Social Implications of Climate Change on the Environment in Emohua Local Government Area

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Abstract

The study examined the social implications of climate change on the environment with emphasis on Emohua Local Government Area (LGA). The growing impacts of climate change on local environments have become a critical concern, particularly for communities whose livelihoods are closely tied to natural resources, such as those in Emohua LGA of Rivers State. The area has experienced serious environmental changes, including irregular rainfall patterns, recurrent flooding, rising temperatures, soil degradation, and declining agricultural productivity. The objectives of the study were to; identify the major climate change–related environmental changes that occurred in Emohua LGA; and assess how these environmental changes have affected the livelihoods and socio-economic activities of residents in Emohua LGA. The theory adopted for this study was the System Theory propounded by David Easton in 1965. The study utilised the descriptive survey research design and applied primary and secondary sources of data. Primary data was sourced from questionnaire while secondary data was sourced from academic books, journal articles and conference papers among others. The study found that the major climate change–related environmental changes that occurred in Emohua LGA include flooding, irregular rainfall patterns and rising temperatures. These environmental changes have affected agricultural productivity and ultimately affected the livelihoods of farmers in the area. Illegal refining of crude oil has led to the depletion of ozone layer which has led to rising temperature and irregular rainfall. The study recommended that to effectively address the environmental challenges posed by climate change, administrators of Emohua LGA needs to adopt a comprehensive and proactive approach. Integrating climate resilience into national development plans is crucial to enhancing the country's adaptive capacity. This requires strengthening collaboration between public and private sectors to mobilize resources, bridge funding gaps, and implement large-scale climate interventions

Keywords: Climate change, environment, agricultural productivity, rising temperature and flooding

Introduction

Climate change has increasingly become one of the most significant challenges confronting human societies in the twenty-first century, with far-reaching implications for environmental sustainability and social well-being. It affects virtually every dimension of human life and continues to generate serious challenges across key sectors such as economic development, agriculture, health, and infrastructure (Fatile, 2013). Beyond its physical manifestations, climate change drives profound transformations in both the natural environment and the social organization of communities, thereby disrupting established patterns of living, production, and social interaction.

Climate change is defined by long-term alterations in temperature, precipitation, and other atmospheric conditions. The Intergovernmental Panel on Climate Change (IPCC, 2014), as cited in Onuoha and Okore (2024), describes climate change as a persistent move in the state of the climate, identifiable through measurable changes in its mean and variability over extended periods. Scientific evidence attributes these changes largely to human activities since the nineteenth century, particularly the combustion of fossil fuels such as coal, oil, and gas (Kolawole & Okonkwo, 2022). These activities release greenhouse gases, including carbon dioxide (CO_2), which trap heat in the atmosphere, leading to the greenhouse effect, global warming, and climatic disruptions. Current trends indicate that global warming is occurring at an unprecedented rate in recorded history (Kolawole & Okonkwo, 2022). The consequences of these environmental changes extend beyond ecological degradation to influence social systems and human livelihoods. Climate change affects agricultural productivity, disrupts economic activities, influences health outcomes, and alters patterns of human settlement. In developing countries such as Nigeria, these social implications are particularly severe due to heavy dependence on climate-sensitive resources, limited adaptive capacity, and inadequate infrastructural development (Ohwo & Evwienure, 2021).

Emohua Local Government Area of Rivers State provides an important case for examining the localized social implications of climate change. The area has experienced observable environmental changes, including irregular rainfall patterns, recurrent flooding, rising temperatures, and the degradation of farmlands. These environmental changes have directly affected agricultural activities, which serve as a primary source of livelihood for many residents, thereby impacting income levels, food security, and general living conditions. Moreover, the environmental challenges in Emohua have contributed to a range of social problems. These include population displacement due to flooding, increased competition over limited resources such as arable land and water, rising poverty levels, and heightened exposure to health risks. These developments reflect patterns observed in other climate-affected regions of Nigeria, particularly within the Niger Delta.

Statement of the Problem

The growing impacts of climate change on local environments have become a critical concern, particularly for communities whose livelihoods are closely tied to natural resources, such as those in Emohua Local Government Area (LGA) of Rivers State. The area has experienced serious environmental changes, including irregular rainfall patterns, recurrent flooding, rising temperatures, soil degradation, and declining agricultural productivity. While these changes are increasingly evident, there remains a major gap in understanding how climate change is

reshaping the social and economic conditions of the population within the LGA. This gap limits the ability of policymakers and stakeholders to design effective, context-specific adaptation strategies.

A major issue in Emohua LGA is the high dependence of rural households on climate-sensitive occupations such as farming, fishing, and other outdoor economic activities. The increasing unpredictability of weather patterns has disrupted traditional agricultural calendars, resulting in reduced crop yields, loss of income, and heightened food insecurity (Tari & Diah, 2024). In addition, frequent flooding has led to the destruction of farmlands, residential buildings, and rural infrastructure such as roads, thereby displacing households and weakening local economies.

Previous studies exist on climate change and its impact on the environment. For instance, Ruhul et al. (2025) investigate Climate Change and its Impact: A Review of Global Strategies for Adaptation and Mitigation. In the same vein, Mustapha et al. (2025) analyse the Impacts of Climate Change on Nigeria's Environment: Challenges, Mitigation Strategies, and Policy Implications. Similarly, Okon et al. (2021) carried out a Systematic Review of Climate Change Impact Research in Nigeria: Implication for Sustainable Development. However, very few studies exist on social implications of climate change on the environment in Emohua Local Government Area. This inform the basis for this present study

Objectives of the Study

The study is guided by the following objectives which are to;

i. identify the major climate change–related environmental changes that occurred in Emohua LGA ; and

ii. assess how these environmental changes have affected the livelihoods and socio-economic activities of residents in Emohua LGA

Literature Review

Concept of Climate Change

Climate change has been conceptualized differently by various scholars, but there is a consensus that it involves significant and persistent changes in climatic conditions. Nordhaus (2017) defines climate change as periodic alterations in the Earth's climate resulting from changes in the atmosphere and its interactions with geological, chemical, biological, and geographical systems. Similarly, Pachauri and Meyer (2014) describe it as a long-term shift in average weather conditions, including temperature, rainfall, and wind patterns, which consequently alters the expected range of climatic conditions and increases the occurrence of extreme weather events.

From a scientific perspective, the Intergovernmental Panel on Climate Change (IPCC, 2007) defines climate change as a change in the state of the climate that can be identified through variations in its mean or variability, persisting over decades or longer. In a related view, the United Nations (2007) emphasizes the role of human activities, defining climate change as alterations in climate directly or indirectly caused by human actions that modify the composition of the global atmosphere beyond natural variability. These definitions highlight

both natural and anthropogenic drivers of climate change, although recent literature increasingly emphasizes human-induced causes.

Climate change is closely linked to global warming, which refers to the rise in average global temperatures primarily due to increased concentrations of greenhouse gases in the atmosphere. Rockström et al. (2009) note that global warming is often used interchangeably with climate change because it is one of its most observable indicators. Hoegh-Guldberg et al. (2018) further explain that contemporary climate change is largely driven by human activities, particularly the burning of fossil fuels and deforestation, which have significantly increased atmospheric carbon dioxide levels since the pre-industrial era

Concept of Environment

According to Hagget (1975) cited in Udok *et al. (*2023), the environment refers to the sum total of all conditions that surround man at any point in time on the earth's surface. In agreement, Prasad et al. (2015) asserts that the environment could be perceived as the aggregate of external conditions that influence the life of an individual or population, specifically the life of man and other living organisms on the earth's surface. Environment has been classified into four major components. Hydrosphere which includes all water bodies such as lakes, pounds, rivers, streams and ocean etc. Hydrosphere functions in a cycle nature, which is termed as hydrological cycle or water cycle. Lithosphere is the mantle of rocks constituting the earth's crust. The earth is a cold spherical solid planet of the solar system, which spins in its axis and revolves around the sun at a certain constant distance. Lithosphere mainly, contains soil, earth rocks, mountain etc. lithosphere is divided into three layers-crusts, mantle and core (outer and inner).

Atmosphere is the cover of the air, that envelopes the earth (Sibly et al., 2013). It is a thin layer which contains gases like oxygen, carbon dioxide etc and which protects the solid earth and human beings from the harmful radiations of the sun. There are five concentric layers within the atmosphere, which can be differentiated on the basis of temperature and each layer has its own characteristics. These include the troposphere, the stratosphere, the mesosphere, the thermosphere and the exo-sphere. Bio-sphere otherwise known as the life layer refers to all organisms on the earth's surface and their interaction with water and air. It consists of plants, animals and micro-organisms, ranging from the tiniest microscopic organism to the largest whales in the sea. Biology is concerned with how millions of species of animals, plants and other organisms grow, feed, move, reproduce and evolve over long periods of time in different environments. Its subject matter is useful to other sciences and professions that deal with life such as agriculture, forestry and medicine. The richness of bio-sphere depends upon a number of factors like rainfall, temperature, geographical reference etc. these conceptualisations are focused specifically on the natural environment without any mention of the artificial environment.

Theoretical Framework

The theory adopted for this study is the System Theory propounded by David Easton in 1965. The theory conceptualizes any phenomenon as a complex whole made up of interdependent and interrelated parts, each performing specific functions necessary for the survival and stability of the entire system. In this sense, the system operates like a biological organism,

where all parts are functionally connected, and a change in one part inevitably affects the others and the system as a whole. Ekpenyong (2003) traced the origin of System Theory to David Easton (1965) and explained that a system is an interdependent structure in which all parts are necessary for the effective functioning of other parts and, ultimately, for the stability of the whole structure. He further noted that the system functions like a biological organism whose components are interrelated and interdependent in such a way that any change or disturbance in one part affects the entire system. In this regard, each function within the system must be effectively performed to ensure the survival of the whole structure (Ekpenyong, 2003).

Similarly, Mukoro (2015) cited in Okore and Onuoha (2023) defines a system as a set of elements standing in interaction, meaning a collection of interrelated components that share a common relationship. These components may include individuals, institutions, or even environmental elements, as long as they interact in a recognizable pattern. System Theory therefore emphasizes the whole rather than the individual parts, with the understanding that the functioning of the whole is directly linked to the functioning of its components (Mukoro, 2005 cited in Okore & Onuoha, 2023). System Theory is also referred to as the input–output approach. From this perspective, the system receives inputs from its environment, processes them, and produces outputs in response. Easton, as cited in Nna (2004), conceptualizes the political system as the authoritative allocation of societal values. Within this framework, inputs consist of demands and support, while outputs consist of policies, decisions, projects, and programmes. Ake (1975 cited in Nna, 2004) explains that demands are articulated statements directed at the system, expressing expectations for specific actions or allocations. Support, on the other hand, refers to actions and attitudes that demonstrate approval, legitimacy, and solidarity with the norms, values, and rules of the system.

Outputs represent the responses of the system to these inputs and are expressed through policies and actions initiated by authorities within the system in response to environmental pressures (Nna, 2004). The system is sustained through a feedback mechanism, which serves as a communication channel between the system and its environment. Through feedback, the system receives information on the effectiveness of its outputs and adjusts accordingly to maintain stability and effectiveness (Okore & Onuoha, 2023).

Relating System Theory to climate change and environmental studies, it becomes evident that there is a strong interdependence between humans and the environment. Man depends on the environment for survival and livelihood, while also influencing it through various activities. In the same way, environmental conditions influence human activities. Whatever affects the environment ultimately affects human systems. Climate change represents a major disturbance within the environmental system. Events such as flooding, irregular rainfall, rising temperatures, and land degradation serve as environmental “inputs” that affect the social and economic life of people in Emohua Local Government Area. These inputs place pressure on livelihoods, particularly agriculture and related economic activities. In response, individuals, communities, and government institutions generate “outputs” in the form of adaptation strategies, coping mechanisms, and policy interventions aimed at reducing vulnerability and restoring stability. The feedback mechanism is reflected in how

communities adjust their practices based on recurring environmental challenges, such as changes in farming methods, migration patterns, and disaster response strategies.

Empirical Review

Ruhul et al. (2025) investigate Climate Change and Its Impact: A Review of Global Strategies for Adaptation and Mitigation argue that climate change conveys an existential threat to global ecosystems and human societies, primarily from human activities that amplify greenhouse gas emissions. This review focuses on the drivers, impacts, and responses related to climate change. It highlights the need for adaptation and mitigation to develop in an integrated way and at a pace and scale commensurate with the urgency of the challenge posed. The role of fossil fuel reliance, deforestation, and intensive agriculture in accelerating global warming is well established, and so is its exacerbation of extreme weather events, biodiversity loss, and the socioeconomic inequities faced by the most vulnerable, often in the Global South. However, Paris and NDCs measures, such as renewable energy transition, carbon pricing, and carbon capture technologies, are addressed in the article as international frameworks. Simultaneously, adaptation strategies, climate-resilient infrastructure, ecosystem based approaches, and community-led initiatives are examined for their effectiveness in building resilience. We can learn from successful policy implementations in Denmark, the Netherlands, and Small Island Developing States through case studies on renewable energy integration, adaptive water management, and the utilization of traditional knowledge. Even as they advance, these Climate Solutions are Facing Mass Adoption. Both emphasize the need for mitigation and adaptation to be framed through a justice lens, privileging vulnerable communities and intergenerational justice. It demands enhanced global cooperation, scalable financing mechanisms, and inclusive governance to close implementation gaps. Understandably, addressing the climate crisis must involve systemic transformation, marrying ambitious policy frameworks with on-the-ground innovations to establish a livable world for everybody

Mustapha et al. (2025) examine the Impacts of Climate Change on Nigeria's Environment: Challenges, Mitigation Strategies, and Policy Implications argue that climate change poses significant threats to Nigeria’s environment, affecting ecosystems, agriculture, water resources, and human livelihoods. Rising temperatures, inconsistent rainfall patterns, and increased occurrences of extreme weather events are already disrupting vital sectors, posing risks to food security, public health, and economic stability. This critical review examines the multifaceted effects of climate change on Nigeria, focusing on environmental degradation, biodiversity loss, and socio-economic implications. The study explored key mitigation strategies, including improved agricultural practices, reforestation, renewable energy adoption, and enhanced water resource management. Moreover, it evaluates Nigeria's existing climate policies, highlighting gaps and proposing actionable recommendations for improved adaptation and resilience. Strengthening policy frameworks, fostering community engagement, and leveraging technological innovations are crucial to mitigating climate change's adverse impacts. This review underscores the urgent need for coordinated efforts from policymakers, researchers, and stakeholders to safeguard Nigeria's environment and promote sustainable development.

Okon et al. (2021) undertook a Systematic Review of Climate Change Impact Research in Nigeria: Implication for Sustainable Development, argue that there is evidence that Nigeria is already experiencing environmental challenges attributed to climate change (CC) and its impacts. This has clearly highlighted the need for knowledge-based strategies to help plan adequate mitigation and adaptation measures for the country. One of the basic requirements to ensure such strategies is the development of a database of national CC research. This will aid in the assessment of past and present scientific publications from which directions for future study can be mapped. The study used standard, systematic, and bibliographic literature reviews to analyse the trend, focus, spatial variability, and effectiveness of published research on CC impacts in Nigeria. Four thematic areas of CC impact research were defined: Agriculture, Environment, Human and Multi-disciplinary study. A total of 701 articles were found to be relevant and the review shows that CC impacts and adaptations in the literature vary across research categories and locations. The period between 2011 (68 studies) and 2015 (80 studies) showed a tremendous rise in CC impact research with a peak in 2014 (84 studies). Studies in the agriculture category had the highest publications in 23 States of Nigeria. The review revealed three research gaps: (1) lack of research that investigated the magnitude of present and potential future impacts in the aquatic environment (2) little attention on CC impacts and adaptation in the Northern regions of Nigeria (3) absence of study investigating the effects of multiple variables of CC at the same time. The findings suggest that it would be useful to advance CC research in Nigeria beyond perceptive approaches to more quantitative ones. This is particularly important for highly vulnerable animals, crops, locations, and for better planning of adaptation strategies.

Chukwuebuka et al. (2025) Research on Climate Change Initiatives in Nigeria: Identifying Trends, Themes and Future Directions argue that Nigeria is among the countries highly vulnerable to climate change impact. Thus, there has been growing emphasis on the pursuit of decarbonization and net-zero (net-zero transition) strategies. The aim of this work was to review major concepts in research publications associated with climate change mitigation in Nigeria. The literature search was conducted on the Scopus database using relevant keyword operators. Mixed methods were adopted to conduct bibliometric, text mining and content analysis. Bibliometric software (VOSviewer) was used. The research objectives were to identify how net-zero transition research has evolved in Nigeria; their important research themes and trends in Nigeria, and potential directions for future research on achieving them in Nigeria. The results show that the number of publications in the field has been increasing, with 87% of the articles included in the dataset published between 2016 and 2024. Through data clustering, eight clusters of articles were identified, namely (i) the renewable energy, economic growth and emission reduction nexus (ii) energy transition in the Nigerian power system, (iii) policy drivers (socio-technical and economic) for a cleaner energy system, (iv) energy transition governance, (v) hybrid renewable energy systems, (vi) low-carbon transition, (vii) energy efficiency and low-carbon growth and others. By checking through the keywords used by authors, it appears that the most popular keywords are carbon neutrality, hydrogen, biomass, circular economy, and electric vehicles. These keywords further highlight areas of research interests. Some of the potential future directions identified include the need for effective research communication and strong cooperation between academia and relevant CC policy-making bodies to translate scientific research into evidence-based policies and actionable frameworks; tiered subsidies or tax rebates to low-income households to promote

CC mitigating technologies and align CC objectives with social equity; and others. Although this work focuses solely on Nigeria, the country shares similar characteristics with many sub-Saharan African countries, and some others in the global South. Accordingly, the findings will be relevant to those areas, with some unique adaptations.

Usman et al. (2024) analyse Nigerian Climate Change and Its Effects on Environmental and Human Health: A Narrative Review argue that Nigeria's human and environmental health is severely impacted by climate change related phenomena such as flooding, air pollution, droughts, erosion, etc. The effects of climate change on environmental and human health in Nigeria suggests that it is now urgent to take health concerns into account when making mitigation and adaptation plans for the effects of climate change. For the Nigerian health sector to be managed effectively, mitigation and adaptation methods are consequently required. The methods for increasing resilience and decreasing vulnerability for environmental sustainability and health in Nigeria are described in this paper. It also highlights the critical need of educating Nigerian institutions and communities about the effects of climate change on human and environmental health as well as creative solutions, such as planned tree planting events, environmentally friendly green technology, and awareness campaigns for sustainable development in Nigeria. The work is highly noteworthy due to the fact that it investigates novel avenues for mitigation and adaptation to the effects of climate change on human and environmental health in Nigeria

Osakede et al. (2016) examine Climate Change and its Impacts on the Development of Coastal Communities in Nigeria argue that climate change poses a greatest challenge to community development such as flooding, dew, humidity, haze and cloud, to mention a few. Climate change is a global challenge affecting every segment of the society. It appears people in the rural areas are better off because the live closer to nature. The study made use of sample size of 64 people living at Eti-Osa Local government Lagos State. The data collected from the questionnaire and interview were coded using Non parametric technique of Z-score analysis. The finding revealed that climate change threatens the livelihood of people in coastal communities and serve as setback progress to human development with negative implications for political and socio-economic arrangement. The study recommended among others that Federal government should adequately equip and empower local government to tackle any disaster with dispatch efficiency arising from climate change. The study concluded that the drive to develop coastal community programmes that are sustainable in the context of climate change policy is implemented at all levels of government

Mu'azu et al. (2025) analyse the Impacts of Climate Change on Nigeria's Environment: Challenges, Mitigation Strategies, and Policy Implications argue that climate change poses significant threats to Nigeria's environment, affecting ecosystems, agriculture, water resources, and human livelihoods. Rising temperatures, inconsistent rainfall patterns, and increased occurrences of extreme weather events are already disrupting vital sectors, posing risks to food security, public health, and economic stability. The study examines the multifaceted effects of climate change on Nigeria, focusing on environmental degradation, biodiversity loss, and socio-economic implications. The work explores key mitigation strategies, including improved agricultural practices, reforestation, renewable energy adoption, and enhanced water resource management. Moreover, it evaluates Nigeria's

existing climate policies, highlighting gaps and proposing actionable recommendations for improved adaptation and resilience. Strengthening policy frameworks, fostering community engagement, and leveraging technological innovations are crucial to mitigating climate change's adverse impacts. The research underscores the urgent need for coordinated efforts from policymakers, researchers, and stakeholders to safeguard Nigeria's environment and promote sustainable development

Materials and Methods

The study adopted the descriptive survey research design. According to Iwariemie-Jaja (2014), it involves checking and fact-checking enquiries. Still within the descriptive framework, the survey method employed because the study was dependent on the use of questionnaire. The study's population consists of both male and female indigenes and non-indigenes of Emuoha Local Government Area, Rivers State who have attained eighteen (18) years of age and above. The population strength of Emuoha Local Government Area was 201,901 in 2006 according to the National Population Commission (National Population Commission, 2006). With an annual growth rate of 2.0% in population figures, the population of this study was estimated at 254.500 which were based on estimated population of the local government area (National Population Commission, 2023).

The instrument of data collection for the study was the questionnaire. Questionnaire was used to elicit information from respondents by filling in the answer in the space handed for that purpose. A structural questionnaire containing close-ended questions was used. There were two main parts to the questionnaire; the first part contain details with regards to the bio-data of the respondents, while the second part of the instrument (questionnaire) was center on the applicable question that induced useful information which were assessed and tested.

To choose the samples and to reflect the rudiments in the population, the researcher combine the cluster sampling and scientific sampling techniques. The cluster sampling techniques entailed grouping the population of interest and also, opting for the sub populations. The inhabitants were divided into some recognisable sizes which were nominated as clusters; the population was divided into six zones namely; Ogbakiri, Ibaa, Elele, Emuoha, Rumuji and Ndele and multi stage sampling technique was used. Using this technique, 400 respondents were used to represent the whole population. Sixty six (66) respondents were drawn from five of the zones; Ogbakiri, Elele, Emuoha, Rumuji and Ndele, while seventy (70) respondents were drawn from Ibaa due to it vastness and population.

The sample size was statistically determined using the Tiaro Yamane's formula;

$$n = \frac{N}{K+N(e)\hat{}2}$$

Where

n = sample size

N = population of study

K = constant (1)

e = degree of error expected (0.05)

$$n = \frac{254,500}{1+ 254,500\ (0.05)\hat{}2}$$

$$= \frac{254,500}{1+ 254,500\ *0.0025}$$

$$= \frac{254,500}{637.25}$$

n = 400

Thus, the sample population was 400. The questionnaires were administered to residents who have attained the age of 18 years and above.

Table 1Division of Communities

S/No	Communities	Number of Respondents
1.	Ogbakiri	66
2.	Ibaa	70
3.	Elele	66
4.	Emuoha	66
5.	Rumuji	66
6.	Ndele	66
	Total	100

Source: Researcher's compilation (2026)

Mean method was used in analyzing the research questions with a criterion mean of 2.50 for judgment as to agree or disagree. The instrument was coded on a 4 point modified Likert scale as follow

4- Strongly Agreed (SA)

3- Agreed (A)

2-Disagreed (D)

1-Strongly Disagreed (SD)

Agreed = $\frac{4=SA,3=D,2=SD=1}{4}$

$=1\frac{10}{4}=2.5$

Data Presentation and Analysis

Data Presentation

A total number of four hundred (400) copies of questionnaires were administered in Ogbakiri, Ibaa, Elele, Emuoha, Rumuji and Ndele, Rivers State out of which 384 copies were retrieved on completion by the researcher representing 96% of total distributed questionnaires, the other sixteen copies which represent 4% of total distributed questionnaires were not properly filled and as such was not used for the study.

Table 2: Demographic Characteristics of Respondents

Variables	Frequency	Percentage (%)
Sex		
Male	206	53.8
Female	178	46.2
Total	384	100%
Educational Status		
Primary	92	23.9
Secondary	155	40.5

Tertiary	137	35.6
Total	384	100%
Marital Status		
Single family	184	47.9
Married	177	46.2
Divorced	23	5.9
Total	384	100%
Occupation Status		
Self-employed	204	53.8
Civil Servant	38	9.6
Unemployed	63	15.3
Students	79	21.3
Total	384	100%

Source: Researcher's field work (2026)

Table 3: Returned Rate of Questionnaire

S/N	Selected communities	Total Number of questionnaire sampled	Total Number of questionnaire returned	Percentage (%)
1	Ogbakiri	66	63	16.4
2	Ibaa	70	67	17.4
3	Elele	66	64	16.6
4	Emuoha	66	63	16.4
5	Rumuji	66	64	16.6
6	Ndele	66	63	16.4
Total		400	384	100

Source: Researcher's field work (2026)

Data Analysis

Objective One; identify the major climate change–related environmental changes that occurred in Emohua LGA

Table 4: Analysis of respondents view on the major climate change–related environmental changes that occurred in Emohua LGA

S/N	Statement/ Item	SA 4	A 3	D 2	SD 1	Total	Mean ($\bar{x}$)	Remarks
1.	Flooding is one of the common environmental changes that occurred in Emohua LGA	109 (28.3%)	105 (27.3%)	83 (21.6%)	87 (22.6%)	384	2.6	Agreed
2.	irregular rainfall patterns is another common forms of climate change that occurred in Emohua LGA	123 (32%)	151 (39%)	54 (14%)	56 (14.5%)	384	2.8	Agreed
3.	rising temperatures is another common forms of climate change that occurred in Emohua LGA	104 (25.9%)	118 (30.5%)	90 (22.8%)	72 (20.8%)	384	2.6	Agreed

Source: Researcher's field work (2026)

Table 4 indicates that respondents acknowledged the occurrence of climate change–related environmental changes in Emohua LGA. The results reveal that flooding, irregular rainfall patterns, and rising temperatures are widely experienced in the area. Among these, irregular rainfall patterns received the highest mean score (2.8), indicating the highest level of agreement. Flooding and rising temperatures each recorded a mean score of 2.6, showing that respondents also agreed they are common environmental changes.

Objective Two; assess how these environmental changes have affected the livelihoods and socio-economic activities of residents in Emohua LGA

Table 5: Analysis of respondents view on how environmental climate changes has affected the livelihoods and socio-economic activities of residents in Emohua LGA

S/N	Statement/ Item	SA 4	A 3	D 2	SD 1	Total	Mean ($\bar{x}$)	Remarks
4.	Environmental climate changes affect the productivity of crops in Emohua LGA	110 (28.6%)	107 (27.8%)	88 (22.9%)	79 (20. %)	384	2.6	Agreed
5.	Many farmers in Emohua LGA area have lost their source of livelihood due to environmental climate changes	131 (34%)	102 (26.6%)	79 (20.6%)	72 (18.8%)	384	2.7	Agreed
6.	Many farmlands in Emohua LGA area have lost their fertility due to environmental climate change	133 (34.9%)	121 (31.7%)	62 (16%)	68 (17%)	384	2.8	Agreed

Source: Researcher's field work (2026)

Table 5 reveals that respondents agreed that climate change has had adverse effects on the livelihoods and socio-economic activities of residents in Emohua LGA. The results indicate that environmental climate changes have led to reduced crop productivity, loss of farmers' livelihoods, and declining farmland fertility. Among these impacts, loss of farmland fertility recorded the highest mean score (2.8), followed by loss of livelihood (2.7), while reduced crop productivity had a mean score of 2.6.

Discussion of Findings

1. The study found that the major climate change–related environmental changes that occurred in Emohua LGA include flooding, irregular rainfall patterns and rising temperatures. These environmental changes have affected agricultural productivity and ultimately affected the livelihoods of farmers in the area. Illegal refining of crude oil has led to the depletion of ozone layer which has led to rising temperature and irregular rainfall

2. The work found that environmental changes have adversely affected the livelihoods and socio-economic well-being of residents in Emohua LGA by reducing agricultural output, decreasing fish production, and increasing exposure to flooding and erosion. As a result, many households have experienced reduced income, heightened food insecurity, and worsening economic conditions.

Conclusion

Climate change continues to cause serious environmental and socio-economic challenges in Nigeria, affecting ecosystems, public health, and economic stability. Although efforts have been made to introduce policy frameworks and promote renewable energy adoption, challenges such as weak implementation, inadequate funding, and limited public awareness hinder progress. Achieving meaningful climate resilience requires a unified approach that brings together government institutions, private sector stakeholders, civil society organizations, and international partners. Collaborative efforts should prioritize sustainable practices, improved resource management, and inclusive decision-making processes. By embracing these strategies, Emohua LGA can effectively reduce climate risks, protect its environment, and advance long-term sustainable development objectives.

Recommendations

The study recommended the following

1. To effectively address the environmental challenges posed by climate change, administrators of Emohua LGA needs to adopt a comprehensive and proactive approach. Integrating climate resilience into national development plans is crucial to enhancing the country's adaptive capacity. This requires strengthening collaboration between public and private sectors to mobilize resources, bridge funding gaps, and implement large-scale climate interventions
2. Administrators of Emohua LGA need to establish partnerships with international organizations to provide technical expertise and financial support to improve climate adaptation efforts. Also, embracing technological innovations is vital in boosting environmental resilience in the area

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