift from an economy that is dependent on fossil fuel to one driven by an increasing share of renewable energy mix, while exploring renewable energy in quantities and at prices that will promote the achievement of equitable and sustainable growth. Renewable energy is derived from natural forces that are continuously at work in the earth's environment, and which are not depleted through use. The Renewable Energy Master plan advocates a solar PV and solar thermal contribution of 5MW by 2010, 121MW by 2015 and 505MW by 2025 into the Nigerian energy mix. Renewable energy sources produce few or no greenhouse gases. Increasing their usage will therefore contribute to reduction of emissions nationally and world-wide (Sam-Amobi et al, 2019)

3.0. ENERGY CONSUMPTION IN HOSPITALITY INDUSTRY

The ratings of energy consuming public buildings ranked hotels among most prominent. To provide comfort to the guests, hotels need to use several resources, including energy. This is all the more pronounced since hotel operates round the clock, and thus requires energy on a daily basis regardless of season, accommodated number of guests and localization. It is known that electricity consumption is one of the dominant sources of carbon emission in the hospitality industry (Shehu et al, 2019). As a fact, hotel energy requirements are often not optimized, thus contributing to a high carbon footprint. Hotels use significant amounts of energy for daily operations and recreational activities. In many facilities, energy costs are the second-highest operating costs after salaries and wages. A number of factors influence energy consumption in a hotel. Occupancy is one such

factor that impact the energy consumption, as more people in the building will require more energy (Salem et al, 2020). However, there are still spaces where energy will be required independently of the occupancy. Also, the size of a hotel and its design is very crucial because, the bigger the building, the more energy is required (Pieri, & Santamouris,2015). A hotel where all is condensed in the same building is more likely to be energy efficient. Therefore design is an important factor in hotel energy consumption. Furthermore, a new building is likely to be better insulated than an old one (Harvey, 2009). The choice of technical appliances such as television set, light bulbs, and air conditioners among others is important, as they are to be energy efficient to reduce energy consumption. The higher the category of hotel, the higher the energy need. An estimated detrimental 160kg to 200kg per square meter of room floor area carbon dioxide gas emissions is associated to the various energy resources consumed by the hotels (Shehu et al, 2019). The presence or absence of hotel's energy management policy is crucial in controlling energy costs, as it will involve all the parties (staff, investors, and guests) and will set up targets and best practices. Local energy policies impact the prices and carbon emissions, as it will determine the type of energy used: gas, electricity, nuclear, wind (Upadhyay, & Vadam,2015). Unfortunately, it appears, there is no clear cut energy policy in Nigeria to drive sustainable energy use in the industry. Climate will impact the use of air conditioning and heating, hence, it is an important factor to be considered too. A hotel with only a few services and facilities will consume less energy than a hotel with a lot of services and facilities (Upadhyay, & Vadam, 2015).

Investments in more efficient energy use and improved housekeeping practices can lead to significant reductions in operating costs and energy bills, with relatively short payback periods. In simple terms, energy efficiency means using less energy to perform the same tasks and functions. For hotels, this could mean reducing the amount of energy needed for heating by improving insulation of the hotel building, by introducing lighting control or also regulate space heating and cooling. Energy efficiency saves energy, costs and reduces emissions of greenhouse gases. Use of renewable energy sources will help secure our future energy supply and lower the human impact on the environment. As at 2010 renewable energy accounts for 8% of the total energy used in the European Union and targets have been set for this to increase to 20% by 2020. The EU Action Plan for Energy identifies the tertiary sector, including hotels, as having the potential to achieve 30% savings on energy use by 2020 – higher than savings from households (27%), transport (26%) and the manufacturing industry (25%) (Proskurina et al, 2020) Using renewable energy can reduce local air pollution, maintain destination quality and enhance the guest experience. Energy efficiency and conservation practices can enhance reputation among guests and others who are concerned about reducing global energy consumption and the effects of climate change.

For many thousands of years, man's impact on the environment was negligible; however, at the dawn of the industrial revolution all this changed. We now consume more of the earth's resources than the earth can regenerate; hence, the planet is in 'ecological overshoot '. Current consumption levels are simply too high and action needs to be taken as the planet's non-renewable resources are being quickly depleted. This depletion is accelerated by the continuous growth of world population and its changing consumption patterns (Fanning et al, 2022). Another consequence of human activity is the changing climate (Goudie, 2018). Climate changes can be observed by measuring the increases in ocean temperatures and global sea levels that result from the melting of the polar ice caps. A consensus exists among scientists that the greater part of global warming in the past decades can be attributed to human activities

(Cook et al, 2016) . The existence of the so-called greenhouse gases is vital to the survival of humankind, without them the surface temperature on earth would be approximately 30 °C lower. But human activity has caused increases in the concentration of greenhouse gases, which have led to increases in air temperatures around the globe.

4.0. IMPLICATIONS OF STUDY TO TOURISM AND HOSPITALITY MANAGEMENT INDUSTRY IN NIGERIA

The progress of investments in sustainable hospitality operations is often impeded by misconceptions about what is the bottom line. There is over concentration on the initial investment costs of renewable energy that are indeed higher when compared to unsustainable solutions. However, in the long run, the running costs are generally much lower than in those properties that have inefficient and unsustainable solutions. The longer-term return of such investments is most often positive in financial terms, even without considering the triple bottom line of environment, society and economics (Chen et al, 2010).

Another impediment lies in the internal communication and control within hotel chains. Several hotel corporations operating in Nigeria already have environmental management programs in place but an important factor determining the effectiveness of these programs is the translation of corporate environmental policies into real actions. Many hotels until now have had problems in articulating corporate environmental management activities (Chen et al, 2010). Most often the manager of a hotel has the freedom to determine the strategies and procedures that seem fit to him. Therefore the attitude of such managers toward specific subjects will, for a major part, determine the hotel's actions with respect to that subject when the corporate framework leaves them the room to do so.

We move readily into associate environmental degradation with industries like manufacturing, energy production, steel industry, and oil and gas production. Pollution, waste, greenhouse gases and environmental hazards do not necessarily spring to mind when considering the hospitality and tourism industries. Therefore, we associate sustainable energy use to industries where the pollution is actually visible. However, while the processes that are necessary in the assembly of service products may be intangible, perishable and consumed as they occur, they often involve the support of a wide spectrum of physical components and reliance on natural resources. Hotels need to reduce their impact on the environment as they count amongst the greatest polluters and resource consumers within the service industries. Major hotel chains that constitute a large percentage of rooms in Nigeria have a significant potential to decrease their impact on the environment. Moreover, these large hotel brands have the financial capacity to invest in technology. Hotel chains also have the opportunity to introduce environmental policies on a corporate strategic level and therefore reduce environmental impact on a large scale (Filimonau & Tochukwu,2020) .

The integration of renewable resources for an isolated energy generation in newly constructed buildings and incorporation of same in energy efficiency retrofits is gaining more popularity. In fact, the use of solar in hospitality businesses energy generation has been found to be experiencing advances in popularity (Yu et al, 2017). Moreover, wind turbines suitable for use in taller buildings such as skyscrapers are also becoming available and affordable and can be incorporated in green retrofits (Al-Kodmany, 2014). Also, geothermal energy production and use which is projected to be cheaper than solar, deserves consideration and should be harnessed by hospitality business that are locatedu in regions that are favourable to geothermal energy generation. (Emodi & Ebele, 2016).

5.0. CONCLUSION AND RECOMMENDATIONS

This study identified factors affecting energy usage in the hospitality industry. They can be categorized into three namely; Building System, Locational Factors and Operational Factors. Largely, management has no control over locational factors, as factors such as the climate (outdoor temperature, degree-day, and geographic location), are beyond the management. However, building-related characteristics (fabric, type, age, size, orientation, envelope, construction quality etc.) can be improved in the future. Building systems and services related characteristics (HVAC system, consumption hours, structural, systems specification, building services and systems load and efficiency, building services and systems and appliances used), can be gradually overhauled and replaced. Finally, human-related qualities such as (energy management, operation and maintenance schemes, human knowledge of energy use, and guest behaviour) are elements that we can control and enhance.

Furthermore, the main challenge we faced is the lack of any breakdown information of energy consumption throughout hotels. Most hotels have no sub-meters, only one main gas meter and one electricity meter, which are used, mainly for billing reasons. Hence no clear information on where the intense energy areas are or where energy waste is occurring. Also, no real-time data can be compared with the daily number of guests and degree on daily basis. The researcher thus recommend that sub-meter be installed and monitoring policies be put in place. It is also recommended that energy-efficient appliances should be installed in hospitality outfit. We need to improve internal advocacy by educating staff on efficient use of each energy consuming appliances. Installation of energy-saving controls, such as thermostats in each room to regulate temperature and smart lighting controls in walkways and public areas.

Furthermore, the use of advanced technologies in energy recovery such as heat pump and HVAC technologies, that have heat recovery options. Hospitality outfits can deploy renewable technologies where possible, such as the use of solar to generate electricity and water heating. Essentially, there is need to introduce regular maintenance practices for all appliances. Well-maintained equipment will perform better for longer.

In conclusion, there should be deliberate effort to enhance operational efficiency by setting up hotel energy management team responsible for overseeing all energy-related performance targets and reviews. Regular and clear energy-saving communication strategies which include all stakeholders in the hospitality industry is a sine qua non. To enhance this, a regular staff training and workshops with a clear aim to have full staff engagement with the energy savings goals should be implemented. This is key as staff play an important monitoring link and are likely to know about appliances left running unnecessarily, temperature variations throughout the facility among others. Behavioral change such as turning off appliances and computers at the power source should be encouraged. Energy efficiency should be an integral part of your hospitality culture.

Finally, a deliberate legislative provision should be made by government making the use of some forms of renewable energy a mandatory inclusion in the energy mix for hospitality businesses in Nigeria. This will encourage a paradigm shift from fossil fuel to a renewable energy propelled hospitality sector. This will require a strong political will and tenacity to achieve.

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