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Climate change awareness and perception among residents of a per-urban community in Jos South local government area of Plateau state, Nigeria.

[1]Ukachukwu Mary Ifeoma, [2]Langs Monday Jacob, [1]Dan Adamu, [1]Gaude Jesse Joshua, [1]Choji chollom Dauda, [1]Rottemwa Ruth Adamu, [1]Adamu Bello, [1]Banwar Entang Stephen, [3]Patience Bukar

Corresponding author: *ukachukwumary@gmail.com* 08061517145
[1]Federal College of Animal Health and Production Technology, Vom, Plateau state.
[2] Federal College of Veterinary and Medical Laboratory Technology, Vom, Plateau State
[3] Federal College of Land Resources Technology, Kuru, Plateau State

Keywords

climate change awareness, climate perception, peri-urban communities, Plateau State

Abstract

Climate change poses significant environmental, economic, and health risks to communities worldwide, yet public awareness and perception of the phenomenon vary across demographic and socio-economic contexts. This study assessed climate change awareness and perception among residents of Zawan, a peri-urban community in Jos South Local Government Area of Plateau State, Nigeria. A descriptive cross-sectional survey design was adopted. Data were collected from 100 adult residents using structured questionnaires and analyzed using descriptive statistics and chi-square tests in SPSS version 25. The results showed that respondents were predominantly young (63% aged 18–35 years), highly educated (67% with tertiary education), and largely urban residents (82%). Social media emerged as the dominant source of climate information (50%), followed by educational institutions (15%) and traditional media (23%). Respondents demonstrated moderate knowledge of global drivers of climate change, with fossil fuel combustion (31%) and industrial emissions (25%) most frequently identified, while local drivers such as deforestation (14%) and agricultural activities (7%) were

less recognized. Extreme weather events shaped risk perception, with drought (28%) and flooding (21%) reported as the most commonly observed environmental changes. Health impacts (28%) and economic losses (28%) were the most frequently reported personal consequences. Chi-square analysis revealed significant relationships between education level and climate change awareness ($\chi^2 = 8.42$, $p = 0.038$) and between information sources and understanding of climate change causes ($\chi^2 = 12.67$, $p = 0.027$). The findings indicate that although climate change awareness is relatively high in the study area, important knowledge gaps remain regarding local drivers and community-level mitigation actions. The study recommends strengthening community-based climate education, leveraging social media for accurate climate communication, and integrating climate literacy into educational curricula to enhance local adaptation capacity.

Introduction

Climate change has emerged as one of the most critical environmental challenges of the 21st century. It is largely driven by anthropogenic activities such as fossil fuel combustion, deforestation, industrialization, and land-use changes, which have significantly increased the concentration of greenhouse gases in the atmosphere (IPCC, 2022). These changes have resulted in rising global temperatures and increased frequency and intensity of extreme weather events, including floods, droughts, heatwaves, and irregular rainfall patterns. Such environmental changes pose serious threats to ecosystems, agricultural productivity, water resources, public health, and human livelihoods across the world (World Bank, 2021).

In recent decades, climate change has increasingly affected many regions of Africa, particularly West and Central Africa, where the impacts are intensified by socio-economic vulnerabilities and dependence on climate-sensitive sectors such as agriculture and natural resources. Scientific assessments indicate that climate change has contributed to increased seasonal rainfall intensity and the occurrence of severe flooding in several parts of the region, leading to widespread displacement of populations, destruction of infrastructure, and disruption of livelihoods (World Weather Attribution, 2024). These impacts highlight the urgent need for effective climate adaptation strategies supported by adequate public awareness and community engagement.

Nigeria is among the countries highly vulnerable to the impacts of climate variability and change. The country faces multiple climate-related challenges, including desertification in the northern region, coastal erosion and flooding in the southern region, biodiversity loss, and increasing food and water insecurity (Federal Ministry of Environment, 2021; IPCC, 2022). In response to these challenges, the Nigerian government enacted the Climate Change Act in 2021, which established the National Council on Climate Change and provided a framework for coordinating national climate actions and policies. Despite these policy efforts, significant gaps remain in climate financing, public awareness, and community-level adaptation strategies (Climate Policy Initiative, 2025).

Plateau State, located in the central highlands of Nigeria, is characterized by relatively cooler temperatures compared with surrounding lowland regions. However, the state has experienced increasing climate variability in recent decades. Studies conducted in Jos Metropolis have documented significant fluctuations in temperature and rainfall patterns over the past three decades, which have affected agricultural productivity and environmental stability (IIARD Journals, 2023). Similarly, research conducted between 2012 and 2019 reported a relationship between climate variability and declining crop yields in parts of the state (Environecosystem, 2023). These changes have contributed to

growing concerns about food security, land degradation, and socio-economic vulnerability within the region (MDPI, 2025).

Zawan, a peri-urban community located in Jos South Local Government Area of Plateau State, lies within the Guinea Savanna ecological zone and experiences two distinct seasons: the rainy season from April to October and the dry season from November to March. The community's economy is largely supported by farming, petty trading, and civil service employment. As a peri-urban settlement situated between rural agricultural systems and expanding urban influences, Zawan provides an important setting for examining how residents receive, interpret, and respond to information about climate change. Understanding the level of awareness and perception of climate change among residents in such communities is essential for designing effective local adaptation strategies and climate education programs.

Statement of the Problem

Climate change has significant implications for agriculture, water resources, public health, infrastructure, and socio-economic stability worldwide. Rising temperatures, erratic rainfall patterns, and extreme weather events have increasingly disrupted food systems, displaced communities, and threatened livelihoods, particularly in developing countries where adaptive capacity remains limited (World Bank, 2021; IPCC, 2022). In Nigeria, where many livelihoods depend on climate-sensitive sectors such as agriculture and natural resource utilization, the impacts of climate variability are becoming more evident.

Plateau State has experienced noticeable environmental changes, including irregular rainfall patterns, soil erosion, and flash flooding, despite its relatively moderate climatic conditions compared with other parts of the country (IIARD Journals, 2023; MDPI, 2025). These environmental challenges have affected agricultural production, water availability, and general living conditions in several communities within the state. While a number of studies have examined farmers' knowledge and perceptions of climate change in Plateau State (Wuyep et al., 2015; IOSR, 2021), limited attention has been given to the broader population, particularly residents of peri-urban communities.

Peri-urban communities such as Zawan consist of diverse populations including farmers, traders, civil servants, and other non-farming residents whose livelihoods and living conditions are also affected by climate variability. However, there is limited empirical information on the level of climate change awareness and perception among residents in such communities. This lack of localized data creates challenges for policymakers, environmental agencies, and development organizations seeking to design effective climate education, adaptation, and resilience programs tailored to community needs. Therefore, this study seeks to assess the level of awareness and perception of climate change among residents of Zawan in Jos South Local Government Area of Plateau State, Nigeria. The findings are expected to provide baseline information that can support the development of targeted climate change awareness initiatives and community-based adaptation strategies within the area.

Research Questions

1. What are the socio-demographic characteristics of residents in Zawan, Jos South Local Government Area?
2. What are the major sources through which residents of Zawan obtain information about climate change?
3. What do residents of Zawan perceive as the main causes of climate change?
4. What is the level of awareness and perception of climate change effects among residents of Zawan?

Hypotheses

1. H_{01}: There is no significant relationship between the socio-demographic characteristics of residents and their level of climate change

awareness in Zawan, Jos South Local Government Area.

2. H_{02}: Information sources do not significantly influence residents' awareness of the causes of climate change in Zawan, Jos South Local Government Area.

Literature Review

Climate change refers to significant and long-term alterations in the statistical properties of the climate system, including changes in temperature, precipitation patterns, and the frequency of extreme weather events over decades or longer (Intergovernmental Panel on Climate Change [IPCC], 2022). These changes are largely driven by anthropogenic activities such as fossil fuel combustion, deforestation, industrialization, and land-use changes, which increase atmospheric concentrations of greenhouse gases and contribute to global warming (IPCC, 2022; Federal Republic of Nigeria, 2021). According to the World Meteorological Organization (2023), global surface temperatures between 2011 and 2020 were approximately 1.09°C higher than pre-industrial levels, with human activities identified as the dominant driver of this warming trend.

Climate change has far-reaching environmental, social, and economic consequences worldwide. In Africa, the impacts of climate variability are particularly severe due to the continent's high dependence on climate-sensitive sectors such as agriculture and natural resources (Niang et al., 2014; IPCC, 2022). Nigeria has experienced rising temperatures, unpredictable rainfall patterns, desertification in the northern region, and coastal flooding in the southern region (Federal Republic of Nigeria, 2021). Within Plateau State, irregular rainfall patterns, soil erosion, and seasonal flooding have been reported to affect agricultural productivity and environmental stability (Wuyep et al., 2015; Ayanlade & Jegede, 2016).

Public awareness and perception play critical roles in shaping community responses to climate change. Awareness refers to the extent to which individuals possess knowledge or understanding of climate change, including its causes, impacts, and potential mitigation strategies (Nzeadibe et al., 2017). Perception, on the other hand, reflects the way individuals interpret and evaluate climate change based on personal experiences, cultural beliefs, and available information (Armah et al., 2022). Research suggests that individuals' perceptions of climate change are often influenced by direct environmental experiences such as extreme weather events, as well as access to information through education, media, and social networks (Leiserowitz et al., 2021).

Empirical studies indicate that climate change awareness in Nigeria is gradually increasing; however, significant disparities exist across geographical regions, educational levels, and socio-economic groups. For instance, Nzeadibe et al. (2017) reported that urban residents generally demonstrate higher climate awareness than rural populations due to better access to education and information sources. Similarly, Afrobarometer (2021) found that individuals with higher levels of formal education are more likely to possess accurate knowledge of climate change and its causes. Armah et al. (2022) also observed that education significantly influences individuals' understanding of climate change processes and environmental risks.

Despite growing awareness, several studies indicate that many Nigerians still have limited knowledge of national climate policies and adaptation strategies. For example, Ifegbesan et al. (2025) reported that although general awareness of climate change is increasing, public familiarity with Nigeria's Climate Change Act of 2021 remains relatively low. In Plateau State specifically, Wuyep et al. (2015) found that farmers recognize changes in rainfall patterns and declining crop yields but often attribute these changes to short-term weather variability rather than long-term climate change trends.Although previous studies have contributed to understanding climate change awareness in Nigeria, most research has focused primarily on farmers and rural agricultural communities. Consequently, limited attention has been given to

the broader population, particularly residents of peri-urban communities where both rural and urban influences interact. Peri-urban areas often experience unique environmental and socio-economic dynamics that shape how residents access information and perceive environmental risks. Therefore, there is a need for empirical studies that examine climate change awareness and perception among diverse community groups beyond farming households.

This study seeks to address this gap by assessing the level of climate change awareness and perception among residents of Zawan, a peri-urban community in Jos South Local Government Area of Plateau State. By examining the socio-demographic factors, information sources, and perceived causes and effects of climate change among residents, the study provides important insights that can support the development of community-based climate education and adaptation strategies.

Methodology

This study employed a descriptive cross-sectional survey design to assess climate change awareness and perception among residents of Zawan, a peri-urban community in Jos South Local Government Area of Plateau State, Nigeria. The study population comprised adult residents aged 18 years and above. A convenience sampling technique was used to select 100 respondents from different parts of the community. Data were collected using a structured questionnaire consisting of socio-demographic variables and items measuring climate change awareness, perceived causes, and observed effects. The instrument was adapted from validated studies and subjected to expert review for validity and pilot testing for reliability, yielding a Cronbach's Alpha coefficient of 0.78. Data collection was conducted over a two-week period using both self-administered and interviewer-administered questionnaires with the assistance of trained bilingual research assistants. Ethical considerations including informed consent, voluntary participation, and confidentiality of responses were strictly observed. The collected data were analyzed using descriptive statistics (frequencies and percentages) and Chi-square tests with the aid of SPSS version 25, with statistical significance set at $p < 0.05$.

Results

Table 1: Demographic Characteristics (N=100)

Variable	Category	Frequency	Percentage (%)
Age	18–25	34	34
	26–35	29	29
	36–45	30	30
	46–60	7	7
Gender	Male	56	56
	Female	44	44
Marital Status	Single	45	45
	Married	45	45
	Divorced/Widowed	10	10
Occupation	Civil Servant	37	37
	Student	30	30
	Trader	18	18
	Other	15	15
Education	Tertiary	67	67
	Secondary	24	24
	Primary/Other	9	9
Location	Urban	82	82
	Rural	18	18

Table 1 results show that the respondents were predominantly young, with 63% aged between 18 and 35 years. The sample consisted of slightly more male respondents (56%) than females (44%). A large proportion of the respondents had tertiary education (67%), indicating a relatively educated population. Most respondents were urban residents (82%), reflecting the peri-urban nature of the study area.

Table 2: Sources of Climate Change Information

Source	Frequency	Percentage (%)
Social Media	50	50
School/Educational Programs	15	15
Television/Radio	13	13
Newspapers/Magazines	10	10
Community Meetings	7	7
Religious Gatherings	5	5
Total	**100**	**100**

Table 2 shows that social media was the most dominant source of climate change information (50%), followed by educational institutions (15%) and traditional media such as television and radio (13%). Community-based channels such as religious gatherings and community meetings accounted for only 12%, suggesting limited use of local institutions in climate communication

Table 3: Perceived Causes of Climate Change (N=100)

Cause	Frequency	Percentage (%)
Burning of Fossil Fuels	31	31
Industrial Emissions	25	25
Poor Waste Disposal	21	21
Deforestation	14	14
Agricultural Activities	7	7
Others	2	2
Total	**100**	**100**

Table 3 shows that majority of respondents identified fossil fuel combustion (31%) and industrial emissions (25%) as the major causes of climate change. In contrast, fewer respondents recognized local environmental drivers such as deforestation (14%) and agricultural activities (7%), suggesting a gap in awareness regarding local contributions to climate change.

Table 4: Environmental Changes observed by Respondents (N=100)

Effect	Frequency	Percentage
More Frequent Droughts	28	28
Flooding/Excessive Rainfall	21	21
Irregular Rainfall Patterns	14	14
No Changes Noticed	14	14
Increased Temperature	12	12
Late/Early Season Onset	11	11
Total	**100**	**100**

Table 4 shows that Drought (28%) and flooding (21%) were the most frequently reported environmental changes, indicating that extreme weather events are the most noticeable manifestations of climate variability in the study area. However, 14% of respondents reported observing no changes, suggesting variations in environmental awareness.

Table 5:Climate Change Impacts Experienced by Respondents (N=100)

Impact	Frequency	Percentage
Increased Disease Outbreaks	28	28
Loss of Property/Livelihood	28	28
Water Shortages	15	15
Migration/Displacement	10	10
No Direct Impact	10	10
Reduced Agricultural Yield	9	9
Total	**100**	**100**

Table 5 shows that Health-related and economic impacts were the most frequently reported consequences of climate variability, with 28% of respondents reporting increased disease outbreaks and 28% reporting loss of property or livelihoods.

Hypothesis Testing

Table 6: Chi-Square Test Results

Hypothesis	Variables	χ^2	df	p-value	Decision
H_{01}	Education × climate change Awareness	8.42	3	0.038	Reject H_{01}
H_{02}	Info Source × Awareness of climate change causes	12.67	5	0.027	Reject H_{02}

The chi-square analysis revealed a significant relationship between education level and climate change awareness ($p = 0.038$), indicating that respondents with higher education were more likely to possess accurate knowledge of climate change. Similarly, information sources significantly influenced respondents' understanding of climate change causes ($p = 0.027$).

Discussion

This study assessed the level of climate change awareness and perception among residents of Zawan, a peri-urban community in Jos South Local Government Area of Plateau State, Nigeria. The findings indicate a moderate to relatively high level of climate change awareness among respondents, which may be attributed to the socio-demographic characteristics of the sample. The majority of respondents were young adults (63% aged 18–35 years) and highly educated (67% with tertiary education), factors that have been widely identified as important determinants of environmental awareness. Previous studies have similarly reported that higher levels of education significantly enhance climate literacy and environmental knowledge (Armah et al., 2022; Leiserowitz et al., 2021). The statistically significant relationship found between education level and climate change awareness further reinforces the role of formal education in shaping environmental understanding.

Despite the relatively high awareness levels observed, the results also revealed notable gaps in residents' experiential understanding of climate change. For instance, 14% of respondents reported noticing no environmental changes despite documented climate variability in the Jos Plateau region. This finding aligns with previous research indicating that individuals often struggle to differentiate between long-term climate change and short-term weather variability (Wuyep et al., 2015; IPCC, 2022). Such discrepancies between scientific knowledge and local perceptions may limit the effectiveness of climate adaptation strategies at the community level.

The results further revealed that social media was the dominant source of climate change information, accounting for 50% of responses. This finding reflects the growing influence of digital communication platforms in shaping environmental awareness, particularly among younger populations in developing countries. Earlier studies suggested that radio and television were the primary channels for climate communication in African communities (Nzeadibe et al., 2017). However, the present findings suggest a shift toward digital media as the primary information source. While this trend presents opportunities for rapid dissemination of climate information, it also highlights the need for credible and scientifically accurate online climate communication to reduce the risk of misinformation.

With regard to perceived causes of climate change, respondents demonstrated a relatively good understanding of global drivers such as fossil fuel combustion (31%) and industrial emissions (25%). However, awareness of local environmental drivers such as deforestation (14%) and agricultural activities (7%) was comparatively low. Similar patterns have been observed in other studies across Africa, where communities tend to associate climate change primarily with industrial activities rather than local environmental practices (Armah et al., 2022). This perception gap may reduce community engagement in mitigation efforts if residents do not recognize the role of local environmental management practices in influencing climate change.The findings also indicate that residents primarily perceive climate change through observable extreme weather events, particularly drought (28%) and flooding (21%). This supports the risk perception perspective, which suggests that individuals often interpret climate change based on direct environmental experiences rather than abstract scientific concepts (Leiserowitz et al., 2021; IPCC, 2022). Furthermore, the most frequently reported personal impacts were health-related problems and economic losses, both reported by 28% of respondents. These results highlight the interconnected nature of climate change impacts on health, livelihoods, and environmental security in peri-urban communities

Conclusion

This study examined climate change awareness and perception among residents of Zawan, a peri-urban community in Jos South Local Government Area of Plateau State, Nigeria. The findings

indicate that residents generally demonstrate moderate to relatively high levels of climate change awareness, largely influenced by educational attainment and access to information sources. Social media emerged as the most important channel for climate information dissemination, reflecting changing communication patterns in contemporary society. However, the study also revealed significant gaps in residents' understanding of local drivers of climate change and their ability to connect global climate processes with local environmental practices. While respondents widely recognized global causes such as fossil fuel combustion and industrial emissions, relatively few acknowledged the roles of deforestation and agricultural activities. Additionally, climate change perceptions were largely shaped by observable extreme weather events such as drought and flooding. However, the findings highlight the importance of strengthening community-level climate education and communication strategies that link global climate knowledge with local environmental realities. Enhancing public awareness and engagement will be essential for improving community resilience and supporting effective climate adaptation initiatives in peri-urban areas.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. Government agencies should strengthen climate change education and awareness programs through integration into formal school curricula and community outreach initiatives. In addition, climate communication strategies should utilize digital platforms and social media to disseminate accurate and accessible climate information.
2. Environmental Non-Governmental Organizations (NGOs) should collaborate with community leaders, religious institutions, and youth groups to enhance grassroots climate awareness.
3. Educational institutions should promote experiential and community-based climate learning approaches that link global climate science to local environmental changes. Teacher training programs should also incorporate climate change education to strengthen environmental literacy among students.
4. Further research should employ larger sample sizes and longitudinal designs to examine changes in climate awareness and perception over time. Comparative studies across different ecological zones in Nigeria would also provide deeper insights into regional variations.
5. Local communities should establish community climate committees to monitor environmental changes, facilitate knowledge sharing, and support collective adaptation initiatives.

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