

ENHANCING NIGERIAN TOURISM AND HOSPITALITY SECTOR THROUGH EFFICIENT USE OF ENERGY

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Abstract

The painful consequences of the growing global energy crisis affecting every sector of human endeavor have been with us for some time now. While the developed countries, reportedly, are actively engaged in finding solutions to their energy needs, many developing countries, like Nigeria, seems to be ignorant of the future consequences of the growing energy crisis. The aim of this paper is to draw attention to the global concern for energy efficiency as it relates to the Tourism and Hospitality sector. The critical issues of energy wastes and losses and their impacts on the sector were highlighted. A typical approach to energy conservation was cited as well as how to achieve energy efficiency in the sector. The derivable benefits of embarking on energy efficiency measures were pointed out with a view to adequately addressing them.

Key words: energy, sector, audit, consumption, conservation, management, tourists.

Every facet of our nation's social and economic development and growth is powered by energy. Energy in its various forms is required for cooking and preserving our meals, provision of comfort in the form of air conditioning and refrigeration, transportation, manufacturing, communication, health services and maintenance operations, among other areas of applications (Oyedepo and Aremu, 2013). The consistent global growth and development of Tourism and Hospitality industry over the past few years shows a concomitant growth of energy consumption which has become difficult to sustain (Assegid, 2015). This rapidly growing global energy use has already raised concerns over issues such as supply difficulties, depletion of finite energy resources and massive environmental impact (Maria, et al, 2013).

According to Intelligent Energy Europe as cited by Hotel Energy Solutions (2011), hotels are globally grouped among the top five in terms of energy consumption when considering the tertiary building sector after other consumers such as food production, sales and health care. At the moment there is no collective data with respect to global energy consumption in the tourism and hospitality sector. Individual reports, according to Hotel Energy Solution (2011), however indicates that an estimated 97.5 TWh (terawatt hours) of energy was consumed by this industry globally in 2001 and it was predominantly fossil fuel based. This huge amount of energy is expended on space heating, cooling, ventilation, lighting, hot water use and miscellaneous activities by guests requiring use of energy, warming swimming pools, sports facilities, health facilities, security and transportation (Dascalaki and Balaras, 2007) as reported by Margret and Robert (2013). This report goes to show that current problems of energy supply could be worsened by uncontrolled Tourism and Hospitality growth and hence the need for this paper.

Fossil fuels are non-renewable and as such are limited in supply(Meng-Lei H. et al). They are attended to by soaring prices globally and the consumption level is reported to have adverse consequences on the environment due to significant emissions of particulates, nitrogen and sulphur dioxides and other air pollutants, both locally and globally (Paulina and Ivo, 2011). Dependence on the fossil fuels by the Tourism and Hospitality industry is one of the causes of high cost of service delivery due to huge operational cost. Usman et al (2011) observed that the use of the fossil fuel will continue to be with us for sometime because it is hard to expect a sudden switch to other alternative sources of energy given our level of economic development. As a result, Mohammed (2013), suggested that is is imperative to ensure that fossil fuels are used as efficiently as possible while applying renewable energy application should be increasing. This is because the choice of energy available to any sector, according Baldwin (1987), depends on location, cost, availability and efficiency of the energy conversion method. Similarly, the imperative of an energy shortage according to Olugbenga et al (2012), calls for prudent energy conservation measures. One of the key ways to address this situation is by embarking on comprehensive efficient use of available energy.

Energy consumption in the Tourism and Hospitality sector is governed by physical and operational factors (). The physical factors are more general as they have to do with common criteria such as the building's size, building's design and structure, geographic location, the age of the facility, and the type of energy and water systems installed. The operational factors includes the way these systems are maintained, types and amounts of energy and water resources available locally, as well as energy use regulations and cost. The load on facilities installed is determined by the

out-door temperature, hotel floor area, guest nights sold, hotel standards and the thermal inertia of the available swimming pool.

To ensure a vibrant and growing Tourism and Hospitality industry in Nigeria demands proper understanding of energy consumption and management with a view to saving costs, reduction of energy consumption and thereby reducing adverse effects of the industry's operations on the environment by the release of green house emissions (Gomathi and Yarlagadda, 2014). The principal ways by which these emissions are produced and released in the sector are international transport, national transport, combustion of generated solid wastes, accommodation and use of other installed facilities. As reported by the United Nations Development Project (UNDP), the global annual tourism related consumption of energy is about 14,000 petajoules (PJ) out of which 94 per cent goes to transport, 3.5 per cent share is for accommodation and the balance is traceable to other transport-related activities (EnBreve, 2006). Governments of most countries of the world, private sectors and international organizations have put in place a number of key measures to mitigate carbon emissions by developing and use of new technologies that are more environmentally friendly. Adopting energy efficiency measures has been globally accepted as a necessary measure to combat global warming partly escalated by these emissions.

Energy efficiency, according to International Energy Agency and as reported by Marinela and Marcel (2014), is a measure that indicate the extent to which the adopted measure and technologies has contributed to the reduction and/or fuel consumption such as domestic energy consumption or the production of a certain product. Understanding of energy efficiency in overall energy use begins with a commitment to do energy audit which is a process of analysing energy inflow into a system, utilization and losses incurred. This is done with a view to plugging the means by which energy is wasted through leakages and overuse thereby reducing cost and maximizing profitability. According to Usman et al (2012), energy audit evaluates the energy efficiency of an establishment against established best practices. The report can be used as a baseline for assessing the sector's yearly progress against set targets. It has a way of sensitizing the workforce on proper energy management. It can also be used to undertake energy forecast for an industry such that future energy needs are readily addressed in good time.

Tourism and Hospitality sector is known to be one of the sectors that consume large amount of energy (Chen et al, 2011). Efficient use of energy in this globally expanding sector will make it more sustainable to operators of the sector and attractive to the customers. According to Susanne (2004), it also leads to saving money on energy bills and environmental awareness is good for business. In addition, it enhances reduction in environmental pollution. Enhancing this sector will serve a catalyst for the development of common infrastructures such as roads, lights and water supply since

these are key infrastructures required for the development of other sectors of the economy.

Generally, it is known that a given Tourism and Hospitality product is obtained by interplay of activities and contributions from different sectors, so increased spending by tourists can positively impact on other sectors such as agriculture, handicrafts, energy efficiency, transport, communication, waste and water management. The sector is also recognized as one of the world's top job creators such that promoting it directly means subscribing to more job creations (International Finance Corporation). And besides, the sector provides jobs to more women and young people more than other sectors thus economically empowering women to support child development and extricate themselves from the grip of poverty.

Tourism and Hospitality is one of the leading global industries responsible for large percentage of world production, trade, employment, and investment (Paulina B et al 2001). It has been reported in literature that “the tourism economy represents 5 per cent of world GDP, while it contributes to 6-7 per cent of total employment. International tourism ranks fourth (after fuels, chemicals and automotive products) in global exports, with an industry value of US\$1trillion a year, accounting for 30 per cent of the world's exports of commercial services or 6 per cent of total exports; 935 million international tourists were recorded in 2010 and 4 billion domestic arrivals in 2008. In over 150 countries, tourism is one of five top export earners, and in 60 it is the number one export. It is the main source of foreign exchange for one-third of developing countries and one-half of less developed countries” (Towards green economy).

According to researchers at the United States Environmental Protection Agency, a ten per cent improvement in energy efficiency yields a cost saving “equivalent to increasing average daily room rates by 62 cents for limited-service hotels, and \$ 1.35 for full-service hotels” (Sustainable Tourism:Energy Efficiency in Siem Reap). Cost reduction through saving energy is a much better strategy for the sector than regulating labour costs.

How to Conduct Energy Audit

The capacity of a structure or system to conserve energy is influenced by the age and size of the structure, the kinds of equipment/facilities installed in the structure and the level of operational practices and maintenance culture observed. These are the key issues to be addressed as a way of taking account of energy consumption and the cost implications over a definite period of time, usually a year. It can be done by simply undertaking a quick walk through a facility in order to identify key problem areas with a view to addressing them. Usually, the term energy audit is used to describe a wide range

of energy studies capable of revealing major problem areas and the analysis of adoption of a given alternative energy efficiency measure.

The following general steps culled from “Responsible Tourism Manual” could be adopted when embarking on an energy audit:

- a. Electricity consumed – If connected to electricity, the monthly units of electricity utilized in Kilowatt hour (kWh) can be ascertained from current/voltage reading or analyser measurement. The data obtained can be used to compute consumption, cost and fluctuations within the prescribed period.
- b. Petrol and diesel – Actual volume of the petrol and diesel consumed for the period can be gotten from tank readings of monthly consumption or flow meters. Alternatively record the volumes purchased in litres. Petrol and diesel are used for transportation and to run generators.
- c. Natural gas – For natural gas the quantity consumed for cooking and heating water, is ascertained from the number of canisters and their weights as reflected on the invoice.
- d. Paraffin – In cases where paraffin was used, especially in rural areas for lighting and as cooking fuel, the volumes of paraffin bought in litres can be obtained from the receipts.
- e. Wood – The analysis should take note of the kilogram of wood used where applicable since it is still used for heating, lighting and ambience in places where the availability of fossil fuel and other fuel sources is leaves much to be desired.
- f. Charcoal and coal – The weight in kilograms of charcoal and coal utilized should be accounted for.
- g. Batteries – Record the number of rechargeable batteries purchased.
- h. Renewable energy – The energy production by solar panels and windmills should be accurately and promptly documented.

How to Achieve Energy Efficiency Gains in the Tourism and Hospitality Sector

Forecasting how much funding should be invested in Tourism and Hospitality energy efficiency seems a very difficult task. This is because investments in energy efficiency depend on many factors including green house gas emissions mitigation targets set by the international community, future oil prices, climate change policies of national governments as well as breakthroughs in energy efficiency technologies (Yang,

M et al, 2014). However, the following practical steps can be taken with respect to various energy consuming devices in order to enhance energy efficiency in the sector.

Electric bulbs should be turned off when not in use. This can be achieved by installing sensors that are operated by detecting movement or body heat of guests such that room services are suspended when guest's presence is not detected in the room. Use of energy saving bulbs rather than incandescent lights should be encouraged. This is because they cost more than ordinary bulbs but consume about 60 – 80 % less electricity than non energy saving bulbs and lasts 5 - 10 times longer (Abimaje and Akingbohunge, 2013). This also means that you can install fewer light fittings that generate the needed illumination. Use of the day light within the building should be encouraged by regularly cleaning window and opening blinds and curtains. Decorating the rooms in light colours which enhances illumination should be practiced. Photosensitive light switches should be installed on outdoor lights.

Transportation is known to account for the lion share of the energy consumed in the sector. Energy can be saved by introducing cost effective transports such as mass-transit systems involving buses and rails. Unnecessary journeys should be discouraged in order to avoid waste of energy. The use of high grade petrol such as the ones that are lead free should be encouraged in the fleet of vehicles used in the sector. Such vehicles should be given regular maintenance for them to operate freely. Alternative transport facilities such as cycling and canoeing should be encouraged, since they are environment friendly.

Where washing machines are used in the laundry, they should be installed close to the hot water tank so as to reduce heat loss through the pipes. In order to cut down the cost of washing, the hot water thermostat should be turned to 71⁰C for laundry water and water in the guest room should be around 49⁰C (ATN-Z-08). Linen should be dried on washing lines outside the building and that provides free drying. Where there is abundant sunshine, the use of solar water heater should be encouraged more so that it has the potential of paying off for its initial premium within a short period of time.

Regularly maintain facilities such as air-conditioners and refrigerators every three or four months as that helps them to function better. This is because the dust that could have made them to work harder thereby consuming more energy would be eliminated. Ensure all cooling and heating devices are properly insulated. Acquire facilities that are rated as energy efficient when changing old ones.

In furtherance of the pursuit of energy efficiency, there is need to commit the sector to reducing and managing energy consumption. As a result, a supporting staff member should be identified and assigned the responsibility for driving an energy

conservation programme for the enterprise. Such a programme requires regular data acquisition for the development of energy efficiency measures, creating increasing awareness of energy consumption issues among tourists and developing strategies for prudent efficient energy management. Incentives should be put in place for tourists and staff by way discounts or gifts for using energy below the establishment's benchmark. The progress made towards the achievement of the overall target need be assessed from time to time by evaluating reductions in the use of fuels such as wood, charcoal, electricity bills and volume of liquid fuels consumed. Friendly reminders such as leaflets could be developed to educate guests on how to save energy by turning off facilities when necessary. Other pragmatic steps that could be taken includes installation of energy efficient appliances, adoption and sustenance of energy efficient practices, installation of renewable energy devices, in addition to carbon credits and reducing ODS.

Benefits of Energy Efficiency

Several benefits accrue from energy efficiency measures. It enhances sustainability and competitiveness of the sector by reducing cost. The resultant effect of operating cost reduction is harvest of more profits. Energy efficiency reduces the environmental impacts heavy energy use imposes on the environment. It improves customer's perception of the sector's image. More energy is made available for alternative use thereby guaranteeing energy security of the economy. Many energy saving opportunities recommended does not call for heavy upfront investment. Besides, the initial high cost of energy-efficient facilities takes little time to be recovered as a result of lowered costs of facilities.

Constraints in the Way of Energy Efficiency Measures in the Sector

Little or non-employment of energy efficiency in Nigeria's Tourism and Hospitality sector can be attributed to several factors one of which is lack of professional advice to plan and implement energy efficiency measures,. In some instances, some of the key operators of this sector do not avail themselves of professional advice in the area of energy efficiency and management. Others who feel the need finds it difficult to access such professional services.

At the moment, there is an apparent lack of information or low awareness about energy efficient systems, best practices and the benefits in this part of the world, and hence the need for this paper. At times there is confusion in the market place which make it difficult for operators to assess information provided by suppliers on energy efficiency measures and cost. The needed commitment on the part of management to embark on energy efficient measures is lacking in some cases. Lack of training for unskilled staff that are to run existing energy facilities efficiently is another stumbling block that must be removed. Several of existing buildings were poorly designed

resulting in energy losses through poor insulation and draughts and that hinders efficient use of energy.

In some other instances the operators finds it difficult to access skilled suppliers and installers of energy efficient facilities. Where this is not the case, there may be fear of diverting money from revenue-enhancing projects to fund energy efficient programmes which initially demand high premium in some applications. Others do not do much in this direction because of their expectation that energy efficiency investments should pay back in one to four years.

Conclusion

It has been rightly observed that that the drivers that have led to greater use of energy efficiency measures include provision of independent information, advice and training on energy efficiency, better understanding of the costs and benefits of investments in energy efficiency measures, and increasing customer concern and awareness on energy use issues. Hospitality And Tourism Management Association of Nigeria (HATMAN) will do a lot of good to the sector by taking the front seat in canvassing for adopting energy efficiency measures in line with the emphasis of the World Bank's Latin American and Caribbean (LAC) two day event on Sustainable Tourism in April 2008 which states in part, " and the application of existing and new technologies to improve energy efficiency." (United Nations World Tourism Organization (UNWTO), 2007)

Recommendations

In order for this sector to maintain its significant role of providing jobs, supporting infrastructure development and boosting economic growth among other benefits, the following recommendations are made:

Operators of the sector should embrace planning for energy use improvements. Energy efficiency measures should be strongly communicated to different levels of staff ranging from the technical staff, management staff to the general public. Such information includes cost and competitiveness improvements, technical information on energy savings, and tangible demonstrations of savings and benefits.

There should be a clear recognition of the various methods for monitoring energy consumption such as KWh/guest night and KWh/square metre per year.

Energy supply companies such as Electricity Distribution Company of Nigeria (EDCN) and other independent power producer (IPP) should be encouraged to play a significant role in supporting investment in energy efficiency by facilitating easy access to finance.

The Bank of Industry (BOI) and other financial institutions should be encouraged to introduce and sustain financial packages that would ginger operators of the Tourism and Hospitality sector to invest in energy efficiency.

In order that all resources are utilized in accordance with sustainable development and the recommended implementation of energy efficiency, it is strongly recommended that the Tourism and Hospitality sectors implement ISO 50001:2011 standard in their daily operations. It is a newly developed international standard for energy management, which provides a framework for the establishment of energy management to help organisations improve their energy efficiency in a logical, controlled and systematic way.

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