Impact of Climate Change on Farmers Livelihood in Oluyole Local Government Area of Oyo State, Nigeria

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Abstract:-**The study aimed to examine the effects of climate change on the livelihood of farmers in Oluyole Local Government area of Oyo state. The objectives of this work was to determine the socio-economic characteristics, source of income of the farmers, determine the level of awareness of climate change and the effects of climate change on health of the farmers. The study used primary data through a well-structured questionnaire and scheduled interview, fifty respondents were randomly sampled. The use of frequency count and simple percentage were used to analyze the data.**

The study revealed that male farmer's population was 76% o while female population was 24%. 70% of the farmers are married, 10% are divorced and 20% widowed. The study also indicated that 54% had non-formal education, 20% of the farmers had quranic education while 12% and 8% of the farmers had secondary and tertiary education respectively. 90% of the forest zone has been degraded as a result of deforestation. The respondent's major source of information on climate change includes (Research institute-60%, radio/Television station-30% and newspaper-0%). The ailments experienced by respondents are malaria (66%) and headache 12%. Major source of water supply during dry season is stream 76%, which is scarce during dry season (68%).The farmers main livelihood activities is trading of forest products (firewood & bush meat-58%), sales of farm products and medicinal herbs represent 30% of their source of income. This study recommends that more awareness strategies on climate change should be opened-up to the farmers to curb the effect of deforestation. Good water supply should be provided in the area to eradicate the effects of prolong drought.

Key words: **Climate change, Global warming, deforestation, livelihood.**

I. INTRODUCTION

Inter-Governmental panel on Climate Change [6] Links climate change to the changes in global average temperature between (0.74±0.18). The world health organization (WHO) also considers the consequences of global warming as the most pressing problem of the 21st century. The implication of climate change on human health could be direct or indirect. According to Building National Response to Climate Change (BNRCC) the direct consequences of climate change in Nigeria include cerebra-spinal meningitis, cardiovascular respiratory disorder of the elderly, skin cancer, high blood pressure, malaria and cholera. There is much danger to child and maternal health [17].The scientific knowledge that gases, accumulating mainly from the burning of fossil fuels and the clearing of forests ,add to the natural ''greenhouse effects'' has been known since 19th century[18]. Consensus is substantial that human behavior contributes to climate change: 97% of climatologists maintain that climate change is caused by human activities, particularly fossil fuel combustion and tropical deforestation [19-21]. From ancient times, early naturalists and philosophers theorized on a possible climate change, for instance Theophrastus a pupil of the famous Greek philosopher, Aristotle (384-322BC) speculated that lands became warmer when the clearing of Forest exposed them to sunlight; hence significant changes In global warming are not strange in earth's history. Renaissance scholars including Vitruvius were of the opinion that deforestation, irrigation and grazing had effects on the local weather around the world [10].**Climate change** is a complex interaction between earth's atmosphere-stratosphere and troposphere on one hand and land biosphere [4,14]. Carbon dioxide and other greenhouse gases are generated as waste by products by human activities; this traps heat from escaping from the troposphere thereby causing global warming. **Global warming** is the term used to describe the gradual increase in the average temperature of earth's atmosphere and its ocean, a change that is permanently changing earth's climate forever. Global warming is caused by increase in the emission of GHGs through the burning of fossil fuel (oil, natural gas, and coal), burning of wood products and solid wastes, bush burning and deforestation. All these human activities (anthropogenic) contributes to alter the balance of the equilibrium between the natural GHGs (water vapour,CO2, methane and nitrous oxide) and the man-made GHGs (sulfur hexane fluoride-SF6), hydroflourocarbons-HFC and per fluorocarbons-PFC In earth's atmosphere and the ocean since they are heat trapping gases.

Climate change has been found to have several negative consequences cutting across nearly all spheres of life particularly urban livability and human health either directly or indirectly [2, 8, 15]. This follows from its effects on environmental determinants of health such as clean air, effluents discharge from homes and industries, melting glaciers, rising sea levels and their effects on flooding make

water unsafe for drinking. Changing rainfall pattern and rising temperatures as well as deforestation impact food production with resulting effects on health. According to the world health organization (WHO) around 250,000 additional deaths are projected to occur annually between the year 2030 and 2050 due to malnutrition, malaria ,diarrhea and heat stress occasioned to climate change (WHO,2015).

Deforestation is the removal of a forest or stand of trees where the land is thereafter converted to a non-forest use [5]. For 105years there has been increase in temperature by 1.1oc and decrease in rainfall by 81mm [12], this was attributed to high rate of deforestation leading to increase in desertification [7]. Deforestation has been implicated in Flooding cases which affects farm lands leading to food shortages and ultimately the source of livelihood of rural farmers, health risk as also been implicated in flooding resulting in disease such as cholera and diarrhea..It is important to note that deforestation activities increase the amount of carbon dioxide released into the atmosphere through wood smoking kiln, firewood burning, charcoal production and forest degradation. All these post deforestation activities release carbon dioxide into the atmosphere thereby contributing to the greenhouse gases consequently causing global warming which is a precursor to climate change with concomitant negative impact such as increase temperature, rise in sea level, flooding, famine, ecosystem collapse and ultimately death. **Livelihood** refers to means of making a living. People adopt various lifestyle and ways of meeting their needs. Livelihood depends on the availability of various resources, skills, education, socio-economic factors, agro-climate and agro-ecology as well as gender [3, 13]. The specific objective of this study is to determine the effect of climate change agents on the livelihood of farmers in Onigambari.

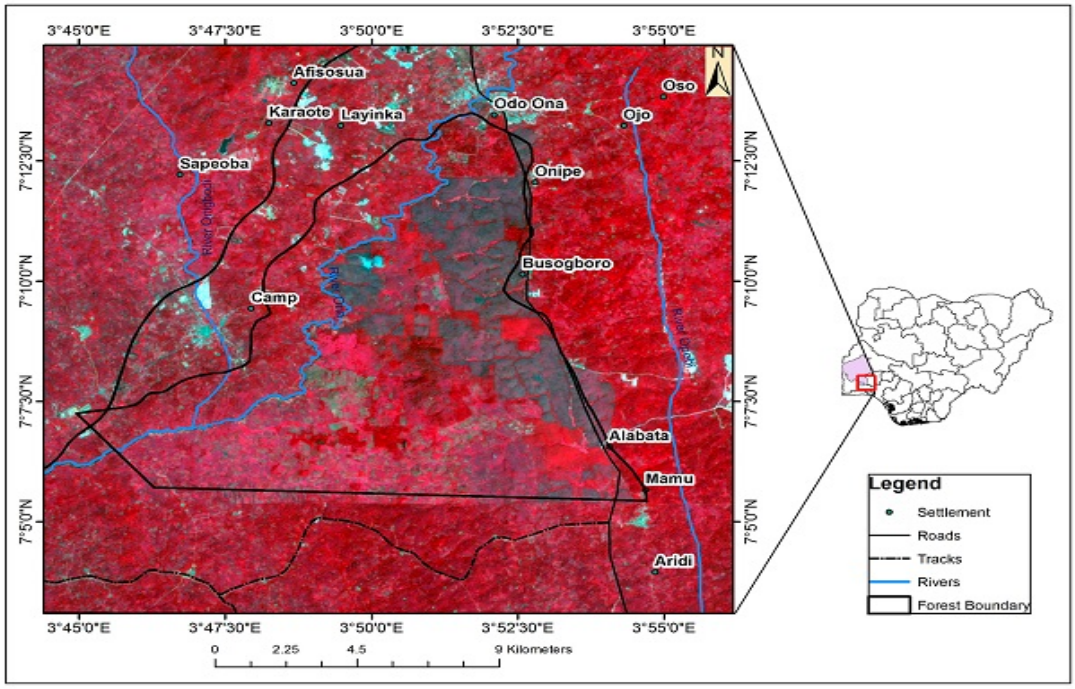

Fig1: Map of Onigambari Forest Reserve**.**

II. METHODOLOGY

Study Area/Data Collection

Oluyole is a Local Government area in Oyo state, South West Nigeria. It was established in 1976 and occupies a land mass of 4000 square kilometer with a population of 202,725 (Census 2006).The study was conducted around Gambari Forest Reserve,5 villages which include Odo-ona, Busogboro, Mamu, Alabata and Onipe were purposively selected. These villages were selected based on the high concentration of farmers in the area. Maize, coco–yam, cocoa and cassava are the major crops grown in the area. Questionnaire was randomly administered to50 farmers where about 102 farmers were identified. Frequency and simple percentage method of data analysis was used to examine the test variables and the generated results.

III. RESULTS AND DISCUSSION

III.1 Socio-Economic Distribution of Farmers and Their Source of Income.

Age, gender, marital status, level of education, family size, livelihood activities were the socio-economic parameters analyzed. Tab 1. Revealed that majority of the respondents were male (76%) and (24%) female. 10% of the farmers are widowed, 20% divorced and 70% are married. This is in agreement with the separate works of [1, 11] who revealed

that 53.1% and 96% respectively of their respondents were married. The implication of this is likely to result in respondents having more children which directly increase the population and other human activities (Anthropogenic). Deforestation, one of the causative factors of climate change is extremely high in this area; this was confirmed by the present study where the rate of forest degradation as a result of deforestation has increased to an alarming rate of (90%) in this area. It was also discovered by the present study that the rural farmers are predominantly illiterate, majority of who had non-formal education 54% as compared to 12% literate secondary education,20% had Quranic education,6% had Adult education,8% had tertiary education with 0% pry education. This is in agreement with the findings of [9, 16] who separately reported in their studies that rural farmers are characterized with low level of literacy. The study further shows that the main source of income of the farmers is trading of Bush meat and firewood 58%, while sales of medicinal herbs and other farm products represent 30% of the farmer's income source while only 12% utilizes their farm products for personal use .Family size of 5-10 represent 60%of the respondents, 1-4 represents 30% while 10 and above represents 10%.

Table1. Socio-Economic distribution of farmers and their source of income (n=50)

VARIABLES	FREQUENCY	PERCENTAGE
GENDER		
MALE	38	76%
FEMALE	12	24%
MARRITAL STATUS		
Married	35	70%
Divorced	5	10%
Widowed	10	20%
AGE		
20-31	4	8%
31-40	8	16%
41-50	17	34%
51-60	18	36%
61-70	3	6%
LEVEL OF EDCATION		
Non-formal education	27	54%
Adult Education	3	6%
Quranic Education	10	20%
Pry Education	-	0%
Secondary Education	6	12%
Tertiary Education	4	8%
FAMILY SIZE		
1-4	15	30%
5-10	30	60%
10 &Above	5	10%
MAIN LIVELIHOOD ACTIVITY		
Sales of Medicinal herbs / farm products	15	30%
Trading(Bush meat/Firewood)	29	58%
Personal Use	6	12%

Source: Field work 2018

III.2 Climate Change Awareness

Tab.2. shows that 86% of the respondents are aware of climate change, only 14% of them are not aware, the table also indicates that 60% of those aware got their information through Research institute while 30%got their information through Radio/TV station. None of the farmers got their information through Newspaper 0%, 6% got their information from Non- government organization (NGO) while 4% heard from farmers association. 90% of the farmers believed that the forest has been degraded as a result of deforestation activities, 10% believed that the forest is still intact.

Tab2: Farmers Source of Information on Climate Change, Awareness and Level of Deforestation. (n=50)

SOURCE OF INFORMATION	FREQUENCY	PERCENTAGE
Aware	43	86%
Not aware	7	14%
Research institute	30	60%
Radio/TV station	15	30%
Newspaper	-	0%
Non-govt organization	3	6%
Farmers association	2	4%
DEFORESTATION RATE	**FREQUENCY**	**PERCENTAGE**
Intact	5	10%
Degraded	45	90%

Source: Field work 2018

III.3 Effects of Climate Change on Health of Farmers.

Tab.3. revealed that malaria is the most common ailment experienced by the farmers 66%, followed by cholera 18% headache 12%, Headache & cholera 2% and typhoid, headache &malaria represents 2%.

Result of Tab.4.Shows that the farmer's source of water during dry season is the Stream which account for 76% of their water supply during the dry season, well and borehole water accounts for12% each. 68% of the farmers said that water was not available during prolong drought /dry season while 32% agreed that water was available during this season.

Tab.3: Health Challenges Usually Experienced (n=50)

AILMENT	FREQUENCY	PERCENTAGE
Cholera	9	18%
Malaria	33	66%
Headache	6	12%
Headache & cholera	1	2%
Typhoid, Headache & Malaria	1	2%

Source: Field work 2018

Tab 4: Sources of Water During Dry Season and Availability (n=50)

SOURCES	FREQUENCY	PERCENTAGE
Available	16	32%
Scarce	34	68%
Well	6	12%
Borehole	6	12%
Stream	38	76%

Source: Field work 2018

IV. CONCLUSION

From the results it is obvious that the farmers are aware of climate change to a high extent, although most of them had non-formal education, they can easily be tutored by research institutes representatives and other agencies. Their main sources of livelihood are trading of forest products and agriculture. The health risk analysis shows that malaria is the prevalent health challenge experienced by the farmers, also acute water shortage is experienced during dry season .Finally the study showed that deforestation is on the increase in the study area.

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COMPETING INTEREST

The authors declare no competing interest.

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