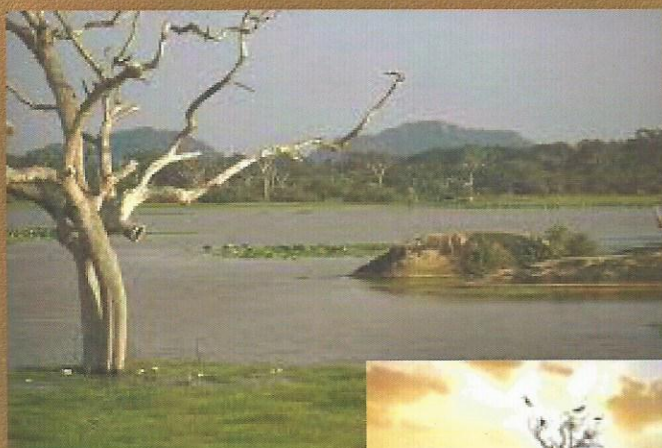
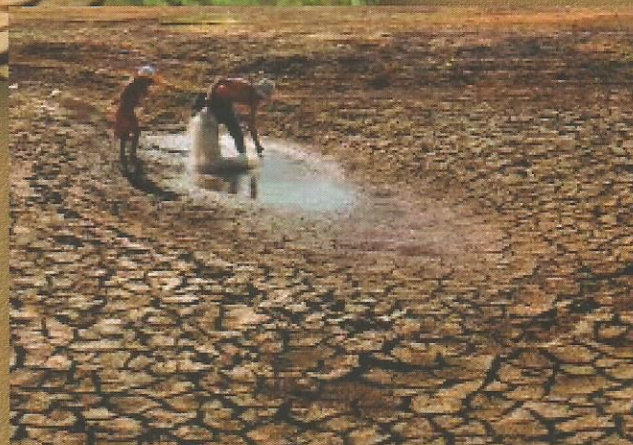


Water, Land and People in Climate Change



S. L. Tilakasiri



WATER, LAND AND PEOPLE IN CLIMATE CHANGE

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Chapter 21

CLIMATE CHANGE AND POOR RURAL WOMEN IN NIGERIA

A.M. Tunde

Introduction

The issue of climate change cannot be discussed without first understanding the meaning of climate. Climate is the average weather condition or the regular variations in weather in a region over a period of years usually thirty (35) years. Climate change itself can be defined as any change in climate which alters the composition of the global atmosphere which is in addition to natural climate variability observed over comparable time periods (IPCC, 2007). Climate variability on the other hand is referred to as difference from statistical average of climate over a given period of time (such as a specific month, season or year). The basic characteristic of climate which shows itself very clearly in changes with time is what is regarded as climate variability.

Climate change is a global phenomenon and is one of the most serious environmental threats facing mankind worldwide (Enete and Amusa, 2010) although it affects African countries more than any other country in the world. IPCC (2007) Fourth Assessment Report (AR4) gave the most acceptable definition of climate change as “a change in the state of the climate that can be identified (e.g. by using statistical tests) by changes in the mean and or the variability of its properties, and that persists for an extended period typically decades or longer”. Deeply rooted in this fundamental relationship between climate and human are the many ways in which climate has affected human lives. Climate change affects what human beings eat, where they live, how they make a living, the abundance or lack of fresh water and even what they do in their leisure time. Essentially, it affects almost every sector of the economy ranging from agriculture, transportation, settlements, health and water resources

among others. The impacts of climate change do not happen in isolation because impacts in one sector can adversely or positively affect another.

Climate change and variability are caused mainly by both natural and anthropogenic activities. The natural cause includes changes in the earth's orbit, changes in the energy received from the sun, interaction of the oceans and the atmosphere, and volcanic eruptions. Anthropogenic activities include high increase in the rate of gaseous emissions especially greenhouse gases into the atmosphere, thereby causing global warming. Over the years, different scholars (Buba, 2004; Porbeni, 2004; DeWeerd, 2007; Odjugo, 2007) from different backgrounds have revealed that anthropogenic activities like population explosion, urbanization, industrialization, deforestation and the release of greenhouse gases contribute highly to the depletion of the ozone layer resulting to global warming, climate variability and change. An estimates of about 150,000 deaths annually (especially in Africa countries) have been attributed to climate change effect by World Health Organization (WHO).

Rural areas in Nigeria just like developing countries are more vulnerable to climate change due to the fact that rural people are dependent on primary activities such as farming and fishing which are climate dependent. Climate change is a gender issue in rural areas of the world. The most vulnerable group to the impact of climate change is rural women and children. Women especially in the rural areas are more vulnerable to climate change than men basically because of their physical and biological composition and that they constitute the larger percentage of the poor and depend on natural resources for their livelihood. The issue concerning climate change is therefore very crucial and requires thorough exchange of information for the understanding of women's socio-economic conditions. This chapter therefore discusses the relationship between climate change and rural women. The chapter is divided into five sections. The first section focuses on the introductory aspect, the second examines climate change and rural women in Nigeria; the third discusses rural women and poverty, the fourth highlights climate change and adaptation challenges by poor rural women while the fifth section is the concluding remark of the chapter.

Climate Change and Rural Women in Africa

Climate change affects rural women's lives in many areas in the world. German think-tank Heinrich Boll Stiftung confirmed this in a study conducted in South Africa's rural KwaZulu-Natal province. From the study it was discovered that women's workloads were increasing as a result of climate change. Essentially, in most developing countries including Nigeria, women worked longer hours than men and were both physically and emotionally drained from the burden of the well-being of dependent children and old members of their family. They are charged with the responsibility to secure water, food and fuel for cooking.

This aspect of the study examines the impact of climate change on rural women's lives in the areas of: agriculture and food security, energy fuel, health, water resources, settlements and transportation.

Agriculture and Food Security

A greater proportion of women in Nigeria are involved in agriculture as the main source of livelihood and Ayoade (1983) submits that agriculture largely depends on climate to function.

Agriculture is affected by climate change because a slight drop or sudden increase in temperature can affect the growth of crops either positively or negatively. A change in climatic pattern such as flooding or drought will affect farmers' output (crop and livestock) especially women, thereby causing food insecurity. Basically, climate change affects agriculture in several ways; including its direct impact on food production which has adversely affected agricultural production in Africa (Ziervogel *et al.*, 2006). Ayoade (1988) noted that temperature, solar radiation, moisture and other climatic parameters largely determine the global distribution of crops and livestock as well as crop yield and livestock productivity. Rural women farmers suffer from the impact because they constitute larger proportion of agriculture farmers and lack access to production resources. In a study carried out by Olaniran and Babatunde (1987) in Kabba, Kogi State, it was discovered that rainfall distribution and the occurrence of moisture stress condition during vegetative period are critical for the yield of maize crop. More importantly, Ayoade (2002) succinctly declares that many of the problems facing agricultural production are climate-related. Hence, these problems affect rural farmers especially women because Nigerian agriculture is predominantly rain-fed and hence fundamentally dependent on the vagaries of weather. Rural women involved in agricultural production are affected greatly since they have to make sure they put food on the table for their children and family as a whole.

Health

Another area in rural women's lives affected by climate change is health. Climate change affects the lives of rural women in many ways. For instance global warming gives rise to sea and ocean levels during rainy season. Hence, flooding may result which is likely to increase the vulnerability of the poor to malaria, typhoid, cholera and pneumonia. Since women form a larger percentage of the poor in rural areas they are therefore most likely to be affected by the impact of climate change. Furthermore, temperature and rainfall dynamics at times increase the distribution of disease vectors such as dengue, malaria and incidence of diarrheal diseases (Haines *et al.*, 2006). Extreme weather events amplifies the spread of pests and diseases and whenever temperature is high there is tendency for increased ailments such as meningitis, measles, chicken pox to mention just a few. These ailments are common among children of which their mothers have to take care of them because of their traditional roles as mothers. The asthma information guide.com (2000) agreed that weather and the environment play an important role in asthma attack and temperature influences asthma more than any weather factors. Olorunfemi and Adeyemi (1994) in their attempt to find out the relationship between climate and the major causes of mortality in Ilorin

discovered that deaths are common in rainy season than dry season. Similarly, some vector borne diseases like malaria, fever and dengue fever transmission are highest in month of heavy rainfall and humidity (More, 1992). Heavy rainfall events can also carry terrestrial micro-biological agents into drinking water sources in the rural areas which may eventually lead to outbreak of cryptosporidiosis, giardiasis, amoebiasis, typhoid and other infections (Lisle, 1995; Rose, 2000). Rural women are affected by this because of the fact that they are responsible for taking care of the sick members of the family. Rural women are more vulnerable to various health related problems like nutritional deficiencies, as a result of this; girls are often forced to drop out of school to help with recovery efforts.

Water Resources

During dry season, women in the rural areas have to trek longer distances in search of water for domestic use as well as for irrigation purposes. Invariably time taken and distance traveled reduced their daily activities and output. According to United Nation Development Programme UNDP (1993), majority of African women work more than 14 hours per day and produce about 80 per cent of sub Sahara Africa food, fetching water, gathering fuel and caring for their families. A rise in sea level caused by climate change can affect livelihoods from fishing in which women are also involved. Global warming may lead to changes in high and low runoff extremes. Increase in rates of evaporation may lead to reduced soil moisture storage and reduction in total annual volume of runoff. Global warming and climate change lead to changes in demand for water resources both for municipal and agricultural uses. Regions that rely on unregulated river system are more vulnerable to hydrological changes induced by climate change than regions which have regulated river systems. When there is drought, there will be reduction in the available water for people to use hence pressure will be high on the available water. The group of people affected most by this is the rural women since they are responsible for fetching water (Plate 1) for domestic and other uses.



Plate 1: A Rural Woman Farmer Fetching Water for Irrigation Purposes Settlements.

Human settlements are usually affected by natural hazards caused by climate change, these include coastal and river flooding, severe rainstorms, tropical cyclones and heat waves. Settlements along river banks are affected by flooding thereby making affected people especially women refugees homeless. Global warming induced rise in sea level affects coastal human settlements. Climate change affects not only houses but also the industries, businesses and infrastructures that make up the elements of any human settlement. When this happens, women because of their ascribed roles tend to look for alternative means of shelter for their children. The vulnerability of settlements to climate change impacts is determined by the ability of the built physical environment of buildings and infrastructure to withstand the stress imposed by climate change impacts. Consequent upon this, migration and resettlement may be one of the major short-term strategies to climate change on human settlements. This eventually increases hardship for women making them less able to pursue their income generating activities.

Transportation

Climate change has impacts on road, rail, air and marine although the most common means of transportation in the rural areas is road. For instance on road, high temperature can soften and expand pavement thereby creating rutting and potholes particularly in rural roads that already need rehabilitation and even roads that were not tarred. When rural roads are destroyed by rain as a result of flooding, women are therefore charged with the responsibility of head loading agricultural products from farm to their various houses and

markets. This has adverse effect on their health and economic activities. Time taken to head load agricultural products is high to the extent that they will not be able to participate in other economic/domestic chores as a result of tiredness.

Rural Women and Poverty

About 70 per cent of the world's poor are women who have inadequate access to financial resources, health, land, education and other basic rights than men, and are rarely involved in decision making processes. Climate change affects food, health, water and energy and these areas are the bases of women's livelihoods and fall within the purview of women's socio-economic responsibilities (IUCN, 2007). For example, women produce and prepare food, collect firewood for fuel, fetch water and care for the sick in their households. Climate change is an important issue in most developing countries of Africa particularly Nigeria where the economy is agro based and has the largest group of people (women 60-80 per cent) in farming activities (World Bank, 2003). With the increased occurrence of floods and droughts associated with climate change these tasks are becoming more cumbersome and time consuming. This in turn increases their poverty level. Studies have shown that women feel the impact of natural disasters than men. For instance, 90 per cent of 140,000 who died in a cyclone in Bangladesh in 1991 are women (Yocogan-Diano and Kashiwazaki, 2009). This could be attributed to less access to information on how to lower their risk to hazardous events. Furthermore, studies have shown that during extreme weather conditions, women tend to work longer hours to secure household livelihoods and subsistence needs. According to Mak (2008), rural women lack assets to borrow from cheaper formal lending services hence, they borrow money from informal money lenders in order to make up for food shortages and to pay for health treatments; paying interests of 10 per cent per month. Climate change no doubt affects everybody but women are more vulnerable and more affected by it than men as a result of their subordinate nature. Women farmers face a lot of problems resulting from climate change as a result of limited access to resources such as land, capital and water which make them to be more vulnerable to the impacts of climate change. Natural disasters affect women directly and severely because of their social and ascribed roles and the impacts of poverty.

In spite of the effects of climate change on rural women, they also contribute to climate change in the area of source of fuel energy which is as a result of poverty. Firewood is the primary source of energy in the rural areas and women are charged with the responsibility of securing this for domestic purposes. The United Nation Development Project (UNDP, 2004) noted that an estimate of 2.5 billion people lack access to modern energy services because they are poor and this constrained their opportunities for economic development and improved living standards. Most of these people rely on traditional biomass sources such as wood fuel, agricultural residues, and animal dung to meet their basic energy needs (WHO, 2006). When trees are cut down either for firewood or to produce charcoal and are not replanted it can cause global warming hence climate change. Plants are supposed

to use the carbon dioxide breathe out by human beings to manufacture their food through photosynthesis but where there are no trees or plants because they have been cut down there will be high concentration of carbon dioxide in the atmosphere which leads to global warming.

Climate Change and Adaptation Challenges by Poor Rural Women

Rural women are less able to cope and adapt to the impact of climate change because they represent 70 per cent of the poor rural populace in Nigeria. They face a lot of challenges in the process of adaptation to climate change and these vary from lack of access to political empowerment, access to information needs, access to education, access to production resources and limited access to healthcare services.

Access to Political Empowerment

Political empowerment means that there should be equal representation of women in decision making structures, both formal and informal and their voice in the formulation of policies affecting their societies. Generally, women are rare in decision making especially decisions concerning their livelihood. They are not usually included in decisions that have to do with climate change and usually poorly represented in the lower levels of government. This is as a result of the norms and culture of the society that do not allow them to be part of decision making processes. Lack of inclusion of rural women in decision making has really affected their vulnerability and adaptation to climate change in the rural areas and the country as a whole. Women should however be included in decision at all levels, from the family, to the nation, to the international community and should have an impact on the discourse. This will in a way assist and encourage them in adapting to the impact of climate change.

Access to Information Needs

Rural women in Nigeria lack access to information that can improve and enhance improved/increased productivity hence this pose a great challenge to them. For instance, larger proportion of women working in the informal sector and small enterprises in rural areas (OECD, 2008) lack capital and access to information and recovering from devastating effects of environmental disasters is nearly impossible. Rural women also lack information needs to improve their productivity and economic activities generally. Women in the rural areas are supposed to have access to important information about their lives and livelihoods which in turn should have guided them in their daily activities with respect to climate change. However, societal restrictions affect women in the rural areas to move and interact with people particularly men that can transmit important information to them. The implication

of this is that women are limited to their personal knowledge in performing their roles as mothers and farmers. Hence, they are more conservative and less innovative to adapting to the impact of climate change. According to Saito and Spurling (1993), women generally do not have access to agricultural information and innovations.

Access to Education and Training

Most rural women lack education and to empower women in all areas of the society, education is an important prerequisite. Education and literacy contributes to reduction in mortality rates of children and the bias towards female child. It also helps reduce fertility rates. In spite of this, women still constitute two-thirds of world's illiterate population. Majority of rural women are poor illiterates and so do not have access to information needs for improved economic activities coping with the fact that most economic activities in rural areas are nature-based. Even where information is available, they lack ability to understand and interpret it. This affects their productive capacity. Furthermore, women in the rural areas do not have access to training needed to improve their production capacity because they do not have access to extension agents who can disseminate important information and train them on the perils of climate change, mitigation and adaptation programmes in which rural women can be involved and benefit from.

Access to and Control over Resources

Rural women do not have access to adequate productive resources that can enhance their capacity to adapt to climate change in terms of landownership, credit, agricultural input, technology and extension services. In Africa, particularly Nigeria, land tenure system may be described as traditional, customary or communal in nature hence, women do not have the right to land ownership but rather farm on their husbands or family lands. Supporting this is the study carried out by Adedayo and Tunde (2008) on gender access to agricultural production resources in Kwara State, Nigeria where it was reported that women farmers are the worst affected in terms of agro-resources. Similarly, Saito (1992) confirmed this in Lesotho, it was discovered that women farmers' productive capacity was limited by lack of credit to purchase necessary inputs.

Health and Well-being

The significant differences between men and women in their access to sufficient nutrition, healthcare and reproductive facilities and issues of fundamental safety and integrity of person is related to the concept of health and well-being. The World Health Organization reported that 585,000 women die every year, over 1,600 everyday, from causes related to pregnancy and child birth. Also, the Planned Parenthood Federation of

America quotes estimates that 20million of the annual 46 million abortions worldwide are performed unsafely. This resulted in the deaths of 80,000 women from complications, accounting for at least 13 per cent global maternal mortality, and causing a wide range of long term health problems. Incidences of domestic violence and sexual assault are usually not reported as a result of stigma and isolation in the society. This makes it difficult to measure the true extent of violence against women. Also, an estimate of two-million girls usually between the age of 4-8years are forcibly subjected to female genital mutilation which leads to death, chronic infection and bleeding each year.

Conclusion and Recommendations

The chapter examined how climate change affects poor rural women in Nigeria. From the paper, it was discovered that climate change has greater impact on poor rural women because most of their activities are primary in nature. Furthermore, women especially in the rural areas are constrained by some problems which make adaptation to be difficult for them. Based on this study it can therefore be recommended that women should have a better and improved access to productive resources, needed information on climate change, better education, better health care, opportunities and part of decision making concerning climate change and other areas of lives. This would give them hope and some sense of belonging and eventually make them to be less vulnerable to the impact of climate change both in Nigeria and other developing countries.

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