

Perception of Fisherfolks to Climate Change among Fishing Dependent Communities Around Owala Lake, Osun State

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Abstract

This study examined the perception of fisherfolks to climate change, among fishing dependent communities surrounding Owala Lake in Osun State. A total of 150 fisherfolks were interviewed using well structured questionnaire. Likert scale was used to determine the perception and the impacts of the respondents on climate change. The respondents indicated high level of awareness on climate change, 36.0% of the respondents about climate change and 23.3% with reasonable knowledge. The respondents also indicated that the impact of climate change on artisanal fisheries includes increase in rainfall variability, excessive sunshine, drought, frequent flooding and temperature variability. Adaptive strategies developed include fishing gears, adjustment in the time of catch, building houses far from the river course and planting of shrubs. Extension services should be made available to the fisherfolks to encourage them to keep climate variable records which will be useful for climate variable forecast.

Keywords:

Fisherfolks, Dependent, climate change, forecast

Introduction

Africa is generally acknowledged to be the continent most vulnerable to climate change. West Africa is one of the most vulnerable to the vagaries of the climate, as the scope of the impacts of climate variability over the last three or four decades has shown (IPCC, 2007). Recent food crises in countries such as Nigeria are reminders of the continuing vulnerability of the region to the vicissitudes of climatic conditions. This is in large measure due to weak institutional capacity, limited engagement in environmental and adaptation issues, and a lack of validation of local knowledge (Adams, *et al.*, 1998).

Fishers, fish farmers and coastal inhabitants will bear the full force of this impact through less stable livelihoods, changes in the availability and quality of fish for food, and rising risks of their health, safety and home. Nigeria is not left out among the developing countries that will be affected by this precarious situation of climate change (IPCC, 2001). Nigeria is not producing enough fish for consumption; also, the fish industry is not providing the much needed financial empowerment for fish farmers (Molua, *et al.*, 2007). There is a huge supply- demand gap for fish and fishery products in Nigeria, about 400,000 tons of supply in comparison to the 800,000 tons of demand (FAO, 2006). This makes Nigeria one of the largest importers of fish in the developing world, importing 600,000 metric tons annually (Molua, *et al.*, 2007; Lam, *et al.*, 2011).

Several works have been carried out on fisherfolks perception of climate change in Nigeria. Some of which include the works of Adebayo (2012), which examined the climate change perception and adaptation strategies of Catfish farming in Oyo State, Nigeria. It investigated the adaptive strategies employed by the respondents and examined the constraints against catfish production in Nigeria. Adeleke, *et al.*, (2013) in the assessment of the current knowledge of the fisherfolks on climatic

variables, bring to light that fisherfolks had different perception and attitude towards increase or decreases in climatic variables, hence, the various inadvertent and intentional methods of climate change adaptation. Likewise, there have been literatures (Tologbonse *et al.*, 2010; Simonelli, 2008; Rosenzweig and Tubiello, 2006; Jones and Thornton, 2003; and Mubiru *et al.*, 2010) on coping strategies of farmers with climate change but limited information on Owala Lake which is noted for its contribution to fish production but may be heavily impacted by vagaries of climate changes. Consequently, this research identified the perception of fisherfolks to climate change together with the communities' level of awareness, source of information and adaptation strategies to cope with the impacts of climate change.

Materials and Methods

Description of Osun State

The study was conducted in Osun State where artisanal fishing is appreciable. Osun State is situated in the tropical rain forest zone. It is located in South-western Nigeria and covers an area of approximately 14,875 sq km and lies between latitude 7° 30' 0" N and longitude 4° 30' 0" E. It is bound by Ogun State to the south, Kwara State to the north, Oyo State to the west and Ekiti and Ondo State to the east. The data were obtained from the fishing communities surrounding Owala Lake, (Fig. 1) primary and secondary data was used for the study. The primary data was collected through the means of structured questionnaires to interview fisher folks in the fishing communities, while the secondary data includes journals and reports. A total of 150 fisherfolks were interviewed using well-structured questionnaire, interview schedule to obtain relevant information in Erinle, Oba, Ore, Ilie and Okinni.

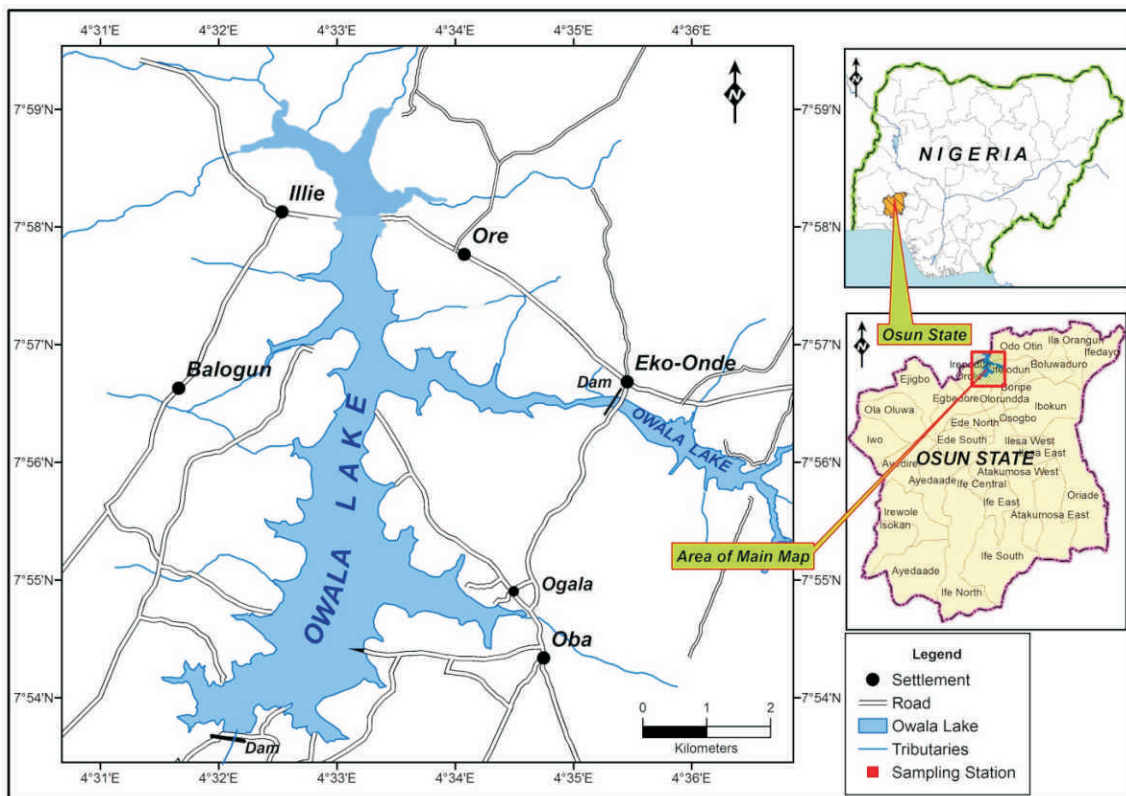


Figure 1: The map of Owala Lake showing the various sampling site.

Source: Field Survey, 2017

Likert scale was used to determine the perception of the respondents on climate change. Inferential analysis was used to show the effect of socio-economic variables such as age, household size, educational level, income per annum of the catches and year of fishing experience. It is also used to show the significant effect of adaptive strategies on income per annum catches. Multinomial regression is used to describe data and to explain the relationship between one dependent nominal variable and one or more continuous-level (interval or ratio scale) independent variables.

Results and Discussion

Socio-economic characteristics

From the study 93.3% were males, 92.7% were married and 25.3% of the respondents of the fisherfolks in the study areas indicated that their age fell between the age ranges of 46 and 50 years (Table 1). The study of Deressa, *et al.*, (2009) show that married fisherfolks have advantage over single fisherfolks that would hire labour during fishing activities (net or trap setting). This is in line with the findings of Aphunu and Nwabeze (2012) who found out in their study that there are still young people involved in fishing and are in their active and productive years to adopt effective measures to cushion the effects of climate change.

Majority (41.3%) of the fisherfolks had secondary education and Ordinary National Diploma (OND) which showed that they have the understanding of climate change and social vulnerability in their environment and this will in turn have impact in the mitigation of climate change effect. It has been reported by Agwu and Anyanwu (1996) that increase in educational status of fisherfolks positively influenced their perception and adoption of improved technologies and practices. Fisherfolks with 38.7% had a fishing experience of about 15-20 years which implies that operating a canoe or outboard engine on water are usually done by matured and experienced fishermen. This is in line with the study of Onyekuru, *et al.*, (2011) who argued that it is likely that age may endow the fisherfolks with requisite experience that empower them to make better assessment of the prevailing risks.

The result showed that 93.3% of the fisherfolks earned more than N500,000 in a year which enable them cater for their family and other responsibilities within and outside their communities. Majority of the respondents (67.3%) are aware of climate change and its vulnerability (Table 2). From the respondents that claimed to be aware of climate change, 28.0% had little knowledge, 23.3% of the respondents had a reasonable knowledge about climate change and social vulnerability, and 12.7% of the respondents had a great extent of knowledge about it (Table 2). This implies that the fisherfolks in the study area were familiar with the effects of climate change in artisanal fishery and management and might be familiar with the adaptive strategy to combat the adverse effects of climate change. Mendelsohn (2009) stated that educated and experienced farmers have more knowledge and information about climate change and adaptation practices.

Majority of the respondents are affected by the following climatic factors which includes increased incidence of flooding and drought, poor catches, destruction of property resulting from heavy wind storm, increased cost of fish catches and late start of rains which decreases fish catches (Table 3). This study is in line with the work of Ayanwamide (2002) that stated that the impacts of climate change is mainly due to flooding, drought and deposition of silt which not only do damage on the farm structures and profitability, but also cause loss of fish and great changes in the quality of water.

Also the respondents around Owala Lake are affected by excessive temperature and rainfall which in turn leads to frequent flooding of the lake. The findings is in line with that of Dewit and Stankiewicz,

(2006) which predicted that significant negative impacts will be felt across 25 percent of Africa's inland aquatic ecosystem.

Effects of Climate Change on the Fish Catches

Majority of the fisherfolks in the study areas have been exposed to changes in climatic conditions affecting catch or fisherfolks activities. These effects as indicated by the respondents included; poor catches, destruction of fishing gear and craft, increased incidence of flooding and drought increased rate of rainfall, drastic change in weather condition (Table 3). These changes has therefore led to changes in

Table 1: Distribution of demographic characteristics of respondents

		Frequency	Percentages
Gender	Male	140	93.3
	Female	10	6.7
Marital Status	Married	139	92.7
	Single	3	2.0
	Separated	6	4
	Widowed	2	1.3
Age	Below 29	7	4.7
	30 – 35	15	10
	36 – 40	17	11.3
	41 – 45	21	14
	46 – 50	38	25.3
	51 – 55	21	14
	56 – 60	24	16
	61 Above	7	4.7
Religion	Christianity	70	46.7
	Islam	68	45.3
	Traditional	11	7.3
	Others	1	0.7
Tribe	Yoruba	127	84.7
	Igbo	21	14
	Hausa	1	0.7
Highest Educational Qualification	No Formal Education	31	20.7
	Primary	37	24.7
	Secondary	62	41.3
	OND	14	9.3
	HND	3	2
	B.sc	1	0.7
	Technical Education	2	1.3

fish catches, hence reduced catches of the fisherfolks. This is aligned with the study of Ayanwamide (2002) that stated that climate change causes damage to the farm structures and profitability, and also loss of fish and great changes in the water quality. Likewise, majority of the respondents have been exposed to change that is caused as a result in increased rate of temperature which has led to the decrease in fish catches. This is in line with the study carried out by Akegbejo-Samson (2009) which indicated that the effects of high temperature disturbs the fish's comfort zone and thus cause raised metabolic changes, which affects potential productivity. Consequently, increase in rainfall has resulted in increased yield of the fish catches.

Table 2: Awareness of fisherfolks on climate change

		Frequency	Percentages
Aware of climate change	Yes	101	67.3
	No	49	32.7
Extent of knowledge about climate change	Don't know	54	36
	Know little	42	28
	Reasonable extent	35	23.3
	Great Extent	19	12.7

Table 3: Perception of fisher folk's on the impacts of climate changes on fishing

S/N	Variable	Strongly Agree	Agree	Disagree	Strongly Disagree	Undecided	Score	Point	Remark
1.	Increase in rate of rainfall increases fish catches	88	37	25	2	0	667	4.45	Strong
2.	Drastic change in weather condition	46	104	0	0	0	646	4.31	Strong
3.	Destruction of property resulting from heavy wind storm	78	64	4	4	0	666	4.44	Strong
4.	Excessive sunshine	53	80	11	6	0	621	4.14	Strong
5.	Increased incidence of flooding	111	37	1	01	00	708	4.72	Strong
6.	Increased incidence of drought	79	67	03	01	00	674	4.49	Strong
7.	High temperature and heat waves	47	72	18	10	03	575	3.83	Strong
8.	Poor catch of fish	66	65	16	03	0	644	4.29	Strong
9.	Increased in catches of some fish species	48	52	15	19	16	547	3.65	Strong
10.	Increased fish disease infestation	30	59	26	02	33	501	3.34	Strong
11.	Increased cost of fish catches	64	67	17	02	00	643	4.29	Strong
12.	Late start of rains decrease fish capture	52	60	30	01	07	599	3.99	Strong
13.	Early start of rains increases fish capture	69	52	20	02	07	624	4.16	Strong

Source: Field Survey, 2017

Conclusion and Recommendation

Conclusion

The study affirms that, though the fisherfolks were aware of the phenomenon, their level of knowledge about the impacts of climate change was low. The fisherfolks indicated relying mostly on personal experience as well as mass media (Radio and Television) rather than on the extension agents as their main source of information. It was also evident that the fisherfolks around Owala Lake adopt some coping strategies such as changing of fishing gear and craft, adjustment in the time of catches, clearing of surrounding, building far from the river course, and diversification into farming activities and majority of the fisherfolks are engaged in farming activities as their secondary occupation.

Recommendation

The impact and effect of climate change can be reduced largely by the effort of individual fisherfolks. Also from the survey, there is a need for a multi-media enlightenment campaign of the effects and possible adaptation strategies of climate change, to reach all fisherfolks using the available extension structures on ground by all stakeholders. The vast potentials of the mass media should be tapped by policy makers to disseminate climate change information and create more awareness about causes and consequences of climate change as well as strategies for climate change adaptation. Also, effort should be geared towards identifying and compiling indigenous adaptive strategies to climate change that fish farmers may have used over the years as an approach to overall food security in communities around Owala Lake.

Schooling level reduces fisherfolks vulnerability to climate change, therefore everybody should be encouraged to be educated as well as improve on their level of education. Since it was shown that the more educated they are, the lower the vulnerability level. Government should bring up a policy that would favour fisherfolks and provide credit for them in order to enhance their fish catches. Extension services should be made available to the fisherfolks to encourage them to keep climate variable records which will be useful for climate variable forecast. Fisherfolks should engage in preventive measures such as changing of fishing gears, adjustment in the time of catch, building houses far from the river course, planting of shrubs, construction of embankment to prevent flooding.

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