

MORAL AND SOCIAL IMPACT OF GLOBAL WARMING IN THE FEDERAL
CAPITAL TERRITORY ABUJA

BY

OYAWALE, EMMANUEL ADENIYI
NSU/ART/M.A/PE/0013/15/16

MASTER OF ARTS (MA) IN PHILOSOPHY AND ETHICS

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DEPARTMENT OF PHILOSOPHY AND RELIGIOUS STUDIES
FACULTY OF ARTS

NASARAWA STATE UNIVERSITY, KEFFI,
NIGERIA

DECLARATION

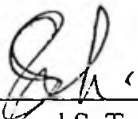
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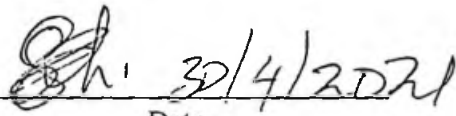
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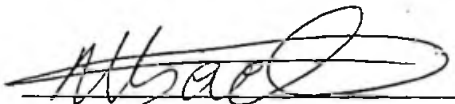
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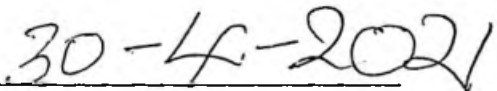
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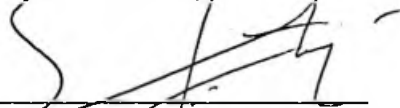
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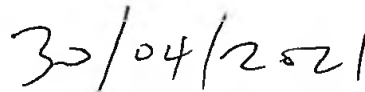
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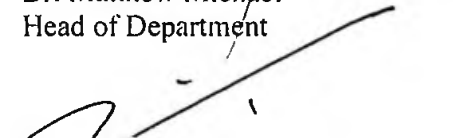
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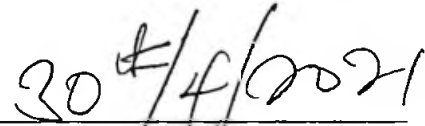
Dr. Matthew Michael
Head of Department



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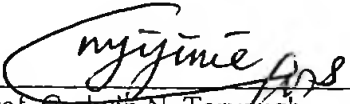
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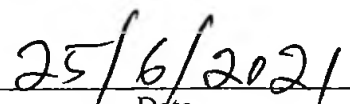
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Prof. Gideon Omachonu
Dean, Faculty Of Arts

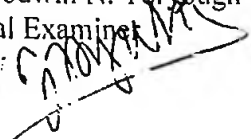
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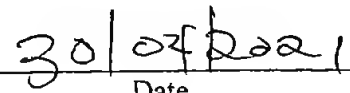
Prof. Godwin N. Toroyough
External Examiner



Date



Prof. Jonathan M. Ayuba
Dean, School of Postgraduate Studies



Date

DEDICATION

This dissertation is dedicated to God Almighty, and to my amiable wife and our lovely children for their support and prayers.

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ABSTRACT

Global warming in the Federal Capital Territory FCT Abuja has posed some social and moral concerns and this has made the researcher to embark on the study in order to proffer solution to the challenge. Hence, the research examined the moral and social consequences of global warming on the lives of citizens of FCT Abuja. The study adopted descriptive survey methodology. The population of the study consists of 100 male and female respondents who were randomly selected from the five Area Councils of Abuja since the issue of global warming affects everyone. A 10 scale structured questionnaire was used for data collection. The instrument was first validated by an expert and reliability of the instrument was ascertained by testing. One hundred copies of the questionnaire were distributed to the respondents and 83 copies were completely filled and returned with 17 not returned. The data collected was analyzed using simple percentage method where number of respondents is all over number of questionnaire multiplied by 100, all over 1. The research found that global warming has serious impacts on the social and moral lives of the people of Federal Capital Territory (FCT) Abuja. It further revealed that poverty and lack of public awareness about the usage of home appliances is a major consequence of global warming. The study went further to recommended that government and NGOs have the responsibility of educating her citizens on the consequences of tree cutting and bush burning in the FCT. It also recommend that government at all levels should work hard to eliminate the problem of lack of electricity so as to discourage the use of generating set which will in turn reduce the fast depleting ozone layer.

CHAPTER ONE

GENERAL INTRODUCTION

1.0 Introduction

Early in year 2017, heavy rain and thunderstorms caused major havoc in the Federal Capital Territory (FCT), and the economic center of the country. Residents woke up in many parts of this city to find their streets and homes flooded and their property and other valuables, submerged in water. Consequently, climate change is a threat to clean air; it depletes water sources which in turn lead to shortage in food supply. Climate change has forced many families out of their homes into displaced peoples camp as a result of the "rapid warming brought on by rising levels of heat-trapping gases known as green-house gases, in the atmosphere" (Michael 11).

The increase in volumes of carbon-dioxide and other greenhouse gases released by the burning of fossil fuels, land clearing, agriculture and other human activities are believed to be the primary sources of the global warming that has occurred over the past 50 years. Heat from global warming is stronger at the earth's poles, at the arctic and the antarctic, and will continue to be so. In recent years, earth air temperatures have been at a record of 9 degrees fahrenheit (5 degrees Celsius) above normal in the arctic. But changing wind patterns could mean warming Arctic, for example, which leads to colder winters in continental Europe. Regional climates will change as well, but in very different ways. Some regions like parts of Northern Europe or West Africa will probably get wetter, while other regions like the Mediterranean or Central Africa will most likely receive less rainfall. Melting ice is the most visible impact of a warming climate. The UN Panel on Climate Change finds that average Arctic temperatures have increased at almost twice the global average rate in the past 100 years when sunlight reaches Earth's surface some is absorbed and warms the earth and most of the rest is radiated back to the atmosphere at a longer wavelength than the sun light. Some of these longer wavelengths are absorbed by greenhouse gases in the atmosphere before they are lost to space. The absorption of this long wave radiant

energy warms the atmosphere. These greenhouse gases act more like a mirror which usually reflect back to the earth. The reflecting back of heat energy by the atmosphere is called the "greenhouse effect" (Venkataramanan and Smitha, 226). The primary greenhouse gases (heat-trapping) in the earth's atmosphere are water vapor, carbon dioxide, methane, nitrous oxide and ozone. Other greenhouse gases are three fluorinated industrial gases:

Hydrofluorocarbons, perfluorocarbon and sulphur hexafluoride. Anthropogenic greenhouse gas emission is the main cause of climate change. Its effects on global warming and climate change are devastating and it is becoming increasingly urgent to reduce the emissions and curb the pressure that human exert in the planet. The situation is so critical that, by the international energy Agency assessment, if we continue not to remedy it emission will be up 130% by 2050. Disaster associated with global warming and climate change includes killer heat waves, wildfires, droughts and flooding which highlight how vulnerable humanity is to extreme weather. Twenty-first century disasters such as killer heat waves in Europe, India and Pakistan, wildfires in the United States, droughts in Australia and deadly flooding in Mozambique, Thailand and Pakistan, flooding and heat waves in Nigeria in recent time scores caused by global warming and climate change (Nwaonicha 5).

There is no doubt that the world is under serious threat from the environment: From China to Mexico, Indonesia, United States of America, United Kingdom and Nigeria, analysts have argued that the environment was only responding to the abuses heaped on it by man's activities (Christopherson, 423). The concern is that the world may be getting close to extinction through natural disasters unless immediate actions are taken; and the signs are just too apparent to be ignored (Christopherson, 424 and Oyegbile, 25). Specifically, in May 2008, floods triggered by torrential rains killed dozens of people across China, while thousands of others were victims of landslides caused by the downpours. Also in the United States of America, the Mississippi River caused damages put at several millions of dollars when it over flew its banks, flooding some cities, towns, farmlands and major industrial installations over a distance of about 250km and ravaging Iowa before it heaped downstream. Apart from the Mississippi-Missouri River Systems of 1993, and that of 1995, world records of flood have it that recently severe floods were

experienced in Norway, China, Bangladesh, Ghana, The Netherlands and South Florida, (Christopherson, 425). In February 2000, a cyclone swept across Mozambique which left some 950,000 people homeless as floods devastated huge areas of low-laying lands. Roads, homes, bridges and crops were destroyed. Journalist, Greg Barrow, as quoted by Kerski and Ross 2000, flew over the striking area and filed this report for BBC, London, United Kingdom:

Wave of brown water has swept through the Save River valley. Trees have been uprooted, houses lie in ruins and debris are floating. Those who survive the flooding have been stranded on rooftops and in trees. Beneath them the bloated corpses of livestock float in the waters to rescue the survivors. Pilots say some people have been trapped in trees for days without food or water...the people wave frantically, motioning to their mouths and stomachs with their hands to show that they were hungry. When the rescue helicopters came to winch them to safety, there were desperate scramble...lifted around 300 survivors to higher ground but their work is difficult, fuel supplies was low. There were lacks of coordination in caring for the flood victims...up to 40,000 people were believed to be trapped by the flood (Kerski 52).

It is over 14 million Indians that were victims to the flood of August 2007 in Sathya Sai Baba; a major human settlement of that region. The nation's government could not organize any emergency relief immediately. Rather, it spent over \$1.6 billion on Hawk Jets. Hunger and diseases stalked the India children and the poor in the region. In a similar writing, Wright (2011) reports the devastating flood of Lahore, Pakistan in July 2011 where transportation systems were halted and businesses were closed down for days. Nigeria, a nation of 150 million people, shoehorned into an area twice the size of California and confronting deep ethnic divisions, development challenges, and a history of poor leadership, already struggles to meet its resource needs and wants. Failure to share limited resources well underlies many of the violent conflicts that dot the country's social landscape, pitting neighbor against neighbor, Muslim against Christian, patron against client, citizen against the state. Nigeria's climate is also likely to see growing shifts in temperature, rainfall, storms, and sea levels throughout the twenty-first century. These climatic challenges, if unaddressed, could throw already stressed resources such as land and water into even shorter supply. Moreover, poor responses to resource shortages could have

and water into even shorter supply. Moreover, poor responses to resource shortages could have serious negative secondary effects, including more sickness and hunger, fewer jobs, and poor economic growth, which in turn could open the door to more violence. Indeed, in a few conflict-prone spots such as the Niger Delta and the arid northeast, this sequence is probably playing out on a limited scale already.

Climate change is impacting on the health of Nigerians. When it rained, the downpour is usually heavy, making the expressway not to be pliable. Likewise, when it is dry, dust that vehicle raise are unbearable. Mr. Kolawole Ajanaku, Head of Department of Environment Services, Ikeja Local Global Area(LGA) Lagos state was afraid in a public presentation, saying; change in temperature could bring a lot of environmental problem. When sunlight reaches earth's surface, it can either be reflected back into space or absorbed, the planet releases some of the energy back into the atmosphere as heat (also called infrared radiation).

Greenhouse gases like water vapour (H₂O), carbon dioxide (CO₂) and methane (CH₄) absorb energy, slowing or preventing the loss of heat to space. In the way, greenhouse gases act like a blanket making earth warmer than it would otherwise be. Ngozi in an oral interview with THIS DAYS Newspaper (November, 2016) on the impact of climate change noted that it "impacts cannot be overemphasize as they are affecting people physically and mentally" (20). Aaron in the same interview added that "all pathogens, virus, bacteria, fungi and parasites are temperature-sensitive, they have differences in how they reproduce and they infect people and other animals based on the temperature they are living at" (12).

This study is aimed at examining the impact of global warming in the Federal Capital Territory (Abuja) canvas ways in which individual, national leaders and Government at all level in Nigeria and around the globe can manage climate change.

Statement of Problem

In 2010, a friend of mine would have lost his life and that of members of his family to flood as a result of heavy rain that lasted for over ten (10) hours in FCT Abuja. It is very alarming to see how devastating climate change has affected the moral and social wellbeing of FCT resident. Climate change combines in promoting all forms of nudity in the name of trying to receive fresh air which in turn has led to sexual harassment, leading to rape and all kinds of domestic violence. Apart from the aforementioned problems, global warming has also led to food scarcity which in turn resulted in inflation of cash crops such as vegetables, beef and other household items which the poor in the society largely depend on for their daily food. Thus, lack of food has caused an increase in poverty among the less privilege in Abuja, which has contributed to street begging and criminal activities.

Similarly, fresh water is becoming a problem and digging a well or a bore hole is now very frustrating as the ground is becoming harder and most especially, in rocky areas. A part from the social impacts of climate change, there is also the environmental impacts, which can be seen in area of afforestation and farm production. It is noteworthy that 20 years ago, Abuja used to be the hub of beautiful trees and edible plants and people usually come from far to relax during harsh and hot weathers but today it is a shadow of itself. Many of these trees have been cut down and the ones timed beautiful zones have turned into shelter and the result is heavy flood during rainy season and dangerous windows that usually accompany it. Climate change in Abuja has threatened in several areas Government effort to combat diseases and the spread of other infectious disease that lead to death. Government inability to provide power is a major cause of climate change in FCT. Households in Abuja depend on alternative power generating sources like generators and science has revealed that generator is a major contributor the generation of greenhouse gases and which further causes air pollution due to the dangerous substance it emit into the atmosphere.

Thus to checkmate this kind of experience that has affected the social and moral lives of the citizen of FCT Abuja, this study is apt because it suggested ways which climate change and global warming can be curb using the Abuja experience.

1.2 Research Questions

- i. What are the possible causes of global warming?
- ii. What are the effects of global warming?
- iii. What are the economic and social implications of global warming?
- iv. What are the role of Government in the fight against global?
- v. What are the suggestions that could help the government in dealing with it in the FCT?

1.3 Aim and Objectives of the Study

The research is aimed at achieving the following:

- i. To find the possible causes of global warming within the FCT Abuja.
- ii. To investigate the effects of global warming on FCT Abuja.
- iii. To evaluate the social and moral impacts of global warming in FCT Abuja.
- iv. To proffer a preferable solution to global warming in FCT Abuja

1.5 Significance of the Study

The following groups will benefit from this research work. Firstly, the government and other agencies; by given them a clue of the current state of the Federal Capital Territory, Abuja in respect to Global warming. How they can further manage the situation within the federal capital territory, as this work would serve as a guide to them when researching on the current state of the territory, and also serve as guide when strategizing on how to manage the moral and social effect it has created on the citizen of Abuja. Secondly, different guano and NGO's; by given them clue of the present effect of global warming on the moral and social life of the citizen of Abuja, it will

also serve as a guide to how they can manage the present effect of global warming negative consequential that has jeopardize the moral and social life of the people in the capital territory.

Thirdly, the residence of the Federal Capital territory Abuja, will be awakened to the negative daily human activities and how they are contributing to the spread of global warming. It will also serve as an eye opener to residence of FCT Abuja.

Fourthly, the research will reawaken the consciousness of religious societies in Abuja dwellers to understand the negative impact of noise pollution as a great effect on global warming in FCT Abuja and Nigeria at large.

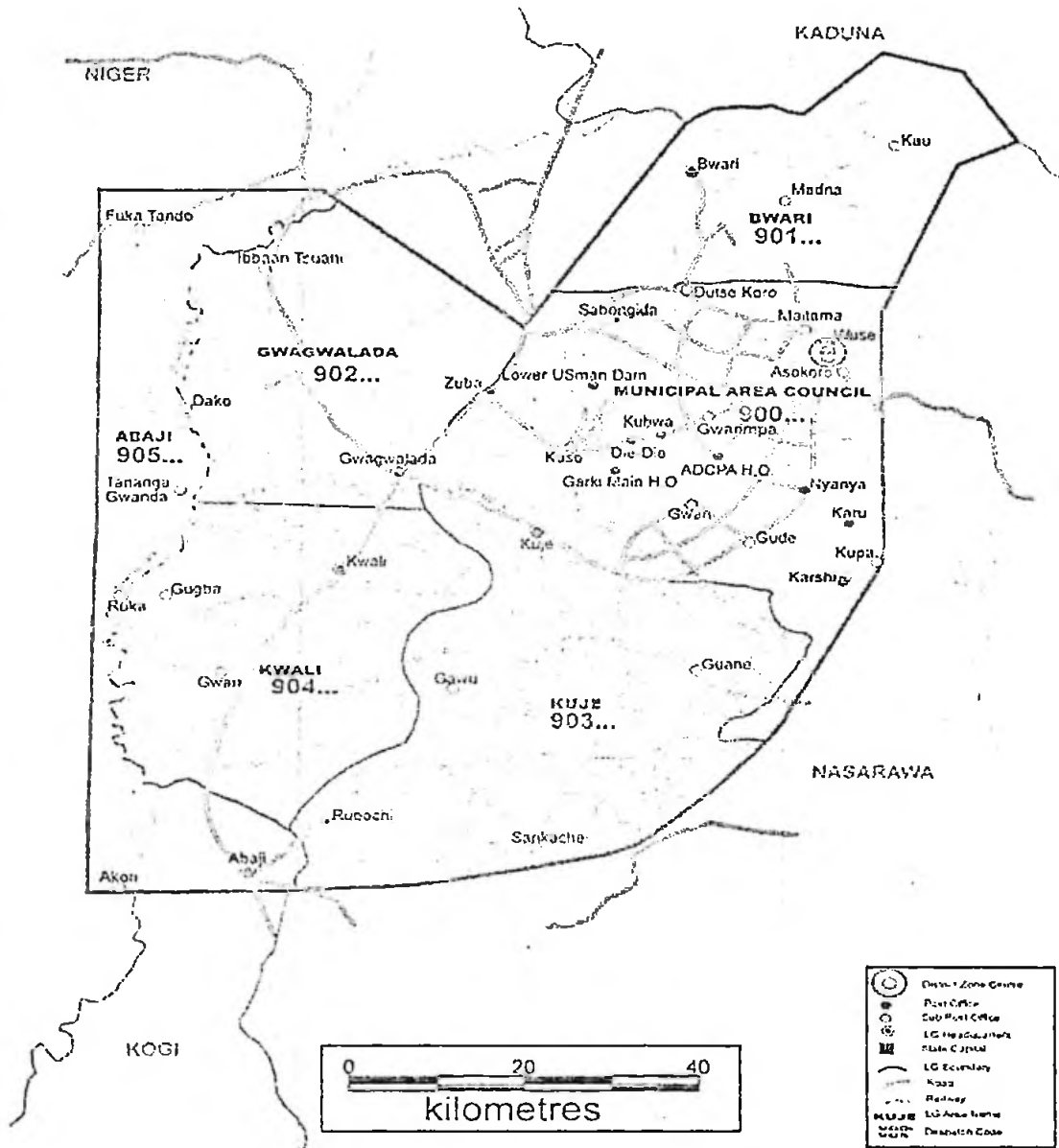
Fifthly, the environmental managers will also be beneficiaries of this research work because it would help them to develop a foundation on which they can set further research and that will lead to wider advocacy on the impact of global warming in FCT Abuja.

Finally, the scholars: scholars who are planning on furthering on this research would be a great beneficiary as this becomes a foundation from which they can extend their work.

1.4 Scope of the Study

Abuja is the capital city of Nigeria located in the center of the country within the Federal Capital Territory (FCT). It is a planned city and was built mainly in the 1980s, replacing the county's most populous city of Lagos as the capital on 12th December, 1991. Abuja's geography is defined by Aso Rock, a 400 meter (1,300 ft.) monolith left by water erosion. The Presidential Complex, National Assembly, Supreme Court and much of the city extend to the south of the rock. Zuma Rock, a 792 meter (2,598 ft.) Monolith lies just north of the city on the road to Kaduna State. At the 2006 census, the city of Abuja had population of 776,298, making it one of the ten most populous cities in Nigeria. According to the United Nations, Abuja grew by 139.7% between 2000 and 2010, making it the fastest growing city in the world. As of 2015, the city is

still experiencing an annual growth of at least 35%, still retaining its position as the fastest growing city on the African continent and one of the fastest growing in the world. Abuja has witnessed a huge influx of people into the city; the growth has led to the emergence of satellite towns, such as Karu, urban area, Suleja, Gwagwalada, Lugbe, Kuje and smaller settlements towards which the planned city is sprawling (See Fig 1. Map of Abuja, showing Area Councils). The rainy season begins from April and ends in October, when day time temperature reaches 28°C (82.4°F) to 30 °C (86.0 °F) and night time lows hover around 22°C (71.6 °F) 23°C (73.4 °F). In the dry season, daytime temperatures can soar as high as 40°C (104.0 °F) and nighttime temperatures can drip to 12 °C (53.6 °F). Even the chilliest nights can be followed by daytime temperatures well above 30 °C (86.0 °F). The high altitudes and undulating terrain of the FCT act as a moderating influence on the weather of the territory. Rainfall in the FCT reflects the territory's location on the windward side of the Jos Plateau and the zone of rising air masses with the city receiving frequent rainfall during the rainy season from April to October every year (Tourislink.com).



Map of Abuja Showing Abuja Area Councils. (Source: Google Map)

1.5 Organization of the Study

Chapter one, deals with introduction and background of the study, the problem that prompted the study, followed by research questions, aim and objectives of the study, scope of the study, organization of the study and definitions of research terms and variables as they apply to the study. Chapter two presents review of relevant literatures on some significant themes on global

warming and later draws conclusion from works of relevant scholars on the study under investigation.

Chapter three of the study exposes the step by step methods the research adopted for simple understanding. The chapter also discusses the researcher's activities on the field showing numbers of questionnaires administered, the number of response and the number of valid questionnaires analysis including the population of the study.

Chapter four deals with data presentation, analysis, interpretation and the research outcomes. The chapter also shows how the research questions were used to answer some of the problems that prompted the research and the validity of the research result was displayed in tables and were analyzed using simple percentage method. This chapter discusses the research findings.

Chapter five contains the summary of the research, the conclusion, recommendation and the research contribution to existing body of knowledge.

1.6 Operational Definition of Terms

This section provides clear definition of terms that are relevant to the study but are not clear to the reader. They are terms such as:

Carbon dioxide: Carbon (II) oxide (CO) is produced by the incomplete combustion of carbon compounds, such as octane, found in petrol. Carbon dioxide occurs in traces as an impurity in the atmosphere. The percentage present may be higher in cities where the gas is released in the exhaust fumes of motor cars, and in industrial areas due to the combustion of fuels, carbon dioxide is a poisonous gas. As little as 0.5% of it in the air may cause a person to die. Since the gas has no colour or odour, its presence is difficult to detect, so it is very dangerous (Ababio 59).

Climate Change: According to the Webster Comprehensive Dictionary of the English Language, the term "Climate" refers to "the temperature, humidity, precipitation, wind, radiation

meteorological conditions characteristic of a locality or region over an extended period of time” (247).

Greenhouse gas: It is any gaseous compound in the atmosphere that is capable of absorbing infrared radiation, thereby trapping and holding heat in the atmosphere. By increasing the heat in the atmosphere, greenhouse gases are responsible for the greenhouse effect, which ultimately leads to global warming.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Concept of Global Warming

Global Warming is defined as the increase of the average temperature on earth. As the earth is getting hotter, disasters like hurricanes, droughts and floods are getting more frequent. Over the last 100 years, the average air temperature near the earth's surface has risen by a little less than 1 degree celsius or 1.3 degrees fahrenheit. Global warming is the cause of climate change in the world today. Scientists often prefer to speak about climate change instead of global warming, because higher global temperatures do not necessarily mean that it will be warmer at any given time at every location on the Earth. Warming is the strongest at earth's poles, the arctic and the antarctic, and will continue to be so. In recent years, fall air temperatures have been at a record 9 degrees fahrenheit (5 degrees celsius) above normal in the arctic, according to the U.S National Oceanic and Atmospheric Administration. But changing wind patterns could mean that a warming Arctic, for example, leads to colder winters in continental Europe. Regional climates will change as well, but in very different ways. Some regions like parts of Northern Europe or West Africa will probably get wetter, while other regions like the Mediterranean or Central Africa will most likely receive less rainfall. Melting ice is the most visible impact of a warming climate. The UN Panel on Climate Change finds that average Arctic temperatures have increased at almost twice the global average rate in the past 100 years (Venkataramanan 226).

Global warming is not the only problem now facing mankind, but it is one of the most serious with which humanity has ever been confronted (Adeniji 41). Others such as overpopulation as predicted by Malthus in the 19th century did not occur as forecast, Water shortages, already plaguing many regions of the world. This has become a new reality with harmful impacts. Many elements of the environment and the human society are sensitive to climate variably and change.

Fatile argued, that “climate change has affected virtually every aspect of the human life in contemporary society and also brought about daunting challenges to virtually all facets of life” (Fatile 2013). According to Klisten Flint:

Global warming has been a point of contention in our society for years, and the extreme views from both sides of the argument have transformed the subject of global warming from a factual theory into a mythical idea. At one extreme, those who consider themselves “green” bemoan the tragedy that man is causing our planet’s climate to heat up while the other side of the debate refuses to believe any part of the global warming theory. Behind both opinions, there is often confusion, misunderstanding, and a general lack of knowledge. The theory that global warming has anthropogenic causes has existed for over a century, and scientists have collected evidence on global warming for over fifty years. In spite of the evidence, the public generally lives in the dark, constantly wondering if global warming is fact or fiction (1).

Global warming is the increase in the Earth’s temperature caused by increased emission of greenhouse gases into the atmosphere. The greenhouse gases, including CO₂, form a blanket in the Earth’s atmosphere that traps heat and causes global temperatures to increase (Moriarty 723-725). The theory of global warming was first offered by a Swedish chemist named Svante Arrhenius in 1896. Arrhenius estimated that “doubling the level of carbon dioxide in the atmosphere would raise the mean global temperature by several degrees” (Weart and Atom 67). Even then, his audience was skeptical as many other factors could also affect global temperature. Since Arrhenius’ paper, the global warming discussion has grown convoluted as both scientists and the media have addressed the subject. Scientists track climate change and publish their evidence, but then the media hypes it up in its articles to the public. To add to the confusion, the public tends to avoid thinking much about the topic unless extreme weather occurs unexpectedly.

2.2 Causes of Global Warming

The causes of global warming may be natural or may be caused by human interference. The climate system is a complex, interactive system consisting of the atmosphere, land surface, snow and ice, oceans and other bodies of water, and living things. The atmospheric component of the

climate system most obviously characterizes climate; climate is often defined as 'average weather'. Climate is usually described in terms of the mean and variability of temperature, precipitation and wind over a period of time, ranging from months to millions of years (the classical period is 30 years). The climate system evolves in time under the influence of its own internal dynamics and due to changes in external factors that affect climate (called 'forcings'). External forcing includes natural phenomena such as volcanic eruptions and solar variations, as well as human-induced changes in atmospheric composition. Solar radiation powers the climate system (Peterson 96).

The reason the earth's surface is this warm is the presence of greenhouse gases, which act as a partial blanket for the long wave radiation coming from the surface. This blanketing is known as the natural greenhouse effect. The most important greenhouse gases are water vapour and carbon dioxide. The two most abundant constituents of the atmosphere – nitrogen and oxygen – have no such effect. Clouds, on the other hand, do exert a blanketing effect similar to that of the greenhouse gases; however, this effect is offset by their reflectivity, such that on average, clouds tend to have a cooling effect on climate (although locally one can feel the warming effect: cloudy nights tend to remain warmer than clear nights because the clouds radiate long wave energy back down to the surface). Human activities intensify the blanket effect through the release of greenhouse gases. For instance, the amount of carbon dioxide in the atmosphere has increased by about 35% in the industrial era, and this increase is known to be due to human activities, primarily the combustion of fossil fuels and removal of forests. Thus, humankind has dramatically altered the chemical composition of the global atmosphere with substantial implications for climate (Somerville et al. 97).

Greenhouse effect according to Odjogo is:

One of the first things scientists learned is that there are greenhouse gases responsible for the warming, and human emit them in variety of ways most comes from the combustion of fossil fuels in cars, factories and electricity production.

The gas responsible for the most warming is carbon dioxide (CO₂). It is obvious that CO₂ is the most important contributor to the greenhouse gases, it contributes 76.7% of the greenhouse gases. Its annual emission grew by about 80% between 1970 and 2004 (142).

Other contributors include methane released from landfills and agriculture (especially from the digestive systems of grazing animals), Nitrous Oxide from fertilizers, gases used for refrigeration and industrial processes, and the loss of forests that would otherwise store CO₂. Different greenhouse gases have different heat-trapping abilities. Some of them can even trap more heat than CO₂. A molecule of methane produces more than 20 times the warming of a molecule of CO₂. Nitrous Oxide is 300 times more powerful than CO₂. Other gases such as chlorofluorocarbons (which have been banned in much of the world because they also degrade the ozone layer) have heat trapping potential thousands of times greater than CO₂; none of these gases add as much warmth to the atmosphere as CO₂ does.

Some other examples of using energy and polluting the air: turning on a light, watching television, listening to a stereo, washing or drying clothes, using a hair dryer, riding a car, heating a meal in the microwave, using an air conditioner, playing video games, using a dishwasher, use of horn speakers in religious gatherings all these and many more release greenhouse gases to the air in their own proportion and it is the accumulation of all these that has caused the warming. Another cause of global warming as observed by the Environmental Protection Authority is attributed to the activity of the solar system thus:

It is the activity of the Solar system, hence the heat and light from the sun is produced in the Centre of the sun. The sun has a layer just like the earth. The heat escapes out of this layer to the next layer, the radioactive zone. Gradually, the heat and light will pass through the convection zone at a temperature of around 2,000,000F. When it gets to the surface, the temperature is about 10,000F. Finally the heat and light is sent into space. When you pollute, you send chemicals into the air that destroy our atmosphere, so more heat and light cannot escape from the earth's atmosphere (2).

2.3 History of Global Warming

The history of the scientific discovery of climate change began in the early 19th century when ice ages and other natural changes in paleo climate were first suspected and the natural greenhouse effect first identified. In the late 19th century, scientists first argued that human emissions of greenhouse gases could change the climate.

Many other theories of climate change were advanced, involving forces from volcanism to solar variation. In the 1960s, the warming effect of carbon dioxide gas became increasingly convincing. Some scientists also pointed out that human activity that generated atmospheric aerosols (e.g. "pollution") could have cooling effects as well.

During the 1970s, scientific opinion increasingly favored the warming viewpoint. By the 1990s, as a result of improving fidelity of computer models and observational work confirming the Milankovitch theory of the ice ages, a consensus position formed, greenhouse gases were deeply involved in most climate changes and human caused emissions were bringing discernible global warming. Since the 1990s, scientific research on climate change has included multiple disciplines and has expanded. Research has expanded our understanding of causal relations, links with historic data and ability to model climate change numerically. Research during this period has been summarized in the Assessment Reports by the Intergovernmental Panel on Climate Change. Climate change is a significant and lasting change in the statistical distribution of weather patterns over periods ranging from decades to millions of years. It may be change in average weather conditions, or in the distribution of weather around the average conditions (such as more or fewer extreme weather events). Climate change is caused by factors that include oceanic processes (such as oceanic circulation), biotic processes, variations in solar radiation received by Earth, plate tectonics and volcanic eruptions, and human-induced alterations of the

natural world. The latter effect is currently causing global warming, and climate change is often used to describe human-specific impacts. In fact, Glacken et al, note that:

From ancient times, people suspected that the climate of a region could change over the course of centuries. For example, Theophrastus, a pupil of Aristotle, told how the draining of marshes had made a particular locality more susceptible to freezing, and speculated that lands became warmer when the clearing of forests exposed them to sunlight. Renaissance and later scholars saw that deforestation, irrigation, and grazing had altered the lands around the Mediterranean since ancient times; they thought it plausible that these human interventions had affected the local weather (441).

In a similar argument, Fleming and James posit that:

Vitruvius, in the first century BC, describes a series of ancient cities that lined the Anatolian peninsula from south to north along the Aegean Sea, he then comments that they long ago were engulfed by the seas presently these ancient cities [which?] are again out of water. The most striking change came in the 18th and 19th centuries, obvious within a single lifetime: the conversion of Eastern North America from forest to croplands. By the early 19th century many believed the transformation was altering the region's climate—probably for the better. When sodbusters took over the Great Plains they were told that "rain follows the plough (100).

Consequently, Spencer and Weart do not agree with the above submission when they argue that:

Some experts reported that deforestation not only caused rainwater to run off rapidly in useless floods, but reduced rainfall itself. European professors alert to any proof that their nations were wiser than others, claimed that the Orientals of the Ancient Near East had heedlessly converted their once lush lands into impoverished deserts. Meanwhile, national weather agencies had begun to compile masses of reliable observations of temperature, rainfall, and the like. When the figures were analyzed, they showed many rises and dips, but no steady long-term change. By the end of the 19th century, scientific opinion had turned decisively against any belief in a human influence on climate. And whatever the regional effects, few imagined that humans could affect the climate of the planet as a whole (17).

In the same general period that scientists first suspected climate change and ice ages, Joseph Fourier, in 1824, found that Earth's atmosphere kept the planet warmer than would be the case in a vacuum. Fourier recognized that the atmosphere transmitted visible light waves efficiently to

the earth's surface. The earth then absorbed visible light and emitted infrared radiation in response, but the atmosphere did not transmit infrared efficiently, which therefore increased surface temperatures. He also suspected that human activities could influence climate, although he focused primarily on land use changes.

Connolley has rightly observed that:

The establishment and progress of human societies, the action of natural forces, can notably change, and in vast regions, the state of the surface, the distribution of water and the great movements of the air. Such effects are able to make to vary, in the course of many centuries, the average degree of heat; because the analytic expressions contain coefficients relating to the state of the surface and which greatly influence the temperature. (23)

In Eunice Newton Foote study on "The Warming Effect of the Sun", she said:

Warming was increased by the presence of carbonic acid gas (carbon dioxide), and suggested that the surface of an earth whose atmosphere was rich in this gas would have a higher temperature. Her work was presented by Prof. Joseph Henry at the American Association for the Advancement of Science meeting in August 1856 and published as a brief note, but scientists failed to take notice (Sorenson 78).

John Tyndall took Fourier's work was one step further in 1859 when he investigated the absorption of infrared radiation in different gases. He found that water vapor, hydrocarbons like methane (CH₄), and carbon dioxide (CO₂) strongly block the radiation. In his words:

Some scientists suggested that ice ages and other great climate changes were due to changes in the amount of gases emitted in volcanism. But that was only one of many possible causes. Another obvious possibility was solar variation. Shifts in ocean currents also might explain many climate changes. For changes over millions of years, the raising and lowering of mountain ranges would change patterns of both winds and ocean currents. Or perhaps the climate of a continent had not changed at all, but it had grown warmer or cooler because of polar wander (the North Pole shifting to where the Equator had been or the like). There were dozens of theories (John 44).

In another study done by Arrhenius in 1896 shows the impacts of Carbonic Acid in the Air upon the Temperature of the Earth (Arrhenius, 14) and in attempting to quantify natural sources of

In another study done by Arrhenius in 1896 shows the impacts of Carbonic Acid in the Air upon the Temperature of the Earth (Arrhenius, 14) and in attempting to quantify natural sources of emissions of CO₂ for purposes of understanding the global carbon cycle. Högbom found that estimated carbon production from industrial sources in the 1890s (mainly coal burning) was comparable with the natural sources. Arrhenius saw that this human emission of carbon would eventually lead to warming. However, because of the relatively low rate of CO₂ production in 1896, Arrhenius thought the warming would take thousands of years, and he expected it would be beneficial to humanity.

Arrhenius's calculations were disputed and subsumed into a larger debate over whether atmospheric changes had caused the ice ages. Experimental attempts to measure infrared absorption in the laboratory seemed to show little differences resulted from increasing CO₂ levels, and also found significant overlap between absorption by CO₂ and absorption by water vapor, all of which suggested that increasing carbon dioxide emissions would have little climatic effect.

These early experiments were later found to be insufficiently accurate, given the instrumentation of the time. Many scientists also thought that the oceans would quickly absorb any excess carbon dioxide (Spencer 23). Other theories of the causes of climate change fared no better. The principal advances were in observational paleoclimatology, as scientists in various fields of geology worked out methods to reveal ancient climates. Wilmot H. Bradley found that annual varves of clay laid down in lake beds showed climate cycles. An Arizona astronomer, Andrew Ellicott Douglass, saw strong indications of climate change in tree rings. Noting that the rings were thinner in dry years, he reported climate effects from solar variations, particularly in connection with the 17th-century dearth of sunspots (the Maunder Minimum) noticed previously by William Herschel and others. Other scientists, however, found good reason to doubt that tree

Through the 1930s, the most persistent advocate of a solar-climate connection was astrophysicist Charles Greeley Abbot. By the early 1920, he had concluded that the solar "constant" was misnamed and his observations showed large variations, which he connected with sunspots passing across the face of the Sun. He and a few others pursued the topic into the 1960, convinced that sunspot variations were a main cause of climate change.

In 1938, a British engineer, Guy Stewart, attempted to revive Arrhenius's greenhouse-effect theory. Stewart presented evidence that both temperature and the CO₂ level in the atmosphere had been rising over the past half-century, and he argued that newer spectroscopic measurements showed that the gas was effective in absorbing infrared in the atmosphere. Better spectrograph in the 1950 showed that CO₂ and water vapor absorption lines did not overlap completely. Climatologists also realized that little water vapor was present in the upper atmosphere.

In 1955, Hans Suess's carbon-14 isotope analysis showed that CO₂ released from fossil fuels was not immediately absorbed by the ocean. In 1957, better understanding of ocean chemistry led Roger Revelle to a realization that the ocean surface layer had limited ability to absorb carbon dioxide, also predicting the rise in levels of CO₂ and later being proven by Charles David Keeling (Revelle 18-27). By the late 1950, more scientists were arguing that carbon dioxide emissions could be a problem, with some projecting in 1959 that CO₂ would rise 25% by the year 2000, with potentially "radical" effects on climate (Spencer 22). In 1960, Charles David Keeling demonstrated that the level of CO₂ in the atmosphere was in fact rising. Concern mounted year by year along with the rise of the "Keeling Curve" of atmospheric CO₂.

Another clue to the nature of climate change came in the mid-1960 from analysis of deep-sea cores by Cesare Emiliani and analysis of ancient corals by Wallace Broecker and collaborators. Rather than four long ice ages, they found a large number of shorter ones in a regular sequence.

It appeared that the timing of ice ages was set by the small orbital shifts of the Milankovitch cycles. While the matter remained controversial, some began to suggest that the climate system is sensitive to small changes and can readily be flipped from a stable state into a different one. Scientists meanwhile began using computers to develop more sophisticated versions of Arrhenius's calculations. In 1967, taking advantage of the ability of digital computers to integrate absorption curves numerically, have made the first detailed calculation of the greenhouse effect (Spencer 3). They found that, in the absence of unknown feedbacks such as changes in clouds, a doubling of carbon dioxide from the current level would result in approximately 2 °C increase in global temperature. By the 1960, aerosol pollution ("smog") had become a serious local problem in many cities, and some scientists began to consider whether the cooling effect of particulate pollution could affect global temperatures.

Scientists were unsure whether the cooling effect of particulate pollution or warming effect of greenhouse gas emissions would predominate, but regardless, began to suspect that human emissions could be disruptive to climate in the 21st century if not sooner. Innis 1968 book *The Population Bomb*, Paul R. Ehrlich wrote, "the greenhouse effect is being enhanced now by the greatly increased level of carbon dioxide... [This] is being countered by low-level clouds generated by contrails, dust, and other contaminants... At the moment we cannot predict what the overall climatic results will be of our using the atmosphere as a garbage dump" (Ehrlich 52).

In 1965, the landmark report, "Restoring the Quality of Our Environment" by U.S. President Lyndon B. Johnson's Science Advisory Committee warned of the harmful effects of fossil fuel emissions: In 1969, NATO was the first candidate to deal with climate change on an international level. It was planned then to establish a hub of research and initiatives of the organization in the civil area, dealing with environmental topics as Acid Rain and the Greenhouse effect. The suggestion of US President Richard Nixon was not very successful with the administration of German Chancellor Kurt Georg Kiesinger. But the topics and the

preparation work done on the NATO proposal by the German authorities gained international momentum, as the government of Willy Brandt started to apply them on the civil sphere instead (Umweltkrise 18-21).

Scientists have increasingly predicted warming in 1970, meanwhile, temperature anomalies during the period of 1965 to 1975 with respect to the average temperatures from 1937 to 1946. In the early 1970s, evidence of aerosols was increasing worldwide, encouraged by Reid Bryson and some others to warn of the possibility of severe cold. Meanwhile, the new evidence that the timing of ice ages was set by predictable orbital cycles suggesting that the climate would gradually cool, over thousands of years. For the century ahead, however, a survey of the scientific literature from 1965 to 1979 found 7 articles predicting cooling, and 44 predicting warming; the warming articles were cited much more often in subsequent scientific literature. Several scientific panels from this period concluded that more research was needed to determine whether warming or cooling was likely, indicating that the trend in the scientific literature had not yet become a consensus. John Sawyer published the study *Man-made Carbon Dioxide and the "Greenhouse" effect* in 1972 (Sawyer 26):

He summarized the knowledge of the science at the time, the anthropogenic attribution of the carbon dioxide greenhouse gas, distribution and exponential rise; findings which still hold today. Additionally, he accurately predicted the rate of global warming for the period between 1972 and 2000. The mainstream news media at the time exaggerated the warnings of the minority who expected imminent cooling. For example, in 1975, *Newsweek* magazine published a story that warned of "ominous signs that the earth's weather patterns have begun to change" (Gwynne 13). The article continued by stating that evidence of global cooling was so strong that meteorologists were having "a hard time keeping up with it" (Gwynne 71). On October 23, 2006, *Newsweek* issued an update stating that it had been "spectacularly wrong about the near-term future" (Jerry 43).

The World Climate Conference was held on 12th to 23rd of February, 1979 in the conference the World Meteorological Organization concluded that:

It appears plausible that an increased amount of carbon dioxide in the atmosphere can contribute to a gradual warming of the lower atmosphere, especially at higher latitudes. It is possible that some effects on a regional and global scale may be detectable before the end of this century and become significant before the middle of the next century (WMO, 28 June 2009).

In July 1979, the United States National Research Council published a report, concluding (in part): Consensus begins to form, 1980–1988 By the early 1980s, the slight cooling trend from 1945–1975 had stopped. Aerosol pollution had decreased in many areas due to environmental legislation and changes in fuel use, and it became clear that the cooling effect from aerosols was not going to increase substantially while carbon dioxide levels were progressively increasing. In 1973, British scientist James Lovelock speculated that chlorofluorocarbons (CFCs) could have a global warming effect. In 1975, Ramanathan found that a CFC molecule could be 10,000 times more effective in absorbing infrared radiation than a carbon dioxide molecule, making CFCs potentially important despite their very low concentrations in the atmosphere. Why most early work on CFCs focused on their role in ozone depletion, by 1985 Ramanathan and others showed that CFCs together with methane and other trace gases could have nearly as important a climate effect as increases in CO₂. In other words, global warming would arrive twice as fast as had been expected.

Shortly after, a "World Conference on the Changing Atmosphere: Implications for Global Security" gathered hundreds of scientists and others in Toronto, they concluded that the changes in the atmosphere due to human pollution" represent major threat to international security and are already having harmful consequences over many parts of the globe, and declared that by 2005, the world should push its emissions some 20% below the 1988 level (WMO (World Meteorological Organization)). The 1980s saw important breakthroughs with regard to global

environmental challenges. e.g. Ozone depletion was mitigated by the Vienna Convention (1985) and the Montreal Protocol (1987). Acid rain was mainly regulated on the national and regional level.

In 1988, the WMO established the Intergovernmental Panel on Climate Change with the support of the UNEP. The IPCC continues its work through the present day, and issues a series of assessment reports and supplemental reports that describe the state of scientific understanding at the time each report is prepared. Scientific developments during this period are summarized about once every five to six years in the IPCC assessment reports which were published in 1990 first assessment report, 1995 second assessment report, 2001 third assessment report, 2007 fourth assessment report, and 2013/2014 fifth assessment report. Since the 1990s, research on climate change has expanded and grown, linking many fields such as atmospheric sciences, numeric modeling, behavioral sciences, geology and economics. Articles on climate change science are now frequently published in major journals.

2.4 The Effect of Global Warming in Nigeria

Climate change presents an additional stress for Nigerians who are already struggling with the changes posed by climate variability; ongoing environmental degradation and wide spread poverty. With the recent damage caused by flood in Lagos and Niger State, it is ease to point out this to be a side effect of global warming on Nigeria. Throughout live? Most Nigerian have observed changes in their weather and environment. They say that the regular pattern of seasons has shifted. For example, a woman from Abia state said that the rainy seasons now come at a different time: "we know the rainy seasons starts around March and ends by August, but as of last year even on 23 or 24 December the rain was still falling". This is interesting because the time of Ramadam shifts from year to year. Other people talk not about shifting seasons but about the loss of district seasons, particularly rainy seasons. There is no consensus on whether overall rainfall is less or more than it used to be but this is partially due to different climatic

characteristics across the country: some areas have experienced more flooding while others have experienced drought and desert encroachment. A lot of people have also noticed higher temperatures. Changes in temperatures are often attributed to the sun or overpopulation because heat from the sun rays and overcrowding are immediate sources of heat: "Nowadays, there is too much sun, the heat is terrible. It is not like what we were used to", said a woman from Abia. In northern Nigeria, many people have noticed a reduction in agricultural output due to drought and desert encroachment: "years back, we used to have trees and grow groundnuts and local beans," a man from Jigawa lamented "but there was this strong approach of drought that took over, and since then we don't grow them anymore. The lack of trees gave way for the desert to come in".

Farmers in particular feel the effects: "In those days you could farm and harvest food that would last for a whole year, but these days your harvest can not last beyond six month, "says one someone in Jigawa. If you had ten cows you would not be any worry because they could go around and feed well because there was grass. But now even if you have two cows you will be worried because there is no grass for them to eat". Clearly, farmers are worried by the change in their circumstances. Similarly, food scarcity is a concern in parts of Nigeria. "In the 1990s, people usually come to these towns to collect food, but this time around we go somewhere to buy food and look for all the things people usually come here to buy", said a man from Rivers. Urban Nigeria tends to express different concerns, including lack of space and over population. "The population was not like these five years ago," claimed a woman from Lagos, "but now the population is such that the traffic will stand still till mid-night...the population is too much," traffic, along with people building house too close together and in inappropriate places, is seen as the result of over population. There is a general sense that the environment has been degraded. People mention several problems when they discuss environmental change, as a woman from Abia said: "What I have said about the nature environment around here is that it is rough," "Things are very expensive. The road is not good and they are not also motor able. Farming here

is also not too good” she added. A man from Lagos said: “A decade ago Nigeria was blessed with natural good vegetation and conservation but now, because of pollution, the ozone would be destroyed”. This quote signifies a sense that ozone destruction is sometimes part of the general environmental degradation that constitute climate change in the minds of many.

Recently, a former Minister of Water Resources, Suleiman Adamu, conveyed the Government’s sympathy at a news conference on Wednesday in Abuja, where he said that thirty states and over one hundred local areas, which have been categorized as high flood risk areas, could expect flood in the year 2017.

2.5 Government Effort on Global Warming in Abuja

Government efforts to contain global warming in Abuja started with an effective Master Plan. In June 1977, the FCDA commissioned a team of international planning consultants, the US-based IPA Group, to prepare a draft Master Plan for the new Federal Capital of Nigeria. And a little more than 18 months later, the 286 page Master Plan was published (FCD Authority, 2018). Chuks Akamadu wrote that “the total land area for Phase I of the city is about 7076 hectares out of which about 1260 hectares is reserved for ‘greens’ development. This includes open spaces, recreational facilities, parks, gardens, children playgrounds, outdoor games, sport centers, national and district/neighborhood parks. Others are green stretches along valleys, riverbeds, hilly patches and some incidental open spaces. A well-planned sewage system also runs across the city and emptied liquid waste into an environmental sink (Thisday 28 February 2017).

Environmental health was therefore carefully considered in the planning of the city to minimize the impact of physical development on the ecosystems of Abuja as well as control deforestation and other activities detrimental to the environment. However, the Nigerian Institute of Town Planners in 2017 disagree that the Abuja Master Plan was followed as significant loss of green areas as been seen.

A comparison between the IPA plan which was approved and what is on the ground today shows much distortion. In what the planners called The Monumental Core in the Central Area, there was to be a National Square as the anchor of two radial streets; with a National Mall that linked to the National Assembly and other monumental symbols of government. The Presidential Palace surrounded by Presidential Gardens was to be in this area. That is not there. As a matter of fact the concept of a National Mall where the ministries and many government offices are located does not exist anymore. At the other end of the central area was to be the National Sports Centre which thankfully exists. Beyond this was to be the Parkway from the Airport intended to be a green area that welcomes visitors and residents alike. This Parkway is now lined with buildings, estates and institutions. The plan envisaged that the natural watercourses in the area would be preserved as green areas. In all parts of the city most of these have been encroached upon and converted to a variety of uses such as residential, commercial (usually entertainment) and so on (NITP, 2017).

To tackle environmental challenges in the federal capital territory, the FCT Administration established the Abuja Environmental Protection Board (AEPB) in 1997, backed by National Assembly legislation, AEPB Act of 1997. The objective of the Board was to secure the quality of environment good for health, conserve and use the environment and its natural resources for the benefit of the territory as well as minimize the impact of physical development on the ecosystems of Abuja (Vconnect 10). AEPB is the regulatory body statutorily charged with the responsibility of protecting and managing the FCT environment. Its mission is “to provide innovative, efficient and effective environmental regulation and waste management services towards ensuring a healthy, clean and sustainable FCT environment; raise public awareness and promote understanding of essential linkages between the environment and development within the Territory” (AEPB, 19).

Abubakar however, observes that “waste collection in Abuja has assumed a similar posture to that of Lagos where garbage is dumped on roads, inside drainage channels or empty lots and uncompleted buildings in the city and its suburbs and satellite towns” (20). In a bid to improve solid waste management in the city, a partnership between Abuja Environmental Protection Board (AEPB) and a number of private companies began in 2003. The companies were assigned

to various districts and contracted to pick up and transport garbage to various disposal sites a number of times per week. On its part, the city collects user charges that it uses to pay the companies. Abubakar notes that "although this initiative has significantly improved garbage collection in Abuja, it suffers from two main problems: (i) some companies use open trucks thereby littering the pick-up sites and their trucks are inadequate and often break down; (ii) residents are often unable to hold the companies accountable as they have no direct contract with them and have no clear idea who to contact when garbage has not been picked up: the companies or the utility agency as" (21).

The legal status of Abuja as Nigeria's capital makes it a beneficiary of federal legislations, action plans and programmes on global warming, and environmental health etc. In 1998, the Nigerian Government released the National Policy on the Environment which has become a working document upon which the actions of government on global warming are derived. The policy envisages the integration of environmental concerns into major economic decision-making processes as posited by the NPE, thus:

The goal of the National Policy on the Environment is to achieve sustainable development in Nigeria, and, in particular to: a. secure a quality of environment adequate for good health and well-being; b. conserve and use the environment and natural resources for the benefit of present and future generations'. Restore, maintain and enhance the ecosystems and ecological processes essential for the functioning of the biosphere to preserve biological diversity and the principle of optimum sustainable yield in the use of living natural resources and ecosystems'. raise public awareness and promote understanding of the essential linkages between the environment, resources and development, and encourage individual and community participation in environmental improvement efforts; and. co-operate in good faith with other countries, international organizations and agencies to achieve optimal use of trans boundary natural resources and effective prevention or abatement of trans boundary environmental degradation (87).

Furthermore, the document stipulates mandatory implementation of a detailed Environmental Impact Assessment of major construction projects, ensuring that remedial measures to mitigate the negative impacts of major construction projects on the environment are built into the project

Furthermore, the document stipulates mandatory implementation of a detailed Environmental Impact Assessment of major construction projects, ensuring that remedial measures to mitigate the negative impacts of major construction projects on the environment are built into the project blueprint before permission is given for work to commence, initiating post-construction environmental audits that ensure that the in-built mitigating measures satisfactorily address the anticipated environmental concerns and the introduction, in collaboration with the Standard Organization of Nigeria and the Nigeria Society of Engineers, of stringent quality standards for various construction materials in order to guarantee the structural stability and durability of the construction works.

The policy equally recommends the enactment of environmental by-laws aimed at minimizing the negative impacts on the environment of the processes of material procurement, transport and utilization in construction industry especially with regard to: noise abatement, reduction of vibrations, reduction of dust pollution, careful handling and disposal of spent oils, fuels etc. minimization of noxious gas emissions (CO, SO, NO_x, O₂, etc.), provocation of erosion, flooding, landslides, etc., and habitat destruction, and conservation of local ecological resources.

On the strength of policies such as the forgoing, Nigeria has become a signatory to international obligations such as the 2015 Paris agreement on climate change which was ratified by over 176 countries with the aim of reducing greenhouse emissions to preindustrial levels. Consequently, a report by Daily Trust Newspaper, published in September 24, 2014, allude to the fact that the National Environmental Standards and Regulations Enforcement Agency (NESREA) commenced nationwide consultations as part of activities that would eventually culminate into the introduction of the national vehicular emission control programme.

However, most policy statements on the reduction of vehicular emissions have been largely ignored as the country lacks the technology to revert to clean energy instead of fossil fuel

increases, so larger scale and less locally evident environmental changes (category C) accrue. Abuja's inability to effectively tackle gaseous emissions from cars could be traced to the national challenge for clean technology in refining and car manufacturing.

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter discusses the methodology the researcher used in carrying out the research under investigation. The data were gathered using questionnaire.

3.1 Research Design

A survey design was adopted in this study. The survey design enables the researcher to obtain the opinion of representations sample of the targeted population. This adopted the open option method in which research question was presented to each participant and they are expected to respond according to their experience of climate change and global warming.

3.2 Population of the Study

The population of this study is one hundred (100) participants who are made up of educated men and women from the Federal Capital Territory Abuja, who are aware of the effect of global climate change and global warming. According to the 2006 census, the city of Abuja's population was 776,298, "making it one of the most populous cities in Nigeria. The United Nations has noted that "Abuja grew by 139.7% between year 2000 and 2010, making it the fastest growing city in the world" (1).

3.3 Sample and Sampling Procedure

The sample for this study was drawn from among resident of the Federal Capital Territory, Abuja. The total of one hundred respondents was sampled to represent the entire population. Random sampling technique was adopted in choosing one hundred male and female respondents that were used for the study. Similarly, one hundred copies of questionnaire were produced and distributed to the respondents for data collection and analysis.

Letters of introduction were served to the respondents seeking the assistance and cooperation to provide necessary information required in the questionnaires and were assured that their responses were treated with confidentiality.

3.4 Data Collection Procedure

The questionnaires were distributed to the respondents and were filled and returned immediately after filling. A total of 100 copies of the questionnaire were personally distributed. The respondents were given the chance to express their opinion by on the moral and social impact of global warming in the Federal Capital Territory, Abuja.

3.5 Method of Data Analysis

The data were collected and arranged based on the number of people who responded to each of the items on the questionnaire. The researcher used simple percentage formula to numerically show the rate of responses received from a given test. Number of respondents X is equal to 100 total respondents X is equal to 100.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND FINDINGS

In this chapter, the researcher presented, analyzed and interpreted the information that was gathered from the field survey with respondents. These questions focused on covering the core issue of the research topic. These include the cause, effect and solution to help curtail the effect of global warming on the social and moral life of the Federal Capital Territory, Abuja.

4.1 Data presentation

4.1.1 Acknowledge/Awareness about Global Warming.

The respondents were asked whether they have heard of global warming before. The responses obtained are presented in the below table:

Table 1:

Responses	No. Of respondent	Percentage (%)
Yes	78	94
No	5	6
I don't know	0	0
Total	83	100

Sources: Filed Work

The information from the table above shows that 78 respondents representing 94% of the total respondents have heard about the term global warming, 5 respondents representing 6% of the total respondent have not in any way heard about the term global warming. This means there are still people who have not heard about global warming in Abuja.

4.1.2 Change in Weather in Abuja is due to Global Warming

The respondents were asked whether there have been any change in weather in Abuja before due to global warming. The responses obtained are presented in the table below:

Table 2:

Responses	No. Of respondent	Percentage (%)
Yes	83	100
No	0	0
I don't know	0	0
Total	83	100

Sources: Filed Work

The above table shows that 83 respondents representing 100% agreed that there has been change in weather within the Abuja metropolis. Even though some may not have the understanding of the cause but there is a general agreement of the change in weather.

4.1.3 The Effects of Global Warming in Abuja

The respondents were asked whether there have been any effects of global warming on Federal Capital Territory Abuja. The responses obtained are presented in the table below:

Table: 3

Responses	No. Of respondent	Percentage (%)
Yes	79	95
No	0	0
I don't know	4	4
Total	83	100

Sources: Filed Work

The above table shows that 79 respondents representing 95% acknowledge that Abuja and her citizens have been affected by global warming, why 4 respondents representing 4% cannot tell if Abuja is being affected by global warming; this may be due to the fact they have no knowledge of the term global warming.

These 79 respondents representing 95% of those who acknowledge that Abuja is facing the effect of global warming mostly agreed that most of the citizens of Abuja are not aware of global warming and the causes. This poses a challenge to the government of the Federal Capital Territory, Abuja to intensify awareness for her residences.

4.1.4 Thoughts about Possible Reasons for Global Warming in Abuja

The respondents were asked whether they have ever had the thought on the possible reasons for global warming in the Federal Capital Territory, Abuja. The responses obtained are presented in the table below:

Table: 4

Response	No. Of Respondent	Percentage (%)
Human Activities	45	54
Industrial activities	38	46
Total	83	100%

Sources: Filed Work

The above table shows that 45 respondents representing 54% of the total respondents agreed that global warming is a direct effect of human activities on earth with answers ranging from deforestation to the day to day activities of human, while 38 respondents representing 46% state the reason as the aftermath effect of industrialization, some stating that the government has been lacking in managing industries in Nigeria, stating that some of these industries produce high carbon monoxide and with no one to check on their activities.

4.1.5 Knowledge of any Organizations Making Effort to Control Global Warming

The respondents were asked if they have knowledge of any organizations that are doing all they can to control global warming in Abuja. The responses obtained are presented in the table below:

Table: 5

Responses	No. Of respondent	Percentage (%)
Yes	78	94
No	5	6
Total	83	100

Sources: Filed Work

The above table shows that 78 respondents representing 94% of the total respondents are aware of organizations making effort to control of global warming. Some of the organizations

mentioned by the respondents are: World Health Organization (WHO), Media Industries, The Ministry of Environment in Abuja and other Non-governmental Organizations. The respondents also outlined some methods these organizations are employing to contribute their quota as follow to include awareness via seminar, media awareness, television and radio, on plantation of trees. 5 respondent representing 6% of the total respondents have no knowledge of any organizations helping to combat global warming effect in Abuja, Nigeria.

4.1.6 Poverty has something or nothing to do with Global Warming

Table: 6

Responses	No. Of respondent	Percentage (%)
Yes	36	43
No	43	52
I don't know	4	5
Total	83	100

Sources: Filed Work

The above table shows that 36 respondents representing 43% agreed that poverty contributes to global warming, stating reason for example, lack of finance has limited people to the use of firewood, as a means of cooking. While 43 respondents representing 52% disagreed the possible means of poverty as cause of global warming with some of the respondents pointing out that global warming is caused by the rich who build industries, use big generators, drive cars, which attribute to major cause of global warming in the world as a whole. 4 respondents representing 5% could not tell if poverty can also be part of the cause of global warming.

4.1.7 Home Appliances such as Electronic Gadgets Contribute to Global Warming

The respondents were asked whether their home appliances such as electronic gadgets contribute to global warming in Federal Capital Territory Abuja. The responses obtained are presented in the table below:

Table: 7

Responses	No. Of respondent	Percentage (%)
Yes	81	100
No	0	0
I don't know	0	0
Total	81	100

Sources: Filed Work

The above table shows that 81 respondents representing 100% of the total of respondents agreed that some of the home appliances also contribute to global warming and they stated some: fridge, Air Condition, Mobile Phones, Electric Cooker, Gas Cookers, Television Set, Electric lamps, Washing Machines.

4.1.8 Can Global Warming be Curtailed

The respondents were asked whether global warming can be curtailed in Abuja, the Federal Capital Territory. The responses obtained are presented in the table below:

Table: 8

Responses	No. Of respondent	Percentage (%)
Yes	61	74
No	22	26
I don't know	0	0
Total	83	100

Sources: Filed Work

The above table shows that 61 respondents representing 74% of the total respondents agreed that global warming and its effect can be curtail by planting of trees, proper awareness of the cause, reducing the effect of carbon dioxide, poverty elevation, seeking foreign aid. While 22 respondents representing 26% agreed that global warming cannot be curtailed, with most stating that it is God that determines the change in climate and human cannot alter it.

4.1.9 Global Warming have effects on the Social and Moral life of FCT, Abuja Residences.

The respondents were asked whether global warming has any effect on the social and moral life of FCT Abuja residences. The responses obtained are presented in the table below:

Table: 9

Responses	No. Of respondent	Percentage (%)
Yes	83	100
No	0	0
Total	83	100

Sources: Filed Work

The above table shows that 83 respondents representing 100% of the total respondents believe global warming is affecting the social and moral life of the citizen of Abuja, some stated the ways as: high mortality rate which has become a norm that people no longer get disturb by it effects anymore. Some observed that global warming effect has pushed many into dressing barely naked during hot weather which has led to high mortality in terms of rape which leads to early pregnancy among young girls.

4.2 Discussion of Findings

Base on the research carried out the finding reveals that valuable numbers of people are not aware of the effects of global warming in Federal Capital Territory, Abuja. In fact, there are those who believe in the yearly changes in weather yet do not know the causes of these changes in the atmosphere. From the study, 4% of the respondents actually do not believe in global warming and do not know if the Federal Capital Territory is affected by it and their response was due to their lack of knowledge about global warming and its related consequences in Federal Capital Territory. As reported by this study, those who agreed support the fact that there are still those who are not aware of global warming and its effects. Therefore, the government and the FCT Abuja Administration should intensify on the issue of

public awareness on the causes and effects of global warming through programmes on the mass media.

In the study, 54% of the respondents agreed that global warming is caused by the activities of industry and large producers of domestic products and consumables. The study concludes that government should advise and supervise the activities of large industries in the Federal Capital Territory Abuja so as to minimize the effects it has on the atmosphere. In the study, 81% of the respondents applauded the government and the FCT Abuja administration on the steps taken to contain the effect of global warming on her citizens. The study went further to recommend that government at all levels should take it upon her-self to educate citizens on the effects of global warming through seminars, workshops and the involvement of Non-Governmental Organizations (NGOs) in mass education of citizens. Furthermore, 43% of the respondents agreed that poverty is a contributing factor to the activities that lead to global warming, in the sense that there are those who are involved in trees cutting for the purpose of cooking, thereby causing global warming due to the fact that they have no money to purchase cooking fuels such as kerosene or gas.

On the issue of control measure on the increasing phenomenon of global warming and its activities in the FCT, 74% respondents are of the opinion that global warming can be controlled if government and their citizens will take it upon themselves to plant trees and proper awareness and educational programmes aired on the dangers of global warming and how it can be controlled. The study concluded that global warming has affected both the social and moral existence of the citizens of FCT, Abuja.

4.3 Social and Moral Impacts of Global Warming

The major adverse effects of climate change are experienced by poor and low income communities around the Federal Capital Territory, which have much higher level of

vulnerabilities to environmental determinants of social, moral, health, and other factors, and much lower levels of capacity available for coping with environmental change. Some of the moral impacts include poor dressing during excessive heat and related issues, dirty air, access to clean water leading to water and food borne diseases.

A report on the global human impact of climate change published by the Global Humanitarian Forum in 2009, estimated more than 300,000 death and about \$125 billion in economic losses each year.

The consequences of climate change and poverty are not distributed uniformly within communities. Individual social factors such as gender, age, education, ethnicity, geography and language lead to differential vulnerability and capacity to adapt to the effects of global warming. Global warming and climate change affect social circumstances such as hunger, poverty and disease like diarrhea and malaria, disproportionately impact children; about 90% of malaria and diarrhea deaths are among young children. Those in urban area will be affected by lower air quality and overcrowding and will struggle the most to better their situation.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Summary

Chapter one is introduction and it discusses the Background of the Study, Statement of the Problem, Aim and Objectives of the Study, the Research Methodology, the Significance of the Study to the citizen, stakeholders and governmental body of Abuja, the Scope and Limitation of the Study and definition of some major terms to avoid ambiguity.

Chapter two is literature review. It discusses the concept of global warming in which will the discover that over the last 100 years, the average air temperature near the Earth's surface has risen by a little less than 1 degree Celsius or 1.3 degrees Fahrenheit and that Global warming is the cause of climate change in the world today. The chapter also discusses the types of global warming. It also examines the following types of greenhouse gasses; carbon dioxide, water vapour (Aqueous vapour), methane, nitrous and oxide. Other areas probed include causes of global warming and it was stated that the two major causes are natural and human interference. This research work also discusses history of global warming, and it was agreed that it was in the early 19th century when ice ages and other natural changes in Paleo climate that it was first suspected, it further discuss the History of Global Warming in Abuja, Global Warming in other state in Nigeria. It also discusses the causes of global warming in Abuja. The research also probes the past and present Governmental effort on Global Warming in Abuja in which it listed out some efforts of the past and present government to curtail the effect of global warming. The research work also discusses the impact of Global warming on the social life of the citizen of Abuja.

Chapter three discusses the methodology. It discusses field survey, the library used in other to have a successful research work, the instrument used in gathering information from the field, the Population Samples and the Sampling Technique used.

Chapter four focuses on data presentation, analysis and interpretation. It also gives an interpretation to the collected data and also give a Discussion of the findings.

5.2 Conclusion

Based on the research conducted, it has been revealed that Abuja is not left out in the effect of global warming and its impact is felt also on the social and moral life of the citizen of Abuja. The Federal Capital Territory Administration need not underestimate the continuous impact of global warming on the social and moral life of his citizen. The government should focus on curtailing the continuity of the effect of global warming on Abuja. When the government has a good plan and create an avenue to pass on their vision and mission to the citizen it will be easy to implement. The government should not just create large industries but also seek for method of managing those releasing toxic gasses into the atmosphere.

From the data collected it is obvious that the awareness is not sufficient. The government should not relent in making people more aware of their environment and should also be ready to look for ways to help eradicate poverty.

5.3 Recommendations

Based on the findings of the research, the following recommendations are made:

- i. The government should have a rule guiding against cutting of tree in Abuja.
- ii. The government should encourage Non-governmental organizations that are ready to go into the interior axis of Abuja to create awareness.
- iii. The government should organize several awareness seminars, for the minority.
- iv. The government should organize awareness programmes using the social media platforms.
- v. The government should educate people on effect of house appliance and the way to reduce the effect of some of these appliances.

- vi. The government should look into small and large industries that release toxic gasses in Abuja.
- vii. The government should create avenue for students in schools to learn about gases and their effects (that is not limiting to secondary school science students alone).
- viii. The government should seek foreign advice on this issue.
- ix. The government should be open to welcome project from youths who have good idea on this issue, and implement it.
- x. The government should look into the use of generators. This can only be curtailed by giving enough power supply to the citizen, so as to reduce the use of generators.
- xi. The government should look for way to reduce the use of expired cars, by creating other fast means of transportation that is less dangerous to the climate.
- xii. The government should seek for profitable ways to recycle waste in FCT.

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Appendix A:

**NASARAWA STATE UNIVERSITY, KEFFI
DEPARTMENT OF PHILOSOPHY AND RELIGIOUS STUDIES
QUESTIONNAIRE ON THE TOPIC**

**“ The Moral and Social Impacts of Global Warming in the Federal Capital Territory
(FCT) Abuja”**

This questionnaire is aimed at ascertaining the moral and social impacts of global warming in FCT Abuja Nigeria.

Demographic Information of the Respondents

Name:..... Age:.....

You are kindly requested to respond to this questionnaire with high sense of honesty, as every information you provide will be treated confidentially. You are advised to tick in the column which suits your opinion.

1. Sex of respondents: Male () Female ()

2. Qualification of Respondents:

- a) NCE ()
- b) Degree ()
- c) Master Degree ()
- d) Ph.D ()

Respond to the following questions and try to be sincere as possible

1. Have you heard of global warming before? Yes () No () I don't Know ()
2. Do you think there has been a change in the weather of FCT Abuja? Yes () No () I don't Know ()
3. Do you think Abuja has been affected by the effects of global warming? Yes () No () I don't Know ()
 - i. If yes. In what ways has it been affected? _____