

# Sensitizing Nigerian Citizens on the Effects of Climate Change: Challenges for Social Studies Curriculum Planners and Implementers

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**Abstract:** Climate change is a contemporary issue and environmental problem worldwide. Its attendant problems are affecting the sustainability of man and his environment. The cumulative effects of climate change are already visible in Nigeria. These include floods, drought and famine, landslide and so on. It will not only have a negative effect on food supply but also bring some diseases caused by pests such as malaria (mosquitoes). The biggest obstacle is the lack of its sensitization and knowledge and Nigerians need to be sensitized and informed about it. To do this successfully, it has to start from elementary to the highest levels of educational system. Since climate is not restricted to any discipline and social studies is a problem solving subject which's contents are derived from different areas like environmental education, family life and HIV/AIDS education and other social science disciplines to tackle different problems facing man in his environments, its curriculum should be enlarged to include important aspects of climate change. This paper therefore discusses the concept, types, causes, as well as global effects and specific effects on Nigeria, level of its sensitization in Nigeria, how Nigerians can be better sensitized of its effects and what the social studies curriculum planners and implementers should do to face the challenges.

**Keywords:** Sensitizing Nigerians, Citizens, Climate Change, and Social Studies teachers.

## I. INTRODUCTION

The greatest environmental problem of our time is climate change or global warming. It is global in its causes but its consequences are far more reaching in developing countries particularly Nigeria. Its attendant problems has made it a worldwide challenge. It is a contemporary issue worldwide because of its attendant problems that are threatening the sustenance of man as well as his environment.

Jekayinfa (2011) reiterates that its problem is becoming more severe in the under-developed and developing countries. Climate change as the new reality of our time brings with it changes in weather patterns that can have serious repercussions for human beings, harming ecosystem and water supply, affecting agriculture and food production, upsetting seasonal cycle, and causing sea-levels to rise. The cumulative effect of climate change is already visible in Nigeria (Reilly, 1999).

As a developing nation, Nigeria is particularly sensitive to the effects of climate change. Larger percentage of the economy

of the country depends on natural resources which are vulnerable to climate change. The whole communities are influenced when natural resources are affected. Loss of livelihoods and settlements, disease can force entire communities into relocation or refugee status. However, as critical as the effects of climate change are, it is not clear whether Nigerians were sensitized on what climate change and its effect is. Nigerians need to be educated and orientated about climate change and how it can change our lives drastically. Lack of proper sensitization and knowledge about climate change also means that many Nigerians are reluctant to accept the reality of climate change. There is also lack of public policy, government preparedness and commitment to promoting climate change adaptation strategies in this country. This paper is therefore written to sensitize Nigerians on climate change and its effects and the challenges this has posed to social studies curriculum planners and curriculum implementers.

## II. PURPOSE OF THE PAPER

The purpose of this paper is to discuss the following:

- i. Meaning of climate change
- ii. Types and causes of climate change.
- iii. Global effects of climate change
- iv. Effect of climate change on Nigerians.
- v. The level of sensitization of climate change in Nigeria.
- vi. How to sensitize Nigeria on climate change
- vii. What challenge does this create on social studies curriculum planners and implemented and why?

### *Concept, Types and Causes of Climate Change*

Climate change refers to an overall increase of the temperature of the earth's atmosphere, landmasses and the oceans and seas. Climate change according to Gbadero (2010) is the resulting variation in the average weather conditions around the world as a result of global warming. While it is causing flooding in some areas of the world, it is at the same time causing severe drought in some other parts of the world. It can also be described as a phenomenon created by human being and nature which devastate the earth and causes hardship of unpredicted magnitude to the living (Intergovernmental Panel on Climate Change (IPCC) 1990).

Climate change is a change in the climate condition of the world and that change is found by the scientists and others to be of negative impact. United Nation on Environmental Programme (UNEP, 2000) defines climate change as extreme reactions of the weather phenomenon which create negative impact on agricultural resources, water resources, and human health depletions of ozone layer, vegetations, soil and doubling of  $\text{CO}_2$  in the ecosphere. Climate change can also be described as an increase in average global temperature caused by natural events and human activities which are believe to be contributing to an increase in average global temperatures.

Climate change is an undisputed greatest environmental issue of our time. Climate change though global in its causes has far more reaching effects in developing countries particularly Nigeria. It is an environmental, social and economic challenge on a global scale (Scholze et al, 2006, Mendelsohn et al 2006). It can be caused by human induced actions like widespread use of land, the broad scale deforestation and accelerated uptake of fossil fuels (Millennium Ecosystem Assessment, 2005). Climate change is a resulting variation in the average weather conditions around the world as a result of global warming. While it is causing flooding in some areas of the world, it is at the same time causing severe droughts in some other parts of the world (Gbadero, 2010).

According to Ozor (2009) climate change describes changes in the variability or average state of the atmosphere over time, scales ranging from decades to millions of years. Climate, water resources biophysical and socio-economic system are interconnected in complex ways, so change in any of these induces a change in another. Countries in sub-Saharan Africa are likely to suffer the most devastating impacts of climate change because of their geographical location, low income, technological and institutional capacity as well as their greater reliance on climate-sensitive renewable natural resources sector such as water and agriculture (Eboh, 2009).

Anyadike (2009) reiterates further that Africa is particularly susceptible to climate change due to the desertification process, declining run-off from water catchments, declining soil fertility, dependency on subsistence agriculture, the prevalence of AIDs and vector borne diseases as well as population growth. Corroborating still, Spore (2008) explained the weather patterns that can lead to easy understanding of climate change. According to him, each day the sun emits rays of light onto the earth's surface, the earth absorbs part of the heat, reflect another into the atmosphere and sends out a third share in the form of infra - rays. These rays are cushioned by the clouds and water vapour which stabilizes the earth is temperature under normal circumstances. There are man-made climate change and normal climate change. People are to be blamed for man-made climate change, while normal climate change can happen with no people on the planet.

*Man-made climate change:* There is abundant evidence that human activities influence the global climate system and that

is making earth's surface temperature to rise. This increase can be attributed in part to human-cause increase in greenhouse gases such as carbon dioxide. It is becoming apparent that these climate changes are negatively affecting physical and biological system worldwide. A report issued in 2001 by the Intergovernmental Panel on climate change (IPCC) stated that it is "virtually certain" that emissions of carbon dioxide due to fossil fuel burning are the main cause of increasing atmosphere carbon dioxide during the 21<sup>st</sup> century. Various hypotheses for human-induced climate change have been argued for many years. Presently the scientific consensus on climate change is that human activities are very likely the cause for the rapid increase in global average temperatures over the past decades.

*Burning Fossil Fuel:* When fossil fuel like coal and gas are burnt, they release greenhouse gasses. In 2005, burning fossil fuel sent about 27 billion tons of carbon dioxide into the atmosphere. People burn fossil fuel to create energy, which is used for many things like:

- Heating homes and buildings.
- Growing, transporting and cooking food.
- Travelling (e.g. by car, plane, bus and train).
- Treating water to make drinkable, piping it into homes.
- Manufacturing, using and transporting products.

*Greenhouse Phenomenon:* There are two ways by which these greenhouse gases causes climate change (Gbadero, 2010). The first is by erosion and depletion and thus the thinning and punching of the holes into ozone blanket layer which allows more heat and ultraviolet radiation into the earth's atmosphere and the second is by the thickening of the greenhouse gas layer causing more heat to be trapped in the lower earth's atmosphere. The net effect of these two processes is climate change.

*Deforestation:* Cutting down of trees and forests faster than they are replaced is the major contributor to climate change. It causes 5.9 billion tones of  $\text{CO}_2$  per year to be released into the air. This account for 20 percent of the world's carbon – more than the entire global transport sector producers. Deforestation makes such a huge contribution to carbon emissions and trees absorb  $\text{CO}_2$  as they grow. The more trees are cut down, the fewer there will be left to absorb  $\text{CO}_2$ , leading to it building up in the atmosphere (UNEP, 2008).

### III. NORMAL CLIMATE CHANGE

Natural or normal factors that can influence climate change or forcing it include continental drift changes in greenhouse gas concentrations. Some part of climate system such as the oceans and ice caps, respond slowly in reaction to climate forcing because of their large mass (Chan, 2008). Climate system can take centuries to fully respond to new external forces which is obvious as daylight when the sun is above the horizon. When the direct solar radiation is not blocked by clouds, it is experienced as sunshine, radiant heat and bright

light. But when it is blocked by the clouds, it is experience as diffused light.

*Sun Influence:* The only source for energy input to the earth is sun. Variations in solar intensity are known to affect global climate. Sun is the driving force behind the world's weather and the only source of light and warmth. Cloudy day is usually colder than sunny day and night is colder than day time. Change in the amount of energy from the sun could therefore affect the earth's climate.

*Volcanism:* Volcanism is the process of conveying material from the mantle and crust of the earth to its surface. Examples of volcanic processes are volcanic eruptions and hot spring which releases gases or dust into the atmosphere. This volcanic pollution blocks some of the sunlight and thus causes a cooling of the climate.

*Mountains:* The largest features found on the earth continent are mountains. The highest one on earth rises to over 5 miles into the sky. Mountains are usually grouped together in ranges which can be several miles wide and thousands miles long. When continents collide, the rock in the middle is crunched upwards to form mountains. Mountain ranges can disrupt the flow of air by their presence affecting the weather and changing the climate. This happened in North America, where the rocky mountains that run along the entire western side of the continent have slowly changed the climate of the region that is now central Canada and the Central United States (Scholze et al, 2010).

#### *Global Effects of Climate Change*

One of the significant challenges that confront man and the society today and even the incoming generations is the issue of climate change. The world societies are dominated and driven by ideas and products from science and technology (Igwe, 2003). The knowledge of science and technology is likely to influence our lives since lives will continue to increase. Many global problems facing human beings today came from global scientific collaborations that depend largely on ecosphere (Sjoberg, 2002). The effects resulted in the experience of the terrible environmental problems enumerated by (Udenyi, 2010) like global warming, ozone layer depletion, acid rains, extinction of wild life, earthquake, volcanic eruptions, floods, disasters, rock fall, mud flow, hail storms, hurricane, melting of ice sheet in the poles region, droughts, forest fire in California, heat waves, desertification, collapse of lake NYOS in Cameroon in July 2009, drying up of lake Chad in January, 2000, coasted loss of lands to erosion, diseases like cancer, meningitis, epidemics, erosive and erodible actions on soils.

Climate change has also been causing melting of the polar ice and the ice caps of towering mountain heights. This has invariably caused rising tides of the oceans and coastal lands and low lying Island like the Maldives and Tuvalu are under the real risk of being submerged (Gbadero, 2010). The effect of climate change is enormous on the ecosystem. Biodiversity

is threatened and the survival of many species including humans is being severely threatened by global warming.

#### *Effects of Climate Change on Nigerians*

Climate change has great effects on human health in Nigeria. This is because numerous Nigerians already suffer from nutritional imbalances. Climate change has a harmful and damaging effect on food security. A shift could occur in location of some vectors borne-disease like malaria (mosquito) sleeping sickness (tsetsefly) and so on. The shift in the pattern of rainfall and temperature, mosquitoes currently thrive in location where water logging and poor drainage typify the landscape. High flood frequency and water-logging due to climate change will enhance the breeding of mosquitoes and thus leading to the spread of malaria (Olumide, 2009, IPCC, 2007).

Health problems induced by increasing incidences of heat waves are direct effect of climate change. This could lead to cerebral-spinal meningitis (CSM) which today is found to correlate positively with the highest maximum temperature of the northern winter season. The occurrence of skin cancer from direct Ultra-violet radiation could become more common as could increase incidences of cardiovascular respiration disorders.

Generally, in 2005, evaluation of Nigeria alongside with other 23 countries in the sub-Saharan African projected that meeting of the Millennium Development Goals (MDGs), with respect to child and maternal health will elude the country simply because of other multiple stresses (UNDP, 2005; IPCC, 2007). Agriculture also had been badly affected as a result of erratic weather patterns. The dryness has led to dry waterbeds and movement of people and their pasture to the southern region thus causing tension and conflicts between the original inhabitants and the new comers.

#### *The Level of Sensitization on Climate Change in Nigeria*

Climate change is badly affecting Nigeria by altering seasonal rainfall patterns. This is because streams and springs are drying up, causing major crop yield reductions on food shortages. The level of knowledge of Nigerians on climate change is very low. Concerned people like corporations and transport sector who are the perpetrators of this damage, have not even begun to take the necessary actions to address these problems. No concrete measures have been implemented to stop gas flaring, Nigeria's source of greenhouse gas emissions. (Friends of the Earth, 2007). According to Ishaya and Abaje (2008) who studied indigenous people's perception on climate change and adaptation strategies in Jema'a local government area of Kaduna state, it was reported that in terms of awareness on climate change in the study area, 13% of the respondents agree that there is a high level of awareness on climate change in the study area. 33% of the respondent said they don't know and finally majority 54% of the respondents declined saying that the awareness of climate change is very weak in the study area and Nigeria as a whole.

Corroborated further, (UNDP, 2010) report shows that people's level of sensitization about climate change is rather low in Nigeria and it is likely to continue if no intervention measures are taken. Many people thought climate change is an act of God event and divine punishment for the basket of sun of the world (This Day, 2009). Apart from the God-frame, the report also noted that the understanding of climate change was highest at the federal level and it is sharply low at the state and local government level where real action is needed.

According to (Olorunfemi 2009) it was noted that the greatest obstacle to reducing the effect of climate change in Nigeria is lack of awareness and knowledge of it. Lack of information and knowledge about climate change has made many Nigerians not to accept its reality. Also government is not prepared and committed to promote climate change adaptation strategies in the country (Jekayinfa, 2011). It should be noted that the way the risk of climate change is presented to the public will determine the way the public will take it and react to it. Therefore their sensitization of climate change should be created on the Nigerian citizens.

#### *How to Sensitize Nigerians on Climate Change*

Having recognized the role school children can play as critical stakeholders in the society, the former Lagos state governor Honourable Raji Fashola inaugurated climate change club among schools in the State. He said further, that the establishment of the child climate change club is a "demonstration of Lagos state commitment to empowering the youth with the requisite knowledge and opportunities to play leadership roles in the society today and not tomorrow". (Punch, 2010). He also said "I am indeed proud to learn that 85 percent of you want climate change to be included in the school curriculum and taught as a subject. This enthusiasm confirms that our confidence in the effectiveness of young people as agents of positive change is not misplaced. Our administration will continue to tap into the energy, resourcefulness, inquisitiveness and enthusiasm of young people by creating more opportunities to bring the best out of you and see you compete favourably with your peers the world over not only on the issues of climate change or the environment, but in all spheres of human endeavours."

With the above speech from one of the active and versatile ex-governors in Nigeria, it is pertinent to say that climate change should be incorporated in the school curricular. This paper is therefore advocating that social studies, which is an integrated and problem solving discipline should be one of the schools' curricular that should be re-planned to have aspects of climate change, since climate cuts across the school curriculum.

#### IV. CHALLENGES TO SOCIAL STUDIES CURRICULUM PLANNERS AND IMPLEMENTERS

Climate change has numerous effects but more devastating consequences on African agriculture and food security. These effects range from flooding events to drought events, sea level rise, drying of rivers and streams, disease in water quality,

melting of glaciers, loss of biodiversity, change in rainfall pattern and amounts, increase in temperature among others. This calls for integrated approaches for the adaptation and mitigation and one sustainable way to achieve this is through educations and capacity building. In order to achieve this aim, the curriculum of educational institutions has to be modified to accommodate their current issues of climate change (Ozor, 2009).

The issues of climate change should be infused into the curricular of schools right from the elementary to the university level as a matter of urgency. The students need to gain knowledge and understanding about climate change. The knowledge and understanding will enable them to respond effectively to the global challenges posed by climate change on graduation. Future policy-making would be sustained and shaped by educating those who are currently at school about climate change.

Topics below should be planned by curricular developers and infused into the social studies curricular at various levels. These are:

1. Introduction to climate change: The content and context of climate change, implications of climate change on people's livelihoods and the world economy.
2. Global warming: The causes of global warming and projections under different scenarios.
3. Adaptation strategies: Indigenous and modern innovations for adaptation to climate change by different groups of people.
4. Global policy issues on climate change, global policy framework, UNFCCC, Kyoto protocol: CDM, National Adaptation Plan of Action (NAPA); the politics and policies of climate change.
5. Societal and political decision is related to climate change needs to come from governments, cultures, individuals and institutions and this is part and parcel of social studies.

#### V. CONCLUSION AND RECOMMENDATIONS

The effects of climate change affects not only human settlements as well as health but also water resources, wetlands, industry, commerce, food security, land degradation among others, it is recommended that climate change sensitization be embarked on amongst Nigerian citizens. Also, efforts should be made to put in place integrated approaches for adaptation and mitigation and one sustainable way to achieve this is through education and capacity building. To be able to do this, curriculum of educational institution has to accommodate the current issues of climate change. There is therefore urgent need to infuse climate change issues into the school curriculum right from elementary stage to the university level.

To this effect, the following recommendations are made:



- That climate change education should be incorporated into the social studies curriculum in Nigeria to provide effective and efficient sensitization on the danger of climate change;
- That the incorporation of climate change education into the social studies curriculum should be premised on integrated approach which social studies is known for.
- That the teachers who would be the implementers of the issues of environment and climate change should be provided with professional development programmes to enhance their competence and disposition;
- That environment protection club be set up in schools and that learners should be encouraged to belong to the club.

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