

THE IMPACT OF RENEWABLE ENERGY ON TOURISM DEVELOPMENT IN NIGERIA

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ABSTRACT

This paper presents the benefits accruable from the use of renewable energy sources for energy generation in tourist destinations as against the present means used in getting electricity which has disadvantages like noise pollution, insecurity of supply and other environmental problems. The tourism industry is a global phenomenon that has been growing rapidly over the past decades, particularly in the developed countries. Today, tourism is one of the single largest business sector in the world economy, creating employment, providing new business opportunities both locally and globally. The means of electricity supply should therefore be of a great concern to the people as power is a well-known important factor for tourism development. Different renewable energy sources were listed and their operational performance explained. With this, a comparison was thereby made with the dominant source of energy generation (fossil fuels, hydro power plants, Gas turbines and so on). It was then seen that several benefits would arise in the usage of renewable energy sources in tourist attractions. This will go a long way in helping the country, the management of the tourist attraction and also the individual customer.

Keywords: Renewable Energy, Tourism, Energy Generation, Hydro power plant, Insecurity of supply, Fossil Fuels.

INTRODUCTION

Any Sector in the Country that aims attaining greatness must first look for a way of improving Electricity. The two sectors are mutually exclusive such that tourism cannot get to its peak without an improved Power Sector.

Several Companies failed and folded up in the Country because developing, testing, promoting and sales were practically unrealizable and these revolve around the usage of electricity. They failed because of the unavailability of power, high cost of self-generation of power and even purchasing and running either on Diesel operated or Fuel operated generator.

Some of these companies left Nigeria for some neighboring countries like Ghana where they can get 24hours Uninterrupted power supply which will reduce their cost of production and maintenance.

Electricity supply in Nigeria dates back to 1886 when two (2) small generating sets were installed to serve the then Colony of Lagos. By an Act of Parliament in 1951, the Electricity Corporation of Nigeria (ECN) was established, and in 1962, the Niger Dams Authority (NDA) was also established for the development of Hydro Electric Power. However, a merger of the two (2) was made in 1972 to form the National Electric Power Authority (NEPA), which as a result of unbundling and the power reform process, was renamed Power Holding Company of Nigeria (PHCN) in 2005. (Sambo et al, 2010)

These Companies are saddled with the responsibility of Generation, Transmission and Distribution of electricity. They Include:

GENERATING COMPANIES

- Egbin Electricity Generating Company (EEGC)
- Sapele Electricity Generating Company (SEGC)
- Ughelli Electricity Generating Company (UEGC)
- Afam Electricity Generating Company (AEGC)
- Shiroro Electricity Generating Company (SEGC)
- Kainji Electricity Generating Company (KEGC)

DISTRIBUTION COMPANIES

- Abuja Electricity Distribution Company (AEDC)
- Benin Electricity Distribution Company (BEDC)
- Eko Electricity Distribution Company (EKEDC)
- Enugu Electricity Distribution Company (ENEDC)
- Ibadan Electricity Distribution Company (IBEDC)
- Ikeja Electricity Distribution Company (IKEDC)
- Jos Electricity Distribution Company (JEDC)
- Kaduna Electricity Distribution Company (KDEDC)
- Kano Electricity Distribution Company (KNEDC)
- Port-Harcourt Electricity Distribution Company (PHEDC)
- Yola Electricity Distribution Company (YEDC).

TRANSMISSION COMPANY

The Transmission Company of Nigeria is located in Osogbo, Osun State. It is controlled solely by the Government, nonetheless, its management is handled by a Canadian company, Manitoba Hydro Company.

Basic Problems encountered by the different arms include:

GENERATING COMPANIES

- Inadequate generation availability.
- Inadequate and delayed maintenance of facilities.
- Insufficient funding of power stations.
- Obsolete equipment, tools, safety facilities and operational vehicles.
- Inadequate and obsolete communication equipment.
- Low staff morale. (Sambo et al, 2010)

DISTRIBUTION COMPANIES

- Substandard distribution lines
- Poor billing system
- Low staff moral
- Lack of regular training for staff
- Lack of maintenance of equipment used (Oseni, 2011).

TRANSMISSION COMPANY

- It is yet to cover many parts of the country
- Inadequate spare-parts for urgent maintenance
- It is funded solely by the federal government whose resource allocation cannot adequately meet all the requirements (Akeem, 2013).

Over the decades, tourism has gained an incredibly recognized attention being one of the sectors that contribute to global economic growth. People travel for various reasons such as educational, leisure, business and for other personal purposes, hence the need for hospitality. Hotel and tourists' attraction industry is one of the subsectors that provide range of products and services from luxurious and comfortable accommodation to appealing site attractions, entertainments and provision of quality services. In a bid to meet with all of these, the industry consumes enormous amount of energy to sustain the business and to meet the ever growing customers demand.

Tourism is a vast growing source of income to a nation and if well managed, develops a nation positively. As a sector, it is also required that there should be regular supply of power for its sustainability.

Tourist attractions like the National parks and reserves, Cultural and sports event centers, Art galleries and Museums, Libraries, Resorts, Castles and so on. need power for beautification, maintenance and operation.

Considering that these tourist destinations are located in places with an abundance of renewable energy resources, it is still surprising that these resources remain largely unexploited. (Paulina et al, 2014).

The consumption of energy in tourism industry varies as it's affected by a number of factors such as the size and types of establishment, location, available facilities, destination attributes and amenities provided. Fossil fuels in the recent years have been the dominant source of energy across different sphere of business sectors which contributes to the emission of pollutant and greenhouse gasses that caused environmental degradation and jeopardizes the sustainability of natural environments. (Paulina B. et al., 2014). The cost to maintain the machines and keep the business running is high compared to renewable energy.

According to Paulina B. et al., (2014), even though most hotels are often located in places with an abundance of renewable energy (solar, wind, hydro, biomass, geothermal and other) sources, in natural attractive coastal, mountain, riverside or lake environments, these resources remain largely unexploited. Despite this, more than 85% of the energy is still fossil fuel based.

However, there have been an increased in environmental consciousness, education and responsibility in the recent years. Hence, attitudes towards the use of renewable energy are gradually improving.

Giving preference to renewable energy gives rise to the following advantages;

- It is safe, abundant and clean to use.
- Multiple form of renewable energy exists.
- It is stable, suitable and dependable
- Generates additional employment opportunities in the renewable energy and associated industries.(Bohdanowicz, 2014).

ENVIRONMENTAL IMPACTS OF TOURISM

Environment is the physical, biological, social, economic and cultural surroundings in which human and other living beings maintain their lives in mutual interaction (Karabuğa et al., 2015) Environment is inevitably part of human life.

Economic benefits of tourism have help to improve destination's standard of living, some national parks and Wildlife Park exists to support the economic benefit of tourism. Parks attract visitors to its communities which result in an increased employment opportunity. World Tourism Organization (UNWTO) foresees that the number of international tourists as 1.6 billion in 2020.(Karabuğa et al., 2015)

The environmental impact of tourism can be viewed from two sides: positive and negative side.

Tourism has the potential to impact on physical environment, natural resources, culture, society and ultimately on global economy both positively and negatively.

Negative impact of tourism

An improper tourism planning, development and bad management gradually destroy the conservation of environmental resources on which it depends. Tourism development can put pressure on natural resources when it increases consumption in areas where resources are already scarce (Neeta Rath et al, 2017). Some of the negative impact of tourism are: Depletion of natural resources (such as land degradation, water resources and local resources), Pollution such as air emission, noise, solid waste and littering, oil and chemicals etc. (Neeta Rath et al, 2017).

Positive impacts of tourism

Positive impacts of tourism can be seen when the number of tourists is in proportion to the destination's ability to cope with the use, such that it promotes natural constructed environments and infrastructure development of the destination communities. Furthermore, tourism that focuses on natural resources and cultures (referred to as 'Ecotourism') motivates the protection of environment, conserving biological diversity, promoting the culture of host communities and sustainable use of natural resources.

In addition, economic benefits of tourism have help to improve destination's standard of living, some national parks and Wildlife Park exists to support the economic benefit of tourism. Parks attracts visitor to its communities which result in an increased employment opportunity.

THE IMPACT OF RENEWABLE ENERGY ON TOURISM

According to the researches, 90% of energy consumption occurs during going and coming to destinations (43% airway, 42% land transport, 15% sea and railways). The airway transportation is the fastest growing cause of carbon

dioxide emission. In this regard, the European Union has tagged renewable energy as a strategic alternative to help achieve proposed energy goals. (Karabuğa et al., 2015).

The most suitable form of energy for a clean environment is the renewable energy. They don't pollute the environment either by noise or by air and they can be harnessed over time. The renewable energy resources are references of modern life. To use renewable energy in a tourist attraction, different considerations have to be made which ranges from the population of the place and also the location where it will be used (Karabuğa et al., 2015). Renewable energy sources are defined as tapping into the energy flow of nature and can be utilized over-and-over on a day-by-day basis without harming the environment (Prinsloo, 2015). In rural environments where tourist attractions are to be constructed, renewable energy is considered the best option because of the unavailability of electricity in most of these rural areas. In Urban Areas, renewable energy is considered the last resort to the irregularity and fluctuation in power supply system.

We can therefore use these resources as listed below for the tourist attractions:

- Solar Energy
- Biomass Energy
- Heat Pump
- Wind Power
- Geothermal Energy.

These renewable energy sources will be discussed appropriately.

Solar Energy

Photovoltaic systems are devices which convert sunlight into electricity. Photovoltaic systems are considered safe, reliable and low maintenance source of solar electricity. They have life expectancy exceeding 25years.They produce no pollution or emission. (Electricity Commission of Nigeria, ECN). The system consists of the following;

Solar Panels: which basically absorbs the light from the atmosphere using the photovoltaic cells, generates a direct current and then convert it into alternating current by the use of the inverter. They are usually rated in Watts.

Batteries: they are used in storing the electrical energy produced by the solar panels and produces same during when there is no sunlight. They are rated in Amp-Hour(AH)

Solar Charge Controller: they control the rate at which the battery charges. Its main purpose is to protect the battery against undercharging and overcharging. They are rated in Volts.

Inverter: just like a rectifier converts Alternating currents to Direct currents, the inverter does opposite of this. It converts the Direct current gotten from the whole system into an Alternating current which is useful in the tourist attractions. Usually rated in KVA

DC Circuit Breaker: a system without a means of protection is a faulty system. As such, the DC Breaker provides a means of protection to the overall system. It is rated in Amps.

off grid solar system

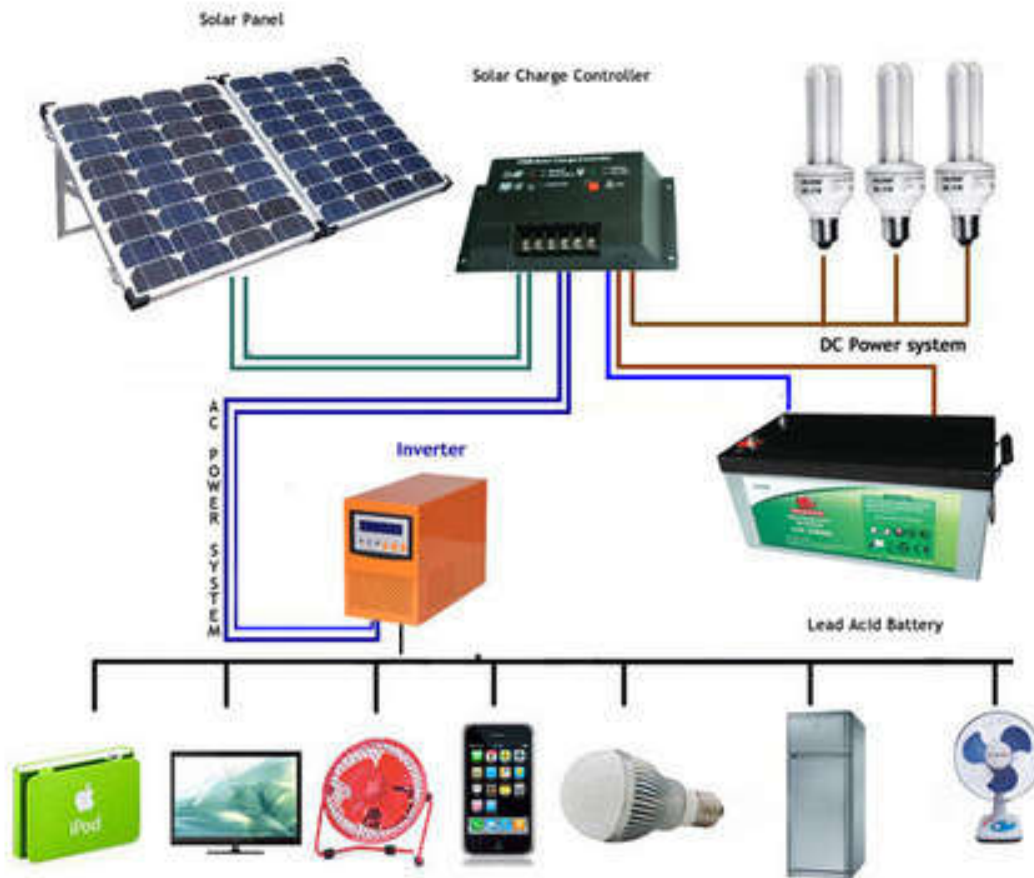


Fig 1. Representation of the solar powered system

Biomass/ Biogas Systems

Biomass is organic material that comes from plants and animals, and it is a renewable source of energy. Biomass contains stored energy from the sun. Plants absorb the sun's energy in a process called photosynthesis. When biomass is burned, the chemical energy in biomass is released as heat. Equally, we can say that it is a gas obtained through the anaerobic fermentation(burning) of organic wastes such as human wastes, sewage, weeds etc. (Energy Commission of Nigeria, ECN). They are burnt to generate energy.

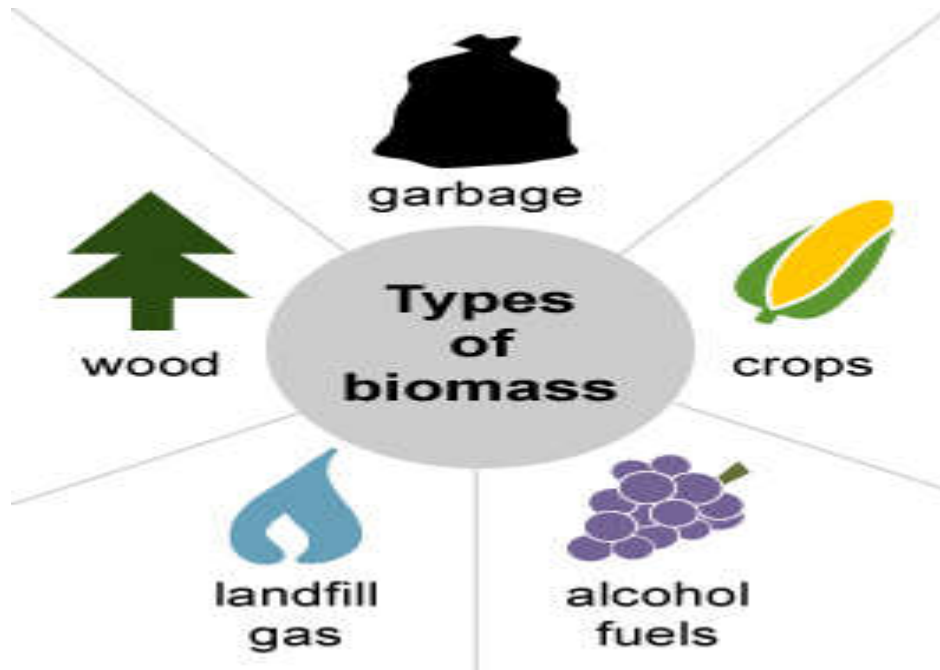


Fig 2; Different types of biomass which can be burned to produce energy.

Wind energy

Currently, it is referred to as one of the cheapest means of energy generation. The major constraint it has is the cost of procuring the tower. Here, generation is done from naturally available wind. The wind rotates the blade and wind energy is captured. The blade drives the generator which in turns converts the wind energy to electrical energy.

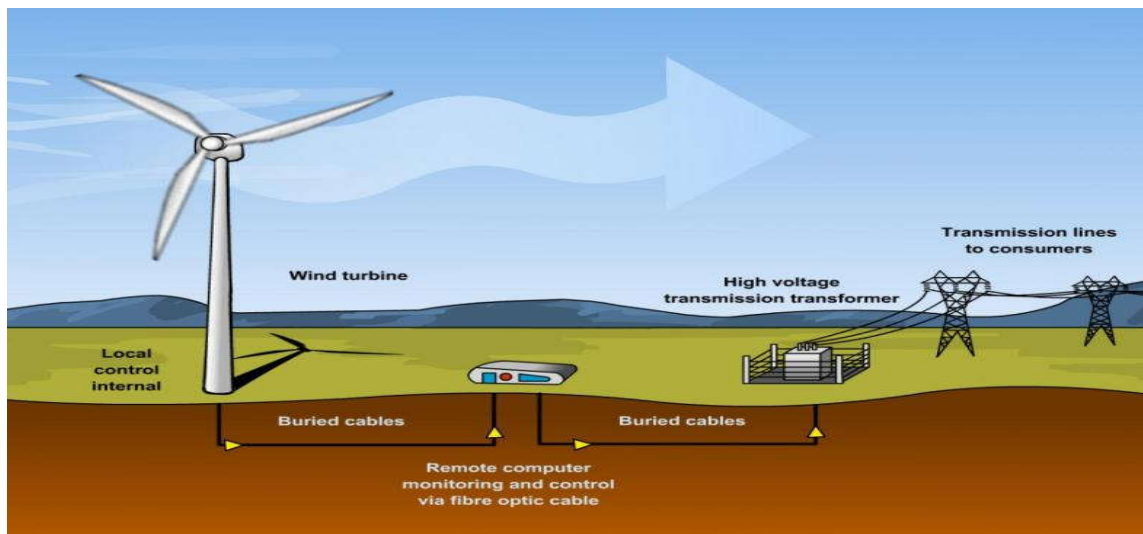


Fig 3; the complete structure for the wind power system.

CONCLUSION AND RECOMMENDATION

Tourist attractions embracing the usage of any of these renewable energy will go a long way to keeping them in operation for a very long time. It will further increase their productivity and will be beneficial to customers as they tend to pay less.

Considering that the cost of running on diesel generators all day long to solve the problem of unavailability of electricity will be far too tedious and also capital intensive, it is advisable and highly recommended that they go for any of the sources of renewable energy sources aforementioned depending on the location they find themselves.

Conclusively, the advantages of renewable energy sources include

- Renewable energy won't run out. It is replenishable.
- Maintenance requirement of the sources is low.
- Renewable energy saves money.
- Renewable energy has numerous health and environmental benefits.

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