Public Perception of Climate Change awareness in Akinyele Local Government Area, Oyo State, Nigeria

ABSTRACT

Aims: The study investigated the awareness, causes, effects and mitigation strategies of climate change revealing that generally the people are knowledgeable of the issues involved
Study area: This study was carried out in Oyo state, specifically Akinyele Local Government Area Ibadan, Oyo State, Nigeria
Methodology: Two hundred and forty copies of the questionnaire were administered to the residents of Akinyele local government taking into consideration the prominent areas within each of the twelve (12) wards of the local government area. Twenty respondents using simple random sampling from each of the 12 wards were selctd making up 240 questionnaires.
Results: The assessment of socioeconomic characteristics of the population showed that the area is male-dominated with only 45% being female. It is predominantly Yoruba (80.8%) with 55% being 40 years and below and Christians and Muslims sum up to 93.3%. The majority of the population are involved with various occupations while 30.8% constituting the dependent population (students 22.5% and unemployed 8.3%). The study investigated the awareness, causes, effects and mitigation strategies of climate change revealing that generally, the people are knowledgeable of the issues involved.. Concerning awareness, 53.3% of the people consider themselves to be knowledgeable of climate change with 62.55 of males being more knowledgeable than females (37.5%). Equally noteworthy is the fact that students were the most knowledgeable of the occupation group with 39%, with artisans who have 0% knowledge about global warming. However, schools constituted the least source of information of the inhabitants with 9.5% while Print and Electronic media seem to have the high source of information (33%) **Conclusion:** Non-invasive independent predictors for screening esophageal varices may decrease medical as well as financial burden, hence improving the management of cirrhotic patients. These predictors, however, need further work to validate reliability.
Conclusion: It is suggested that environmental issues such as global warming and climate change should be included in the school curriculum and studied at various levels.

Keywords: Public Perception, Climate Change, Akinyele Local Government Area, Oyo State, Nigeria

1. INTRODUCTION

The ways in which individuals, societies, and polities respond to global warming and consequent climate changes are in many cases dependent on public perceptions of its

causes, consequences and wider implications. Therefore, understanding popular opinion on climate change and global warming is critically important. In some parts of the world, there has been a growth in public skepticism about climate change since the late 2000s. This has been attributed to a range of factors, including climate fatigue, misleading media representations, the global financial crisis of 2008, and social attenuation of risk [1]. Generally, there has been growing concern that communities are becoming aware of the changes in climatic conditions, human perceptions of climatic changes are influenced by how these changes affect their livelihood. Knowledge gained from exploring how the local population perceives these changes could be used to formulate adaptation strategies and to address specific effects of climate change [2-4].

Studies have been carried out in different parts of the world on the perception of people on climate change They include those in South America [5]; USA [6]; France [7]; in South Africa [2]; in USA [8], Canada and Malta [9] and in Nigeria [10]. Sullivan and White [6] assessed the public perception of climate change risk in three Western U.S. cities – Denva, Los Vegas and Phoenix. The study revealed that 60% of 786 respondents identified climate change as personally risky, the study indicated a reduced gap in risk perception between the public and experts. Rankoana [2] examined community perception of climate change in Limpopo Province in South Africa, using information collected through a focus group discussion of 150 community members. The study revealed a general perception of changes in temperature and rainfall over the past 24 years with negative consequences on the community's livelihood resources.

A national sample of 3480 representatives across France provided current French attitudes and beliefs about climate change – 85% believe climate change is happening; 90% believed climate change is caused by human activities, while 85% expressed concern about the impact of climate change, with the level of concern increasing with relation to the level of education [7].

Using data collected from 197 respondents, [9] examined public perception of climate change and factors affecting their perception in Moba Local Government Area of Ekiti State, Nigeria. 79.7 % of the respondent agreed that climate change issues needed immediate attention while 50.3% see climate change issues as being very important. The study revealed that educational level influences climate change perception and improved access to climate change education can enhance people's understanding about climate change and their ability to relate to climate change. [10] assessed the Public Perception of Climate Change in Yenagoa, Bayelsa State, Nigeria, using 360 questionnaires in randomly selected households. The study showed 43.33 % of the respondents lacked knowledge of climate change; 55.5% were unaware of CO2 as a major greenhouse gas; 66.33% had personal experience and TV as the major source of information, while, 48.7% saw divine providence as a major cause of climate change. The paper concluded that there was a great need for mass education on causes, impact and mitigation strategies for climate change.

[8] used data nationally representative survey carried out in three countries (USA, Canada and Malta) to assess the perception of climate change as a health risk. The findings revealed that the majority of people in the three countries said it posed significant risks and the 1/3 of Canada and 2/3 Maltese said they were already being harmed. Brügger [5] assessed the public perceptions of climate change in a semi-arid high-mountain region of the Peruvian Andes, an environment that is highly vulnerable to the negative effects of climate change. The respondents identify various climate-related issues as the most important challenges for their country. Specifically, 80% of the respondent experience extreme weather events at a personal level.

According to a review of the major global studies into global warming/climate change perception [11,12], there is no significant difference in knowledge on global warming/climate change between developed and developing nations [13] Global studies also showed that concern for the environment and the impacts of climate change is high amongst residents of all countries and the majority of nations see global warming as either 'very serious' or 'somewhat serious' [14] focused mainly on the levels of knowledge about climate change in the indigenous African city of Ibadan. The result yields less than 40% of the respondent attributing climate change to supernatural forces. The study also found out that occupation and educational background influence knowledge of global warming as people who have a higher level of education tend to have more knowledge about climate change.

There are a lot of misconceptions and wrong beliefs about global warming even among the so so-called 'literates' despite the fact that global warming is a worldwide issue with its impact being felt in most parts of the world. In 1981 only about 38% of the American public heard of global warming, and this increased to 40% by 1987, 86% by 1990, and 88% in 1997. Since the year 2000, numerous public opinion polls demonstrate that 92% (large majorities of Americans) are aware of global warming (92%), 74% believe that global warming is real and already underway, 61% believe that there is a scientific consensus on the reality of climate change, and 76% already view climate change as a somewhat to a very serious problem [15].

In an attempt to deal with the issue of global warming, perception studies present themselves as an effective tool. How people perceive global warming issues affect how much they will take it seriously. Improved understanding of public perceptions of global warming can contribute to inform scientific and policy discussions of climate change. Scientists need to know how the public is likely to respond to climate impacts, simply because those responses can reduce or increase the impacts. Policymakers need to know what the public want, in order to work out policies that will be supported or at least tolerated. Scientists and policymakers need to understand the extent to which people's responses will differ across different areas. However, not many studies have been carried out in Nigeria on public perception of climate change. Hence, this study on people's perception of climate change in Ibadan, Akinyele Local Government Area, and Oyo State of Nigeria is to help bridge this gap.

The study was carried out in Oyo state, specifically Akinyele Local Government Area Ibadan, Oyo State, Nigeria (Fig. 1). Oyo state is located in the southwestern region of Nigeria with 33 Local Government Areas and her capital in Ibadan municipality. The study area is a predominant Yoruba-speaking area with other ethnic groups such as the Ibo, Hausa, Igede, and Fulani being in the minority. Akinyele Local Government is one of the 6 peri-urban and rural Local Government Areas of Ibadan metropolis and it is located between Latitude $7^0$25'0'N and $7^0$42'39''N, Longitude $3^0$39'4''E and $4^0$07'00''E. Akinyele is one of the 11 Local Government Areas in Ibadan region and it was created in 1976 sharing boundaries with Afinjio Local Government to the north, Lagelu Local Government to the east, Ido Local Government to the west and Ibadan North Local Government to the south. It occupies a land area of about 464,892km^2 with a population of about 211,811 on a density of 516 persons per km^2 which is subdivided into 12wards. Judged by geographical area, Ibadan is the largest city in Nigeria, and is equally the largest truly indigenous city in Sub-Sahara Africa. Hence, the large population and of the right ethnic mix from many parts of the country makes the area suitable for a study like this.

Ibadan has a tropical wet and dry climate (Köppen climate classification *Aw*), with a lengthy wet season and relatively constant temperatures throughout the course of the year. Ibadan's wet season runs from March through October, though August sees somewhat of a lull in

precipitation. This lull nearly divides the wet season into two different wet seasons. November to February forms the city's dry season, during which Ibadan experiences the typical West African harmattan. The mean total rainfall for Ibadan is 1420.06 mm, falling in approximately 109 days. There are two peaks for rainfall, June and September. The mean maximum temperature is 26.46^0 C, minimum 21.42^0 C, and the relative humidity is 74.55%. Akinyele local government is in Ibadan region, the climate there is, therefore, similar to the regional climate.

As a result of the geology of the area which is underlined by the basement complex rocks, the soil types common in the study area falls into red-brown and laterites categories which supports cash crops such as cocoa, oil palm, kola nut, and food crops such as cocoyam, maize, cassava, yam, and plantain. The vegetation type is centrally rainforest with a mean annual temperature of 26.6^0C while the major types of livelihood activities include farming, trading, and government employment. The section of the population engaged in farming, as the source of income by cultivating crops such as maize, cassava, plantain, timber, and oil palm.

2. MATERIAL AND METHODS

The types of data used for the research was primary data and secondary data. Data was collected by the researchers through the distribution of questionnaires. The questionnaire was designed using open-ended questions and close-ended questions. In the open-ended questions, respondents were asked to answer the question in their own words. The questionnaire was designed by the researcher to contain more closed-ended questions to enable the researcher to code the responses with ease. Questions used in the public perception of climate change literature provided a starting point for questionnaire design. This is to ensure that the questionnaire used in the survey was designed in a manner that did not lead respondents to answer in a particular way. The questionnaire had two parts. The first was based on questions about the socio-demographic profile of the respondent while the other part focused on the knowledge and concern about global warming. The questions were designed to elicit information on respondent's awareness of the global warming phenomenon, respondents perceived cause and effect of global warming and their willingness to support policy on mitigation of global warming. Secondary data were gathered from different journals, newspapers and textbooks.

Studying the entire population will be time-consuming and the quality of data will be low given the fact that the population of the study area is quite large. Since it is virtually impossible to study every individual in the target population, it becomes necessary to take samples of the population using any of the sampling techniques. The researchers are quite aware of the use of Fisher s formula in characterizing the sample size of the population but for this research, 0.1% of the study population seems adequate. This gives a minimum sample size of about 211 but 240 respondents were selected to allow for robust analysis and adequate cell representation during analysis. Two hundred and forty copies of the questionnaire were administered to the residents of Akinyele local government taking into consideration the prominent areas within each of the twelve (12) wards of the local government area. A systematic sampling technique was used to select an interval of three houses in the process of administering the questionnaire. 20 respondents using simple random sampling from each of the 12 wards = 240 questionnaires.

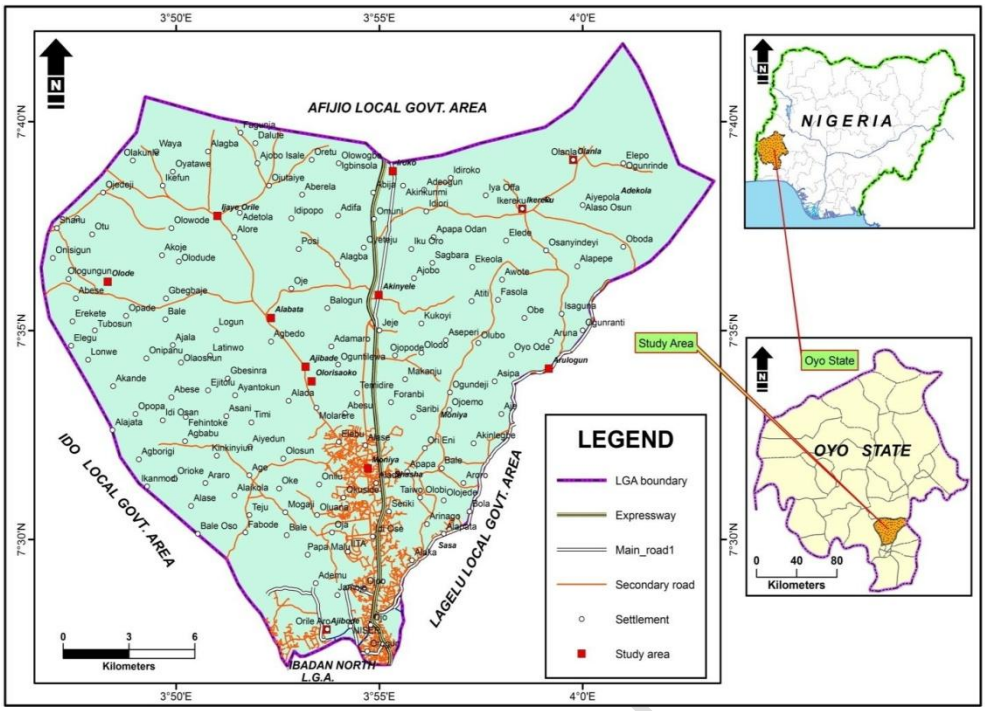

Fig. 1. Study Area Map

3. RESULT AND DISCUSSION

Sex, Age, Religion, Marital and Educational status were the major components used to monitor the socioeconomic and demographic characteristics of respondents in the study area. Table 1 shows that out of a total number of 240 respondents, 132 (55.0%) were male while 108 (45.0%) are female; As for age, 94 people which is 39.2% of the total respondent were between the age range of 20-30, 68 (28.3%) between age range 31-40, 50 (20.8%) between age range 41-50, 20 (8.3%) between age range 51-60 while 8(3.3%) of the respondents are of the age 61 and above. Married people made up 134 (53.3%) of the respondents followed by Single 88 (36.7%), while 6 (2.5%) and 12 (5.0%) were divorced and separated respectively. For religious affiliation, 128 (53.3%), 96 (40.0%) and 16 (6.7%) of the respondents were Christian, Muslim and traditional religions respectively. Also, the educational distribution of the respondents showed that while 90 (37.5%) had tertiary education; 34 (14.2%) and 40(16.7%) had primary and secondary education respectively; 76 (31.7%) had no formal education at all. Not surprisingly 194 (80.8%) of the respondents were from the Yoruba ethnic group while 40 (16.7%) and 6 (2.5%) respondents' were Igbos and Hausa respectively. This is because; the region is located in South West Nigeria which is dominated by the Yoruba ethnic group. The occupation distribution of the respondents' revealed that most were into trading 68 (28.3%) and 54(22.5%) students while 34 (14.2%), 28(11.7%), 24(10.0%) and 12(5.0%) of the respondents' are Civil servant, Farmers, Artisan, Unemployed and Professionals respectively. Unemployed were 20 (8.3%).

Table 1. Characteristics of respondents

Parameter	Frequency	Percentage (%)

1.	Sex	Male	132	55
		Female	108	45
		Total	**240**	**100**
2.	Age	20-30	94	39.2
		31-40	68	28.3
		41-50	50	20.8
		51-60	20	8.3
		>60	8	3.3
		Total	**240**	**100**
3.	Marital status	Single	134	55.8
		Married	88	36.7
		Divorced	6	2.5
		Separated	12	5.0
		Total	**240**	**100**
4.	Religion	Christianity	128	53.3
		Islam	96	40.0
		Traditional	16	6.7
		Total	**240**	**100**
5.	Educational Status	No formal	76	31.7
		Primary	34	14.2
		Secondary	40	16.7
		Tertiary	90	37.5
		Total	**240**	**100**
6.	Ethnic group	Yoruba	194	80.8
		Igbo	40	16.7
		Hausa	6	2.5
		Total	**240**	**100**
7.	Occupation	Farming	28	11.7
		Artisan	24	10.0
		Civil servant	34	14.2
		Professional	12	5.0
		Trading	68	28.3
		Student	54	22.5
		Unemployed	20	8.3
		Total	**240**	**100**

Table 2 shows the respondents' awareness of global warming with 128 (53.3%) being aware of global warming while the remaining 112 (46.7%) were not. To further buttress this, 166 (69.2%) of the respondents considered use of firewood as contributing to global warming while 4 (30.8%) did not. More so, over 62% of the respondents considered the destruction of tropical forests as contributing to global warming while 37.5% did not. On whether emission from industries can be considered as a contributing factor to global warming, 178 (74.2%) of the respondents agreed while 62 (25.8%) disagreed.

Furthermore, 116 (48.3%) of the respondents said that the use of chemicals to destroy insects/pests can be considered as the contributing factor to global warming while 124 (51.7%) disagreed with the claim. Also, 92 (38.3%) of the participants considered people cooling their homes using artificial gadgets such as air conditioners as the contributing factor to global warming compared to 148(61.7%) who did not. However, those who agree that emissions from the automobile can contribute to global warming were few 96 (40.0%) against numerous respondents' who disagreed 144 (60%). Also, 112 (46.7%) of the respondents perceived themselves to have been affected by global warming while 128

(53.3%) claimed to be safe from global warming effects. When asked whether they were aware of any policy made to reduce global warming, 83.3% answered yes, while 16.7% were not aware of any policy made by government and policymakers to reduce global warming. Respondents were also asked if they would support policies made to reduce global warming. 52.5% of the respondents pledge to support any policies that would be made to reduce global warming while the remaining 47.5% said they would oppose to any policy made to reduce global warming.

From the total of 240 respondents, 24 (10.0%) of those aware of global warming declared that they got the information on print media, 68 (28.3%) from electronic media, 80 (33.3%) from both print and electronic media, 22(9.2%) from school while 46 (19.2%) of the respondents got the information from the source mentioned above (Fig. 2)

Two hypotheses were tested to see the relationship between socioeconomic characteristics and awareness of climate change. The first hypothesis stated that there is no significant difference between males and females in terms of knowledge of global warming. As seen in Table 3, based on Gender, 62.5% of Males and 37.5% of Females are knowledgeable about issues of climate warming. The result of the chi-square test of 6.234 revealed that there is essentially a significant difference between males and females in terms of knowledge of global warming. Since the p-value of 0.00 is less than the critical value of 0.05, therefore the null hypothesis was rejected. Hence, there is essentially a significant difference between males and females in terms of knowledge of global warming.

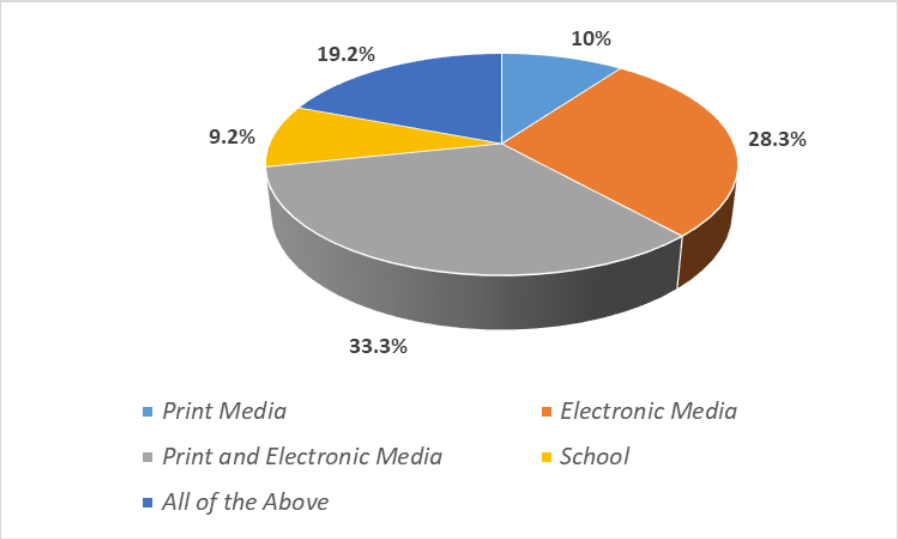

Fig. 2. Source of information

Table 2. Awareness of global warming

Question	Response	Frequency	Percentage (%)
Awareness of global warming	Yes	128	53.3
	No	112	46.7
	Total	240	100
Firewood contributes to global warming	Yes	166	69.2
	No	74	30.8
	Total	240	100
Destruction of tropical forest	Yes	150	62.5

contributes to global warming.	No	90	37.5
	Total	240	100
Emissions from industries contributes to global warming	Yes	178	74.2
	No	62	25.8
	Total	240	100
Chemical for pest contributes to global warming.	Yes	116	48.3
	No	124	51.7
	Total	240	100
Artificial cooling of home contributes to global warming	Yes	92	38.3
	No	148	61.7
	Total	240	100
Emission from automobiles contributes to global warming	Yes	96	40
	No	144	60
	Total	240	100
Effect of global warming on the respondent	Yes	112	46.7
	No	128	53.3
	Total	240	100
Awareness on policy made in reducing global warming.	Yes	200	83.3
	No	40	16.7
	Total	240	100
Respondent support on policy made to reduce global warming	Yes	126	52.5
	No	114	47.5
	Total	240	100
Source of information	Print media	24	10
	Electronic media	68	28
	Print & Electronic media	80	33
	Schools	22	9.5
	All of the above	46	19.5
	Total	240	100

As regarding occupation and global warming which is shown in Table 3, Students are the most knowledgeable, followed by civil servants, then Traders (15%), Farmers (9.4%), and Professionals (9.4%). The unemployed and Artisans with scores of 1.5% and (0%) respectively are the least knowledgeable. With a Chi-square test score of 126.050 and the p-value of 0.00 less than the critical value of 0.05, the result showed that occupation determines respondent's knowledge of global warming. Hence the null hypothesis that occupation does not affect people‘s perception of global warming is rejected.

Still on those that are aware of global warming, Table 4 and Fig. 3, 4 and 5 show the distribution of likely causes of global warming. The result reveals that 98 respondents, that is, 40.8% claim human factors to be the cause of global warming, 30 (12.5%), attributed global warming to personal environmental experience, 58 (24.2%) and 38 (15.8%) perceived natural experiences and natural process respectively, while the remaining 16(6.7%) said they do not know the cause of global warming.

Table 3. Knowledge of global warming based on gender and occupation

	Parameter		**Frequency**	**Percentage (%)**
1	Gender	Male	150	62.5
		Female	90	37.5
		Total	240	100
2	Occupation	Farming	23	9.65

	Artisan	0	0
	Civil servant	60	25
	Professional	23	9.65
	Trading	36	15
	Student	94	39
	Unemployed	4	1.7
	Total	240	100

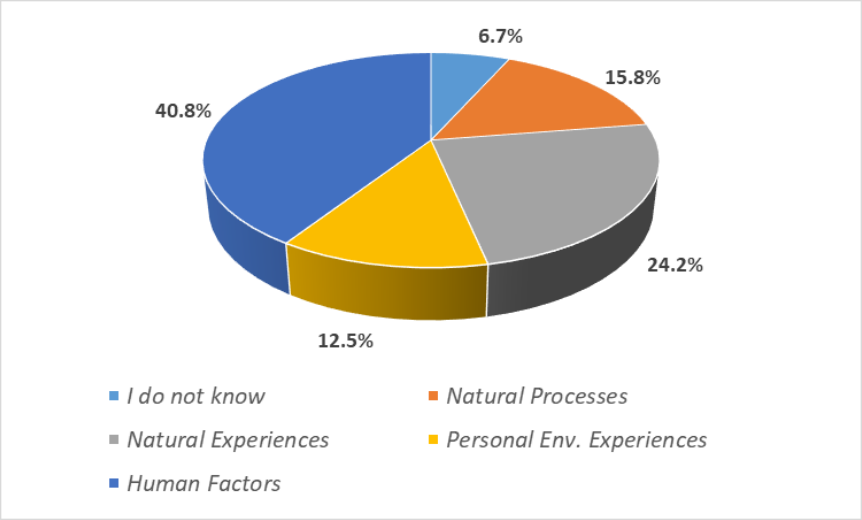

Fig. 3. Causes of Climate Change

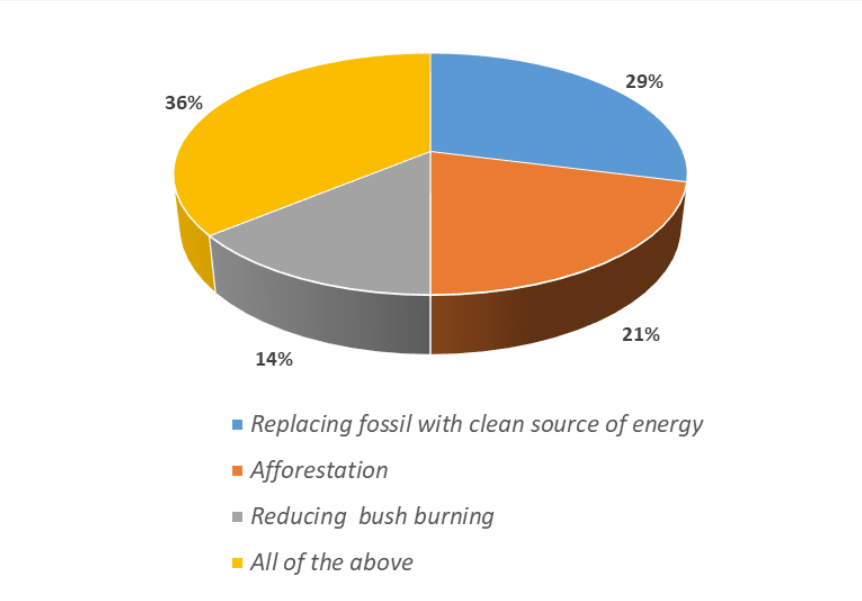

Fig. 4. Adaptive Strategies

Fig. 4 reveals the series of adaption measures respondents think can be adopted to reduce global warming of which 29%, 21%, 14% and 36% of the participants wanted to replace

fossil fuels with a clean source of energy, afforestation, reducing bush burning and all of the above respectively.
Regarding the question of who should take legal action to fight global warming, Fig. 4, 5 shows response made by the participants whereby 33% of the respondents said it is the responsibility of the government, 24% said citizens, 11% said private sectors, 13% said environmental group, 14% said scientist and 5% said no idea.

As for the effects shown in Table 5, 83.3% of respondents said "Yes' to high temperature, 52.5% frequent rainstorms, 15% sea-level rise, 41.7% crop failures, 20% drought and 72% floods.

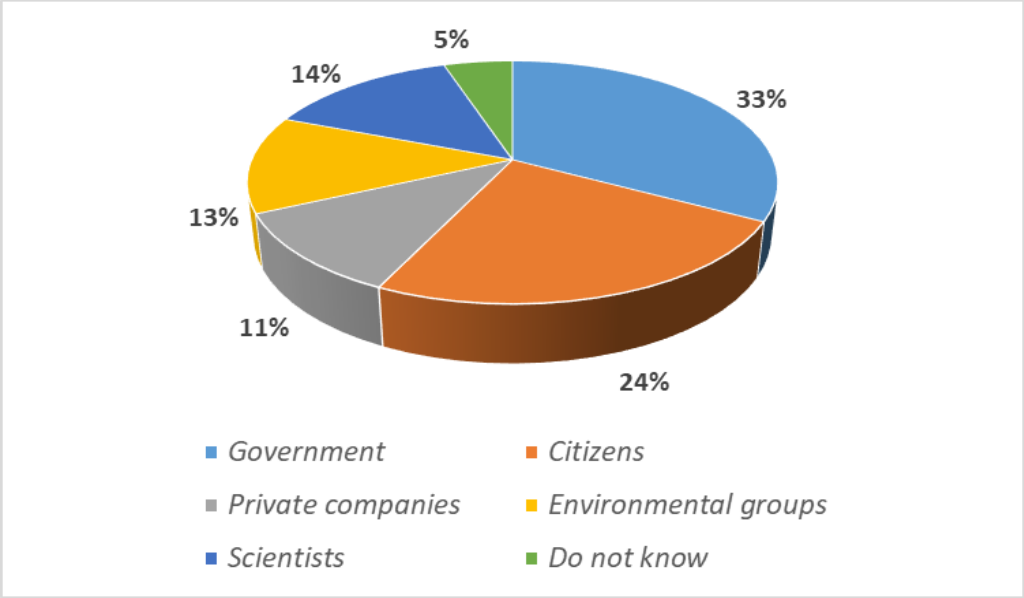

Fig. 5. Who takes responsibility to fight global warming?

Table 4. Causes and Adaptation strategies

Parameter		Frequency	Percentage
Causes of climate change	I do not know	16	6.7
	Natural processes	38	15.8
	Natural experiences	58	24.2
	Personal env experiences	30	12.5
	Human factors	98	40.8
	TOTAL	**240**	**100**
Adaptive strategies	Replacing fossils with clean source of energy	70	29
	Afforestation	50	21
	Reducing bush burning	34	14
	All of the above	86	36
	TOTAL	**240**	**100**
Who takes responsibility?	Government	79	33
	Citizens	58	24
	Private companies	26	11
	Environmental groups	31	13

	Scientists	34	14
	Do not know	12	5
	TOTAL	**240**	**100**

Table 5. Effects of climate change

Parameter	**Response**	**Frequency**	**Percentage (%)**
Higher temparature	Yes	200	83.3
	No	40	16.7
	Total	240	100
Freq rain storm	Yes	126	52.5
	No	114	47.5
	Total	240	100
Sea level rise.	Yes	36	15
	No	204	85
	Total	240	100
Crop failure	Yes	100	41.7
	No	140	58.3
	Total	240	100
Drought	Yes	48	20
	No	192	80
	Total	240	100
Flood	Yes	173	72
	No	67	28
	Total	240	100

This study analyzed the perception of global warming in Ibadan, Akinyele Local Government Area, Oyo State, Nigeria using mainly questionnaire survey method. The assessment of socioeconomic characteristics of the population showed that the area is male-dominated with only 45% being female. It is predominantly Yoruba (80.8%) with 55% being 40 years and below and Christians. Muslims sum up to 93.3%. The majority of the population are involved with various occupations while 30.8% constituting the dependent population (students 22.5% and unemployed 8.3%). The study investigated the awareness, causes, effects and mitigation strategies of climate change revealing that in general, the people are knowledgeable of the issues involved.

Concerning awareness, 53.3% of the people consider themselves to be knowledgeable of climate change with 62.55 of males being more knowledgeable than females (37.5%). Equally noteworthy is the fact that students were the most knowledgeable of the occupation group with 39%, while artisans have 0% knowledge about global warming. However, schools constituted the least source of information of the inhabitants with 9.5% while Print & Electronic media seem to be the high source of information (33%)

These findings agree with similar studies concerning the general awareness and occurrence of climate change in different parts of the world [6]; [2]; [5] [7]; [8] and [9]. The study equally agrees with the fact that socioeconomic parameters influence people's perception of climate change. For example, [9] asserted that the level of education influences perception as improved access to climate education can significantly enhance people's understanding and ability to relate to climate change issues. Also, [14] found out that occupation and educational background influence knowledge of global warming as people who have a higher level of education tend to have the knowledge and know about climate change. This

also agrees with [10] that there is a great need for mass education on causes, impact and mitigation strategies for climate change.

4. CONCLUSION

Awareness and education programs need to be designed especially in areas with little or no access to education. As the result of this research has shown, residents in the study area are willing to support policy to mitigate global warming. Therefore, if awareness is created and education programs are available, the residents in the study area may even take part in the adaptation and mitigation strategies to reduce global warming. From the result of the study, only about 5% of those aware of global warming got their information from school, this is very low and it is an indication that the global warming and climate change phenomenon has not been fully incorporated into the school curriculum. Environmental issues such as global warming and climate change should be included in the school curriculum and studied at various levels. Awareness should also be mounted using mosques and churches in the local Yoruba language. Government and policymakers should draft out more policies to reduce global warming since more is expected of them by the citizens. They should not only design policies but make sure these policies are implemented and citizens are aware of them.

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