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An Assessment Of Climate Change Awareness Among Students Of Tertiary Institutions In Benue State, Nigeria

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ABSTRACT
This study examined the level of awareness of climate change and its impacts among students of tertiary institutions in Benue state, Nigeria. Five state owned tertiary institutions were purposively selected for the study. Fifty (50) respondents were randomly selected from each of the institutions to obtain a total of two hundred and fifty (250) respondents while questionnaires were used to collect the data for the study. Frequency counts and item analysis was used to analyze the data collected. The findings showed that 86.0% of the respondents had heard about climate change. About 80.0% did not know what climate change is all about. Among those that heard about climate change, 59.6% of the respondents had heard through radio and television. Most of the respondents (76.0%) were of the opinion that climate change is caused by burning of fossil fuels and other human induced factors. 86.4% of the respondents had perceived the impacts of climate change out of which 38.0% identified extreme/high temperature and 30.0% identified changes in rainfall patterns as the major changes in climate while 47.2% of the respondents opined that reduction in crop yield is the main impact of climate change. Majority (42.8%) of the respondents identified increased public awareness as the possible adaptive or mitigation measures. The study recommends the need to evolve a policy to integrate climate change awareness in the educational curriculum for all tertiary institutions in order to sensitize the students.
Keywords: Assessment, Students, Awareness, Climate change, Tertiary Institutions

1.0 INTRODUCTION

Climate change is generally recognized as the major environmental problem facing the world today. As a result of climate change, average temperature has been rising and is expected to continue while changes in precipitation patterns are at a faster rate than the rate at which ecosystems can adapt. Consequently, a variety of effects such as rise in sea level, desertification, extinction of rare plants, and animal species, shifting of agro-ecological patterns or zones, and changes in the occurrence of extreme weather events such as floods, droughts and heat waves have been identified (Houghton, Ding, Griggs, Noguer, Linden, Dai, Maskell and Johnson, 2001). Therefore, climate change has been considered as one of the most serious threats to the current and future agricultural development as its adverse impacts are already observed on the environment, human health, food security economic activities, natural resources and physical infrastructure (Bozoglu, Topuz, Baser, Shahbaz, and Eroglu, 2022).

The impacts and consequences of climate change are not evenly distributed. The developing countries are the most vulnerable to impacts of climate change because of their low capacity (socially, technologically and financially) to adapt. It is predicted that billions of people, particularly those in developing countries will face shortages of water or floods, food insecurity because of crop failure and greater risks of health

and life because of climate change. Thus, climate change is anticipated to have far reaching effects on the sustainable development of developing countries thereby limiting their ability to attain the United Nations Sustainable Development Goals of ensuring sufficient and nutritious food all year round by 2030 (United Nations, 2007).

Africa is already a continent under pressure from climate stress and is highly vulnerable to the impacts of climate change. Many areas in Africa are recognized as having climates that are among the most variable in the world on seasonal and decadal time scales. Extreme events such as floods and droughts can occur in the same area within few months of each other. Nigeria in particular is vulnerable to all kinds of climate related problems unless it adapts or adjusts to actual impacts of climate change (Igwebuike, Odoh, Ezeugwu, Oparaku and Oparaku, 2009). Some of the noticeable consequences of climate change in Nigeria are intense thunderstorms, widespread floods, and incessant droughts. Odey, (2009) has pointed out that climate change impacts pose greater dangers with consequences such as desertification, sea level rise, water salination, among others. These impacts could also manifest in food security challenges, damage to infrastructure, and social dislocation. Others include, threat to health as rising temperature could bring about diseases such as chronic heat rashes, cerebra-spinal meningitis, stroke, malaria and other related diseases. Climate change will affect every citizen, every part of environment, and our resources, and thus practically every aspect of our lives (Ekpoh, 2009).

Despite the huge threats from impacts of climate change, many people in Nigeria are ignorant about climate change. Presently, Benue state which is regarded as the food basket of the nation is experiencing problems related to climate change. The impact of these adverse climate changes on the socio-economic life of the people is exacerbated by the lack of knowledge of the causes, impacts and adaptation strategies. The ignorance of the people in the state on climate change issues makes them to engage in activities that contribute to the problem rather than mitigate it. Many personal adaptive measures can be taken to counteract the ill effects of climate change. These can be done as preventive of mitigative measures which include tree planting, increase in water intake during hot weather and avoiding exposure to reduce skin cancer risk among others.

The public needs to understand the causes and effects of climate change on their lives, and the measures they can take to mitigate or minimize these effects starting with the understanding of what it is, then causes and mitigations or adaptation measures to the adverse impacts (United Nations Environmental Protection, 2003). Article 6 of the United Nations Framework Convention of Climate Change (UNFCCC) calls for development and execution of educational public awareness programmes, access to climate change information and its effects (United Nations, 2016). Knowledge of a particular issue allows people to evaluate impacts and risks associated with that issue (Hansen, et al., 2003). According to Bozoglu et al., (2022) there is always a difference in understanding the impacts of climate change due to the gap in knowledge of the general public and experts .

There are various models by which individual knowledge and actions can be promoted in the public arena. The most common of such models is the "literacy" model. This is founded on the notion that by raising awareness on an issue, the behavioural changes of an individual directed towards combating a problem can be stimulated. Therefore, having climate change issues in the educational curriculum and educating people to have knowledge of it at every level, especially the Tertiary educational institution level, has great importance in order to reveal misconceptions of students (Freije, Hussain, and Salman, 2017). According to Skamp Boyes and Stanisstreet, (2009) and Kilinc, Boyes and Stanisstreet (2011), environmental education on climate change from primary to tertiary level is the most effective way to create awareness to the public all over the world, because these students will be either part of the experts or general public in near future.

There are numerous youth pursuing tertiary education in different tertiary institutions within the country that are a neglected army for use in the climate change awareness crusade. They could in turn if properly enlightened lead the youth that are not in schools in the climate change awareness crusade. To be able to adapt to the problem of climate change effectively, there is need to understand the level of knowledge or awareness and perception of climate change especially the causes, effects and possible adaptation and

mitigation measures. This will also change the perception and create motivations for adaptation behaviours as well as mitigation strategies (Mase, Granig and Prokopy, 2017)

Several studies have been carried out in different parts of the world by different Authors on the awareness of the impacts of climate change and adaptation strategies (Nhemachena, 2007; Deressa, Hassan ans Ringler, 2010; Arragaw and Woldeamlak, 2017; Damnyag, Mwinkom, Abugre and Alhassan 2021, Mbwambo, Kabote and Kazuzuru, 2022 and Bozoglu *et al*., 2022). However, much of these studies were focused on the awareness of farmers' and their adaptation strategies to climate change. In Nigeria, studies on perception and awareness of impacts of climate change have also focused on the farmers. For example, Ozor, Madukwe, Onokala, Garforth, Eboh, Ujah, and Amaechina (2010) and Ojo and Baiyeguahi, (2018) have dwelt on adaptation strategies of farmers in Southern Nigeria while Adebayo *et al.*, (2012) and Adamgbe, *et al.*, (2018) in Adamawa and Benue states respectively have focused on awareness of impacts of climate change by farmers. Even though Bozoglu *et al.*, (2022) had focused on Graduate Students' knowledge levels of climate change, it was limited to the students of the departments of Agricultural Economics in Turkey who were assumed to have offered some courses in Agricultural Meteorology. Ekpoh and Ekpoh, (2011) also assessed the level of climate change awareness among secondary school Teachers in Calabar Municipality, in Nigeria. A gap still exist as the critical component of our society whose awareness of climate change impacts could go a long way in enhancing the mitigation and adaptation capacity of various sectors of the economy has not been carried out.

The study is therefore aimed at assessing the level of awareness of students about climate change in tertiary institutions in Benue state. This is vital as it will help in enhancing the knowledge of students in tertiary institutions, formulating policies and planning, to promote sustainable climate change awareness.

2.0 MATERIALS AND METHODS

2.1 Study Area

Benue State lies between latitudes 6^0 35' and 8^0 08' N, and on longitudes 7^0 47' and 10^0 00' E in the central part of Nigeria called 'Middle belt' (Nyagba, 1995 cited in Tyubee, 2005). The State shares boundary with Nassarawa State to the north, Taraba to the northeast, in the south by Cross River, while in the southeast is Enugu, Ebonyi and Kogi State to the west. A short international boundary with the Republic of Cameroon is shared around Kwande Local Government Area (Figure 1). Climatically, Benue State falls within the tropical humid climate with wet and dry seasons (Aw) according to Koppen's classification. The climatic condition is influenced by two air masse: the warm, moist south westerly air mass and the warm, dry north easterly air mass. The south westerly air mass is a rain-bearing wind that brings about rainfall from the months of March/April to October. The north easterly air mass blows over the region from November to April thereby bringing about seasonal dryness. The annual rainfall amount is between 1,200 – 1,500mm with slight variations between the north and southern parts of the state (Adamgbe and Ujoh, 2012). Temperature condition is generally high throughout the year with daily range of 23^0 -28^0 C and maximum of 37^0C (Tyubee, 2005). The elevation, which is generally undulating, rises from the Benue valley below 100m eastwards and southwards to the western ranges of Cameroonian highlands and Nsukka escarpments respectively. Benue State is drained by River Benue and its tributaries such as Katsina-Ala, Okpokwu, Guma, Gwer, and Aya. Benue State lies within the root and grain crops zone of Nigeria with great potential for commercial production of yam, cassava, sweet potato, soya beans, sorghum, beans, cowpea, millet maize, rice, beniseed and groundnut (Surma, 1995 cited in Tyubee, 2005). The population of the state is 1830483 people as at 2016 (Tser, 2013). The major ethnic groups in the state are Tiv,s Idoma, Etulo, Igede and Jukun among other several minor tribes. The state has four universities, five state owned Polytechnics and Colleges of Education as well as other several private tertiary institutions.

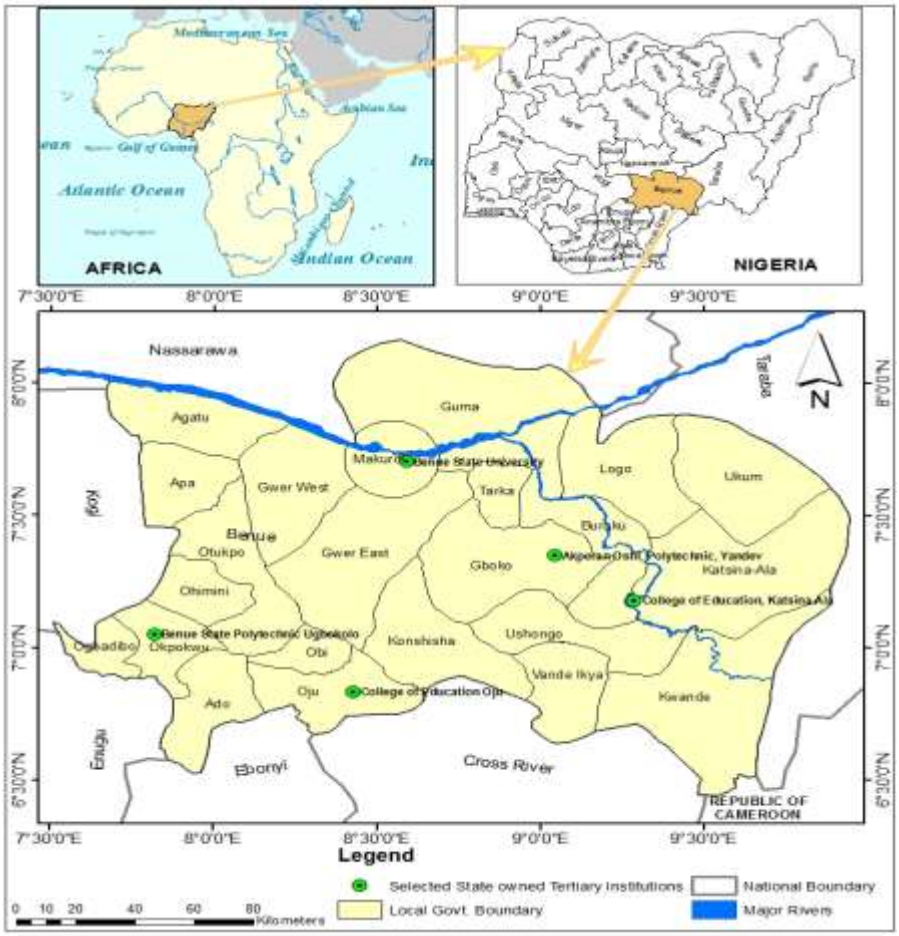

Fig. 1: Location of the Study Area

Data Collection and Analysis

Five state owned tertiary institutions spread across the three political zones (Senatorial Districts) of Benue state were purposively selected for the study. The institutions were College of Education, Katsina-Ala in Zone A, Benue State University, Makurdi and Akperan Orshi Polytechnic, Yandev, Gboko in Zone B, and Benue State Polytechnic, Ugbokolo as well as College of Education, Oju in Zone C (see figure 1). The choice of only one institution from zone A was because it is the only recognized tertiary institution in the zone. The choice of state government owned institutions was based on the fact that they are the only category of tertiary educational institutions that have more heterogeneous population.

Random sampling technique was used in the selection of fifty (50) respondents each from the five (5) selected major tertiary institutions. Structured questionnaire made up of closed and open ended questions was used as instrument for collection of data from students on their level of awareness of climate change, its causes, impacts and mitigation/adaptation measures to cope with the negative impacts of climate change. This is in line with UNEP (2006) observation that questionnaire survey can be used to gauge the opinions, capabilities and level of awareness of key stakeholders on climate change. The administration of questionnaires was randomly done for each institution to ensure that every student had the chance of being selected. This method has been used by many researchers and proven to be very effective (Neuman, 2006). Frequency counts and items analysis was used to analyze the data collected while tables were used in the presentation of the data.

3.0 RESULTS AND DISCUSSION

3.1 Awareness of Students on Climate Change

The distribution of the respondents on awareness about climate change is presented in table 1. This shows that 86% of the respondents have heard about climate change while 14% claimed they have not heard about it. Their knowledge was however general as 66.4% of the respondents did not know the real meaning of climate change. Only 20% of the respondents knew climate change as the change in average weather condition of a place within a given time while 13.6% had a wrong understanding of what is climate change. The implication is that mere education of people is not enough to assume they have understanding of climate change. On observed changes in climatic conditions, 38% of the respondents had observed extreme/high temperature as the major change in weather condition, 30% had observed changes in rainfall patterns, and 21.6% observed the occurrence of floods while 10.4% observed the occurrence of droughts. This implies that majority of the students had understanding of changes in climate though their observation was limited to increasing temperature which is global warming. This agrees with the findings of Taderera (2010 cited in Kolleh and Jones, 2018) which revealed that most South Africans were aware that weather patterns were changing but their understanding of global climate change was limited. Petengell, (2010) also argues that communities easily notice changes in rainfall patterns but attributes such changes to factors such as an act of God or a locally caused problem. Majority of the students (41.6%) identified the burning of bush and fossil fuels as the main cause of climate change while 34.4% of the respondents identified deforestation, 18.0% identified the increasing population while 6.0% did not know the cause of climate change. This implies that 94% of the respondents were able to rightly identify one of the causes of climate change. This agrees with the findings of Okunlola Oke, Adekunle and Owolabi (2018) and Ogunjinmi and Ogunjinmi, (2022) that anthropogenic causes like burning of bush/fossil fuels and deforestation are the major causes of climate change. Also, according to IPCC, (2007), the current temperature changes associated with global warming suggest a noticeable influence of human beings on global climate.

Table 1: Awareness about Climate change

Awareness	Frequency	Percentage (%)
Have you heard about climate change		
Yes	215	86.0
No	35	14.0
Total	250	100
Knowledge of what is climate change		
It is the weather at any given time.	34	13.6
It is the change in weather condition at a given time	50	20
I do not know	166	66.4
Total	250	100
Observed changes in climatic condition over time		
Extreme/ high temperature	95	38.0
Changes in rainfall patterns	75	30.0
Occurrence of flooding	54	21.6
Occurrence of droughts	26	10.4
Total	250	100
Causes of Climate change		
Deforestation	86	34.4
Burning of bush and fossil fuels	104	41.6
Increasing population	45	18.0
Do not know	15	6.0
Total	250	100

Source: Authors' Field Survey, 2022

3.2 Students' Perception of Climate Change and its Impacts

The perception of the students on changes in climate and its impacts is presented in table 2. This shows that 74.4% of the respondents were aware that climate is changing while 25.6% were neither aware nor sure that climate is changing. On the perceivable impacts of climate change, 47.2% perceived reduction in crop yield, 34.8% perceived water scarcity while 14.0% perceived the death of livestock and 4.0% could not identify any particular impact. This agrees with the findings of Adamgbe Akombo, Gundu and Gesa (2018) that climate change has affected agricultural activities in Gboko local government area of Benue state resulting to reduction in crop yield.

Table 2: Perceived Changes in Climate and Impacts

Perceived Impacts	Frequency	Percentage (%)
Does climate change have impacts		
Yes	186	74.4
No	34	13.6
Do not know	30	12
Total	250	100
What are the impacts you have perceived		
Reduction in crop yield	118	47.2
Water scarcity	87	34.8
Death of livestock	35	14
I do not know	10	4
Total	250	100

Source: Authors' Field Survey, 2022

3.3The Sources of Information on Climate Change

The distribution of respondents on the sources of information about climate change is presented in table 3. This shows that 32.0% had heard about climate change through radio, 27.6% through television, 12.0% through environmental clubs in the various schools, 10.0 through social media and 8.0% in the course of lectures. This implies that majority of the students have heard about climate change through the electronic media (radio and television). This agrees with the findings of McBean and Hengeveld (2000) that most of the information provided to the public on climate change is derived from non-scientific sources such as radio, Television, internet, press and interpersonal communication. Also, the low awareness through school lectures (8%) is contrary to the findings of Bolaji, (2020) that their respondents were aware of climate change through lectures in the class.

Table 3: Sources of Information on Climate Change Adaptation Measures

Sources	Frequency	Percentage (%)
Television	69	27.6
Radio	86	32.0
Newspapers	20	10.4
School Environmental Clubs	30	12.0
School lectures	20	8.0
Social media	25	10.0
Total	250	100

Source: Authors' Field Survey, 2022

3.4 Adaptation Measures to Climate Change

The respondents' knowledge of adaptation measures to changes in climate is presented in table 4. This shows that 42.8% identified increased public awareness, 21.2% identified avoiding bush burning, and 18.0% chose planting of trees (afforestation) while 14.0% could not identify any measure for adapting to

climate change impacts. This implies that majority of the students were aware of one adaptation measure of climate change or the other, even though their knowledge of adaptation measures to climate change was limited. This agrees with Maja, Idris and Fashe, (2022) that lack of access to climate change information and awareness constrains the adaptation against the impacts of climate change.

Table 4: Knowledge of Climate Change Adaptation Measures

Measures	Frequency	Percentage (%)
Avoid deforestation	35	14.0
Afforestation	45	18.0
Increased public awareness	107	42.8
Avoid bush burning	53	21.2
Do not know	10	4.0
Total	250	100

Source: Authors' Field Survey, 2022

4.0 CONCLUSION AND RECOMMENDATIONS

The study sought to ascertain the level of awareness of climate change, its causes, impacts, and adaptation measures and sources of awareness by the students of tertiary institutions in the state. It has established that the students were aware of climate change but their knowledge was limited. Based on the results of the study, the following recommendations were made:

i. The fact that majority of the students have identified increased public awareness has underscored the need for Ministry of Education, Benue state and by extension, the Federal Ministry of Education to evolve a policy to integrate climate change awareness in the educational curriculum for all tertiary institutions. This will help sensitize the students who are future leaders on the importance of bracing up to the challenges of climate change.

ii. Encourage the formation of school environmental clubs to enlighten the students about climate change in the tertiary and secondary schools.

iii. Alternative energy sources should be encouraged to curb deforestation which is seen as one of the major causes of climate change.

REFERENCES

Adamgbe, E.M. and Ujoh, F. (2012). Variations in Climatic Parameters and Food Crop Yields: Implications on food Security in Benue State. *Confluence Journal of Environmental Studies.* A publication of Kogi State University, Ayingba. Vol. 7 pp. 59-67 http://www.journalhome.com/cjes

Adamgbe, E.M., Akombo, R.A., Gundu, E.G and Gesa, T.R. (2018). Impacts of Climate Change and Farmers Adaptation Strategies in Gboko Local Government Area of Benue State, Nigeria. *SAMVS Multi-Disciplinary Journal*, Vol. 2 (2) pp. 27-35

Amaechina, E.A. (2010). Framework for Agricultural Adaptation to Climate Change in Southern Nigeria. A Development Partnership in Higher Education326 Project Executive Summary Supported by DFID and British Council, Enugu: African Institute for Applied Economics.

Adebayo, A.A., Onu, J.I., Adebayo, E.F., Anyanwu, S.O. (2012). Farmers' Awareness, Vulnerability and Adaptation to Climate Change in Adamawa State, Nigeria. British Journal of Arts and Social Sciences. Vol. 9 (11) pp. 104-115 http://www.bjournal.co.uk/BJASS aspx

Arragaw, A. and Woldeamlak, B. (2017). Determinants of Smallholder Farmers' Choice of Coping and Adaptation Strategies to Climate Change and Variability in the Central highlands of Ethiopia. *Environmental Development* 24(2017): 77-85.

Bolaji, O.O. (2020). Climate Change awareness and Adaptation Strategies in Ibadan Metropolis, Nigeria. *Journal of Resources Development and Management,* 70,pp. 34-40

Bozoglu, M. Topuz, B.K., Baser, U., Shahbaz, P. and Eroglu, N.A., (2022). Graduate Students' Knowledge Levels on Climate Change in the Departments of Agricultural Economics in Turkey. *Journal of Agricultural Science Technology.* Vol. 24(5). Pp 1029-1041

Damnyag, L., Mwinkom, F. X. K., Abugre, S. and Alhassan, S. (2021). Factors Influencing Climate Change Adaptation Strategies in North-Western Ghana: Evidence of Farmers in the Black Volta Basin in Upper West region. [https://link.springer.com/article/10.1007/s42452- 021-04503-w] Retrieved on 4th July, 2022.

Deressa, T. T., R. M. Hassan and C. Ringler (2010). "Perception of and Adaptation to Climate Change by Farmers in the Nile Basin of Ethiopia. (*The Journal of Agricultural Science*). 149(1): 23-31.

Ekpoh, I.J. (2009). Climate, Soceity and Environment. St. Paul Publishing Company, Calabar, Nigeria.

Ekpoh, U. I. and Ekpoh, I. J. (2011). Assessing the Level of Climate Change Awareness among Secondary School Teachers in Calabar Municipality, Nigeria: Implication for Management Effectiveness, *International Journal of Human and Social Sciences*, 1(3): 106-110.

Freije, A. M., Hussain, T. and Salman, E. A. (2017). Global Warming Awareness among the University of Bahrain Science Students. J. Assoc. of Arab Univ. Basic Appl. Sci., 22(1): 9-16.

Hansen, J., Holm, L., Frewer, L., Robinson, P. and Sandøe, P. (2003). Beyond the Knowledge Deficit: Recent Research into Lay and Expert Attitudes to Food Risks. Appetite, 41(2): 111–121.

Houghton, J. T., Ding, Y., Griggs, D. J., Noguer, M., Van der Linden, P. J., Dai, X., Maskell, K. and Johnson, C. A. (2001). Climate Change 2001: The Scientific Basis. Published for the Intergovernmental Panel on Climate Change. Cambridge University Press.

Igwebuike, M.N., Odoh, F.C., Ezeugwu, C.I., Oparaku, N.E. and Oparaku, O.U. (2009). Vulnerability and Adaptation to Climate Change: In Anyadike, R.C.N., Madu, I.A. and Ajaero, C.K.(Eds.) Conference Proceedings on Climate Change anf the Nigerian Environment, 29th June – 3rd July, 2009. Pp 383 – 392.

IPCC, (2007). Climate Change, Summary for Policy Makers. The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on climate Change, University Press, Cambridge. UK.

Kilinc, A., Boyes, E. and Stanisstreet, M. (2011). Turkish School Students and Global Warming: Beliefs and Willingness to Act. Eurasia J. Math. Sci. Technol. 7(2): 121– 134.

Maja, M.M., Idris, A.A. and Fashe, M.M. (2022). Gendered Vulnerability, Perception and Adaptation Options of Smallholder Farmers to Climate Change in Eastern Ethiopia. *Earth Systems and Environment.*Springer.com 28th July, 2022

Mase, A. S., Gramig, B.M., and Prokopy, L.S. (2017). Climate Change beliefs, riskperception and adaptation behavior among Midwestern US crop farmers. *Climate risk Management*. Vol 15, 7-17

Mbwambo, E. P., Kabote, S. J. and Kazuzuru, B (2022). Determinants of Farmers' Choice of Coping Strategies to Climate Variability and Change in Manyoni District, Singida Region, Tanzania. The sub Saharan Journal of Social Sciences and Humanities (SJSSH) Volume 1, (1) pp. 11-24. Retrieved on 4th July, 2022

McBean, G. A. and Hengeveld, H. G. (2000). Communicating the Science of Climate Change: A Mutual Challenge for Scientists and Educators. Can. J. Environ. Educ., 5: 9-25.

Neuman, W.L. (2006). Social Science Research Methods: Quantitative and Qualitative Approaches. New Delhi, Pearson Education.

Nhemachena, C. and Hassan, R. (2007). Micro-level Analysis of Farmers'Adaptation to Climate Change in Southern Africa. (IFPRI Discussion paper No. 00714). Washington DC, USA: International Food Policy Research Institute (IFPRI), Environmental and Production Technology Division.

Odey, J. (2009). Efforts to Combat Climate Change. A speech delivered by the Hon. Minister of Environment on 2009 World Environment Day. Economic Confidential, June 2009.

Ojo, T. and Baiyegunhi, L. (2018). Determinant of Adaptation Strategies to Climate Change among Rice Farmers in Southwestern Nigeria: A Multivariate Probit Approach. [https://ageconsearch.umn.edu › record › files] Retrieved on 4th July, 2022.

Okunlola, J.O, Oke, D.O., Adekunle, V. A. J. and Owolabi, K.E. (2018). Effects of Climate Change and Coping Strategies among Crop Farmers in Southwest, Nigeria. *Journal of Agroforestry Systems* . 93, pp. 1399-1408

Ozor, N. Madukwe, M.C., Onokala, P.C, Enete, A., Garforth, C.J., Eboh, E.C. Ujah, O. and Amaechina, E.A. (2010). Framework for Agricultural Adaptation to Climate Change in Southern Nigeria. A Development Partnership in Higher Education326 Project Executive Summary Supported by DFID and British Council, Enugu: African Institute for Applied Economics.

Ogunjinmi, K.O. and Ogunjinmi, A.A. (2022). Climate Variability and Causes among Rural Farmers in Southwest Nigeria: A Gender Solution Analysis. *Nigerian Agricultural Journal.* Vol. 53 (1) pp 396-405 Retrieved from http://www.ajol.info/index.php/naj on 28th July, 2022

Pentegell, C. (2010). Climate Change Adaptation: Enabling People Living in Poverty to Adjust, Oxfam International.

Skamp, K. R., Boyes, E. and Stanisstreet, M. (2009). Global Warming Responses at the Primary Secondary Interface: 2 Potential Effectiveness of Education. Aust. J. Environ. Educ., 25: 31–44.

Kolleh, J.B. and Jones, M.T. (2018). Analysis of Rice Farmers' Perception of Climate Change in the Ketu North District, Volta Region of Ghana. International Journal of Agriculture and Forestry. 8(4) pp. 144-149

Tser, A. (2013). The Dynamics of Benue State Population 1963-2016. Makurdi, Micro Teacher & Associate

Tyubee, B. T. (2005). Influence of Extreme Climate in Communal Disputes in Tivland of Benue State. Paper Presented during the Conference on Conflicts in the Benue Valley held at Benue State University, Makurdi on 16th and 17th March, 2005.

United Nations Environmental Programmes (UNEP, 2006). Raising Awareness on Climate Change: A Hand Book for Governmental focal points, United Nations office, Nairobi.

UNEP. 2003. How Will Global Warming Affect My World?. A Simplified Guide to the IPCC's Climate Change (2001): Impacts, Adaptation and Vulnerability. Information Unit for Conventions, UNEP, Geneva.

United Nations (2007). The Millennium Development Goals Report, United Nations, New York. http://www.un.org/millenniumgoals/pdf/indg2007.pdf Accessed on 11th August, 2022

United Nations. (2016). United Nations Framework Convention on Climate Change (UNFCCC). https://ufccc.int/sites/default/files/action_f or_climate_empowerment_guidelines.pdf Retrieved 11th August, 2022