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Evaluation of Benue Populace Awareness of Climate Change in Africa

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Abstract*: Climate change is an endemic that is fast destroying favourable human living due to damage on the ecosystem by man-made and other related environmental factors. In fact, climate change has consequences for Africa that are exceptionally distinguishing. This calls for knowledge of the people regarding the endemic hence this paper evaluates the awareness of Benue people on climate change in Africa. Findings show that Benue populace are aware that Africa is also a victim of climate change; that public communication media, family/relatives/peers, formal education or schools, workshops/conferences are the main sources of information on climate change among the people. It is found that the people are aware of the causes of climate change and their attendant effects. Causes of climate change in Africa include cutting down trees, industrial activities, bush burning/fossil fuels, inappropriate livestock farming, generating and consuming too much power as well as waste disposal. The effects are hotter temperatures, severe storms, heightened drought, warming and rising oceans/other water surfaces, loss of species, droughts, high health risks, poverty/economic problems and needles migration of humans and animals. However, the general knowledge and awareness on climate change and its attendant effects are on an average scale. The major factors that obstruct effective awareness of climate change are negligence by the people and inadequate awareness creation. Thus, stakeholders' efforts in sustainably creating the desired awareness on climate change issues, especially among the people in fragile societies such as Africa, are highly needed.*

Keywords: *Africa, Climate, Climate Change, Perspectives, Environment*

Introduction/Statement of Problem

Not minding the fact that there is no precise empirical position on the effect of higher temperatures and climate shocks on the people and or societies, climate change is, however, attributed to be the major or leading cause of human and environmental challenges in the 21st century. According to Tadesse (2010), increasing temperatures, dehydrating of the earth surface, high pest and disease burden, changes in appropriate areas for crops growth and livestock, incessant desertification across societies, particularly the African continent, floods, heat from emitted from fusil fuels, deforestation and erosion are all 'pictures' showing that climate change is already manifesting and has taken the position of being one of the greatest environmental and socio-economic threats. In fact, weather temperature is been forecasted to have risen up to 50^{oC}. In affirmation, Maino and Emrullahu (2022) note that global temperatures have augmented considerably over the past-half century and life-threatening weather situations including cold and heat waves, droughts, floods and/or storms have deepened, now influencing disaster setting in the 21st century. The changes in climate change present immense problems and the effects of the problems are predominantly severe for the

populace of poor developing societies of Africa. This is even truer for susceptible environments making them the most vulnerable to humanitarian crisis and volatility, among other ecosystem-related challenges.

The 'far-sightedness' on climate change and its associated effects across the globe, even some students of geography, researchers and a large section of the public considered it as a mere academic exercise. Till date, some still consider climate change as a mere formal term with no realistic negative effects. Consider deforestation, for example, where trees are cut off for firewood, charcoal, furniture, etc. is increasing day by day in the region despite efforts made to tackle the menace by interventionist agencies and stakeholders. Unfortunately, these trees when cut down are not replaced. Consider also the nature of waste disposal where wastes are burnt and released to the atmosphere – which is already heated. In fact, many instances of inducing climate change in Africa abound. However, developed economies such as the United States, France, Britain, Israel, China, Russia, etc. were quick to accept the reality of climate change and its attendant negative effects and have long been at the forefront of not just eliminating the ecosystem problem in their domain but across other societies of the globe including developing ones. This is better understood on the activities of the United Nations and its agencies such as WHO, UNESCO, UNICEF; not forgetting other interventionists agencies including USAID, European Union, etc.

While there are perspectives of the developed countries including France, the United States, Britain, among other societies across the globe, have been able to tackle climate change by way of formulating and implementing the needed policies in that regard, the position on the state of climate change in the Sub-Saharan Africa seems not heart-warming. Climate change has consequences for Africa that are extremely distinguishing. Collier, Conway and Venables (2008) have documented that the continent's climate is likely to be affected more harshly than that of other regions. This is worsened by the far countless contact of its economy to climatic variation. In contrast to this atypically severe exposure to effects on production, Africa's role in emissions of carbon is atypically minor. Its past economic activity has not contributed to the accumulated global stock of carbon, its current activity accounts for only a trivial proportion of global emissions, and future projections suggest that it will continue to be marginal. Therefore, while in other regions the main issues has to do with how to – for instance – lessen carbon emissions, in Africa they concern the adaptation of production to changing, and mostly deteriorating, opportunities. Not just that, whereas for other regions the foremost adverse consequences of climate change occur only far in the future and are undefined, in Africa many of the confrontational effects are already obvious.

Corroboratively, Alichi (2022) reports, for the International Monetary Fund, that delicate countries in sub-Saharan Africa (SSA) encounter problems to respond to the effects of climate negativities and increasing higher temperatures. The fragile nature of states in the African continent is linked to structural weaknesses, government failure and lack of institutional basic functions; against this setup, climate change could add to risks in the region. Notably, from the news media, empirical researches, social institutions/authorities to individuals, climate change with its attendant effects on the continent are growing day-by-day. This scenario has motivated the authors to evaluate the awareness of climate change among Benue populace. This is in that knowing clearly climate change and its causes demand exploring the needed empirical research prowess.

Objectives of the Study

1. To identify the sources of information on climate change in Africa among Benue people.
2. To find out the awareness of Benue populace on the causes and effects of climate change in Africa.

3. To examine the challenges to effective awareness of Benue people on climate change in Africa.

Understanding Climate Change

Climate change is explained as the numerical or arithmetic spread of weather over periods of time that ranges from decades of millions of years. It is the change in the average weather or a change in the distribution of weather events around an average, for example – greater or severe weather events. The focal cause of global warming to climate change is the accumulation of fumes or gases known as greenhouse gases ⟨GHGs⟩ in the thermosphere. The green gases shelter the natural carbon-dioxide, methane, nito-oxides and chlorofluorocarbons that is synethic. These GHGs grip heat thus speedily warming the ecosystem through the greenhouse effect process. Some of the heat stuck by these GHGs is radiated back from the earth into the space to create the greenhouse effect. This heat trapping is predicated to have increased global temperatures that have altered the weather conditions known as climate change. The major sources of these greenhouse gases could be from machineries that emit much of carbon monoxide to the air, bush burning, gas flaring, fridges, deep freezers air conditioners, burning of fossil fuels among others. These greenhouse gases ⟨GHG) are the major causes of rise in global temperatures ⟨Ebitu, Kajang & Basil, 2014; Alichi, 2022).

High temperature shocks and variations in precipitation patterns and/or more frequent and extreme weather events imply not just a one-time episode for a fragile state but, more importantly, they could convey negative implications for the rate of economic growth. Rising temperatures affect agricultural output and influence lower industrial output. Along with higher temperatures, meteorologists and scientists observe in some areas an increment in the intensity of extreme precipitation and lower precipitation trends in others. Temperature and precipitation are considered in this paper as proxies for climate change on the understanding that augmented heating conditions result in greater evaporation, thus increasing the intensity of droughts, the lack of irrigation, and the negative effect on Africa's economic growth.

A Documentary Index on Climate Change in Africa

We noted earlier how the position is that African societies are more susceptible to the devastating effects of climate change. In fact, the actions and inactions of the economies of the region are considered as the inducing challenging factors. Voices have been in varying forms, advanced on the situation of global warming that have brought up issues leading to climate change and the attendant negative impact on the continent and beyond. We had given few examples of actions and inactions of the governments and the people in inducing high temperatures such as deforestation, industrialization, and waste disposal. Regarding governance, for instance, there could be monies and other supporting apparatuses of tackling climate change that have either been diverted or not accessed due to poor governance on the globe. A good knowledge of environmental challenge of climate change and its attendant negative effects, as unveiled by scholars and authorities, becomes handy. Going by this, we explore, in this paper, the scenario of climate change and its attendant effects on the African continent as well as voices provided in tackling the environmental challenges, among other related issues.

Climate change and its sad effects on Africa, Alichi (2022) has said, are in varying forms – based on the ecosystem in the respective regions on the continent. Vulnerable economies in Africa are confronted with problems to respond to the effects of climate shocks and rising temperatures. Delicateness is linked to structural weaknesses, government failure and lack of institutional basic functions. Against this setup, the growing negative effects of climate change are not to be doubted. A panel fixed effects model (1980 to 2019) revealed that

the effect of a 1◦C rise in temperature decreases income per capita growth in fragile states in SSA by 1.8 percentage points. Panel quantile regression models that account for unobserved individual heterogeneity and distributional heterogeneity, corroborate that the effects of higher temperature on income per capita growth are negative while the impact of income per capita growth on carbon emissions growth is heterogeneous, a show that higher income per capita growth could help reduce carbon emissions growth for high-emitter countries (Alichi, 2022; African Development Bank, 2019).

In examining the economic impact of climate change, economists have sought to quantify how temperature changes affect economic activity. For instance, Dell et al. (2012) in Maino and Emrullahu (2022) investigated the long-term impact of climate change on economic activity. They used historical fluctuations in temperature within economies to identify its implications for aggregate economic outcomes. Dell et al. found substantial effects of temperature shocks but only in poor countries, where a 1◦ C rise in temperature in a given year reduces economic growth by 1.3 percentage points on average. The findings further suggest that temperature shocks may affect not only the rate of economic growth but also the level of output. The research established that per-capita real output is negatively affected by constant changes in the temperature but they do not obtain statistically significant effects for changes in precipitation. The study's counterfactual analysis submits that a continuous rise in regular global temperature by 0.04°C per year, where there is a lack of mitigation policies, reduces world real GDP per capita by more than 7 percent by 2100. On the other hand, when adhering to the Paris Agreement, limiting the temperature increase to 0.01°C per annum, reduces the loss significantly to about 1 percent. These effects appear to differ considerably across countries depending on the pace of temperature escalations and unevenness of climate settings.

To comprehend whether temperature can explain differences in cross-country income, Dell et al. (2009) in Maino and Emrullahu (2022) assert that the negative cross-sectional relationship between temperature and income exist within countries, as well as across countries on the continent, the relationship is, though, noticeably smaller in size in the former rather than in the latter. Their theoretical basis suggests that half of the adverse short-term effects of temperature are offset in the long run through adaptation. This can be explained by the fact that, in the long run, regions may familiarize to their climate. Individuals can adjust their behaviour to enduring temperature changes; hence the short-run effect could be larger than the longer-run response. There are other important studies that examine the relationship between climate – temperature, precipitation, storms, and other aspects of the weather and economic performance – agricultural production, labour productivity, commodity prices, health, conflict and economic growth (Maino & Emrullahu, 2022; Tadesse, 2010).

A publication of Tadesse (2010) reports that global civil societies including UNESCO, ENICEF, USAID, etc., are also worried of the effects of environmental challenge of climate change hence their position that water resources particularly, include one segment that is very much reliant on and swayed by climate change. As documented in the publication, countries in Africa already experience substantial water trauma as a result of insufficient and unreliable rainfall that changes rainfall patterns or causes flooding. Climate change is real and its impact is already being felt. It has affected the people of Africa and its food systems that are already weak.

The people in Africa are pre-empted to increase from 700 million in 2007 to 11 billion in 2030 and 15 billion by 2050, and populations will become increasingly urban. Overall water demand can therefore be expected to more than double in the first half of the 21st century, without considering rises in per capita demand for food and water. Agriculture, which provides a livelihood for about three-quarters of Africa's population, is mainly rain fed. Severe and prolonged droughts, flooding, and loss of arable land due to desertification and soil erosion are reducing agricultural yields and causing crop failure and loss of livestock, which endanger rural

and pastoralist populations (Tadesse, 2010). In the same vein, Godfrey and Tunhuma (2020) reports that the Intergovernmental Panel on Climate Change (IPCC) (2014) indicates that if GHG emissions continue to rise at their current pace, the world will be negatively affected by a rise in sea levels, shifts in growing seasons, loss of biodiversity and increased frequency and intensity of extreme weather events, such as heat waves, storms, floods and droughts.

On the other hand, the World Meteorological Organisation (2020) assessed the state of climate change in Africa and came up with the position that near-surface (2m) air temperature averaged across Africa in 2020 was between 0.45 °C and 0.86 °C above the 1981–2010 average, depending on the data set used, ranking 2020 between the third and eighth warmest year on record. Africa warmed faster than the global average temperature over land and ocean combined. This is consistent with the Intergovernmental Panel on Climate Change (IPCC) special report on climate change and land, which showed that land areas have consistently warmed faster than the global average. Predominantly tropical areas have warmed more slowly than higher latitudes such as Europe and Asia. This analysis is based on six data sets validated in some cases with in situ observations. At sub-regional scales, the temperature analysis using the six data sets shows that the warming trend in the 1991–2020 period was higher than in the 1961–1990 period in all African sub-regions and significantly higher than in the 1931–1960 period. Uncertainty in the trends of the earlier two periods is larger than for the latter two periods, which is not necessarily well described by the spread of the available data sets. Annual average temperatures in 2020 across the continent were above the 1981–2010 average in most areas. The largest temperature anomalies were recorded in the north-west of the continent, in western equatorial areas and in parts of the Greater Horn of Africa. However, near-average or a little below-average temperatures were recorded in Southern Africa, the north of Lake Victoria and the Sahel region (World Meteorological Organisation, 2020).

Climate change is an environmental problem and its wielding pressures on agricultural development in Nigeria. Foremost causes of water supply for agriculture, for instance, in Nigeria like lake Chad Basin and several other river basin system as well as wet lands across the country are plagued by drought, desertification and excessive evaporation. Similarly, the surging Atlantic Ocean is threatening coastal cities and villages with increasing sea level rise and regular floods that have made most of the places theatre of gully erosion and allied disasters. These extreme conditions have negatively affected agricultural development in Nigeria. Most farmlands have been eroded, crops contaminated by salty sea water, low level household wastes have been conveyed into fluvial system to contaminate water supply for communities and wildlife habitats with extreme toxic substances (Ebitu et al., 2014).

The United Nations Economic for Africa Commission (2019) has made a documentation of the negative effect of climate change on the African economy, which is highlighted hereunder.

1. Without action, climate change would impede development across Africa: African countries' restricted resilience against the negative effects of today's climate are now resulting to lower growth and development, highlighting the consequences of an adaptation deficit. Indicative findings show lower GDP per capita growth ranging, on average, from 10 to 13 per cent (with a 50 per cent confidence interval), with the poorest countries in Africa displaying the highest adaptation deficit. Climate change will exacerbate the high susceptibility and limited adaptive capacity, of the majority of African countries, particularly the poorest – possibly rolling back development struggles especially in most-affected nations.

2. While adapting to – and coping with – climate change will cost less under lower levels of warming, African Governments will still face residual damages with considerably higher costs, and those costs will rise substantially with more warming: Adjusting to climate change will necessitate linking African states' existing

adaptation deficit, including improved territorial and city planning, better agricultural practices or restructured building codes, etc. Disregarding the adaptation deficit will lead to significant higher losses and vulnerabilities. With the limits to adaptation, for all African regions, the costs of residual damages are projected to be around five times higher than adaptation investments and costs combined. This reinforces the need for robust and binding global mitigation efforts, and an adequate provision for a loss and damage mechanism to deal with residual damages. The aggregate costs of both climate change adaptation and residual damages are at least one third higher in the high-warming scenario and, in Eastern Africa, will sky rocket by mid-century.

3. The range of benefits from taking action go well further than intended, climate-related objectives: According to United Nations Economic for Africa Commission (2019), alteration, protects societies and creates jobs. Adapting to climate change – even if warming is kept within the limits indicated in the Paris Agreement – will still require high costs, although they would be largely outweighed by the benefits. For example, in the high-warming scenario, by 2050, adaptation benefits are about five times greater than the costs in the health sector. The implementation of adaptation measures would also lead to skilled and unskilled job-creation in a wide range of economic sectors, including construction, health and services. Mitigation limits climate change impacts and damages. By 2030, the low-warming pathway would cost sub-Saharan African countries between a tenth (in North Africa) and a third (in Central Africa) less than macroeconomic losses projected to be incurred in the high-warming scenario. This difference almost doubles by 2050, from being a third higher in Northern African (compared a tenth in 2030) to almost 85 per cent greater in Western Africa. Mitigation leverages development. Mitigation actions are also associated with at least three direct co-benefits: increased energy security, employment generation, and reduction in health risks related to direct exposure to pollution from fossil-fuel combustion (United Nations Economic for Africa Commission, 2019).

UNEP Division of Communications and Public Information (2012) notes that amplified temperatures and a greater probability of life-threatening weather happenings emanating from climate change will no doubt intensify the hazard of drought and increased water scarcity in Africa. There are a number of issues to consider when describing the range of impacts of and the causal vulnerability to climate change on the continent. In addition to regional variability, there are manifold problems connected with the ability of current models to project the likelihood of heat extremes and precipitation scenerios, which is expected to have subordinate impacts on economic development. Not just that, in a report by Baarsch and Schaeffer (2019) and commissioned by the United Nations Environment Programme (UNEP), the African Development Bank and the United Nations Economic Commission for Africa (ECA) and prepared by Climate Analytics, in collaboration with the Potsdam Institute for Climate Impact Research (Germany), the Centre for Environmental and Resource Economics at Umeå University (Sweden), the Institut National pour la Recherche Agronomique (Morocco), the University of Nigeria-Nsukka (Nigeria), the University of Addis Ababa (Ethiopia), Humboldt University (Germany), the University of Makerrere (Uganda) and the University Eduardo Mondlane (Mozambique) presented key findings on the scenario of climate change in Africa, as highlighted below.

- **The direct and indirect costs of taking action on climate change will be high, but the costs of inaction will be much higher.** For example, Baarsch and Schaeffer (2019) reports that with climate change, Western and Eastern Africa could lose up to about 15 per cent of their gross domestic product (GDP) by 2050. Global efforts towards low-emissions, low-warming scenario – as expressed in the Paris Agreement's long-term

goals – could avert a large part of the most serious macroeconomic and development consequences for Africa.

- **The report clearly demonstrates that there are substantial development risks in Africa under any level of warming.** Uncertainty, over the magnitude of warming cannot, therefore, be used as a rationale to postpone action. Climate change will pose additional constraints and threats to development in Africa in the twenty-first century. Failure to integrate climate change impacts into development planning will result in major economic, social and human development risks.
- **However, actions on climate change in mitigation and adaptation will be rewarded by significant benefits and co-benefits in macroeconomic stability, job creation, and decreased negative impacts of climate change on development**. Mitigating emissions in Africa's energy sector would result in 0.7 million net potential jobs in 2030, which would thereafter sharply increase to as many as 11.8 million jobs by 2050 (United Nations Economic for Africa Commission, 2019).

Similarly, the IPCC (the United Nations–sponsored scientific body on climate change), as presented by Godfrey and Tunhuma (2020), predicts the following global climate change trends: (i) The typical air temperature between 2090 and 2099 will be 1.8°C to 4°C higher than it was between 1980 and 1999 (ii) The increase in surface temperature will be greater over land than over the ocean. (iii) Sea ice and snow cover will continue to contract and shrink because of melting due to high temperatures [increased ocean temperatures have been recorded at depths of at least 3,000m since 1961] (iv) The sea level will rise by 1.8–3.1 mm per year between 1990 and 2100 (v) Droughts will become longer and more intense due to higher temperatures and reduced precipitation (vi) Precipitation levels will become more variable (vii) Extreme events – such as heat waves, tropical cyclones, heavy precipitation and high temperature extremes – will become more frequent.

Uses and Gratifications Theory and Awareness of Climate Change

Katz, Blumler and Gurevitch initiated the Uses and Gratification Theory in 1974. However, McQuail (2010) holds that the theory is a map out from in the early 1940's when researchers began investigating why people seek communication contents. Therefore, the theory emerged in response to the needs of explanation to why people use certain information sources and the benefit they get therefrom. In this regard, the theory could be aligned to the thought on the reasons and need to be aware of climate change and its attendant effects. The theory, therefore, serves as guide and motivation examining, explaining, and providing answers to why people use information and awareness sources on climate change and what benefits or gratifications they acquire after that. The fundamental assumption of this theory that people use information channels for different reasons and seek to derive various gratifications, could help in accessing information on the causes of climate change in order to put forward unveil preventive and restorative efforts respectfully. According to Onyilo, Elijah and Habu (2021), due to the devastating impact of environmental problems including climate change, there is need for the citizenry and social institutions to be environmentally conscious. Feasibly, one effective way of creating the desired environmental consciousness is through appropriate environmental communication approaches. If suitable environmental security is to be guaranteed, the ecosystem must be safeguarded with people and organisations empowered to accept ideas by way of taking actions for sustainable development.

Research Method

Survey research design was adopted with questionnaire used to collect the needed primary data. Against this setting, stratified sampling, random sampling and purposive methods were deployed to collect data from sampled 384 respondents. The 384 sample size were

determined using Krejcie and Morgan (1970) method who worked out different sample sizes at 95 percent confidence level as contained in the table hereunder.

Population Size (N)	Sample Size (S)
1,000,000	**384**
75,000	383
50,000	381
10,000	370
5,000	357
3,000	341
2,000	322
1,000	278

Source: Krejcie and Morgan (1970)

Consequently, Benue State was stratified into the three major geographical zones in the state: Benue North East, Benue North West and Benue South – in a bid to ensure that each zone is represented in the study. Thereafter, the simple random sampling technique was accordingly used to choose one local government area ⟨LGA) each from the geographical areas. In this regard, Ushongo, Makurdi and Okpokwu LGAs were sampled after the process. Furthermore, Mbagba in Ushongo, Mission in Makurdi while Ugbokolo Council Ward chosen for Okpokwu LGA were sampled using the simple random sampling technique. The use of the simple random technique was to avoid bias in the selection of the LGAs and council wards respectively. In the selection of houses/residences and respondents from the sampled wards, the purposive sampling technique was used to arrive at 128 houses/residences and respondents in the areas. One respondent was, therefore, sampled from each house/residence thereby bringing the total number of sampled respondents to 384. The sampling technique was to ensure that houses or residences sampled have people who are capable and willing to provide the desired information. The primary data, after collection and collation, have been descriptively analysed.

Findings and Discussion

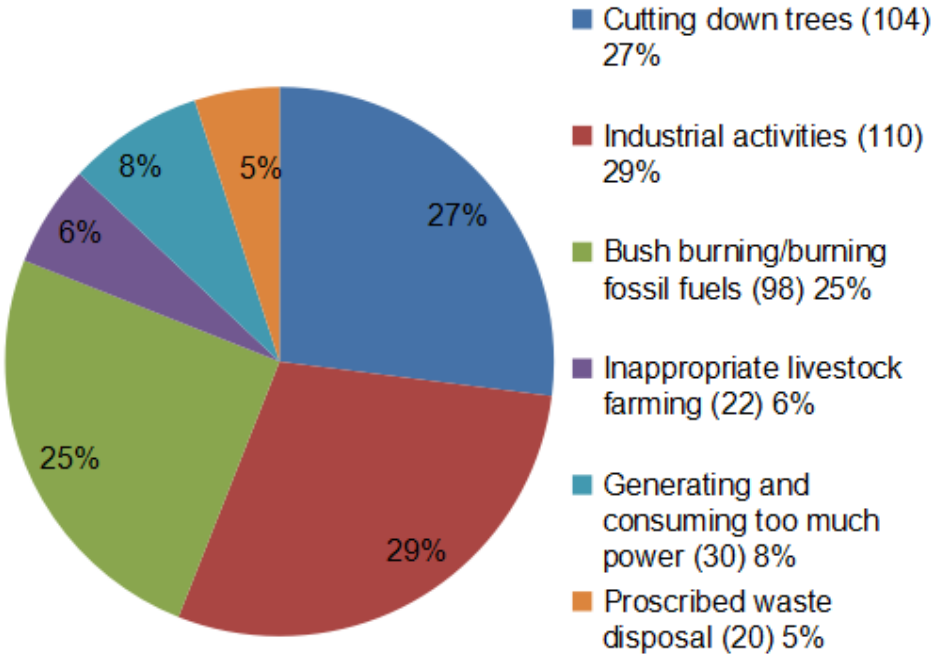
Data on the demographic composition of respondents indicate that relatively more males were represented in this study as they were 208 ⟨54%⟩ than females who were 176 ⟨46%⟩. Regarding the educational status of the respondents, results show high level of education on their part. For instance, it is revealed that 14 ⟨4%⟩ are educated up to First School Leaving Certificate ⟨FSCL⟩, a simple majority of 188 representing 49% are formally schooled up to Senior School Certificate ⟨SSCE⟩ or General Certificate of Education ⟨GCE⟩, 94 ⟨25%⟩ are either holders of National Certificate of Education ⟨NCE⟩ or National Diploma ⟨ND⟩, 68 ⟨17%⟩ are degree/HND holders while those with Masters' Degree/Postgraduate Diploma are 20 in number. The results further show that the respondents are considerably mature by age considering that 68 representing ⟨17%⟩ are within the age category of 18-25, 60 ⟨16%⟩ respondents fall under the age category of 26-30, 36 ⟨9%⟩ are between 31 and 35 years, 121 ⟨32%⟩ are within the ages of 36 and 40 years, 55 ⟨14%⟩ of the respondents are of the ages of 41 and 45 years while 44 ⟨12%⟩ are between 46 years and above. Findings also show that Benue populace are majorly engaged in farming and business activities. They are also employees of public/civil services while some are students. The data collected also reveal that a considerable number of Benue people studied have marriage experience – i.e. 36 per cent of them have never been married.

Regarding the major theme of this study, results indicate that Benue populace are aware that Africa is a victim of climate change – this is as all the 384 respondents studied agreed to that effect. According to results, news media, family or relatives, formal education or training in schools, workshops, etc. and friends/peers. This finding can be likened to the Uses and Gratifications theory by serving as a guide and motivation thereby examining, explaining, and

providing answers to why people utilize information and awareness sources on climate change and what benefits or gratifications they acquire after that. As provided by the theory, people can use information avenues for diverse reasons and seek to derive various gratifications, could help in accessing information on the causes of climate change in order to unveil preventive and restorative efforts respectfully. In this wise, the theory, therefore, serves as guide and motivation examining, explaining, and providing answers to why people use information and awareness sources on climate change and what benefits or gratifications they acquire after that. The fundamental assumption of this theory that people use information channels for different reasons and seek to derive various gratifications, could help in accessing information on the causes of climate change in order to put forward unveil preventive and restorative efforts respectfully.

It is further found that Benue populace are aware of the causes of climate change and their attendant effects. The people, according to results, causes of climate change in Africa include cutting down trees, industrial activities, bush burning/fossil fuels, inappropriate livestock farming, generating and consuming too much power as well as waste disposal (see Figure 1). Conversely, finding shows that there is minimal knowledge of the causes of the environmental endemic in Africa among Benue populace. The finding on the causes of climate change is in tandem with the position of Tadesse (2010) that increasing high temperatures, soil dehydration, increased pest and disease pressure, shifts in suitable areas for growing crops and livestock, continuous desertification across societies, particularly the African continent where floods, heat emitted from fusil fuels, deforestation and erosion are 'pictures' showing that climate change is already manifesting and has taken the position of being one of the greatest environmental and socio-economic threats.

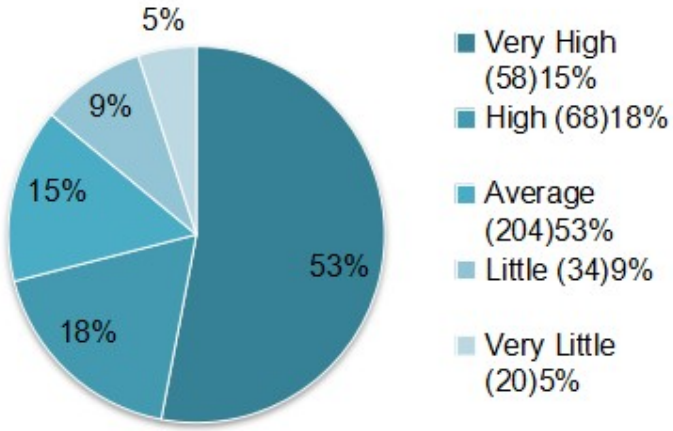
Figure I: Benue People's Awareness of the Causes of Climate Change



It is found that hotter temperature, increased severe storms, heightened drought, warming and rising oceans, other water surfaces, loss of species, lack of food, increased health risks, poverty and economic problems and needles migration of humans and animals effects of climate change in Africa. According to results, 50 (12.5%) of the respondents specifically identified the effect to be hotter temperatures, 30 ⦃7.5%⦄ note that it is increased severe storms, 46 ⦃11.5%⦄ of the respondents state the effect to be heightened drought, 38⦃9.5%⦄ state the effects to be warming/rising oceans/other water surfaces, 68 ⦃17%⦄ respondents identify loss of species, 30 ⦃7.5%⦄ state that it is lack of food, 38⦃9.5%⦄ respondents note that it is increased health risks, 58 ⦃14.5%⦄ identify poverty/economic problems, 42 respondents representing ⦃10.5%) state the effect to be needless migration. The findings show that the position on the state of climate change in the Sub-Saharan Africa seems not heart-warming. Climate change has consequences for Africa that are extremely distinguishing. According to Collier et al. (2008), the continent's climate is affected more harshly than that of other regions. This is worsened by the far countless contact of its economy to climatic variation. Comparatively, while in other regions the main issues have to do with how to slacken carbon emissions, in Africa they are concerned with adaptation of production to changing and mostly deteriorating, opportunities. Again, whereas for other regions, the foremost adverse consequences of climate change ensue only far in the future and are undefined, in Africa many of the confrontational effects are already obvious.

Findings indicate that the extent to which climate change is known by Benue populace to have negative effect is on an average. In essence, despite the devastating effects of climate change, the people lack good knowledge of the endemic (see Figure II⦄. Little wonder, Alichi (2022⦄ documented that the growing negative effects of climate change is not to be doubted. A panel fixed effects model (1980 to 2019) revealed that the effect of a 1◦C rise in temperature decreases income per capita growth in fragile states in Sub Saharan Africa, SSA by 1.8 percentage points. Panel quantile deterioration models that account for unnoticed individual heterogeneity and distributional heterogeneity corroborate that the effects of higher temperature on income per capita growth are deleterious while the impact of income per capita growth on carbon emissions growth is heterogeneous – a show that higher income per capita growth could help reduce carbon emissions growth for high-emitter countries (Alichi, 2022; African Development Bank, 2019⦄. On their part, Maino and Emrullahu, Dell et al.'s (2012) study's counterfactual scrutiny submits that a continuous rise in regular global temperature by 0.04°C per year, where there is a lack of mitigation policies, reduces world real GDP per capita by more than 7 percent by 2100.

Figure II: Rating the People's Knowledge on the Extent to which Climate Change has Effects on the Continent



Findings indicate that factors that obstruct effective awareness of climate change among Benue people is inadequate information on understanding climate change, negligence of the part of the people and lack of sources of awareness creation on climate change. The results indicate that 66 ⟨17%⟩ respondents identified lack of information on the knowledge of climate change, 40 ⟨10%⟩ agreed on negligence on the part of the people, 40 ⟨10%⟩ of the respondents identify lack of sources of awareness creation on climate change while the remaining majority 238 respondents representing ⟨63%⟩ agreed on all hindering factors that hinder effective awareness of climate change among Benue people is inadequate information on understanding climate change, negligence of the part of the people and lack of sources of awareness creation on climate change. This finding is not farfetched from Alichi (2022) who reported for the International Monetary Fund reported that delicate countries in sub-Saharan Africa (SSA) encounter problems to respond to the effects of climate negativities and increasing higher temperatures. The fragile nature of states in the African continent is linked to structural weaknesses, government failure and lack of institutional basic functions; against this setup, climate change could add to risks in the region.

Conclusion

Climate change is a global cankerworm that is continually affecting the ecosystem thereby causing considerable negative effects on human living. Climate change causes severe weather situations that adversely affect the environment. Affirming the findings of this paper, Ebitu, Kajang and Basil (2014⟩ notes that extreme drastic weather events have caused over heating of the environment and have resulted in rapid rise in temperature. This has resulted in increase of the sea level causing flood, drought, desertification and human displacement. The concerns of these alterations are dearth of food supply due to low yield of crop harvest or low productivity of crops, high prices of food, general increase in poverty level and shorter life span. Lack of awareness of climate change and its attendant effects by majority of the people could be considered as the most disastrous epidemic on the continent. Majority of the population both in the urban and rural areas across the continent are completely uneducated and aware of this global catastrophic emergency. This, therefore, calls for stakeholders' efforts in sustainably creating the desired awareness on climate change issues, especially among the people in fragile societies such as Africa. This will go a long way in guaranteeing the

desired information and education on best strategies and practices that enhance the development and sustainability of the environment – devoid of the problem of climate change.

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