

**CLIMATE CHANGE AND EDUCATIONAL  
MANAGEMENT FOR SUSTAINABLE DEVELOPMENT  
OF PUBLIC UNIVERSITIES IN NORTH CENTRAL  
NIGERIA**

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**Abstract**

*The study investigated climate change and educational management for sustainable development of public universities in North Central Nigeria. Two research questions and two hypotheses guided the study. Descriptive survey research design was adopted for the study. The population comprises 10,249 academic and administrative staff from 13 public universities. A total of 1,025/1012 (10%) academic and administrative staff from 7 public universities was sampled using proportionate stratified sampling techniques. A 4-point structured 10 item rating scale questionnaire titled; Climate Change and Educational Management Questionnaire (CCEMQ) was developed by the researchers and used to collect data for the study. The data collected were answered using mean and standard deviation for the research questions. While chi-square ( $\chi^2$ ) test of goodness-of-fit was used to test the hypotheses at 0.05 level of significance. The finding of the study revealed that flood and drought have significant influence on Educational Management for Sustainable Development of Public Universities in North Central Nigeria. It was recommended that, residents within the university community should avoid flood in the school, and government in corroboration with voluntary agency to provide Boreholes, Dams and Water tankers to avoid water scarcity.*

**Keywords:** *Climate change, educational management, sustainable development, universities.*

## Introduction

Climate change has gained worldwide attention because of its influence on social, economic, educational, technological and environmental activities. Higher temperature, drying up of soil, increased pest and disease incidence, shift in suitable area for growing crops and livestock, increased desertification in Sahara region, floods, deforestation, and erosion are all signs that climate change is already evident and represents one of the greatest environmental, social and economic threats facing Africa.

Climate change is often used to describe any kind of change in climate that may be natural or human induced (Unions of Concerned Scientist (UCS, 2012). Climate change has taken a center stage in countries around the world, the atmospheric temperature which has been normal for both human and a host of other biodiversity that co-exist with the human race for its sustainability or life on earth has been altered. The capability for sustainability is distorted. Therefore, when balance in temperature can no longer be stored due to the limited elasticity or its natural capacity the earth is exposed to unimaginable danger, particularly in respect of human life and biodiversity (Jor, 2019).

According to Obasi (2010), climate change refers to a situation whereby there is a significant deviation from the normal range or atmospheric connection required to sustain human lives and different biological structures and systems comprise of plants and animal species commonly referred to as biodiversity. Their coexistence and survival are also a function of their symbiotic relationship. It is a constant interface of atmospheric activities that sometime push the temperature to the extreme level. Ayoade (2013) defined climate change as variations in the atmospheric condition over a long period of time that helps to discern a shift in the climate characteristics of a place for years without revising to former characteristic. Ekpoh and Ekpo (2010), also defined climate change as the typical weather in the region or the atmosphere that prevails in a particular

time in place. It is the regular variation of weather in a region over a period of time. The seasonal variation in climate change are variable such as temperature, pressure and frequency spectrum observed from these definition it is clear that there is statistical imbalance in the properties or the climate system. Amanchuku, Amadi and Ololube (2015) see climate change as the alterations in the atmosphere that are over and above natural climate variation that are caused by human activities. The causes of climate change are attributed to the activities carried out by man on earth. This means that the situation can be changed if human being transform their ways of living to a more environmentally sustainable and friendly manner.

The cause of this drastic change in climate is attributed to the increase in the Green House Gases (GHG) occasioned by both anthropogenic (man-made) and natural occurrences. Some of the man-made sources include industrialization deforestation fossil building (greenhouse gasses), bush burning and desertification. These activities result in the production of carbon-dioxide, methane, nitrogen dioxide, chlorofluoro-carbons and ozone. All these gases lead to depletion of the ozone layer mainly located in the atmosphere thereby leading to the climate warning. There are also natural or external factors that occasion climate change such as volcanic activity, solar output, ocean variation and the earth's orbital movement around the sun (Ekpo, 2019).

According to Litus (2012), climate change causes extreme weather events such as rising and falling temperatures. It also results in either heavy precipitations, which leads to aridity or desertification. Extreme weather events such as cyclones, floods and draughts often lead to malnutrition, waterborne disease such as diarrhea and dysentery. Floods also result in drowning, severe mental and physical trauma as well as vector-borne diseases like malaria and cholera. According to Chiedozie, Ebengbor and Okoye (2015), this phenomenon has been observed to have serious deleterious

consequences for the earth in the form of significant variation in regional climate recurrent excessive rainfalls, drought excessive heat wave, wind and rain storms, killer floods, excessive cold, visibility and other side effects. This study investigated influence of climate change in the area of flood and draught on educational management for sustainable development of public universities in North Central Nigeria. Flood is another element of climate change. Ajayi (2006) defined flood as the accumulation of excessive quantity of water in an area without flowing away easily, flood is an overflow of water that submerges land, which is usually dry or previously uncovered by water. This is sometime caused by an overflow from water bodies such as rivers, lakes and oceans or due to accumulation of rainwater on saturated ground. Flood as used in this study refers to the overflowing of water from river or other water bodies due to excessive rainfall or other inputs of war which temporarily submerge homes and schools thereby destroying instructional materials obstruction of movements, planned universities activities, distribution or university facilities, books and valuable documents, which lead to displacement or relocation of staff and student to safer place and invariably disruption of the process of teaching and learning.

Drought is another aspect of climate change that could influence on the lives of the populace whenever it strikes. According to Abdullahi (2015), drought is the dryness which occurs as a result of lack of precipitation or rainfall received within an area at a given time. It generally refers to the deficiency in precipitation over an extended period, usually a season or more, which result in a water shortage causing adverse influence on vegetation, animals and people as well as school plant. Its occurrence may cause food insecurity, dust and intensive heat in lecture halls, and cause the university ground to break up thereby making movement difficult. This creates room for termite's invasion on school documents, furniture, roofs, flower hedges and play grounds.

Management is defined as the field of human behavior in which managers plan, organize staff, direct and control human and financial resources in an organized group effort in order to achieve desired individual and group objectives with optimum efficiency and effectiveness, Markson (2011). According to Abdulkaram (2010), management means a process, a people and a profession. Management is a process by which limited resources are assembled and used to achieve predetermined goals on the other hand management as a people refers to the people that carry out the activities of management as special field of study, management is regarded as a profession.

According to Yalokwe (2012), management is the process of planning, organizing, leading and controlling the efforts of organizational members and using all other organizational resources to achieve set goals. From this context, management becomes very crucial in the attainment of the success, thus that effective coordination does not just happen, but it is brought about by individuals who possess the knowledge and skills, synchronize the actions of numerous people and channels those actions towards a common goal. To them, persons who accomplish this task are called managers, and the knowledge and skills are referred broadly to as the field of management. This implies that management consist of all organizational activities that involve formation of goals and attainment, appraisal of performance and the development of mechanism that will ensure the success and survival of the organization within the social system.

Educational management can be seen as the ability of the educational manager to prudently manipulate all the resources at his/her disposal such as human, material, finance and time, through the process of planning, organizing, provision of materials, directing, supervising and coordinating towards achieving the goals and objectives of educational institution.

Sustainable development is seen as development which meets the needs or the present generation by compromising the

ability of future generation to meet their own needs. UNESCO (2015) identifies principles underlying sustainability which include; inter-generation equity, gender equity, just and peaceable societies social tolerance, environmental preservation and restoration poverty alleviation. These principles must be reasonably achieved before sustainable development can add values to the lives of people. Sustainable development is an all-encompassing concept cutting access all aspect of development; it is not a one year or two years affairs, but affects development at the present times, while ensuring that future development is not undermined. This, to a great extent, explains why countries strive to improve the standard of living of their citizenry by ensuring that life enhancing projects are initiated to meet present needs and also laying solid foundations whereby the needs or the failure can also be effectively met.

The environmental factors such as climate change can influence educational management for sustainable development in public universities in North Central Nigeria and the world at large. This call for more effort to expand and enlighten the populace of the consequence that accompany climate change in life as well as management of institution in the study earn. It is against this background that the researcher deemed it fit to investigate climate change and educational management for sustainable development in public universities in North Central Nigeria.

### Research Questions

The study was guided by the following research questions.

1. To what extent does flood Influence Educational Management for Sustainable Development of Public universities in North Central Nigeria?
2. To what extent does Drought Influence Educational Management for Sustainable Development or Public Universities?

### Hypotheses

The following null hypotheses were

formulated and tested at 0.05 level of significance.

1. Flood has no significant influence on education management for sustainable development of public universities in North Central Nigeria.
2. Drought has no significant influence on educational management for sustainable development of public universities.

### Research Method

The study adopted descriptive survey research design. The population or the study comprised 10,249 academic and administrative staff from 13 universities in North Central Nigeria (Registry Department of Universities, 2017). A sample of 1,025 refer 072 academic and administrative staff, representing 10% from (7) universities were selected using stratified random sampling technique. This sample was considered adequate since it is in line with Achor and Ejigbo's (2006) assertion that for a larger population, a sample of 10% of the population is adequate. However, the percentage could be higher or less depending on the population of the study.

A researcher structured questionnaire lifted Climate Change and Educational Management Questionnaire (CCEMQ) was used for data collection. The questionnaire was divided into section A and B respectively; section A contained items on the personal data of the respondents, while section B was divided into two clusters one and two. Cluster one contained items 1-5 that sought information on the extent to which floods influence educational management for sustainable development of public universities, and cluster 2 contained items 6-10 that sought information on the extent to which drought influence educational management for sustainable development of public universities. Responses were based on a 4-point rating scale with response modes of Very High Extent (VHE) = 4, High Extent (HE) =3, Low Extent (LE)=2 and Very Low Extent (VLE) 1. The questionnaire was validate by four experts, two in Educational

Management and two in Test and Measurement Unit from the Faculty of Education, Benue State University Makurdi. The questionnaire was trial-tested using 50 academic and administrative staff in three universities who were not part of the sample but part of the population. The reliability of the instrument was measured using Cronbach Alpha which yielded a reliability coefficient of 0.88. This indicated high internal consistency. The data collected was analyzed using mean scores and standard deviation to

answer the research questions. Any item with less than 2.50 was rejected as having no influence. On the other hand, it was accepted if it was 2.50 and above. Chi-square test of goodness of fit was used to test the null hypotheses at 0.05 level of significance.

## Results

**Research Question 1:** To what extent does flood influence educational management for sustainable development of public universities?

**Table 1:** Mean and Standard Deviation of Influence of Flood on Educational Management for Sustainable Development of Public Universities

Item No.	Item Description	VHE	HE	LE	VL E	$\bar{x}$	SD	Decision
1	Flood water washes away road submerges and destroys school records	349	230	246	200	2.7 1	1.1 3	Influence
2	Flood distracts lectures and school activities	92	541	242	150	2.5 6	.85	Influence
3	Destruction of school building	330	150	395	150	2.6 4	1.0 8	Influence
4	Flood affects functionality of staff	334	225	274	192	2.6 8	1.1 2	Influence
5	Flood destroys school plant facilities	296	220	342	167	2.6 3	1.0 7	Influence
<b>Cluster mean and STD</b>						<b>2.64</b>	<b>1.05</b>	<b>Influence</b>

Table 1 shows the mean and standard deviation of items 1-5 to be 2.71, 2.56, 2.64, 2.68, 2.63 with corresponding standard deviation of 1.13, .85, 1.08, 1.12 and 1.07 respectively. With a cluster mean of 2.64 indicating that all the respondents are of the opinion that flood water washes away road submerges and destroy school records, it distracts lectures and school activities, it leads to destruction of school building, flood

also affects functionality of staff and as well destroys school plant facilities. This implies that flood has enormous influence on educational management for sustainable development of public universities.

**Research Question 2:** To what extent does drought influence education management for sustainable development of public universities?

**Table 2:** Mean and Standard Deviation of Influence of Drought on Educational Management for Sustainable Development of Public Universities

Item No.	Item Description	VHE	HE	LE	VL	$\bar{x}$	SD	Decision
6	Management spends a lot of funds repairing water supply during drought	288	290	197	250	2.60	1.14	Influence
7	Staff rely on alternative water supply	238	405	266	116	2.75	.94	Influence
8	Staff attention is diverted looking for water	290	300	192	243	2.62	1.13	Influence
9	Staff hardly washes their clothes because of scarcity of water	290	493	192	50	3.00	.82	Influence
10	Staff hardly takes their baths before going to lectures	405	246	200	174	2.86	1.07	Influence
<b>Cluster mean and STD</b>						<b>2.77</b>	<b>1.03</b>	<b>Influence</b>

Table 2 shows the mean and standard deviation of Items 6 - 10 to be 2.60, 2.75, 2.62, 3.00, 2.86 with corresponding standard deviation of 1.14, .94, 1.13, 1.12 and 1.07 respectively. With a cluster mean of 2.77 indicating that all the respondents are of the opinion that management spends a lot of funds repairing water supply during drought, as a result of drought staff tend to rely on alternative water supply and their attention is diverted looking for water. Also, staff hardly washes their clothes because of scarcity of

water and they hardly take their baths before going to lectures. This implies that drought has immense influence on educational management for sustainable development of public universities.

#### Testing of Hypotheses

**Hypothesis 1:** Flood has no significant influence on educational management for sustainable development of public university, in Makurdi.

**Table 4:** Chi-Square Test of the Influence of Flood on Educational Management for Sustainable Development of Public University

Responses	Fo	Fe	x-cal	df	P.Value	Decision
VHE	279	256.3	37.63	3	.000	Sign.
HE	273	256.3				
LE	300	256.3				
VLE	173	256.3				

Table 4 shows Chi-square value of (3 df) = 37.63,  $p < 0.05$ . With this result, the null hypothesis was rejected. This implies that flood has significant influence on educational management for sustainable development of public university. That is, if

flood is not checked, there will be no sustainable development of public university, Hypothesis 2: Drought has no significant influence on educational management for sustainable development of public university, in Makurdi.

**Table 5:** Chi-square Test of the Influence of Drought on Educational Management for Sustainable Development of Public University

Responses	Fo	Fe	x-cal	df	P.Value	Decision
VHE	302	256.3				
HE	347	256.3				
LE	209	256.3	80.10	3	.000	Sign.
VLE	167	256.3				

Table 5 shows Chi-square value of (3 df) = 80.10,  $p < 0.05$ . With this result, the null hypothesis was rejected. This implies that drought has significant influence on educational management for sustainable development of public university. That is, if drought is well managed, sustainable development of public university will be more promising.

### Discussion of Findings

The finding of the study revealed that there is significant influence of flood on educational management for sustainable development of public universities. This finding is in agreement with Ajayi (2006) which stated that flood is an overflow of water that submerges land, which is usually dried or previously uncovered water, in time of flood, learning was severely disrupted by such flooding disaster as lecturers were sent home thereby distorting school activities. The researchers discovered during the field work that when flood occurred, important school facilities such as classroom, playground and documents were damaged thereby not only disrupting daily routine of teaching and learning but also affect management of educational activities as they were put on hold.

The finding also revealed that there is significant influence of drought on educational management for sustainable development. This finding is in line with Abdullahi (2015), that drought is the dryness which occurs as a result of lack of precipitation of rainfall received within an area at a given time. It can be stressed that whenever drought occurs, the school custodians find it difficult in getting water to clean facilities, school management finds it

difficult to maintain good hygiene. The proximity to water source has influence on lecturers in preparing to lecture. During drought staff tends to rely on alternative water supply and their attention is diverted looking for water.

### Conclusion

Based on the findings of this study, it was concluded that there is significant influence of flood and drought on educational management for sustainable development of public universities in North Central Nigeria.

### Recommendations

The following recommendations were made:

1. Government in corroboration with voluntary agencies, organizations, individuals and residents within the school environment, should avoid dumping of refuse within the school premises and provide drainages and water ways to avoid flooding of school materials.
2. Government should provide boreholes, water tank supply during drought to avoid water scarcity in the schools.

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