# Green Economy and Sustainable Development as an Antidote to the Threat of Global Warming

*By*

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***Abstract***

*The study focused on green economy as an antidote to global warming in Nigeria. All facts and materials were taken from secondary sources mainly literature review.Various measures of green economy in combating global warming were explored. It was discovered that for Nigeria to experience meaningful sustainable development, green economy must be adopted in all facets of the economy be it industrial, manufacturing, agricultural, transportation, mining and other sectors of the economy, all the materials used in this study point towards the human induced global warming, infact, globally man has been seen as a principal actor in the issue of global warming and various literatures have testified to this. Based on this, recommendations were proffered that government should sensitize its populace on the benefits of greenish economy. There should be awareness and readiness to start the green initiative and private sectors need to join hands with government to sustain greenish economy.*

***Keywords:*** *Global warming, greenish economy, sustainable development.*

## Introduction

Global warming is a universal phenomenon and its effects are mostly felt throughout the whole universe.It is not a new phenomenon. The ancient experience of warming was naturally due to volcanic activities and thawing of frozen methane Doyle (2007).

Global warming refers to the increase in the average global temperatures due to the increase in greenhouse effect. Global warming refers to an overall increase in the temperature of the earth's atmosphere and oceans caused by emission of certain gases. This warming may give rise to some unpleasant consequences to man in the future if nothing was done (Awake, 2008, Houghton, 1984). The concept of global warming and the consequent climate change have not been generally accepted by most governments because no significant efforts have been used to reduce the emissions of greenhouse gases. One hypothesis to explain global warming and

climate change is the possible variations in solar radiation or natural variations in earth's temperature independent of human activities. These are yet to be understood, though may be responsible for the observed warming and climate change.The complexity in human behavior and reaction to change and genuine scientific uncertainties about global warming and climate change prediction have made the concept of global warming and climate change difficult for policy makers and planners. (Pollack, 2003). Mahlman (1997) put forward helpful analysis to overcome the uncertainties in the predictions of global warming both in terms of the magnitude and changes, and the related climate effects as follows:

Atmospheric abundance of greenhouse gases is increment due to human activity;

Increased concentration of greenhouse gases in the atmosphere leads to warming at the earth's surface;

Carbon dioxide build up is particularly serious because it remains in the atmosphere for decades to centuries;

Buildup of aerosols, anthropogenic or natural, inhibits incoming solar radiation and thus tends to offset global warming by cooling;

The earth's surface has warmed on the average by 10C over the past century;

The global mean amount of water vapour in the atmosphere will increase with increasing global mean temperature.

The model predictions of Mahlman may have greater than ninety percent chances of being true, as:

The 20th century global warming is consistent with model predictions of expected greenhouse warming.

Doubling carbon dioxide concentration in the atmosphere from 270 to 540ppmv will lead to a total warming of about 1.5 to 4.5OC.

Sea level could rise by 25 to 75cm by the year 2100 caused mainly by thermal expansion of sea water, and melting of ice sheets could lead to a further sea level rise.

Higher latitudes of the northern hemisphere will experience temperature changes much more than the global mean increase.

The rest of the paper highlight the causes of global warming, concepts of green economy, conceptualizing sustainable development.

## Causes of Global Warming

### Anthropogenic/Human Causes of Global Warming

Muhammed (2011) opines that environmental activities and day-to-day human activities have contributed to an increase in average global temperatures, arising from the release of greenhouse gases such as carbon dioxide into the atmosphere. He also added that Africa would be in bad state as a result of the effect of climate change. According to IPCC (2001).The outgoing energy absorbed by

atmospheric gases keep the temperature warmer if this natural heat trapping properties are not available, the average surface temperature of the earth would be about 330C.The gases which trap the heat energy is known as greenhouse gases.

Greenhouse enhancing factor appears to be the rising population of farm animals whose digestive processes produce methane and nitrous oxide continuously, other human activities are knowingly or inadvertently, degrading environment. Include deforestation, bush-burning and hunting, dumping of toxic materials and depletion of the ozone layer (Montegomery, 2000; Chukwu, 2008).

According to Marlandet al., (2003), the major sources contributing to the increasing concentration of carbondioxide in the atmosphere includes burning of fossils fuels, cutting down of forest for agricultural purposes and industrial activities. About 5.4 billion metric tons of carbon is released into the atmosphere annually from the burning of fossil fuel. About 1.6 billion metric tons of carbon is in addition emitted into the atmosphere by deforestation for agricultural and other land purposes.

Global warming itself is a result of human activities, principally through the release of Green House Gases (GHG) are released mostly as by-products of energy use to the atmosphere. In fact whooping three quarters of carbon dioxide (CO2) emissions are directly or indirectly linked to the energy sector (OECD, 2009). These GHG include; carbon dioxide (CO2), methane, nitrous oxide, hydroflurocarbons, perflurocarbons and sulphur hexafluoride, Lawson (2010). Other chloroflorocarbons (CFCs). They are part of the earth's atmosphere and trap warmth emitted by the sun, thus heating up the earth, through a process called the green house effects that makes life on the planet possible, Allianz (2007).

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As of 2005, Nigeria has the highest rate of deforestation in the world according to the food and agriculture organization of the United Nations (Odjugo, 2010). Between 2000 and 2005 the country lost 55.7% of its primary forests and the rate of forest change increased by 31.2% to 38.2% per annum. Forest has been cleared for logging, timber export, subsistence agriculture and notably the collection of wood for fuel which remains problematic in western Africa.

**Natural Courses of Global Warming**

According to Lowrie (1997). temperature variation is one other important factor of global warming as its fluctuations occasioned by sunspots and solar flares correlate with fluctuations in solar energy output as this solar activity progresses it causes temperatures to vary significantly within the earth's surface and atmosphere.

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solar energy output. As this solar activities progresses to causes temperature to vary significantly within the earth's surface and atmosphere (Lowrie, 2997)

Global warming and climate change refer to the increase in average global temperatures due to the increase in greenhouse gases. Natural events such as forest fires, volcanic eruptions, methane release from thawing of permafrost on the ocean floor and release of methane gas, from cattle, wet lands and anthropogenic sources of exhausts from all kinds of combustion, industrial production of greenhouse gases, agricultural water lodging activities such as paddy cultivation, artificial wet lands and deforestation warming of the earth causes rapid changes in pre-existing weather pattern.

Exhaust gases fuming from those machines as a result of industrial revolution contributes to the Green House Gases which include carbon dioxide, nitrous oxide, sulphur dioxide, hydrogen sulphode, methane and water vapour, the uses of fossil fuels like coal, oil and gas produce large volumes of these exhaust gases into the atmosphere whose concentration has increased markedly since the start of the industrial revolution for over twenty five decades.

Similarly, Reinter's (2008) quoted a leading climate change expertthat " The risks of inaction over climate change outweigh the turmoil of the global financial crisis and called for new fiscal spending tailored to low carbon growth. Going further, it stated that in inaction of the emission blamed for global warming could cause economic pain equal to the Great Depression" (Hecht, 2008). Hecht (2008), claims that the clock is ticking inexorably toward dooms day and that,even if we don't kill ourselves by poisoning, the environment or overheating of the planet will eventually consume life in all its entirely.This however, calls for concerns of all stakeholders.

According to OECD (2009), Green House Gases are forecasted to grow by 45%by 2030, even with the development of cleaner technologies. In addition, on European Commission (EC) Report, by 2050 almost three quarters of the world's energy supply will still come from fossil fuels; energy demand and GHG especially CO2 emission will move double; electricity consumption will increase four-fold unless far-reaching policy measures are introduced (EC 2006).

**Effects of Global Warming**

Global warming, a recent warming of the earth's surface which leads to melting of Iceland which invariably increase sea level and lower atmosphere is believed to be the result of a strengthening of the greenhouse effect mostly due to human-produced increases in atmospheric greenhouse gases. A warming world also has the potential to change rainfall and snow patterns, increase droughts and severe storms, reduce lake ice cover, melt glacier, increase sea levels and change plant and animal behavior. The world effects of global warning includes sea level is rising, arctic sea ice is melting, glaciers permafrost are warming and the

temperature of large lakes are warming. Others include; heavier rainfall causes flooding in many regions, extreme droughts increasing, crops are withering, ecosystems are changing, more frequent heat waves, warmer temperature affects human health and sea level is becoming more acidic, (Algore, 2009, Nicholls & Mimura, 1999 and Davies, 2014).

According to John (2010). there are ten indicators of a human finger print on global warming which were observed, they are shrinking thermosphere, rising tropopause, less oxygen in the air, release of 30 billion tons of CO2 annually, nights warming faster than days, more fossil fuel carbon in coral, more heat return to earth, more fossil fuel carbon in the air, cooling of stratosphere and less heat escape the space. Carbon dioxide contributes for 56% of global warming, as other geochemical cycles. Carbonoxide also used to be the self regulating one, until the anthropogenic vast emission and deforestation alters the balance. Major source of Carbonoxide is fossil fuel burning. It contributes more than 75% of atmospheric Carbonoxide in 1990's, further chemical changes during production of lime, cement and ammonia augment and increasing litter and garbage decomposition as other anthropogenic means.

Hulme (1997) as cited in Kemp (2004), while according to NASSA GCC (2015), carbon dioxide level exceeds 400ppm in March, 2015 and expected to reach 450ppm or more and the rate of increase is more than 2.75ppm per year. Global warming has a lot of adverse effects on both ecosystem and terrestrial system such as sea level rise, warming ocean, shrinking ice sheaths, declining arctic such as sea ice and glacier retreat. Ayinde, Ajewole, Ogunlade and Adewumi (2010), global warming is a phenomenon that occurs when the world experiences temperature that is above the normal levels. Such a spiraling of temperatures which occurs in every region of the planet, whether in the northern or southern hemisphere. Allians (2007), describes global warming as the increase in the average temperature on earth, and that over the last 100 years, the average temperature of the air near the earth's surface has risen a little than 10Celsius. A veritable shift in climate is expected, if a predicted 60C increase in global temperature may occurs, if the world continues along the current path (OECD, 2009).

**Concept of the Green Economy**

The United Nations Environmental Programme (UNEP) defines green economy as one that result in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy is low carbon resource efficient and socially inclusive (UNEP, 2010). Green economy according to (UNEP, 2010) aims at reducing environmental risks and ecological scarcities with the aim of sustainable development without degrading the environment, (Nwoke, 2014). To actualize a green economy it must be ensure that public and private investments reduce carbon

emission and pollution and enhance energy and resource efficiency. All efforts channeled should prevent the loss of biodiversity and ecosystem services (Oluwatosin, 2012). In the words of Manish et al. (2011)describe green economy as an alternative vision for growth and development; one that can generate growth and improvements in people's lives in ways consistent with sustainable development.

The adverse effects of global warming, energy security, resource efficiency and climate change are compelling the world to search for a way out. AGreen Economy (GE) paradigm has now become a trend among the various solutions advance for addressing global warming. The leading source of Green House Gas emissions is energy which is at the heart of the problem and so must be integrated into the solution (IEA, 2009, UNEP, 2009 and Huang, 2010).

The green economy is a new economical pattern with an orientation of harmonious development of economy and environmental protection; an outcome of the requirement that industrial economy shall not hurt human health and the earth environment forming a new state of social development or the green economy is a sustainable development path based on addressing the interdependence between economic growth, social protection and natural ecosystem (Huang, 2010; DEA, 2010)

Nwoke (2014) observed that to protect man from climate change and other consequences of environmental degradation, it is expedient to put in place ecologically acceptable strategies in all human activities to ensure sustainability of the environment. In other words, the sustainability of the social and economic activities should ensure that the biosphere and its ecosystems life on earth will continue to draw sustenance from them. Green economy has been linked to sustainable development in developed countries and will equally impact positively on less developed countries when implemented with good national policies and institutions in place: a global green economy can enhance economic growth and contributes significantly to national environmental and developmental objectives,(Omueme, 2013).

As the world is battling with the challenges of global warming and climate change and these two are direct consequences of fossilized energy used in many countries which are now transiting towards green economy, emphasis is now placed on the use of non-fossil fuels (alternative and renewable energy), because a transition to low carbon and more resource efficient economy providing a promising avenue for economic and global development in many countries (UN, 2010). However, for emerging developing countries such as Nigeriaa country of projected 200 million people, battles to provide less than 500Mw of electricity, leading to her low per capital energy consumption. Dwayeinn (2008) posits that Nigerian energy industry is probably one of the most inefficient in meeting the needs of its customers globally; It thus become imperative for Nigeria to take steps

to guide development towards a greener path. Sevres et al., (2010) enthused that green growth policies could lead to significant reallocation of resources within and across broad economic sectors; more so, when the stimulus packages decided by many governments in 2008 and 2009 to address the recent global financial crisis already contained a number of measures specifically aimed at greening the recovery.

The green economy represents a radical transition for more efficient, environmentally friendly and resource- saving technologies that reduce emissions and mitigate the effect of climate change (Janicke, 2012), which tackle resource depletion and serious environmental degradation..

According to the OECD (2009)green house gases are forecasted to grow by 45% by 2030, even with the development of cleaner technologies and yet according to a European Commission EC report, by 2050 almost three-quarters of the world's energy supply will still come from fossil fuels; energy demand and GHG especially carbonoxide emissions will move than double, electricity consumption will increase four-fold unless four-reaching economy policy measures are introduced (EC, 2006). The International Energy Agency (IEA) suggested that globally we only have until 2017 to shift to a 450ppm CO2 trajectory before the lock-in effect of existing infrastructure would require all investments made between 2020 and 2035 to be zero emissions options (IEA 2007). This entails major shift in resource use which has not previously been a significant factor in policy, however the greening of economies is not necessarily a drag on growth (Schmalensee, 2012).

The UnitedStates, China and South Korea labelled their stimulus packages as "Green New Deals (Zysmanet al., 2009); the rationale was that green fiscal stimuli provide a boost to the economy while also laying the foundations for sustainable and more stable growth in the future (Bower et al., 2009). Renewable energy is one of the sectors of green economy. Renewable energy includes, Biofuel, Biomass, Geothermal, Hydropower solar energy, Tidal power, Wave power and Wind power. It is generally defined as energy that comes from resources which are naturally replenished on a time scale such as sunlight, wind, rain, tides, waves and geothermal heat (Anon, 2013). The whole concept of the green economy revolves around the dependence on renewable energy sources, but renewable sources according to Ugwu (2008) are simply defined as those energy sources which when consumed are replenished through natural processes at a relatively short time frame.

The purpose of the green economy is to achieve the harmony between economy and environment, it involves the use of environmental protective technologies, clean production processes and all environment-friendly technologies into productivity to realize sustainable development in economy through economic activity favourable for and non-confrontational to the environment (Huang, 2010).

The essence of using green economy to combat the adverse effects of global warming is simply because emission of green house gases are the major contribution to global warming if all the sectors of the economy turn towards greenish, then there would be possible reduction in the emission of various gases especially carbon dioxide above all, Green economy has far reaching applications in nearly all key sectors of the economy such as agriculture (going organic), energy (clean and alternative energy, smart grids, as well as energy efficiency), transportation (green transportation), tourism (green eco-tourism), housing and urban renewal (green/ smart cities and green buildings), green constructions, environment and waste management, water and natural resources, marketing, industry and manufacturing and policy research and governance (Huang 2010; DEA, 2010;Scanlon, 2010;Cleantech 2010; Rosa 2007; UNEP 2009). According to Cleantech, (2010) the rapid introduction of clean technologies is an essential part of creating a green economy and luckily too, clean technology itself is becoming less sophisticated and increasingly cheaper and readily available due to innovations (Ugwu, 2008).

**Conceptualizing Sustainable Development**

Nigeria is blessed with various types of resources both renewable and non-renewable Chendo (2001) gave an account of Nigerian energy status as having proven oil reserves at about 23 billion barrels; natural gas as 4293 billionM3 AS AT 1999 consisting of about 53% associated gas; coal and lignite reserves as 2.7 billion tones, tar sand at 31 billion barrels of oil equivalent and large scale hydropower at 10,000Mw. The largest unrestricted gas flaring according to Iwayemi (2008) has consistently put Nigeria among the world's largest source of carbon emission.

Sustainable development was first enshrined in the Rio declaration nearly 20 years ago, as an important antecedent for green growth or the green economy (OECD, 2010). Development is real only if the green economy makes lives better in all these respects. Sustainable development must therefore balance the need of the society, the economy and the environment. Attesting to this, Ivbijaro (2012) conceive sustainable development as the capacity to improve the quality of human life while living within the carrying capacity of supporting systems.From the words of Hoverstadt and Bowling (2005), the concept of sustainable development has become the torch stone of modern development thinking and for Fulai (2010) an overarching societal goals of all countries.

The Bruntland Commission (1987) defines sustainable development as the development that meets the need of the present without compromising the ability of the future generation to meet their own needs, for this to be realizable there is needs to promote green economy. According to Munasinghe (2004), sustainable national development is a process of improving range of opportunities that will enable individuals and communities to achieve their aspirations and full potential

over a sustained period of time while maintaining the resilience of economic, social and environmental systems. According to (Ivbijaro, 2012), sustainable development includes maintenance of biodiversity, atmospheric stability and other ecosystem functions not ordinarily classified as economic resources.

Sustainable development is about finding better ways of doing things, both for the future and the present. Man might need to change the way he works and lives now but this does not mean the quality of life will be reduced (Harris, 2000).

Since majorly human factors play greater role in the global warming phenomenon, green economy which involves use of environmentally protective technologies and all environmental friendly techniques in the production activities to at least reduce to minimal level the flaring of gases to the atmosphere and also sustainable development with its main focus of meeting the needs of the present without compromising the future, the duo if accepted and uphold will have significant impact in reducing the menace of global warming which constitute threat to environmental security of many nations of the world.

**Conclusion**

Global warming effects are posing threat to all facets of living and its impacts is already being felt by people around the globe in which Nigeria is inclusive, and to achieve sustainable development, green economy has to be promoted in all the economic activities be it primarily, secondary, tertiary and quaternary sectors since important elements of a green growth framework is to identify ways to redress or prevent environmental damage, as collateral to growth.

**Recommendations**

The following recommendations are put forward to ameliorate effects of global warming.

Firstly, there should be awareness and readiness to start the green initiative by accepting and adopting all the frameworks of green economy to all facets of the country's economy.

Secondly, government should sensitize people on the benefits of green economy, this could be done by integrating greenish concepts into environmental education, also the use of media outlets could also be of assistance.

Thirdly, government should make policies and steps that will promote environmental friendly economy by introducing guiding principles for all stakeholders.

Fourthly, afforestation programmes should be introduced as a matter of urgency in the country, the planting of more trees is a more direct and practical way of

combating global warming because forests sequester a large amount of carbon dioxide in the leaves and soil.

Fifthly, environmental principles should be incorporated to the schools curricula both in primary, secondary and tertiary institutions of learning in the country.

Sixthly, private sectors need to join hands with government to embrace greenish economy, this is necessary because the major cause of global warming is the release of gases to the atmosphere as a result of industrialization.

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