

## Article

# Cut a Tree, Cut a Man: Charcoal Production as a Bane to Green Economy in Nigeria

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**Abstract:** Symbiotically speaking, cutting a tree is akin to cutting a man or any of its counterparts in the animal kingdom. Besides solar energy, heat energy's role in humans' daily life calls for its taming, artificial ignition, and fuelling of same for its reuse as and when due. Hence, humans' ability to ignite and fuel fire marked a significant achievement in human evolution. Meanwhile, wood was the most traditional source of fuel in human history, which is, mainly, of two forms: firewood and charcoal. Dried wood was the common source of fuel for domestic cooking and commercial use both in the rural and urban areas in the primitive era. Although, firewood has relatively little burden on nature, charcoal, which has more adverse effects on the environment, is now taking over. Sadly, the discovery of better alternative sources such as LPG and electricity could not bring about a remarkable shift in many developing nations, including Nigeria, despite their efficiency. Taking expository and critical analysis methodologies, this paper argues that wood-fuelling hinders the achievement of the green economy in Africa, and it persists for many reasons; poor state of electricity, unavailability and/or unaffordability of the LPG, poverty, poor environmental awareness, unsophisticated and poor enforcement of environmental laws and lack of compensation for the conservators among others. In addition to the ever-suggested solutions, this paper recommends a 'carrot and cane' system. By this, the offenders should not only be accordingly penalised but also the conservers be compensated duly. It also recommends the use of briquettes as viable alternatives.

**Keywords:** charcoal; envirosophy; green economy; environmental pollution; sawdust briquettes

## 1. Introduction

Heat energy should be rightly regarded as the energy of life, creation, transformation, and destruction, owing to its decisive role. Clark and Harris corroborate this point (1985). Heat accounts for the existence of life on Earth as a planet in our solar system and, at the same time, causes the absence of life on such planets as Mercury and Venus, on one hand, and the impossibility of the existence of life on, say, Uranus, Neptune, and Pluto, on the other hand, basically for the excess and deficiency of heat on them, accordingly. Aristotle's speculative experiment on animals bears witness to the decisive role that heat plays in transformation; the results of which his male gender supremacy over females was based. He argues that males can "concoct" heat than females which, according to him, is responsible for their production of semen in whitish and relatively small but energy-dense quality, unlike female's which come in reddish and relatively voluminous in the form of menstruation (Mahowald 1994). Anyhow, as abundantly and naturally available the solar heat is, there is a limitation for its raw domestic application without being transformed first; it cannot be used directly for cooking, among others. This lends credence to the Yoruba adage which says, *bí iná bá sun'su àsunjẹ, bí òòrùn bá sun'su àsun nù* meaning "if fire roasts yam, it is okay for consumption but if sun roasts yam, it is waste). Hence, it becomes natural for humans not only to tame and transform solar energy but also to seek alternative artificial fire ignition and fuelling techniques as a source of steady heat.

As the sun is regarded as the natural and most basic source of heat on Earth, the occurrence of fire was also natural before humans discovered ignition techniques. Archaeological proofs account that the occurrence of fire was natural as savanna forest or bush fire, kindled by lightning strikes albeit other natural ignitions such as volcanic activities. Humans' ability comes in firstly in the form of maintaining the fire through wet and cold seasons as the case of Africa and Europe respectfully, requires, perhaps, with the aid of slow-burning animal dung and selected plant material tapers that can last in retaining fire for a longer time (Gowlett 2016). Humans' capacity to

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ignite a fire with the aid of muscle energy birthed significant changes in the history of mankind (Vernadsky 2012). Vladimir Vernadsky (2012) argues that humans' discovery of fire was the first sign of the noosphere (an imaginary layer named the thinking layer, added to the existing physical “-spheres” of the earth). It was firstly in the form of a complex kindling technique of rubbing a stick in a groove in a wooden hearth or striking two stones against each other, which requires more than power and basic skills (Gowlett 2016). Many evolutionists, among whom Charles Darwin belongs, account that hominoids became transformed only after their first ability to ignite and fuel fire. Artificial ignition of fire engendered cooking which made them eat more nourishment. This, in turn, engendered the edibility and digestibility of some yet inedible raw substances. Darwin (1871) concludes that; besides language, fire is the greatest discovery made by humanity. As a result, their jaws became changed as megadonty (large teeth) also became metamorphosed, and also a significant increase in brain size through the Pleistocene was recorded. Gowlett (2016) highlights three distinct but potentially intergrading uses of fire in the primitive era thus:

- Fire foraging for resources across landscapes.
- Social/domestic hearth fire for protection and cooking.
- Fire is used as a tool in the technological process, e.g. for firing pottery.

As glorious as the transformation and developments that resulted from humans' mastery of fire were, they were never without their consequences on the ecosystem. The melancholy is that the historians reported that this human achievement birthed along with its reported glories, significant environmental degradation, whose worsening is directly proportional to the positive human impacts that degenerate from the artificial heat energy. This worsened more when humans were able to extract and transform metals in the Iron Age, moving beyond open fire to close fire in the form of combustion engines. The situation keeps on worsening as new technologies come on board such that it is too early to say environmental deterioration has reached its climax since humans keep on inventing without adequate consideration for the environment (Vernadsky 2012).

Meanwhile, environmental problems have grown to the level of calling human concern such that a further deaf ear to its loud cry for rescue could make the earth more inhabitable. The loud cry for environmental preservation manifests in the form of climatic change, acid rain, ozone depletion, species loss, global warming, hurricanes, and intercostal flooding, just to mention but a few; the cumulative of which is threatening present human generation and threatens to do worse things to the unborn future generations if necessary actions/inactions are not taken. On top of that, the concerns to rescue humanity from environmental degradation could be traced to the 1960s after World War II. The concerns were reinforced in the 1980s when it gained popularity among scholars, hence, an official inauguration of environmental philosophy, hereafter referred to as *envirosophy*. Many theories were formulated, such as anthropocentrism, zoocentrism, biocentrism, ecocentrism, and ecofeminism. All these environmental theories have been alleged to have secular colourations. In the meantime, some theorists have favoured a theocentric environmentalism which is considered a viable substitute for all other theories. In contrast, some scholars have raised objections concerning theocentric environmentalism because it appeals to sacred scriptures as the framework of its propositions. For them, theocentric environmentalism is nothing but anthropocentrism. In response to these objections, other scholars have written in defence of theocentric environmentalism. And they claimed that the objections were misrepresentations. Coming from an Islamic perspective, I have published a paper titled; *Theocentrism is Not Anthropocentric: An Enlightened Environmentalist Reading of the Holy Qur'an*, where “descriptive” environmental ethic is dichotomised from its “prescriptive” ones” (Olaniyan 2022). I have also published another paper from a Christian perspective titled; *Environmentalism is Godliness: A Critique of an Anthropocentric Reading of the Bible*, which takes a dichotomy between the “traditional” as against the “enlightened” reading of the Bible (Olaniyan 2023).

Without any reasonable doubt, the earth is uninhabitable without adequate heat energy. Beside natural ones, humans go ahead to generate artificial heat energy owing to the crucial role heat plays in day-to-day life. As crucial as its role is, it still calls for a wise selection and alternations among artificial sources of heat that are available. Hence, wood-fuelling suffices as a common and the most traditional practice of producing artificial heat in human history. Today, humans' capacity has made it possible for the discovery and usage of many alternative sources of artificial heat energy. This was informed, perhaps, by humans' realisation/discovery of the law of conservation of energy, which is parallel to the law of conservation of matter as it goes thus: energy/matter can neither be created nor destroyed but can be converted from one form to another; mechanical to chemical, solar to electrical, *ad infinitum*.

Sadly, while many so-called advanced nations have successfully substituted this primitive source of fueling with modern alternatives so much that it has become a historical archive to them, wood fueling, especially charcoal, is still growing at its full length in many developing nations of which Nigeria is at the top of the table (Onekon and Koec 2016). The onus of this paper is to look into the production of charcoal, its negative impacts on the environment, especially how production and the use of charcoal is a bane to the realisation of a green economy, efficient alternatives to wood fuel, factors responsible for the persistent production and use of charcoal amidst alternatives and the legitimate and effective way out of charcoal production in commercial rates. These shall be discussed in the subsequent sections.

## 2. Wood fuel, Firewood, Charcoal, and its Production and Usage

Wood fuel (otherwise known as fuelwood) refers to fuel as firewood, charcoal, chips, sheets, pellets, and sawdust. The choice of the particular form to be used depends on such factors as the source, quantity, quality, availability, convenience, affordability and application at a given geographical area and time. In many areas, wood is the most easily available form of fuel for it requires no tools in the case of picking up dead wood, or a few less complex tools such as cutlass and axe. However, as in any industry, specialised tools, such as skidders and hydraulic wood splitters, have been developed for mechanised production. Sawmill waste and construction industry by-products also include various forms of lumber tailings. Wood fuel, in all its variants, can be used for cooking and heating, and occasionally, for fuelling steam engines and steam turbines that generate electricity. It may also be used indoors, in a furnace, stove, or fireplace. It can also be used outdoors as well as in a furnace, campfire, or bonfire. Firewood is dead dried wood that is used for fuelling the ignited fire. In many cases, it is gotten from dead dried stems and roots of trees or the dead and dried branches of living trees. It is only in the absence of already-dried trees that living trees are cut and dried as firewood. Either way, it is noteworthy that, apart from

the fact that it is not user-friendly compared to many other sources of heat energy, the environmental hazard of firewood is less than charcoal.

Charcoal is produced via pyrolysis. Charcoal is a porous, black, solid, energy-dense, lightweight, easy-to-handle, residue of wood, bone, palm kernel, coconut shell or other organic matter, with messy and dangerous parts heated off in the absence of air. It consists, mainly, of an amorphous form of carbon and often with additives like borax, lime, and nitrate. History reveals that charcoal has been part of human history for thousands of years. The first documented usage of charcoal came from the black colour used in cave paintings 32,000 years ago. According to the available history, it came to be used for the first time in human history 7,000 years ago, as fuel in the smelting of copper (Dinsley 2005). It was not traditionally produced in earth kilns until the beginning of the twentieth Century. The batch kiln is not that common. Although charcoal has been part of African culture in the traditional past, its production at a commercial rate was alien to Yoruba people among which its production is now at an alarming rate. In the very recent past, charcoal was known as a residue from burnt large firewood usage, whose application was limited to charcoal pressing-iron and corn, yam, and banana roasting. It is noteworthy that charcoal of this type is of relatively low quality and quantity as a larger portion of the wood's energy must have been exhausted to produce fire flame as the primary mission of the burning. It wasn't until the regime of General Sani Abacha (1993 - 1998), which brought a hike and scarcity of kerosene as the main domestic fuel, that led to a switch, firstly to diesel before charcoal later became the solution of last resort in Nigeria. It was the Makurdi people of Benue state in Nigeria that came to establish the production of charcoal with earth kiln at a commercial rate before the Yoruba people learned the art from them. From this story, one can see the connection between the proliferation of the production and the use of charcoal, and hardship in the government system (Adeegbe 2015).

The most traditional method of the production of charcoal is by putting wood in earth pits, lit and covering it with earth. The combustion of part of the wood produced enough heat to carbonise the remainder. As an alternative, heaps of wood were covered with earth and sod and lit through openings in the earth kilns. To control the introduction of air, those openings could be judiciously and consistently opened and closed, and new ones made, as it may require, to exercise somewhat more control over combustion and carbonisation. The carbonisation takes an average of two to three weeks depending on the efficiency of the traditional kiln used, after which the fire is extinguished with water and allowed to cool for a while before being bagged and transported. In either method, the ratio of input to output in kilogram is always as low as 1:8-12 as much of the content of the tree must have escaped as steam, tars, and other poisonous emissions. However, the remnants are relatively lighter with higher energy density compared to their wood source. Charcoal is more comfortable to use than firewood whose use may require time-to-time adjustment of the wood to avoid fire burnouts and the emission of poisonous flames during its usage. More so, charcoal's reduction in size and weight makes it more comfortable for transportation, which justifies, economically, its longer travel distances from the production sites to the market and the place of usage. However, it requires more wood compared to direct firewood usage (Adeegbe 2015).

### 3. Factors Responsible for the Persistent Production and Usage of Charcoal

There are several factors responsible for the persistent production of charcoal in different places. Some of these factors are highlighted and briefly explained below:

**Poverty:** Poverty is a very serious issue. This is why its eradication is well spelt out in both the Millennium Development Goals (MDGs) as well as Sustainable Development Goals (SDGs) of 2000 and 2015 respectively (Woodbridge 2015). Unfortunately, more than half of the population of African Countries are still living on less than a dollar per day. As a readily available alternative, nature is impugned on, without any consideration of the consequences in the immediate or the nearest future. Many Africans use charcoal since they cannot afford alternative, eco-friendly sources of energy.

**Unemployment:** This is defined as a situation whereby those who are qualified, willing, and able to work cannot find a job suitable for themselves. It is a state of joblessness. Many youths, despite their education either formal or informal, are not gainfully employed. This is worsened by the fact that many African countries do not put in place empowering programmes like Youth Investment Fund Skill Acquisition are not enabling as many amenities, that are supposed to have been sources of legitimate earnings, are not put in place. The consequence of this is the engagement in many unscrupulous acts like banditry, kidnapping, smuggling, and human trafficking while some others, who might be fairly morally conscious might, forcedly, resign to nature extraction which includes charcoal production, among others.

**Unavailability/Unaffordability of Eco-friendly Sources of Energy:** Globally, the production of charcoal trends between 1965 and 2005 with African countries topping the chart (Onekon 2016). This is so because, the eco-friendly sources of energy, that supposed to be the substitutes and better reliefs, are not readily available or somehow unaffordable for the poor. The history of the emergence of the Abacha coal pot in Yoruba land, as it is narrated in five paragraphs above, bears witness to this. The poor and epileptic situation of electricity in many developing countries also culminates in the use of charcoal. Hence, in the absence of the preferable, the available becomes the preferable.

**Ignorance:** A large number of people are not formally educated. Even, among those who have formal education, many are still ignorant of how to preserve their environment. The consequence of this is that people exploit nature without a true knowledge of what the consequences of their actions and inactions could be on the environment.

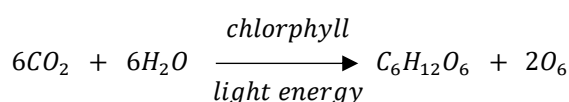
**Poor Laws and Regulations:** Although, there are laws both at the national and international level on the use of forests, many of these laws are passive or remain unpopular. The basis of environmental policy in Nigeria is contained in the 1999 Constitution of the Federal Republic of Nigeria. Following section 20 of the Constitution, the State is empowered to protect and improve the environment and safeguard the water, air land, forest, and wildlife of Nigeria. Although there were some laws and acts of government relating to environmental protection, FEPA (Federal Environmental Protection Agency) was set in December 1988 with Decree 58 of 1988 and amended by Decree 59 of 1992, to work out rules governing the handling of Nigeria's government (FEPA 1999). However, these laws remain unpopular, poorly drafted, arbitrary and so alien to the realities of the cultural practices. What is more, they are not properly

enforced. There is no proper awareness and education on the use of the land by government agencies. Offenders are not promptly penalised while those who adhere to the best way of maintaining the environment are not compensated in any way.

**Population:** This is another critical issue. Some scholars, especially Malthusian theorists, have predicted that the human population is growing geometrically, as against available resources which are growing arithmetically (Malthus 1803). However, many scholars, including the religious A. C. Bhaktivedanta Swami Prabhupāda (1991), as well as the non-religious historian-scientist Vernadsky (2012), do not go with this pessimistic stance, holding that earth has the potential capacity to provide for the ever-growing human population without necessarily messing it up if a proper measure is taken into consideration. Anyhow, whether as a result of poor management or otherwise, what is so glaring now is that the present human population is a threat to the health of the environment taken generally as the more the human population, the more human energy demands, and in this case, charcoal usage.

#### 4. Effects of Charcoal Production and Usage on the Green Economy

When we say that something is a system, it connotes the interconnectedness and interdependency of the parts to form a whole. Solar systems, and more particularly, earth systems should be understood in this manner. A failure to grasp this fact will always result in imbalance, inadequacy, deficit, and deficiency. Of which, the system is self-sufficient and self-regulating if a holistic measure is taken into consideration in coming to terms with it. Basically, there are five kingdoms of living things—prokaryotes, protists, fungi, plants and animals—of which the first four of these species are capable of synthesizing their coenzymes from simple precursors while the only last one “animals” have lost the ability to synthesize some coenzymes (Moran et al. 2012). Plants have what it takes to produce their food from simple inorganic matter through photosynthesis. Photosynthesis, technically defined, is the process whereby green plants manufacture their food using carbon dioxide (CO<sub>2</sub>) and water (H<sub>2</sub>O) to produce sugar (C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>) in the presence of chlorophyll to trap light energy and oxygen (O<sub>2</sub>) is given off during the process. This is expressed with a chemical equation thus:



Owing to this fact, plants can manufacture complex organic sugar from simply inorganic matter. The environmental importance of this is that plants take in CO<sub>2</sub> (which is animals' by-product of metabolism) to produce O<sub>2</sub> molecules (which is the animals' metabolic need). This principle explains the important symbiotic interrelationship and interconnectedness between plant species and animals among which humans are outstanding. Meanwhile, gases exist in the atmosphere in a “delicate” balance such that if the balance is altered, the whole system would, unavoidably, suffer from the consequences. Beside being a carbon sink and oxygen producer, the natural forest serves as a storm breaker, a source of materials for building, construction, and furniture, fibre for papers and textiles, erosion control, food and drug materials, and an abode for wild animals, just to mention but few. This is why the maxim; “no life without plant” is a truism to a very large extent, and, by reduction, no man without plant. It is humans' failure to recognise this fact or take it seriously, that resulted in environmental pollution of different types. Broadly, pollution is defined as:

Any undesirable alteration in chemical, physical, and/or biological characteristics of any/or every sphere of environment, resulting from an introduction of substances or energy by human, other living, and/or non-living components of the ecosystem in an amount that (or liable to) injure(s), or at least offence(s) the survival, wellbeing, and flourishing of the whole or any part of the ecosystem (Olaniyan 2021).

The term “Green Economy” (hereafter to be referred to as GE) first appears in the Blueprint for a Green Economy in 1989 (Pearce: 1989). According to the United Nations Environment Program (UNEP 2008), GE is an economy that will result in improved human well-being and social equity and, in the meantime, significantly reduce environmental risks as well as enhance ecological services positively (UNEP 2008). As a result, many countries developed an interest in a transition to a GE, and the rest intensified following the market and financial crisis of 2008 with the UNEP's call in 2009 for nations to embrace a Global Green New Development (GGND) (Barbier 2010). GGND has three main objectives, namely, economic recovery, poverty reduction, and reduction in carbon emission and ecosystem degradation. To sum it up, the essence of GE is to simultaneously achieve economic development and social and environmental protection with neither of the two necessarily being at the expense of the other.

GE has appealing goals which makes it relevant for every geographical location to pursue. UNEP (2013) predicted that a new growth path in the GE context will create over 300,000 new jobs in South Africa alone within five years; a prediction which squares with Montmasson-Clair's (2012)'s notes. Besides, water supply and crop yield are predicted to be improved while a drastic reduction in energy consumption, as well as carbon and other greenhouse gas emissions, would be recorded (UNEP 2013).

However, as good as these manifestos of GE are, there is a serious setback for most African countries to make significant headway to the transition into a GE. This setback is majorly caused by Africans' overreliance on wood fuel for energy and other activities that cause deforestation at a detrimental rate. Meanwhile, a reduction in carbon emissions and the use of clean energy as a better alternative, among others, are prerequisites to GE. According to the UNEP (2015) report, 90% of harvested wood in Africa ends up meeting the energy demand of more than 60% of households who use it mainly for cooking and heating. She reports further that over-harvesting of the forest for charcoal is damaging forests, and this has caused African forests to become a major source of Carbon emissions. More sadly, Onekon and Kipchirchir (2016) report that globally, charcoal production trends between 1965 and 2005, a duration of forty years, which shows an increased production level with the African continent topping the chart, followed by Latin America, then the Caribbean, leaving Asia at the tail of the chart. Country-wise, of the world's top ten, there are seven African countries in charcoal production with Nigeria taking the lead on the world level, country-wise, after Brazil.

Estimating the forest cover depletion from charcoal production and use, Onekon and Kipchirchir (2016) report that the production of charcoal is mostly from inefficient kilns. To calculate the rate of forest depletion resulting from the production of charcoal mathematically, he appeals to Msuya et al. (2011) formula which states that;  $F_s = M_s \times E_k \times 1/S$ . Where:  $F_s$  = Forest needed to produce a single (35kg) sack of charcoal,  $M_s$  = Mass of a single sack of charcoal,  $E_k$  = Efficiency of the kiln used in the production of charcoal (that is kg of wood per kg of charcoal) and  $S$  = Stock density (that is, a ton of wood per hectare forest). According to their study, the

efficiency is 10%. Taking this into the mathematical calculation,  $F_s = 35 \times 10/100 \times 1,000/10,000 = 0.35$  Ha. Interpreting this, it shows that, for every sack (35kg) of charcoal produced, 0.35 hectares of forest is depleted.

In some cases, the trees are cut selectively such that the ones that are matured enough and have little or no significant timber and other valuable uses are cut. Still, this does not make the process to be justified in totality as the pyrolysis of trees in traditional kilns emits toxic gases on its own plus the fact that microorganisms as well as many minerals of the land where the kiln is set would be lost. However, the situation becomes worse when a clear-cutting is done, leaving no tree uncut purposely to produce charcoal. Several useful timbers have been cut in such a process. Fruits as well as drugs and herbs-producing plants are also lost. Many animals would lose their natural habitat and experience many other harms.

## 5. Towards Strategies for Mitigating Charcoal Production

Deforestation is one of the major anthropogenic environmental issues of which charcoal production and usage is one of the major factors that cause it in Africa. Other factors include logging, grazing, shifting cultivation by farmers, road construction, urbanization, and bush burning (Adeegbe 2005). In the two sections above, factors responsible for the persistent production and usage of charcoal have been highlighted and discussed. This section is dedicated to the ways to mitigate these highlighted factors to pave the way for a green economy.

**Education:** Socrates, in his intellectualism, argues that beneath every wrong action is ignorance. Of course, Prophet Hosea says: “my people are destroyed for lack of knowledge” (Bible Hosea 4). Although, it may be probed, as Socrates was criticized on his idea of a philosopher king, that; is it not a possibility that a person may know but still act contrarily to what he knows? To simply answer this, knowledge is not just a theoretical awareness of a fact. Rather, true knowledge is the practical understanding of a fact in its totality. At this level, knowledge, irresistibly, becomes internalised, which will, surely, give birth to the habitual character. As we have said earlier, a large number of people are uneducated, educated illiterates, not truly educated or environmentally ignorant. Therefore, creating environmental education would go a long way to shape people’s actions and inactions towards the environment, and in this case, the forest. It requires the inclusion of environmental education in the academic curriculum from the very primary to the higher institution, as Mptaala Mpya explicitly suggests at an education summit held in Kenya, that the academic world should go beyond raising questions on the causes of pollution to a creation of a pollution-free human environment. Besides, farmers, who might not have access to former education, should be made aware of the socio-economic and environmental effects and consequences of deforestation.

**Job Creation and Poverty Alleviation:** Alternative and legitimate sources of income should be created for the able-bodies. Failure to do that would make every effort to care for the environment ineffective. This, at the same time, boils down to poverty alleviation. Because of hunger and poor income, so many people engage in illicit businesses. Imagine, a man that sold a-century-old Iroko tree for just \$1 US Dollars! (Oral source) If the youths are gainfully employed, it will go a long way to mitigate the problem.

**Provision and Enforcement of Environmental Laws and Regulations:** Section 20 of the 1999 Constitution of the Federal Republic of Nigeria reads that: “States shall protect and improve the environment and safeguard the water, air, forest, and wildlife of Nigeria” (FRNC, 199: 20). In line with this, FEPA, which later degenerated into the Ministry of Environment, was created. Despite this legal backing and funding received by the agencies, the success recorded is a far cry from the set objectives and goals. Rather than the people protecting the environment, they turn to be second to the tax collectors working for their pockets rather than for the betterment of the environment. Besides, the concept or idea that they operate with is alien and does not evolve from the cultural realities of the people on which it is to be employed. Before colonialism, cutting of trees was not known and African forests were pristine and safe. This means that traditional Africans had a better environmental policy before colonialism. A cursory look into this reveals that these policies were contained in their myths, proverbs, taboos, and totems. Traditional African sense of communitarianism is a community of plants, animals, humans, and ancestors. This has been proven by many African scholars. Francis Nyamnjoh's *Incompleteness* (2015), Amos Tutuola's *The Palmwine Drinkard* (1952), D. O. Fagunwa's *Ògbójú Ọdẹ̀ Nínú Igbó Irínmọ̀lẹ̀* translated by Wole Soyinka as *The Forest of a Thousand Demons* (1968), E. Etieyibo's *Ubuntu and the Environment* (2017: 12) among others, are some of the writings where an African’s environmental worldview is implicitly or explicitly expressed.

These African scholars univocally make a case for a traditional African belief in environmentalism that is conservative to its very best core. Unfortunately, the Western world, out of their epistemicide agenda, to borrow a concept from Tunde Bewaji (Bewaji, 2013: 269-312), killed this animistic belief, upon which Africans’ regard for the environment was erected. To a traditional African belief, animals in the forests are fathered by a god of the forest who has to be appeased before hunting adventure could be embarked on in the forest and who could be vengeful if a pregnant, kid, nursing or naturally disadvantaged animal are deliberately or callously preyed on, or excess killing is done in the forest. The same applies to water hunting. Some animals were held as totems, some forests or water bodies were considered an abomination to hunt on while felling some trees was considered taboo. It was a belief that animals that are not naturally endowed with the ability to run away fast from being preyed on, such as snails and tortoises could cause rainbow against their predators if treated mercilessly while a chameleon’s yearling was believed to be capable of initiating thunder arrest against its perpetrator. These, and many others, served as the bedrock upon which traditional Africans’ environmental policies were erected (Etieyibo 2017).

However, when Europeans came, apart from the fact that they introduced machines that enabled the mass destruction of forests, they abolished all the animistic beliefs, not one by one, but from the very foundation upon which they were erected. These beliefs were replaced by Biblical, yet anthropocentric worldviews, as criticised by a historian named Lynn White (1967). The point here is that the said policies would have enjoyed a nostalgic welcome had it been that the anthropological research had been conducted and put its outcomes into consideration in drafting some of the environmental rules. There was supposed to be a kind of “Agric cell” whereby an officer would be attached to a cell each, who would look to educating and addressing issues relating to agriculture in the rural areas. By this, the offenders could be easily caught and dealt with accordingly.

While a total prohibition of firewood and charcoal production and its usage might be difficult and unnecessary, placing an embargo on charcoal and firewood transportation from rural to city or to neighbouring countries would be recommended. This would delimit its production and usage to the barest minimum. Or better still, firewood and charcoal should be heavily taxed, and the money

thereby generated should be invested to subsidize the eco-friendly alternative sources of energy. This will practically alter the demand and supply chain.

**Inclusion of Compensation:** Aside from punishing the defaulters, sensitisation of the people concerning the importance of afforestation is fundamental. This includes a recommendation that each family should have a forest reserve and be aware of deforestation actions. The sanction should not just be a one-sided punishment of the offenders. Rather, as their deforestation actions accrue punishment, so their deforestation inactions as well as afforestation actions should be fully compensated both in cash and in kind. This is what I mean by the “Carrot and Cane” principle; an ethical principle that derives its justification from Jeremy Bentham's principle of pleasure and pain (1780). I went to harvest some timber for construction from my forefathers' forest reserve one day and Nigerian police stopped the vehicle and asked for a harvesting permit from the government agency. Humorously, I told them that “the permit for harvesting was granted and attached to the same permit paper that was issued to our forefathers before they planted the forest and once we can see the planting permit, we shall see the harvesting permit attached to it. We just laughed it away. However, as a principle of Economics says; “where there is a free entry, there is a free exit.” If people should do afforestation without being sanctioned, the law that sanctions deforestation becomes naked and arbitrary. The point here is that people should be encouraged to keep forests and be duly compensated for following suit.

Closely related to this, is that there should be international as well as intra-national compensation for afforestation and deforestation. This might be called a carbon bonus. If, a Nigerian State as Lagos, should use all its available land to its maximum capacity for building and construction of houses, roads, factories, industries, and other functionalities that, not only could not absorb carbon but also would be discharging carbon and other greenhouse gases from their heavy industrial machines and the unmitigated overwhelming metabolic activities of humans that congest the place and the Lagos government generates revenue therefrom which is credited as their internally generated revenue, a handsome part of the income should be collected from the state too and paid to the neighbouring States, who, out of their retention of good parts of their forests, maintain the symbiotic relationship between plants and animals. This is necessary because should every State use its land territory to the fullest setting in the way such a city like Lagos uses its own, the environment would become more inhabitable for humans than this. In other words, such an action of land overuse could not be universalised without necessarily resulting in ecological imbalance. This recommendation could be extended to the international level too, for, since all the nations inhabit the same earth, our actions and inactions in every geographical location affect one another. If some people in a given geographical location could be exploiting nature maximally in their commercial attempt, of which we jointly own nature equally, they are duty-bound to pay a substantial amount of their earnings from nature exploitation to others whose inactions help to keep the balance. This is so because, should the exploitative actions be universalized, nature would become more inhabitable for all than it is now.

**Provision of Eco-Friendly Alternative Sources of Energy:** We are in a world of energy where all we can do is substitute what is considered as unfriendly with eco-friendly ones. In other words, an energy-free world is unimaginable. Meanwhile, we are in a world of bundles of energy. Energy is ubiquitous, pervasive, and omnipresent. Interestingly, this plethora of energy sources can be converted from one form to another only with a fraction of it being dissipated as heat. It is on this ground that this paper calls for more research into eco-friendly sources of energy and how they can be converted and best conserved. Up till today, the world still wastes a lot of by-product energies. It is high time we realized fully the slogan that “nothing exists for nothing, hence, let nothing waste.” By placing this maxim at the back of our minds, we get to discover how we can put most of our waste into reuse.

For inconveniences in usage, transportation, and many other reasons, our wastes may not be an ideal recommendation for direct raw usage as sources of energy without further processing. Biomass wastes are not excluded from this limitation. It is on this ground that I suggest making briquettes out of our biomasses. Biomass fuel briquettes are one of these alternative ways of putting our waste into better management (Rotowa et al. 2019). Of these biomasses, agricultural wastes and sawdust are recommended. While direct consumption might not be advisable, it would be a good alternative if briquettes were made from them for domestic as well as industrial energy consumption.

Besides, Liquefied Petroleum Gas (LPG) is another, yet eco-friendly alternative. Although it is one of the non-renewable sources of energy, findings have shown that LPG exists in an abundant form that the world may reasonably adhere to as a reliable source of clean energy for domestic use. Sadly, some countries still go to the extent of recklessly flaring gas amidst the use it has and the hazard the flaring could do to the stratosphere. Worst still gas is not made readily available and affordable in many developing countries. It would be recommended that gas should not be only made available but subsidised so that it can be affordable for the masses too. Other alternatives include the provision and stability of electricity in every nook and cranny of Nigeria at an affordable cost as well as more inventions and innovations on solar energy converters as an alternative source of energy in carrying out different activities.

## 6. Conclusions

Charcoal production and usage is a bane on the global realisation of GE as promising and worth pursuing its goals. So much is the human-plant interdependency that it may not be too exaggerating to assert that humans are walking plants and so, cutting a tree is akin to cutting a man. Meanwhile, charcoal production heavily demands from the forest so much that every environmentally friendly alternative should be sorted for. It is on this ground that this paper posits a strategic eradication of charcoal production and its usages in a way that would not only provide better alternative energy sources to the users but also provide alternative and eco-friendly sources of income to millions of people whose sources of livelihood were from charcoal production, sale, and its usage. This shall make a soft and unarbitrary shift rather than take a sharp and arbitrary shift which can cause rebellion and whose success might be a chimera.

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