



### **CLIMATE CHANGE FACTORS IN THE MANAGEMENT OF THE UNIVERSAL BASIC EDUCATION PROGRAMME FOR QUALITY EDUCATION IN ENUGU STATE, NIGERIA**

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#### **Abstract**

This study was carried out to investigate the climate change factors in the management of the Universal Basic Education (UBE) programme for quality education in Enugu State. Descriptive survey research design was adopted for this study. Two research questions and two null hypotheses guided the study. The population of the study comprised of all the teachers in Enugu State public primary schools. The sample size of the study comprises of 150 teachers and head teachers selected through random sampling technique. A 20-item questionnaire was administered to the 150 respondents, the instrument was validated by three experts, two in educational Administration and planning and one in measurement and evaluation, the experts scrutinized the instrument and modified it to suit the purpose of the study. The reliability was determined through trial test using 15 primary school teachers from private schools in Enugu South Local Government Area which is outside the areas of the study. Cronbach alpha technique was used to determine the internal consistency of the instrument. Result of the findings shows that climate factors such as flooding and erosion militate against the management of the UBE scheme for quality education. Based on the findings, it was recommended that greater awareness about climate change should be created among parents, teachers and pupils and Government should look into the issue of high cost of petroleum product which includes kerosene and cooking gas. Due to the hike in the price of these products many families especially in the rural and even urban areas have resorted to the use of firewood and its ally charcoal in cooking thereby increasing the deforestation. Government should either subsidize these products or provide alternative means for domestic cooking

#### **Keywords**

Climate, Climate Change Factors, Management, Quality Education, Universal Basic Education Programme.

#### **Introduction**

Climate change is one of the major challenges of our time. It adds considerable stress to our societies and to our environment. Climate change occurs in form of acid rain, tile threat to ozone layer from chlorofluorocarbons and global weather effects such as erratic rainfall, over

flooding, rise in sea level, global warming, desertification, drought, pest, diseases and land degradation. It may simply be referred to any change in climate overtime whether due to natural variability or as a result of human activity (Odiugo, 2010). Climate change is a change in the composition of the atmosphere that is over and

above natural variations attributed directly or indirectly to anthropogenic or human activities. Many studies such as the one conducted by inter governmental panel on climate change-IPCC Fifth Review in Randell and Gray (2017) predicts a continuous rise in the frequency of the disasters across the globe. This agrees with Hensen (2010) who opines that climate change refers to overtime change in whether due to natural variability or human activity and is widely recognized as the most serious environmental threat facing our planet today.

In the same view Ogunlanye (2016) highlighted that climate change is caused by a number of factors which he classified under two; the climatic/natural factors and human factors. According to him the climatic or natural factors include solar radiation, continental drift and mountain building. While the human factors include persistent deforestation, animal agriculture and all activities of man that increase the emission of greenhouse gases. Examples are methane emitted during production of gases and transport of natural gas, oil, coal etc, nitrous oxide emitted during the combustion of fossil fuels. In the same vein Gobo (2005), Teme (2005), Moyinoluwa (2013), and National Weather Service 2007 in Nyenwe and Victor-Ishikaku (2015) had maintained that bush fire from pastures, change of land use, deforestation for pasture establishment, use of fire to maintain pasture, promotion and subsidies on mechanization, motorization and replacing draught animal power are all human activities that have great impact on the environment.

The effects of climate change on man, animals, plants and their environment are enormous. It is already making life unbearable and difficult. Some of the effects are *rising temperature; droughts and desertification; heavy precipitation; flooding; rising sea level; diminishing waste resources leading to malnutrition, waterborne diseases such as diarrhea and vector borne diseases such as malaria, drowning as a result of increase in sea level and flood, severe mental and physical trauma for people living in areas where flood occurs*. Other effects are skin cancer, depletion or total loss of forest resources, food crop damage leading to hunger, increase in incidences of cataract in humans and associated illnesses; drought leading to poor crop yields which will impact on the economy and available food supply; increase in the risk of forest fire as a result of dry conditions; air pollution mostly in urban cities leading to death and illness from respiratory diseases such as asthma; increase in the

spread of infectious diseases and high breeding of insects; severe weather events as thunderstorms; heavy rains, hurricanes, cyclones, hail and tornadoes and eventual wiping away of human race. (Nyanayo 2005; Teme 2005, Litus 2012; Moyinoluwa 2013 & National Weather Service 2007 in Nyenwe and Victor-Ishikaku, 2013; *Federal Ministry of Environment, Special Climate Change Unit 2010; Haider, 2019*).

In the case of Nigeria Scientist already predicted that Nigeria may be seriously hit by the greenhouse effect as a result of large amount of greenhouse gases emitted into the atmosphere through bush burning and gas flaring. (Nyenwe and Victor-Ishikaku, 2013). Also *Federal Ministry of Environment, Special Climate Change Unit (2010)*, had pointed out that temperatures in West Africa, and particularly the Sahel, have increased more sharply than the global trend and had predicted that Africa's climate will generally become more variable with very high level of uncertainty regarding its climate. It had predicted that between 1980/99 and 2080/99 that in Africa the temperature will be more than 1.5 times the average global trend.

Presently evident about that Nigeria's climate has been changing, examples are increases in temperature; variable rainfall; rise in sea level and flooding; drought and desertification; land degradation; extreme weather; increase in the duration and intensities of rainfall, Lake Chad and other lakes in the country are drying up and at risk of disappearing (Elisha et al., 2017; Ebele and Emodi, 2016; Olaniyi et al., 2013; Enete I. C. 2014; Akande et al.; 2017; Amanchukwu et al. ; 2015; Olapido, 2010; Dioha Emodi, 2018 Elisha et al. ; 2017 and Federal Ministry of Environment, 2014 all in Haider, 2019).

All these adverse effects of climate change directly and indirectly affect every sector of the economy including the educational sector. **Mbah (2014)**; Zimbabwe Human Development Report. (2017); *UNICEF (2011)*; Randell, & Gray, (2017) **opined that** one of the most pressing challenges facing the provision of quality education is climate change. In a more specific term they found out that climate change, with its related problems cause among others: lateness, absenteeism and ill health among teachers and students; destruction of school structures and learning materials, school drop-out, poor supervision of instruction, incompleteness of curriculum content; poor performance in examinations among the students; migration, child

marriage, destruction of bridges and roads leading to schools; poor teachers' incentives to work in areas prone to flood or drought; poor harvests and food scarcity. From the discussion so far, it is very clear that the problem of climate change is a serious one which is capable of affecting some educational programme like the Universal Basic Education (UBE) programme aimed at eradicating illiteracy in the country. This work therefore looked at climate change factors that affect the management of the universal basic education programme for quality education in Enugu State, Nigeria

Management which is an integral part of an organization is a process by which human and material resources are co-ordinated to accomplish a given set of objectives. Akube (2014) cited in Chime (2016) sees management as a process where a group of people at the highest level of an organization plan, organize, co-ordinate, communicate, control and direct the actions and activities of others who work in the organization towards the achievement of the organizational objectives. In view of this, management of the Universal Basic Educational Programme (UBE) is the process of co-coordinating human and material resources towards the provision of free universal basic education for every child of school age. It is established as uninterrupted access to a 9-year formal education programme which is free and compulsory for every child. It comprises of six years of primary school and three years of junior secondary education, at end the pupil could proceed to senior secondary school or enters the labour market. UBE programmes also include adults and non-formal education programme. However, it seems its mission and vision have been obstructed and threatened by climate change disaster in most parts of the country including Enugu State.

Quality in education is the principal measurement of effectiveness in education. It is what makes education worthwhile and it's the most vulnerable attribute. Quality is commonly considered as a determining factor in facilitating the implementation of education for all initiatives (Boissiere, 2004). Quality is a subjective concept that determines standards while standards is the quality attainment which is required to be achieved. The management problems such as poor planning, organizing and poor implementation and weather variability have made it practically difficult in achieving the Universal Basic Education for quality assurance mostly in Nigeria, Enugu State inclusive.

Enugu State is one of the states in South East Nigeria that experiences the effects of weather

variability to unbearable level. The State is prone to weather disasters of over flooding and erosion. In recent years and especially in 2012, the State suffered colossal loss of both human and material resources due to flood disaster and erosion menace. The problem was so much that some communities were virtually washed out and others submerged. This trend has almost become a yearly occurrence making many of the public schools in the State to suffer untold hardship mostly during rainy season as floods keeps them out of school. These poses some challenges to the management of UBE programme in the State. The situation was clearly reported by the 'State Disaster Relief Coordinating Committee' - SDRCC (2012) in Chima (2016). The Committee reported that people of Enugu State have really suffered severe losses of facilities, lives and properties due to flood and erosion menace, which has devastated the agricultural belts of different towns and communities. They reported that floods and erosion also affects some schools premises destroying infrastructural facilities like classrooms, libraries, laboratories staff rooms and workshops.

All these have contributed in making the management of UBE programme a difficult task as to achieve its desired set of objectives. Other researchers like Ekpoh and Ekpo (2011), Nwankwo and Unachukwu (2012), Akuegwu, Nwiue and Nwikiria (2012) and Nwona (2013) have also found out that school climate has in one way or other affects teaching and learning process, administration of educational programmes, healthy relationships in schools, promotion of safety in schools and efforts to improve the quality of teaching and learning. From the discourse it can be seen that climate change has become a global concern that requires urgent attention but much has not be done in terms of climate change as a major factor in the management of educational programmes like UBE. It is in this light that this work examined climatic change as a factor in the management of the Universal Basic Education UBE programme for quality education. Specifically the study sought to:

1. Determine the climatic factors militating against the management of the Universal Basic Education (UBE) programme in Enugu State.
2. Find out the extent to which the climate change factors affect teachers' job performance in the management of the Universal Basic Education for quality education.

## Research Questions

The following research questions were formulated to guide this study:

1. What are the climate change factors that militate against the management of the Universal Basic Education for quality education in Enugu State?
2. To what extent have climate change factors affected teachers' job performance in the management of the Universal Basic Education for quality education?

## Hypotheses

The following null hypotheses were formulated to guide the study and were tested at 0.05 level of significance

**HO<sub>1</sub>:** There is no significant difference between the mean ratings of head teachers and teachers with regards to climate change factors that militate against the management of the UBE programme.

**HO<sub>2</sub>:** There is no significant difference between the mean ratings of head teachers and teachers on the extent to which climate change factors affect teachers' job performance in the management of the Universal Basic Education [UBE] programme for quality education.

## Method

The study adopted a descriptive survey design which sought to ascertain the mean responses of head teachers and teachers on climatic change as a factor in the management of the Universal Basic Education Programme for Quality Education in Enugu State, Nigeria. The population of the study comprised all public primary school teachers and head teachers in the 17 local government areas of Enugu State.

A simple random sampling technique was adopted to select 50 schools. 2 teachers were randomly selected from each of the 50 schools making a total of 100 teachers, in addition to 50 identified head teachers in the selected schools making it a total of 150 respondents. The instrument for data collection was a questionnaire titled "Climate change factor in the management of Universal Basic Education (CCFMUBE). The rating of the response were: Strongly Agree =4, Agree =3, Disagree =2 and

Strongly Disagree =1 respectively for research question one, while research question two has the response of Very High Extent =4, High Extent =3, Low Extent =2, and Very Low Extent =1 respectively. The questionnaire was divided into two sections A and B. Section A required information on respondents' bio data, while Section B was designed to elicit information from the respondents on the subject of the study. Experts in Educational Management and Planning and Measurement and Evaluation in University of Nigeria Nsukka validated the instrument. The corrections which were made were effected in the final draft of the instrument. The reliability was determined through trial test using 15 respondents which comprises of 3 principals and 12 primary school teachers in private schools that were not part of the sampled schools. To determine the internal consistency of the instruments, Cronbach Alpha technique was used for the analysis. This gave the reliability coefficient values of 0.71 and 0.83 for section A and B of the questionnaires respectively. Overall reliability value of 0.82 which was high was obtained. Copies of questionnaire were distributed and collected. They were correctly filled by the respondents. The items of the instrument were responded to a 4-point scale. Mean score and standard deviation was used in interpreting the analyzed data.

The null hypotheses were tested using Z-test statistics at 0.05 level of significance. The decision rule for the hypotheses is that any calculated value which is less than the critical value is considered not significant while any value that is greater than the critical value is considered significant.

## Results and Discussion

**Research Question 1:** What are the climate change factors that militate against the management of the Universal Basic Education for quality education in Enugu State?

**Table 1:** Mean and Standard Deviation responses of head teachers and teachers' responsees on climate change factors militating against the management of the UBE Programme

S/N	Questions	Head Teacher		Teacher		X	SD	Decision
		X <sub>1</sub>	SD <sub>1</sub>	X <sub>2</sub>	SD <sub>2</sub>			
1.	Erosion usually destroys my school facilities and equipment	3.7	0.68	3.6	0.66	3.65	0.67	Accepted
2.	Windstorms affect the growth of flowers in my schools which reduces oxygen for human existence	3.8	0.8	3.4	0.78	3.6	0.79	Accepted
3.	Depletion of ozone layer causes direct heat and high temperature which affects teachers and pupils in my school.	3.7	0.96	3.72	0.94	3.71	0.95	Accepted
4.	Erratic or off- the season rainfall affect the curriculum and keep students out of my school	3.58	1.03	3.56	1.01	3.57	1.02	Accepted
5.	Increase in global temperature affects the lives of both plants and animals in my school	3.59	0.94	3.61	0.92	3.60	0.93	Accepted
6.	Erosion affects the attendance of pupils in my schools	3.9	0.82	3.8	0.80	3.85	0.81	Accepted
7.	Over flooding caused by excess rainfall affects food production for the livelihood of both pupils and teachers in my school	3.73	0.87	3.71	0.85	3.72	0.86	Accepted
8.	Over flooding caused by excess rainfall affect homes of teachers, pupils and their parents in my school	3.77	1.07	3.81	1.11	3.79	1.09	Accepted
9.	Water pollution caused by over flooding affects pupils' health which affects their attendance in my school	3.57	0.98	3.45	0.94	3.51	0.96	Accepted
10.	Flooding common in rainy season affects pupils' attendance in my school	3.69	0.99	3.65	0.96	3.67	0.97	Accepted
<b>Aggregate Mean and Standard Deviation</b>		<b>3.70</b>	<b>0.91</b>	<b>3.63</b>	<b>0.9</b>	<b>3.67</b>	<b>0.91</b>	

Table 1 presents the climate factors militating against the management of UBE Programme. From the above table, all the items (1 – 10) were all accepted as they scored above the criterion mean of 2.50. This indicates that the respondents strongly agreed that all the climate factors mentioned militate against the management of UBE Programme. These climate changes factors are erosion, windstorms,

high temperature due to depletion of ozone layers, over flooding caused by excessive rain, erratic or off season rainfall and water pollution

**Research Question 2:** To what extent have climate change factors affected teachers' job performance in the management of the Universal Basic Education for quality education?

**Table 2:** Mean and Standard Deviation responses of head teachers and teachers' response on the extent climate change factors affects teachers' job performance in the management of UBE programme.

S/N	Questions	Head Teacher		Teacher		Decision		
		X <sub>1</sub>	SD <sub>1</sub>	X <sub>2</sub>	SD <sub>2</sub>	X	SD	
1.	Erosion causes damages and renders some of my teachers and the pupils homeless and hopeless, making their attendance to school irregular	2.88	0.40	2.82	0.44	2.85	0.42	HE
12.	Global warming due to high temperature causes discomfort on me which affect my task performance in the implementation of the UBE programme	2.44	0.55	2.0	0.51	2.22	0.53	LE
13.	Over flooding damages our school premises, equipment and infrastructural facilities making the school environment not conducive for teaching and learning	2.31	0.80	2.25	0.88	2.28	0.84	HE
14.	High humidity which causes increase in pest and diseases infestation affects the income of parents, so many of my pupils do not have basic educational materials like books, pencils, locker and chairs	2.11	0.72	2.15	0.76	2.13	0.74	LE
15.	Flood displaces us from our homes and schools causing academic activity to come to a halt.	2.99	0.60	2.95	0.62	2.97	0.61	HE
16.	Drought affects the farmland which reduces food production and increases the cost of living. This also affects my job performance because I have to do other things to survive.	2.47	0.54	2.41	0.7	2.44	0.62	LE
17.	Windstorms and erosion blows off the roofs of our classroom blocks causing death to pupils and teachers in the school	3.32	0.54	3.26	0.58	3.29	0.56	HE
18.	Whirlwind with its spurious dust and spiral movement often blow sand, stone and dust into the classroom hence disrupting learning process	2.38	0.70	2.42	0.64	2.40	0.67	LE
19.	Heavy rainfall with thunderstorm often disrupt teaching activities in my school	1.9	0.70	3.86	0.74	2.88	0.72	HE
20.	We do not usually cover the curriculum because heavy rainfall and flood keep students and teachers away from school during raining season	3.02	0.82	3.10	0.84	3.06	0.83	HE
<b>Aggregate Mean and Standard Deviation</b>		<b>2.58</b>	<b>0.64</b>	<b>2.72</b>	<b>0.67</b>	<b>2.65</b>	<b>0.64</b>	<b>HE</b>

Table 2 presents the mean responses and standard deviation scores of the head teachers and teachers on the extent to which climate change factor affect teachers' job performance in the management of the UBE programme for quality education in Enugu State. Items 11, 13, 15, 17, 18, 19 indicated high extent with mean values above 2.5 while items 12, 14, 16 and 18 indicated low extent. The item with the highest extent is item 17 which say that “windstorms and erosion blows off the roofs of our classroom blocks causing death to pupils and teachers in the

school”. Next to this is item 20 with a mean value of 3.06. This item says “We do not usually cover the curriculum because heavy rainfall and flood keep students and teachers away from school during raining season. The item with least extent is item 14 which says that “High humidity which causes increase in pest and diseases infestation affects the income of parents, so many of my pupils do not have basic educational materials like books, pencils, locker and chairs.

**Table 3:** Z- test analysis of the responses of teachers and head teachers on the climatic factors militating against the management of the UBE programme..

GROUP	NO	MEAN	STANDARD DEVIATION	DF	Z - CAL	Z - CRIT	LEVEL OF SIG	DECISION
Head Teachers	100	3.70	0.91	148	0.448	1.96	P>0.5	No Significant
Teachers	50	3.63	0.9					

The analysis of data in the above table shows that the calculated value of Z [0.448] is less than the critical Z value of 1.96 at 0.05 level of significance. The null hypothesis was then accepted. Meaning there was a no significant difference between the mean rating of head teachers and teachers with regards to the above mentioned climate change factors militating against the management of the UBE programme. This result showed that both head teachers and teachers agree that erosion, windstorms, high temperature due to

depletion of ozone layers, over flooding caused by excessive rain, erratic or off season rainfall and water pollution affect the management of UBE in Enugu State.

**Table 4:** Z – test analysis of the head teachers and teachers on the extent climate change factors affect teachers' job performance in the management of UBE programme.

GROUP	NO	MEAN	STANDARD DEVIATION	DF	Z - CAL	Z - CRIT	LEVEL OF SIG	DECISION
Head Teachers	100	2.58	0.64	148	-1.24	1.96	P>0.5	Not Significant
Teachers	50	2.72	0.67					

Information in Table 4 indicates that Z– cal is -1.24 at 148 degrees of freedom and Z-critical is 1.96. Since the value of Z – calculated is less than the Z – critical, the null hypotheses stands accepted. This indicated that there is no significant difference between the mean responses of the head teachers and teachers on the extent to which climate change factors affect teachers' job performance in the management of UBE programme for quality education in Enugu State.

**Discussion**

The result revealed that majority of teachers and head teachers agreed that climatic change is a risk factor militating against the management of UBE programme in Enugu state. Among the factors indentified were; erosion, windstorms, increase global warming, erratic or off the season rain fall, over flooding caused by excess rain, water pollution,

drought and high humidity. Windstorms, flood and erosion were identified as having a higher devastating impact In the same vein both teachers and head teachers agree that these climate change factors affect their job performance making it difficult for the management of UBE program programme in Enugu State.

These findings agree with the work of Mbah (2014). Her respondents agree that climate change, with its related problems cause among others: lateness, absenteeism and ill health among teachers and students, destruction of school structures and learning materials, school drop-out, poor supervision of instruction, incompletion of curriculum content; and poor performance in examinations in Ebonyi State. In similar vein, Haider (2019) discovered that in River State many children absent themselves from school during heavy rains especially in villages where transportation is a

problem (Amanchukwu et al., 2015 in Haider) added that during times of drought, many households keep especially the girls at home to go and search for water. Elaborately, Zimbabwe Health Development Report on climate change and development (2017) had reported that Climate change has had negative impacts on education in Zimbabwe, destroying infrastructure such as bridges, roads and schools. They reported that the heavy down pour of 2016/2017 destroyed approximately 18 % of the country's schools, affecting the education of approximately 500, 000 children. They also reported that the incidence of dropouts increases in cases where dwellings are destroyed, students cannot cross bridges to attend school and people are moved to safer areas, leading to withdrawal of children from schools to even help support the household. In Ethiopia Mani et al. (2013) in Randell and Gray (2016) discovered that in rural Ethiopia, heavy rainfall during the year of the survey was negatively correlated with enrollment and grade attainment.

Related to these, findings from the research works of Akuegwu, Nwiue and Nwirikia (2012), Ekpoh and Ekpo (2011), Nwankwo and Unachukwu (2012) and Nwora (2013) confirmed that climate change factors have significant relationship with teaching and learning processes in any educational setup and influences teachers' job performance, administration of educational programmes and efforts to improve the quality of teaching and learning.

### Conclusion

This work examined climate change factors in the management of the universal basic education programme for quality education in Enugu state, Nigeria. It found out that erosion, windstorms, high temperature due to depletion of ozone layers, over flooding caused by excessive rain, erratic or off season rainfall and water pollution have been having a devastating effect on the management of UBE programme in Enugu State. Some of the effects are flood displacing people from their home, windstorm blowing off the roofs of classroom blocks causing deaths of teachers and students; Heavy rainfall with thunder storms disrupting the school curriculum and teaching and learning activity. Head teachers and teachers confirmed that these climate change factors affect their job performance. The work clearly shows that climatic change factor is a critical factor that should be given immediate and urgent attention if UBE programme must achieve its aim of quality education in not just Enugu State but in the country as a whole.

### Recommendations

Based on the findings of this work, the paper therefore made the following recommendations.

1. In view of the huge challenge that climate change poses to national development and the management of UBE programme for quality education all levels of governance in the country must be actively involved in responding strategically to it.
2. The Federal government should ensure that the framework at the Federal level have capacities to facilitate the implementation of its activities at State and Local Government levels.
3. Curriculum experts should explore links to climate change across all subject areas. The inclusion and integration of climate change in the Nigerian educational curricula and in university courses is essential.
4. School administrators should grow their own vegetation; teach children how to plant trees and encourage wildlife behind the school.
5. The government should set up a climate-crisis committee which should consist of students, staff, parents and members of the local community to explore what the school can do.
6. In order to limit greenhouse gas emissions and at the same time provide energy for the entire population, the government should encourage all forms of renewable energies like solar power, tidal, ocean energy, geothermal power, and wind power; nuclear power, the use of carbon sinks, and carbon capture and storage.
7. Government should look into the issue of high cost of petroleum product which includes kerosene and cooking gas. Due to the hike in the price of these products many families especially in the rural and even urban areas have resorted to the use of firewood and its ally charcoal in cooking thereby increasing the deforestation. Government should either subsidize these products or provide alternative means for domestic cooking as suggested above.
8. Government should build durable bridges and convert on the roads leading to schools in the rural areas and buildings in the areas prone to thunder and wind storms should be solidified to withstand the effect of these



storms. The classrooms and offices should also be well ventilated.

9. Lasting the government should intensive the awareness and campaign on climate change adaptation to make sure that everyone, including students, teachers, head teachers, principals parents are knowledgeable about it.

### References

- Akuegwu, B. A, Nwi-ue, F. D & Nwikiria, C. G (2012). Climate Change Effects and Academic Staff Role Performance in Universities in Cross River State, Nigeria.
- Boissiere, M. (2004). Determinant of Primary Education, Outcome in Developing Countries Washington DC, World Bank.
- Chime, E. E. (2016). Correlates of Management of Primary School Head teachers in Promotion of Child- Friendly School Environment in South-East Nigeria. Unpublished Ph.D. University of Nigeria, Nsukka.
- Zimbabwe Human Development Report (2017). Climate Change and Human Development: Towards Building a Climate Resilient Nation
- Ekpoh, U. I & 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 Humanities and Social Sciences* 1(3), 125–140.
- Federal Ministry of Environment Abuja, Nigeria: *Special Climate Change Unit (2010)***
- Haider, H. (2019). Climate change in Nigeria: Impacts and responses. K4 Help Desk Report Knowledge Evidence and learning for Development 3-10*
- Hensen, P. J. K. (2010). Knowledge about the green house effect and the effect of the ozone layer among Norwegian pupils finishing compulsory education in 1989, 1993 and 2005 – what now?. *International Journal of Science Education*, 32(3), 397-419.
- Intergovernmental Panel on Climate Change -IPCC (2007). The Fifth Assessment Report (AR4)
- Mbah, B. A. (2014). Challenges of climate change on provision of and accessibility to quality education in Nigeria. *International Journal of Education Learning and Development*, 2(4) 26-32**
- Nwankwo, C. A & Unachukwu G. O [2012]. Teachers awareness of the causes and effects of climate change and their classroom management strategies in climate change era. *Research Journal in Organizational Psychology and Educational Studies* 1(3), 161-167.
- Nwona, H. A (2013) climate change; causes, effects and the need for science education for sustainable development. *Mediterranean Journal of Social Sciences* 4(8) 35-43
- Nyenwe, J. & Victor-Ishikaku, E. C. (2015). Climate change impacts: need for curriculum review at the secondary education level in Nigeria. *International Journal of Education Learning and Development* 3(2), 33-38**
- Odiugo, (2010). General Overview of Climate Change Impacts in Nigeria. *Journal of Human Ecology*, 29(10); 44-45.
- Ogulenye, B. O (2016). Climate change awareness among male and female junior secondary school teachers of science and non-science teachers' background in Ebonyi State, Nigeria. *Niger Delta Journal of Education* 8(1), 89-95.
- Randell, H.& Gray, C. (2017). **Climate change and educational attainment in the global tropics. *Extended Abstract Submitted for 2017 Annual Meeting of the Population Association of America***
- UNICEF (2011). *Pathways of climate change impact on education*