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# Challenges facing use of energy in the tourism and hospitality industry in Zimbabwe and policies that can promote the sustainable use of renewable energy and tourism development

Edmond Marunda, Judias Peter Sai, Blessing Muchenje \*

*Department of Tourism, Leisure and Hospitality Studies, University of Zimbabwe, Zimbabwe*

## Abstract

This article analyses the various challenges facing use of energy for sustainable tourism development in Zimbabwe on the backdrop of Zimbabwe's reliance mainly on non-renewable energy sources such as fossil fuels and wood whilst very little use is being made of the abundant renewable sources of energy for instance the sun and wind technologies. It is based on the research carried out with the objective of establishing policies that can promote the sustainable use of renewable energy sources in the country. The findings reveal that stakeholders in the tourism and hospitality industry are largely in favour of formulating and expanding policies that encourage use of solar and wind technologies, at the same time mitigating environmental degradation. The article summarises the findings and duly recommends policies that can be used in Zimbabwe to promote the sustainable use of renewable energy employing solar and wind among others for tourism development.

**Keywords:** Tourism, Hospitality, Renewable energy, Sustainability, Green tourism

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\* Corresponding author. E-mail address: [bzmuchenje@gmail.com](mailto:bzmuchenje@gmail.com)

## **1. Introduction**

This research was aimed at collecting opinions and operational statistics relating to policies on the use of renewable energies through a descriptive survey, carried out among the providers of energy sources in Zimbabwe and the users of the energy, specifically captains of industry, comprising the Zimbabwe Tourism Authority (ZTA), the Zimbabwe Council for Tourism (ZCT), Air Zimbabwe, tour operators, travel agencies and accommodation providers throughout the country. The research design involved a descriptive survey enabling the gathering of data from energy-providers and energy-users in the tourism and hospitality industry. Cooper and Schindler (2003) argue that research design is the blueprint for the collection, measurement and analysis of data made up of the plan and structure of the investigation so conceived as to obtain answers to the research question. Saunders et al. (2007) make reference to a variety of relevant different types of research designs which comprise experiments, surveys, case studies, grounded theory, and ethnography, action research, exploratory designs, descriptive studies, cross sectional and longitudinal designs. Data was collected in part during face to face interviews with eight institutions who are providers of energy sources and by means of a questionnaire emailed or handed over to forty of the above energy users who were asked to complete the questionnaire in their own time. The response rate was high as thirty six questionnaires were completed after follow-ups at the Sangana Tourism Travel Exposition where most operators were exhibiting. This constitutes a response rate of 90%.

## **2. The tourism and hospitality industry as users of energy**

One encompassing definition of tourism as presented by the United Nations World Tourism Organisation (UN-WTO) recognises tourism as comprising the activities of persons travelling to and staying in places outside their usual environment for not more than one consecutive year and whose main purpose of travel is other than the exercise of an activity remunerated from within the place visited, for leisure, business or other personal reasons (WTO, 1991). Tourism is a human activity that encompasses human behaviour, use of resources, and interaction with other people, economies and environments. Using tourism for national wealth creation and the extent to which environmental resources should be utilised for tourism are both debatable and contentious, raising ethical and political questions, especially in the less developed world (Holden, 2000). Tourism is a system incorporating businesses, tourists, societies, environment and the use of energy (Leiper, 1990; Gunn, 1994; Mill & Morrison, 1998). It affects a number of decisions in the various system components.

The World Travel and Tourism Council (2011) reports that 980 million arrivals were recorded internationally in 2011, a 4% increase over 2010, and 1.5 billion people are expected to travel yearly by 2020. The average international tourist receipt is US\$700 per person. In terms of economic contributions travel and tourism represents about 10% of total global Gross Domestic Product (GDP) realising US\$919 billion in export earnings and creating approximately 10% of world employment. Zimbabwe occupies position 55 having registered 2,5 million arrivals in 2011 where France tops with 78,4 million followed by USA 57,9 million, Spain 57,3million, China 53 million, Italy 42 million and UK 30,1 million arrivals annually. At least 53

percent of all energy used in the country is wood fuel, and 20 percent electricity both derived largely from non-renewable energy sources.

### 3. Energy situation in Zimbabwe

The National Energy Balance (2000) as provided by the Government of Zimbabwe to the 5<sup>th</sup> session of the United Nations Commission on Sustainable Development shows use of energy in Zimbabwe as 53% wood fuel, 20% coal, 14% liquid fuel and 13% electricity. Worldwide Zimbabwe is ranked at position 154 out of 214 countries in per capita carbon dioxide emissions from the consumption and flaring of fossil fuels, where the leading per capita carbon dioxide emissions are coming from Gibraltar, Virgin Islands and Qatar (International Energy Annual 2005). Apparently the USA occupies position 12 and the UK position 51. However, in absolute terms “the United States emitted 5,424.53 million metric tons of Carbon Dioxide from the consumption of energy, which is enough to make the United States rank second in that category. China ranks first, emitting 7706.83 million metric tons of Carbon Dioxide” (Source: <http://rankingamerica.wordpress.com>).

### 4. Factors affecting energy sector

The major factors affecting energy consumption in Zimbabwe are,

- Reigning high prices for fossil fuels.
- Tremendous increase in power demand nationally and in the region.
- Great power shortage in SADC region → power exporting countries cut exports.
- High dependence on imports: electricity > 40%, Liquid fuel ≈ 100 %
- Extremely poor economic performance.

As a result poor communities have no access to clean energy.

### 5. Tourism and energy

Energy is the capacity of a system to do work. “Energy can have many forms: kinetic, potential, light, sound, gravitational, elastic, electromagnetic or nuclear. According to the law of conservation of energy, any form of energy can be converted into another form and the total energy will remain the same” (source: <http://www.conserve-energy-future.com>). Energy is broadly classified into two main groups: renewable and non-renewable. The non-renewable sources of energy which exist in the form of fossil fuels, natural gas, oil and coal are limited and are bound to expire one day. Development and use of energy, including renewable energy can bring about negative impacts onto the physical and cultural environments, for example building

of a hydro power station, a wind farm, a biomass processing plant etc. Zimbabwe however is increasingly using carbon-emitting fossil fuels such as coal what have been instrumental in driving the menace of global warming and climate change. The country's 2012 Budget announced ambitious plans for a US\$1, 4 billion expansions and refurbishment of the country's power plants, including the big thermal plant at Hwange, and other small thermals in Harare and Bulawayo. This year alone Government is targeting to bring onto the national grid an additional 900MW from the expansion of Kariba and Hwange power stations. Such developments usually lead to serious environmental changes and coal, when burnt releases toxic gases in the air. This is one of the major causes for global warming. "Renewable sources have low carbon emissions, therefore they are considered as green and environment friendly" (source: <http://www.conserve-energy-future.com>).

## 6. Renewable energy

Many greenhouse gases, such as carbon dioxide, nitrous oxide, and methane, occur naturally. Over centuries human activities have added significantly to the level of these naturally occurring gases. Large amounts of these greenhouse gases are produced by the use of non-renewable energy sources such as oil, natural gas and coal. A major source of air pollution within the context of tourism is associated with transport for tourism from the burning of fossil fuels (Holden, 2000). The use of renewable energy is the answer to sustainable tourism as this source has a very low release of carbon dioxide. For a sustainable future, fossil fuels will have to be replaced by renewable energy sources that come either directly or indirectly from natural resources such as the sun, wind, rain, biomass fuels, tides and geothermal heat. According to the law of conservation of energy "any form of energy can be converted into another form and the total energy will remain the same" (source: <http://www.conserve-energy-future.com>). Most renewable energy like sunlight, or solar energy, can be used directly for heating and lighting, for generating electricity, solar cooling, and a variety of commercial and industrial uses. The sun's heat also drives the winds, whose energy is captured through wind turbines. As the winds and the sun's heat cause water to evaporate, the water vapour turns into rain or snow and flows downhill into rivers or streams, its energy being captured for use as hydroelectric power. Along with the rain and snow, sunlight causes plants to grow. The organic matter that makes up those plants is known as biomass which can be used to produce electricity, transportation fuels, or chemicals. The use of biomass for any of these purposes is called bio energy.

Hydrogen, the most abundant element on Earth can be found in many organic compounds, as well as water. But it does not occur naturally as a gas. It's always combined with other elements, such as with oxygen to make water. Once separated from these other elements, hydrogen can be burned as a fuel and can be used for powering automobiles, heating, cooking and electricity generation.

Geothermal energy taps the Earth's internal heat for a variety of uses, including electric power production, and the heating and cooling of buildings. The energy of the ocean's tides comes from the gravitational pull of the moon and the sun upon the Earth. In addition to tidal energy, there's the energy of the ocean's waves, which are driven by both the tides and the winds. The sun also warms the surface of the ocean more than the

ocean depths, creating a temperature difference that can be used as an energy source. All these forms of ocean energy can be used to produce electricity. Renewable energy technologies (RETs) can be used as a leverage to assess the compatibility between renewable energy sources and sustainable tourism development.

## 7. Sustainable tourism and renewable energy

All forms of tourism that respect both the visitors and the hosts, together with their cultural heritage and biodiversity fall under the realm of sustainable tourism. Sustainable tourism is tourism which attempts to make as low an impact on the environment and local culture as possible, while helping to generate future employment for local people. The aim of sustainable tourism is to ensure that tourism development brings a positive experience for local people, tourism companies and the tourists themselves. Sustainable tourism implies responsible tourism that is sensitive to its environment or surrounding. Hence it can also be termed ecotourism as observed by Wight, (1993), Honey and Gilpin (2009) and Mawere and Mubaya (2012).

The concept of sustainability and tourism development can be traced as far back as 1980 when the International Union for the conservation of Nature and Natural Resources (1980) published the world Conservation Strategy which promoted sustainable development in tourism. The publication "Our Common Future" by The World Commission on Environment and Development (1987), defined sustainable development as "development that meets the needs of the present without compromising the needs of future generations". Now being counted among the fastest growing industries which comprise, crude oil and petroleum products, the automobile and spare parts and the information technology industries, tourism has also become a global phenomenon. Tourism in Zimbabwe is based on its natural heritage which comprises national parks, wildlife and its unique cultural heritage like the Great Zimbabwe, the Victoria Falls etc. As people consume more energy resources that provide tourism attractions and habitat to tourism wildlife, bio-diversity is removed. As more bio-diversity is removed tourism becomes unsustainable leading to unsustainable development.

Reviewed literature reveals that studies already carried out on sustainable tourism in Zimbabwe, have focused on the Communal Areas Management Programme for Indigenous Resources (CAMPFIRE) projects. These in turn have concentrated on wildlife management especially, the management of elephant populations and distribution of proceeds from hunting and photographic safaris. In order to curb further removal of biodiversity there is now a need to encourage policies that ensure use of renewable energies and promote the preservation and protection of the environment.

Renewable energies can be employed to:

- a) Develop and disseminate tools and materials to change SMEs, tourism operations and hotels management actions and investment decisions in their use of energy.
- b) Promote the exchanges of know-how and experiences between airlines, tour agencies, tour operations and hotels as energy users, suppliers and manufacturers.

- c) Raise awareness of tour operators, transport providers and hotel managers, decision-makers, staff and consumers of the benefits of using renewable energies.
- d) Stimulate the establishment of networks committed to the dissemination and promotion of energy efficiency and the use of renewable energy sources.

As a way forward, policies need to be developed that ensure evaluation of the tourism and hospitality sector needs for sustainable energy in Zimbabwe. The evaluation should include a survey of energy use and energy management in the industry, as well as a survey of business drivers and customer sensitization that include;

- Development of user-friendly tools for benchmarking and capacity building for energy efficiency in the tourism and hospitality sector.
- Introduction of the tourism sector to renewable energy technologies.
- Communication and information dissemination through a renewable energies website, training workshops on renewable energies, relevant video materials, brochure and conferences on renewable energy uses.
- Availing of various tax and other fiscal incentives in the form of tax waivers and credit deduction that encourage use of renewal energies.

## 8. Green tourism

Green tourism is a form of sustainable tourism which calls for a clean healthy environment to put the tourism and hospitality industry on the path to sustainability. The following aspects need to be taken into consideration:

- Sustainable development involves meeting the needs of the present without compromising the ability of future generations to meet their own needs.
- Zimbabwe is signatory to the 1992 Rio's Earth Summit Resolution, Agenda 21 whose action stresses the need for development of principles for environmental management through codes of conduct for tourism.
- The principles for environmental management comprise:
  - Corporate priority, highest corporate concern.
  - Integrated management PESTLEG concerns vs. Needs.
  - Employee education to be environmentally conscious.
  - Prior assessment, EIAs before development and after decommissioning of a project.
  - Researches on waste, pollution, emissions, etc.

Use of renewable energies in the realisation and implementation of the above resolutions will ensure that green tourism is realised.

## 9. Tourism and Hospitality industry impacts that cause concern

Hospitality is dogged by five major problem areas:

- 1) *Energy consumption* – Hospitality sector is a huge energy consumer for heating, cooling, electricity, transportation and imports over long distances Chlorofluorocarbons (CFCs) Refrigeration, and air conditioning equipment, are ozone depleting substances.
- 2) *Water use* - tourists are high consumers of water, for baths, showers, swimming pools, laundry, maintaining green and garden areas and sports facilities. Water quality and supply are therefore affected.
- 3) *Solid waste disposal* - large amounts of liquid and solid waste are produced mainly through boating and transportation and sometimes left to flow into rivers and lakes.
- 4) *Environment commitment to protecting the Fragile nature* – for example, accommodation in fragile or sensitive environments such as safari lodges can cause serious damage to the flora and fauna.
- 5) Employee education and Community Development, affect the willingness of the local population to accept the impacts and influences of the visitors.

## 10. Energy consumption

The Tourism and Hospitality sector is a huge energy consumer for heating, cooling, electricity, & transportation.

- 1) In order to mitigate excessive energy consumption there is need for:
  - exploiting all technical potential for electrical efficiency via technical standards; for example, replacement of incandescent bulbs with compact fluorescent lights (CFLs), which use less energy and last longer;
  - replacing of old equipment with energy efficient ones especially the use of more energy efficient aircraft in the aviation sector;
  - ensuring regular maintenance of equipment to contain any leaks;
  - replacing fossil energy sources with renewable ones available locally such as wind and sun; and
  - phasing out of CFCs in refrigeration products and replacing them with internationally accepted agents.

- 2) Providing loan guarantees to SME's will boost use of renewable energies:
  - a. A loan guarantee fund should be established that aims to increase the availability of credit for SMEs that employ and make use of renewable energies;
  - b. Government can put incentives to invite investments in renewable energy generation projects such as hydroelectric and wind facilities, as well as companies which provide solar products; and
  - c. Policies can ensure the provision of grant funding and incentives for specific energy enterprises, such as mini-grids, improved cook-stoves, small scale wind and micro-hydro expansion projects.
- 3) Competitions offering prizes for best practices and optimal use of renewable energies need to be sponsored.
- 4) Build, operate and transfer investment arrangements to be utilized in order to encourage investment into renewable energy sources.
- 5) Discouraging the use of electric geysers, to be replaced with solar-powered geysers and encouraging the use of solar technologies by removing duty on solar products and their accessories.
- 6) The rural electrification programme should be solar-driven instead of the current initiative in Zimbabwe which is based on electricity generation mainly from coal.

## **11. Policies on wood energy use; biomass or bio-power**

Electricity generated from biomass is also called bio-power. Biopower facilities use many different technologies; the most common is burning of wood or other biomass feed-stocks to produce steam which then is used to drive turbines and produce electricity. Tourism is not spared from the use of wood energy just like any other industry and households in the country. As a part of Zimbabwe's National Strategy for the Sustainable Management of Forests, existing programmes need to be strengthened to address the problem of deforestation (source: <http://www.un.org/esa/earthsummit/zimbab-c.htm>):

1. Improved environmentally sound harvesting practices;
2. Sponsoring and support of afforestation programmes;
3. Increased agro forestry activities;
4. Promotion of non-consumptive use of forest resources;
5. Value added secondary processing of forest products at the community level;
6. Increasing the capacity of the Forestry Commission in monitoring deforestation and changes in the vegetation cover;
7. More support for the Schools and Colleges Tree Growing and Tree Care Programmes as part of the National Tree Planting Programme;

8. Increasing production of tree seedlings at community based nurseries, in line with the strategy to decentralize this activity and to involve communities in reforestation.
9. Supporting the work of the NGO-based working groups on woodlands who meet periodically to discuss woodland management issues in Zimbabwe. One of their activities has been to hold consultations to formulate a woodland management policy for the country.

## 12. Tourism and solid waste management

The Tourism and Hospitality sector produces large amounts of waste. An average restaurant produces over 20 000kg of garbage a year. Every night, an average diner produces about 1 kg of waste, mostly composed of beverage and paper products

Hotels also use large quantities of plastic in packaging and amenities, which pose a problem in disposal. A good waste management plan in hotels and tour operations includes:

- Reduction in use of virgin paper/paper products and increase use of recycled paper.
- Reduction in use of virgin plastic/products and increase use of recycled plastic/other packaging material.
- Recycling all waste material in the hotel including paper, glass, metal, plastic, and textiles.
- Composting yard and kitchen waste that can then be used as manure or gas for renewable energies.

## 13. Solid waste and sanitation challenges

“Waste, both solid and sewage-related, is becoming a problem in urban areas as urban population increases. Approximately 99 percent of the solid wastes in the country are disposed in landfill sites, the majority of which are old quarries or gravel pits. In general, the landfills are not protected for leakages with low permeable underlying soils, concrete, tarmac or membranes” (source: <http://www.un.org/esa/earthsummit/zimbab-c.htm>). The problems arising from that are the following (<http://www.un.org/esa/earthsummit/zimbab-c.htm>):

- with the exception of Harare, solid wastes are not sorted according to the type of wastes; and
- the impact on ground water has not been fully investigated.

The Natural Resources Act, the Water Act, the Urban Councils Act and the Rural District Councils Act regulate the disposal of Waste in Zimbabwe. The management of sewage related issues is conducted through the use of the Water regulations of 1977 -Effluent and Water Standards- contained in the Water Act. The Government developed guidelines in 1994 for industrial waste management, including solid wastes and sewage. These need to be upgraded to conform to latest conditions prevailing in the tourism environment.

The main objective of the guidelines is to help local authorities and waste generating companies to improve waste management systems so that negative effects on the environment are minimized.

The programme carried out as a result of the requirements of the Hazardous Substance and Articles Act includes:

- Encouraging the industrial sector to treat, recycle, re-use and dispose of hazardous wastes at the source of generation, when its generation is unavoidable and when it is economically and environmentally efficient. Very little is currently being done through meetings of the Industrial Chemicals Association.
- Development of draft legislation to prevent the illegal import and export of wastes.

#### **14. Water management**

“It is estimated that by 2015, water use will increase to over 1 000 litres per day for each room in high luxury facilities. At the same time, water availability is projected to decrease in 30% of the world’s rivers as climate change leads to reduced availability of freshwater and groundwater. With reduced water supplies and increased water demand, water conservation becomes a must” (Singh, 2010):

- Water-efficient technology, like low-flow showerheads and taps fitted with flow restrictors, which reduce water and energy wastage.
- Rainwater harvesting, this utilizes rainwater from the roofs to supply water for toilets, laundry and gardening and demanding in the process, use of very little energy.
- Grey water system, which treats water with low pollutants from sources like the laundry room, sinks and showers and then diverts it for other uses such as watering of gardens.

#### **15. Employee education & community development**

Employee community education can be done through total commitment to the environment by all through the following (source: <http://www.hospitalitynet.org/news/4046716.html>):

- Standard operating procedures in the hotels and tour operations to include correct practices regarding different departments;
- Target setting, and involving and at the same time encouraging employees to meet them;
- Training staff on issues related to the environment such as green house gas emissions, water shortage, renewable energy and the initiatives taken by the tour operators or hotels regarding these;
- Community development with the participation of surrounding communities, suppliers and service providers, promoting the economic, social and cultural growth;

- Greening the supply chain, through either purchasing from firms that are equally environment responsive or setting clauses that result in efficient practices especially in the use of renewable energies.

## 16. Hotel designing

In hotel designing and management the below items can be considered (source: <http://www.hospitalitynet.org/news/4046716.html>):

- Hotel owners should ensure their hotels are constructed using environment-friendly products and have a design that minimizes the usage of resources and maximise on renewable energy sources
- Owners and management companies of hotels and other tourism infrastructures like airports and highways should ensure that their buildings and processes are duly certified and improvements incorporated wherever possible, that encourage use of renewable energies.
- Use of auditing agencies that enable hotel and tour operators to function more economically, efficiently, and as socially responsible entities while reducing the environmental impact of their hotels and tours.

## 17. Code of conduct for tourists

A code of conduct can be developed for tourists and hosts alike that encourages use of renewable energies and reduced negative impacts on the environment through inclusion of the following:

- 1) Be energy conscious, turn off lights when you leave your hotel room, if necessary adjust thermostats;
- 2) Enjoy the National Parks, wildlife and monuments but leave them intact;
- 3) Use trash bins and if there isn't one carry your litter until you can dispose of it properly;
- 4) Use maps to plan routes before venturing out in a rental car. Use energy efficient transportation; and
- 5) Conserve water; ensure that all taps are not running before you leave. This will go a long way in conserving energy.

## 18. Website on sustainable use of renewable energy

Educating tourists to reduce wastage and leakage

- Creating a website with a dedicated tourist menu that gives all the details about availability and use of renewable energy sources in the country and the policies relating to it.

## 19. Media coverage on sustainable use of renewable energy

Some of the important methods to educate tourists may include (source: [http://www.popcenter.org/problems/crimes\\_against\\_tourists/3](http://www.popcenter.org/problems/crimes_against_tourists/3)):

- Encouraging positive media contacts regarding the use of renewable energies.
- Producing a video that provides information about the tourist area, the tourist police program, travel safety tips, and how to get around the area, for showing on inbound aircraft and in airports;
- Providing information to foreign consulates and embassies, so they can educate their citizens about travel to Zimbabwe; and how the visitors can maximise on renewable energy uses; and
- Developing strategies to inform travellers of the safest places to stay who comply with best practices for renewable energy uses and protection and conservation of the environment.

The internet is changing tourism. More and more travellers are planning their travels and vacations via the net. The internet enables people to cut off commissions. The traveller can search for new destinations to visit, talk or read about other people's experiences, and buy the services directly. "The internet platform can encourage local people to start new businesses and that already existing small businesses will begin to promote themselves through the net and receive the economic advantages of this directly in their communities. The world is now in a new tourism age, with globalization and the internet playing a key role" (source: [http://en.wikipedia.org/wiki/Sustainable\\_tourism](http://en.wikipedia.org/wiki/Sustainable_tourism)).

"With the advent of the internet, some traditional conventions are being replaced with virtual conventions, where the attendees remain in their home physical location and "attend" the convention by use of a web-based interface programmed for the task. This sort of "virtual" meeting eliminates all of the impacts associated with travel, accommodation, food wastage, and other impacts of traditional, on-site conventions" (source: [http://en.wikipedia.org/wiki/Sustainable\\_tourism](http://en.wikipedia.org/wiki/Sustainable_tourism)). It is therefore imperative to market use of renewable energies in Zimbabwe on the internet.

## 20. Conclusion

This article analysed the various challenges facing use of energy for sustainable tourism development in Zimbabwe. The major findings were that although Zimbabwe relies heavily on non-renewable energy sources such as fossil fuels and wood there is room for implementing policies that encourage use of the abundant renewable sources mainly solar and wind technologies. It is also imperative for Zimbabwe to embark on measures to mitigate on deforestation by improving use of wood energy. Further policies on educating stakeholders on the benefits of using renewable energy sources via the internet, through a website and the development of a code of conduct to ensure best practices for tourists and hosts have been proposed.

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