

Effect Of Global Warming On The Business Activities Of Fish Farmers In Lagos, Nigeria

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Abstract

The study sought to investigate the effect of global warming on the business activities of fish farmers in Lagos. The study employed survey research design, through the administration of structured questionnaires on some selected fish farmers in Badagry and Epe Local Government Areas of Lagos State. The research instrument (questionnaires) was validated using content validity index while the reliability of the instrument was tested through test-retest method by conducting a pilot study which gave a value of 0.880, 0.901 and 0.719, rising earth temperature, rising water level and business activities respectively, which indicated that the instrument was reliable. The data collected was tested using categorical regression with the aid of SPSS version 24. The findings revealed that global warming (measured by rising earth temperature and rising water level) is negatively related to the business activities of fish farmers in Lagos, with coefficient and p-value of -0.65, p-value<0.05 and -0.71, p-value<0.05 respectively. It can, therefore, be concluded that rising earth temperature and rising water level have an inverse relationship with the business activities of fish farmers in Lagos, Nigeria. It is recommended that the government should come up with eco-friendly policies as well as liaising with other nations to combat global warming. Fish farmers should consider the deployment of other techniques that can mitigate the effect of global warming on business activities of fish in Lagos. This tends to aid the attainment of the second and fourteenth United Nations' sustainable development goals (Zero Hunger and life below water).

Keywords: Business Activities, Climate Change, Fish Farmers, Global Warming, Sustainable Development Goals

1. Introduction

The climatic condition facing human activity in today's globe has changed over time as a result of environmental threats which contribute to the increase in earth temperature between 0.4°C and 0.8°C in the last 100 years. It is believed that global warming is closely associated with climate change due to environmental challenges faced by every society between the atmosphere of earth, which perhaps leads to high level of temperature, intensity of storms and flood that affect the business activities. The United Nations' Sustainable Development Goals (SDG), adopted by all United Nations' member States in the year 2015, provides a

shared blueprint for peace and prosperity for humans and the environment, now and into the future. At its heart are the 17 sustainable development goals; the second and fourteenth sustainable development goals are to end hunger, and to enhance life below water. These goals tend to enhance the wellbeing of the people, as well as, propel sustainability of life below water.

The scientific community proved that global warming across the globe is real and can be caused by human activities through the environmental degrading act of burning fossils fuel, burning wood and cutting trees. The business activities of fish



farmers contribute significantly to the economy of a nation through provision of employment opportunities most especially among the rural dwellers in Nigeria. Evidences have shown that climate change impacts arise from increase in temperature, rainfall, sea level rise, impact on fresh water resources, extreme weather events, flooding, drought in the Northern part of Nigeria and increased health risk. These tend to lead to poor fish farmers' production in Nigeria (Nebedum & Nnaemeka, 2016).

Scholars have carried-out studies on the effect of global warming on Nigeria economy, using a variety of approaches to capture its effects on the agricultural sector (Akomolafe, Awoyemi, & Babatunde, (2018); Fadina & Barjolle, (2018); Osakede, Ijimakinwa & Adesanya, (2016); Nebedum & Nnaemeka, (2016); Idowu, Ayoola, Opele & Ikenweawe, (2011); Apata, (2011); Deressa & Hassan, (2010). However, emphasis has not been made in looking at the effects of global warming on the business activities of fish farmers in Lagos. This study, therefore, seeks to examine the effect of global warming (*measured by rising earth temperature and rising water level*) on the business activities of fish farmers in Lagos, Nigeria. This tends to aid the attainment of the second and fourteenth sustainable development goals (Zero Hunger and life below water).

In line with the objectives of this study, the following hypotheses were formulated:

H₀1: Rising earth temperature does not significantly affect the business activities of fish farmers

H₀2: Rising water level does not significantly affect the business activities of fish farmers

2. Literature Review

Climate is the state condition of weather in a certain areas which is fairly stable and predictable. It can also be defined as the "Weather" pattern in terms of cold and hot, cloudy and clear, humid and dry and other variables at any given site. In general view, climate change can be defined as the fairly stable and predictable condition of weather, which affects the activities of society at a given period of time. (IPCC) What is the full meaning of this? (2007) asserts that climate change refers to change in the

climatic condition that can be identify through the utilization of statistical tests, by changes in the mean and/or the variability of its properties for an expanded period, normally decades or more.

International Fund for Agricultural Development (IFAD) (2008) posits that climate change is a threat to rural farmers in developing countries, especially those living in the tropics and sub-tropics. Global warming has been an adverse environmental phenomenon that is generating concern across the globe. The major characteristics of climate change which include: global temperature increase, ice cap melting, changes in precipitation, and increase in ocean temperature (sea level rise) have adversely affected the environment. As a result of this, the earth temperature has increased over time due to rising water level and reduction in rainfall. Global warming is used in describing a gradual increase in average temperature of earth's atmosphere and its ocean. These have resulted from increase in human emission of Green House Gases (GHGs) through burning of fossils fuel such as oil, coal, among others, as well as, burning of wood products. (Fadina & Barjolle, (2018); Fatile, (2013)

Osakede *et al* (2016) opine that climate change threatens the livelihood of people in coastal communities and serves as setback to human development with negative implications for socio-economic factors. Apata (2011) opines that hunger-related deaths could increase if grain productions do not keep pace with population growth in an unfavourable climatic environment; they further assert that climate change adaptations have significant impact on farm productivity. Business activities are the productive activities carried out to earn a living. Nebedum *et al* (2016) as well as Akomolafe *et al* (2018) posit that many sectors of Nigerian economy appear to be directly vulnerable to the impacts of climate change, such as agricultural sector, health, energy, among others. Idowu, Ayoola *et al* (2011) opine that global warming, if left unchecked, will cause adverse effects on livelihoods in Nigeria, such that crop production, livestock production, fisheries, forestry and post- harvest activities, will drop because of low rainfall regimes and patterns. Floods will occur; increase in temperature and humidity (such as pests and diseases will occur),

which will definitely be harmful to life and property.

2.2. Empirical Review

Andreas, *et al* (2018) examine how climate change alters low flows in Europe under global warming of 1.5, 2 and 3oC. How hydrological low flows are affected under different levels of future global warming was investigated in rivers with a contributing area of more than 1000km². The analysis was based on a multi-model ensemble of 45 hydrological simulations. It was observed that in the Alpine, Northern and Mediterranean regions, the uncertainty contribution by the Hydrological Models (HMs) is partly higher than those by the General Circulation Models (GCMs) due to different representation of processes such as snow, soil moisture and evapo-transpiration. Osakede, *et al* (2016) examine the impacts of climate change on the development of coastal communities in Nigeria, using research design, using non-parametric technique of Z- score analysis from a sample size of 64 people living at Eti-Osa Local Government in Lagos state, the findings reveal that climate change threatens the livelihood of people in coastal communities and serves as setback to human development with negative implications for political and socio-economic arrangement.

Nebedum *et al* (2016) investigate the impact of climate change on various sectors in the Nigerian economy. The study reviews some existing literature, information, policies and data on climate change in Nigeria. The findings indicate that many sectors of Nigerian economy appear to be directly vulnerable to the impacts of climate change such as agricultural sector, health, energy, which generally affects the growth of the economy. Olaniyi, *et al* (2014) examine a qualitative technique on the issue of climate change, the effects of man's activities as well as those of natural phenomena on global warming and the impacts on the environment baseline survey and creation of a comprehensive database for the country driven by geographical information system. The study also indicates options that are available as responses to global warming such as mitigation and adaptation, likewise possible human suffering as consequences of what cannot be avoided by mitigation and adaptation.

Apata (2011) empirically analyses the effects of global climate change on Nigerian agricultural sector using both primary and secondary data sources. The secondary data covers three scenarios ranging from 1971-1980; 1981-1990 and 1991-2000 while the primary data consists of 900 respondents out of which 850 were captured and useful. The study analysed determinants of farm-level climate adaptation measures, using a Multinomial choice and stochastic-simulation model to investigate the effects of rapid climatic change on grain production and the human population in Nigeria. The model calculates the production, consumption, and storage of grains under different climatic scenarios over a 10-year scenery. Results indicated that hunger-related deaths could increase if grain productions do not keep pace with population growth in an unfavourable climatic environment. However, Climate change adaptations have significant impact on farm productivity.

3. Methodology

The study employs survey research design, through the administration of structured questionnaires to some selected fish farmers in Badagry and Epe Local Government Areas of Lagos State. The population of the study are the 402 fish farmers in Epe and Badagry, using the Raosoft sample estimator software which is based on normal distribution at confidence interval or margin of error of 5% and 95% confidence level, the aggregate sample for this study is 196 fish farmers in Epe and Badagry Local Government areas.

The study employs a structured questionnaires that is designed using the Likert scale rated as follows: (1) SD: Strongly Disagree, (2) D: Disagree, (3) A: Agree, (4) SA: Strongly Agree. The research instrument (questionnaires) is validated using Content Validity Index (CVI), through the evaluation of two academic staff of Business Administration Department at Olabisi Onabanjo University. The evaluators assessed the instrument on two scale: relevant and not-relevant.

Using the CVI formula ($CVI = n/N$)
Where n is the total number of the questionnaires items ticked as relevant;

N is the total number of the questionnaires items. A CVI of 0.9021 was obtained, which indicates that the instrument (questionnaires) is valid. The reliability of the instrument was tested through test-retest method by conducting a pilot study. The instrument was administered twice within an interval of fourteen days and the outcome of the first pilot study was correlated with that of the second and a value of 0.880, 0.901 and 0.719 were obtained for rising earth temperature, rising water level and business activities respectively, which

4. Results

Table 4.1: Categorical regression summary for hypothesis1 (Dependent variable - Business activities)

Variable	Coefficient	Fc	P-Value
Rising earth temperature	-0.65	5.26	0.000
R square = 0.6458			F-Stat=41.32 (0.000)

Source: Authors' compilation from SPSS 24

The result on table 4.1 revealed that rising earth temperature has negative significant effect on the business activities of fish farmers.

Table 4.2: Categorical regression summary for hypothesis1 (Dependent variable - Business activities)

Variable	Coefficient	Fc	P-Value
Rising water level	-0.71	4.68	0.000
R square = 0.7104			F-Stat=36.62 (0.000)

Source: Authors' compilation from SPSS 24

The result on table 4.2 revealed that rising water level has negative significant effect on the business activities of fish farmers.

Discussion of Findings

The study sought to evaluate the link between global warming and the business activities of fish farmers in Lagos, Nigeria. The findings revealed that global warming (measured by rising earth temperature and rising water level) is negatively related to the business activities of fish farmers in Lagos, with coefficient and p-value of -0.65, p-value<0.05 and -0.71, p-value<0.05 respectively. This implies that the rising earth temperature and rising water level have negatively impacted the business activities of fish farmers in Lagos. This tends to affect the attainment of the second and fourteenth United Nations' sustainable development goals (Zero Hunger and life below water), which necessitate the global call to tackle

indicates that the instrument is reliable. The research instrument (questionnaires) were administered on 196 fish farmers in Epe and Badagry. However, only 132 were returned and found useable, which gave a return rate of 67%. The data was analysed using categorical regression with the aid of SPSS version 24.

ozone layer depletion as well as reduction in Carbon emission that has contributed significantly to the global warming.

The findings is consistent with that of Nebedum *et al* (2016) that investigated the impact of climate change on various sectors in the Nigerian economy and found that many sectors of Nigerian economy appear to be directly vulnerable to the impacts of climate change such as agricultural sector, health, energy, which generally affects the growth of the economy. It is also consistent with the findings by Apata (2011) whom analyses the effects of global climate change on Nigerian agricultural sector and found that hunger-related deaths could increase if grain productions do not keep pace with population

growth in an unfavourable climatic environment.

5. Conclusion and Recommendations

The study examines the effect of global warming on the business activities of fish farmers in Lagos, using survey research design. The findings reveal that global warming (measured by rising earth temperature and rising water level) is negatively related to the business activities of fish farmers in Lagos, with coefficient and p-value of -0.65, p-value<0.05 and -0.71, p-value<0.05 respectively. It can, therefore, be concluded that rising earth temperature and rising water level, which tend to lead to flooding and ocean surge, have an inverse relationship with the business activities of fish farmers in Lagos, Nigeria.

It is recommended that the government should come up with eco-friendly policies as well as liaising with other nations to combat global warming. Fish farmers should consider the deployment of other techniques that can mitigate the effects of global warming, like using artificial pond and the enhancement of the artificial environment. These tend to aid the attainment of the second and fourteenth United Nations' Sustainable Development Goals (SDGs) adopted by all United Nations' member states in the year 2015. This is because an improvement in fish production will aid the attainment of the second SDG, as it tends to propel the reduction in the rate of hunger. Furthermore, the deployment of other techniques that can mitigate the effect of global warming, like using artificial pond and the enhancement of the artificial environment will aid the attainment of the fourteenth SDG, as it tends to enhance the life below water.

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