Broadcast Media and Climate Change Communication in Nigeria: Evidence from Taraba State

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DOI: https://doi.org/10.47772/IJRISS.2026.101000744

Received: 28 October 2026; Accepted: 02 November 2026; Published: 17 November 2026

ABSTRACT

This study examined broadcast media and climate change communication in Taraba State, Nigeria, focusing on residents' knowledge, exposure to climate information, perceived message effectiveness, adaptive actions and communication barriers. A quantitative cross-sectional survey design was adopted. The study purposively selected Jalingo, Bali and Takum LGAs to represent the Northern, Central and Southern Senatorial Zones, respectively, based on their media presence, agricultural activities and climate-sensitive livelihoods. Using a multi-stage sampling procedure, 384 questionnaires were administered, of which 366 were retrieved, representing a 95.3% response rate. Data were analysed using descriptive statistics, Spearman's rank-order correlation and regression analyses with SPSS version 25. Findings revealed moderate knowledge of climate change, with correct responses across five knowledge indicators ranging from 47.3% to 50.5%. Radio was the more frequently accessed medium (M = 2.19, SD = 1.47) than television (M = 1.78, SD = 1.44). Geographically, Jalingo recorded the highest exposure to both radio (M = 2.45) and television (M = 2.18), followed by Bali and Takum. Perceived message effectiveness was highest for understandability (M = 2.75), while local relevance received the lowest rating (M = 2.41). Insufficient or irregular airtime/electricity availability (25.1%), language barriers (20.5%) and inadequate local examples (16.4%) were the major communication barriers. Correlation analysis established significant positive relationships between broadcast media exposure and climate change knowledge ($\rho = .239$, $p < .001$), and between perceived message effectiveness and reported adaptive actions ($\rho = .363$, $p < .001$). The study concludes that broadcast media can support climate change awareness and adaptive responses when communication is regular, understandable, locally relevant and action-oriented. It recommends increased airtime and adequate electricity supply, local-language broadcasting and practical, community-specific climate information.

Keywords: Broadcast media; climate-change communication; climate knowledge; perceived message effectiveness; adaptive actions; Taraba State.

INTRODUCTION

Climate change is one of the main environmental and developmental challenges that impacts livelihoods, food security, public health and sustainable development (Okafor et al., 2025). It has a significant impact in communities relying on rain-fed agriculture and natural resources. This is because the activities of farmers, water availability and household welfare in Nigeria are affected by flooding, rising temperature and irregular rainfall (Ezeaka et al., 2025). The conditions make it crucial to have access to reliable climate information that can help them to understand the risks of climate change and to take action to prepare and adapt (Nwafor & Aghaebe, 2025).

Taraba State is an important state for investigation of climate change communication due to its agriculture based activities, and reliance on climate sensitive livelihood by majority of its inhabitants. Climate change can

impact on agriculture production, have effects on property and household security as well as flooding and other weather hazards (Isa & Shehu, 2018; Jibril, 2017). But this does not automatically mean there are the right responses to climate change. Residents require information that is both simple and easy to understand, relates to their local experiences and offers practical advice on what they can do (Oramah et al., 2025).

Radio and television are of importance for disseminating information on environmental issues to the public (David, 2024). Radio and television can be used to educate people with regular programmes and news bulletins, and by showing them various images of environmental events and recommended responses (Ogunniyi et al., 2026). The media can create awareness and change the perception of the public on the enviro-

nmental challenges by selecting and presenting issues (Akpan & Udo, 2024). However, climate-related information does not necessarily translate into sufficient knowledge and/or effective adaptation. Exposure frequency, the clarity of messages, and their relevance to local conditions and availability of practical solutions could affect the perception and response to climate risks (Eke et al., 2024; Zakora, 2025; Igbokwe et al., 2025).

The issues of communication and broadcast media with regards to climate change have been discussed in other Nigerian settings. In a research, Ogwezi, Umukoro and Emetenjor (2022) examined the pattern of broadcast media reportage of climate change issues in Lagos and reported concerns with the coverage of the issues. In a study of broadcast risk messages during the 2022 floods in selected Southern Nigerian States, Ejem et al. (2023) emphasised the need for timely warnings and contextual factors in the risk perceptions of the public. Adedowole et al. (2025) investigated the link between the television reportage of climate change and adaptive behaviour of residents in Ondo State. Other studies have evaluated the effectiveness of broadcast media in Port Harcourt (Eke et al., 2024); perceptions of the audience in Adamawa State (Zakora, 2025); effectiveness of radio climate communication in Ibadan (Ogunniyi et al., 2026); and media campaigns for flood control and environmental education in other states (Idowu & Lawrence, 2022; Banjo & Obun-Andy, 2023; Apuke et al., 2025) on use of social media for climate change adaptation and mitigation in Taraba State. These studies are useful pieces of evidence regarding climate information, media exposure and public responses to climate change messages, but do not necessarily explain how residents of Jalingo experience and respond to broadcast climate change messages. This study reviews broadcast media and climate change communication in Taraba State, knowing the residents and their exposure to radio and television, perception of the effectiveness of information broadcast, reported adaptive actions and obstacles to effective communication.

Statement of the Problem

Regardless of the growing importance of climate change communication, many communities still face challenges in accessing adequate, understandable and locally relevant information to guide their responses to environmental risks (Oramah et al., 2025; Eke et al., 2024; Zakora, 2025). Radio and television remain important channels for disseminating climate information, but exposure to such messages does not necessarily translate into better knowledge or appropriate adaptive actions. Irregular airtime, limited electricity, technical language, inadequate local examples and insufficient practical guidance may further reduce the usefulness of broadcast messages (Sa'id & Mijinyawa, 2026; Oyeyinka, 2025; Ogwezi et al., 2022).

Previous studies have examined different aspects of climate change communication and media engagement (Isa & Shehu, 2018; Jibril, 2017; Labiru et al., 2023; Apuke et al., 2025). However, further investigation is needed to understand how residents access climate information through radio and television, what they know about climate change and how they evaluate the messages they receive. In particular, there is limited context-specific evidence on the relationships between broadcast media exposure, climate change knowledge, perceived message effectiveness and reported adaptive actions among residents of Taraba State. The extent to which perceived message effectiveness helps explain the relationship between climate knowledge and adaptive actions also requires empirical examination. These issues are important in a state where geographical and socioeconomic differences may influence access to climate information and the capacity of communities to respond to environmental changes.

However, a study on climate change communication is required that goes beyond the mere dissemination of information. The Knowledge, Attitude and Behaviour (KAB) Model and Agenda-Setting Theory are

considered in this study as it examines the relationship between the knowledge attained from exposure to broadcast climate information, the attitude towards the broadcast climate information, and the reported adaptive action by the residents. The investigation of these dimensions in combination offers the opportunity to gain insight into the role of broadcast media in the communication of climate change locally. This study therefore investigated exposure to broadcast media, climate change awareness knowledge, effectiveness of broadcast messages and adaptive responses of residents in selected LGA's of the three senatorial zones of Taraba State. It also explores relationships between these variables, looks at perceived message effectiveness as a mediator and examines the barriers to effective broadcast climate change communication. The study aims to provide evidence that can be used to design more accessible, locally relevant and practical climate change communication strategies using correlation and regression and mediation analysis.

Objectives of the Study

The main objective was to examine broadcast media and climate change communication in Taraba State, Taraba State. The specific objectives were to:

i. Assess residents' knowledge of climate change in Taraba State.
ii. Examine residents' exposure to climate change information through radio and television.
iii. Determine the relationship between perceived effectiveness of broadcast messages and reported adaptive actions.
iv. Identify barriers affecting effective broadcast climate change communication.

Research Questions

The research provided answers to the following questions:

i. What is the level of residents' knowledge of climate change in Taraba State?
ii. To what extent are residents exposed to climate change information through radio and television?
iii. What relationship exists between perceived effectiveness of broadcast messages and reported adaptive actions?
iv. What barriers affect effective broadcast climate change communication in Taraba State?

Research Hypotheses

The following null hypotheses were tested at the 0.05 level of significance:

H_{01}: There is no statistically significant relationship between broadcast media exposure and climate change knowledge among residents of Taraba State.

H_{02}: There is no statistically significant relationship between perceived effectiveness of broadcast climate change messages and reported adaptive actions among residents of Taraba State.

LITERATURE REVIEW

Climate Change Communication

Information availability, accessibility, and relevance are key factors in facilitating public understanding of climate risks, making climate change communication a focal point in environmental and development communication (Okafor et al., 2025; Chari & Munoriyarwa, 2025). Communication plays a pivotal role in disseminating scientific information to people and communities in a way that enables them to understand and apply it to their preparedness and adaptation planning processes (Ezeaka et al., 2025; Nwafor & Aghaebe, 2025). Its effectiveness relies on the frequency of receiving information, the clarity of information, whether or not the information is based on local experiences, and the trust placed in the sources and the messengers of the information (Oramah et al., 2025; Ejaz et al., 2025; Molina & Abadal, 2025). In the Nigerian context, researchers have also highlighted the importance of language complexity, local languages, and the

consideration of gendered aspects of climate vulnerability in communication (Oramah et al., 2025; Falobi et al., 2026).

Broadcast Media and Climate Change Communication

The use of broadcast media is still significant because its media products can be seen on television and radio, which are used to communicate climate change through news, interviews, discussions, documentaries and public enlightenment programmes (David, 2024; Sa'id & Mijinyawa, 2026). Radio is a channel for spoken messages and is highly accessible and relatively low in cost especially in communities where literacy is limited and the power supply unreliable; television on the other hand, has the advantages of being both audio and visual that can help to explain environmental events and recommended actions (Oyeyinka, 2025; Ogunniyi et al., 2026; Akpan & Udo, 2024). Agenda-setting can shape the salience of issues to audiences (McCombs and Shaw, 1972) as the number and visibility of climate issues are increased. But the availability of climate-related information is not sufficient to bring about sufficient knowledge or adaptive practices. Research findings show that broadcast messages can be difficult to use due to a lack of regular coverage, sufficient airtime, simple language, relevance and practical information (Ogwezi et al., 2022; Sa'Id & Mijinyawa, 2026; Eke et al., 2024; Zakora, 2025; Igbokwe et al., 2025).

Structural and professional issues also impact journalists and environmental communicators and determine how they cover the environment. The following are some of these: changing role perceptions of environmental journalists, balancing scientific accuracy with audience engagement, and demographic factors influencing reporting priorities (Oduolowu et al., 2026; Okoliko & de Wit, 2025; Onuegbu et al., 2026). Other strategies or means that have been proposed for reinforcing culturally relevant climate messages with traditional broadcast messages include the integration of indigenous art forms and oramedia (Nwafor & Aghaebe, 2025).

Empirical Studies

There are gamuts of empirical studies that established the nexus between broadcast media and climate change communication in Nigeria. For instance, Ogwezi, Umukoro and Emetenjor (2022) analysed broadcast media reportage of climate change issues in Lagos State between 2016 and 2018 and highlighted patterns of limited frequency and duration of coverage. Ejem et al. (2023) examined broadcast risk messages during the 2022 floods in selected Southern Nigerian states and emphasised the importance of timely warnings and the contextual factors that shape public risk perception. Adedowole et al. (2025) investigated television reportage of climate change and adaptive behaviour among residents of Ondo State, drawing attention to the distinction between information exposure and the translation of messages into adaptive action.

In northern and north-central contexts, Zakora (2025) assessed audience perceptions of broadcast media coverage of environmental and climate change issues in Adamawa State, while studies of radio climate communication in Ibadan have examined the application of the National Broadcasting Commission (NBC) Code and issues of environmental justice (Ogunniyi et al., 2026). Research in Imo State has similarly evaluated the effectiveness of broadcast media messages in addressing environmental issues (Igbokwe et al., 2025). Public perceptions of climate change campaigns on Radio Lagos have also been examined, with findings pointing to the potential of radio for behavioural change when messages are consistent and practical (Oyeyinka, 2025). Earlier work in Taraba State itself documented government communication strategies during flood disasters and flood-risk awareness campaigns in Taraba State, underscoring the long-standing relevance of mediated information in the study area (Isa & Shehu, 2018; Jibril, 2017).

Related studies have documented an awareness–action gap. Apuke, Ugondo and Lingbuin (2025) examined social media use for climate change adaptation and mitigation in Taraba State and found an association between access to climate-related information and self-reported practices, yet noted that awareness did not consistently translate into action. Similar gaps appear in research on farmers' responses, the role of social networks in adaptation, and the framing of climate change in Nigerian newspapers (Barnabas et al., 2026; Kehinde et al., 2025; Izuogu et al., 2025; Ikpegbu & Ajaegbu, 2025; Matuku & Mishra, 2025). Broader work on environmental communication and sustainable practices in communities such as Ughelli, Delta State,

further illustrates the challenges of linking media messages to everyday environmental behaviour (Guanah et al., 2026).

THEORETICAL FRAMEWORK

This paper is hinged on Agenda-Setting Theory and the Knowledge–Attitude–Behaviour (KAB) Model.

Agenda-Setting Theory

Agenda-Setting Theory grew out of the work of Maxwell McCombs and Donald Shaw, who first demonstrated its core idea in their 1972 study of media coverage during the 1968 U.S. presidential election. Later scholars built on their findings and showed that the theory applies beyond elections to a wide range of public issues. The basic assumption is straightforward: the media may not tell people what to think, but by giving some issues more time and prominence than others, they influence what people think about. Issues that appear frequently in the news or in regular programmes tend to be seen as more important by audiences.

The theory has been useful because it is relatively simple to test and has been supported by many studies across different countries and media systems. It is especially helpful for explaining why some environmental problems receive more public attention than others. At the same time, it has clear limits. It mainly accounts for awareness and issue importance, not for whether people change their attitudes or behaviour. Critics have also pointed out that it pays limited attention to personal experience, conversations with others, and the fact that people often choose media that already match their interests. Even with these limitations, the theory remains relevant for the early stage of climate change communication.

In this study, Agenda-Setting Theory provides a basis for examining the relationship between broadcast media exposure and climate change knowledge. The theory suggests that the prominence given to an issue by the media can influence the importance audiences attach to it. Accordingly, residents who are more frequently exposed to climate change information on radio and television may be more aware of the issue and its significance. However, media exposure does not necessarily guarantee deeper understanding or translate directly into adaptive action. This distinction is important to the study, which examines not only residents' exposure to climate information but also their knowledge, perceptions of message effectiveness and reported adaptive practices.

Knowledge, Attitude, Behaviour (KAB) Model

The Knowledge, Attitude, Behaviour (KAB) Model does not have a single founder or a precise year of origin. It emerged gradually from research in social psychology and health education and was later adapted in environmental education. Early applications in environmental education linked knowledge and attitudes to responsible environmental behaviour (Stapp et al., 1969; Hungerford & Volk, 1990). The model assumes that knowledge about an issue can shape attitudes and perceptions, which may in turn influence behaviour (Hungerford & Volk, 1990; Kollmuss & Agyeman, 2002). However, it also recognises that this progression is not automatic. Factors such as the clarity, relevance, and practical usefulness of information can affect whether knowledge leads to action.

One strength of the model is that it offers a straightforward way of explaining why awareness does not always result in behaviour change. It has been widely used in studies of health campaigns and environmental education for this reason (Hungerford & Volk, 1990). Its main limitation is that it can present the process as more linear and simple than it often is in practice. Critics have noted that knowledge and attitudes are only moderately related to behaviour, and that the model sometimes underplays structural barriers, social norms, and resource constraints that prevent people from acting even when they possess relevant knowledge (Hines et al., 1987; Kollmuss & Agyeman, 2002).

In this study, the KAB Model is applied to the relationship between perceived message effectiveness and reported adaptive actions. It suggests that residents who find broadcast climate change messages understandable, practically useful, and locally relevant are more likely to take steps such as checking warnings, preparing their households, or sharing information with others. The model also helps account for situations in which people have some knowledge of climate change but still report limited adaptive action. The integration together with Agenda-Setting Theory x-rays into how exposure, knowledge, and message quality may relate to both awareness and behaviour among residents of Taraba State.

Research Gap

Though there are existing studies that contribute valuable information on the patterns of broadcast coverage, the perception of the audience and the awareness action gap in various Nigerian states, these studies do not completely capture the lived experiences and responses of the people of Taraba State to radio and television climate change messages. There has been little empirical research on the factors related to knowledge level, radio and television exposure, perceived effectiveness of messages, reported adaptation and communication barriers in this context. In the present study, this gap is filled by a quantitative survey that explores these dimensions and validates relationships between the exposure to broadcast media and knowledge about climate change; and between the effectiveness of the climate change message received and reported actions taken.

METHODOLOGY

Research Design

The study adopted a quantitative cross-sectional survey design. Data were collected from residents at one point in time to assess climate change knowledge, exposure to broadcast information, perceived message effectiveness, reported adaptive actions, and communication barriers.

Study Area

The study was conducted in Taraba State, Nigeria. The state's heavy dependence on rain-fed agriculture, its vulnerability to climate-related hazards such as irregular rainfall and flooding, and the importance of reliable climate information for rural and peri-urban livelihoods made it worth studying. Taraba State is administratively divided into three senatorial zones: Northern, Central, and Southern. One Local Government Area (LGA) was purposively selected from each zone based on concentration of broadcast media outlets, accessibility, population size, agricultural dependence, agricultural economy, its location near the border with Cameroon, and its exposure to climate-sensitive farming activities i.e. Jalingo LGA (Northern Zone), Bali LGA (Central Zone), and Takum LGA (Southern Zone) respectively. The three LGAs represent different ecological and socio-economic settings within Taraba State and provide a suitable environment for examining how residents receive, understand, and respond to broadcast climate change messages.

Population and Sampling

The study population comprised residents of the three selected Local Government Areas (LGAs) in Taraba State. The 2006 National Population Commission (NPC) census figures were projected to 2026 using a 3.1% annual growth rate. Jalingo LGA had a 2006 population of 140,318 (National Population Commission, 2006), projected to 258,397 in 2026; Bali LGA had 211,024 in 2006, projected to 388,602 in 2026; and Takum LGA had 134,576 in 2006, projected to 247,823 in 2026. The total projected population of the three LGAs in 2026 was therefore 894,821. A sample size of 384 was determined using the Raosoft sample size calculator at a 95% confidence level and 5% margin of error, which is appropriate for large populations.

A multi-stage sampling procedure was employed. First, one Local Government Area was purposively selected from each of the three senatorial zones of Taraba State: Jalingo LGA from the Northern Zone, Bali LGA from the Central Zone, and Takum LGA from the Southern Zone. The selection was guided by the concentration of broadcast media stations, accessibility, population size, agricultural dependence, and exposure to climate-sensitive farming activities.

In the second stage, five wards were randomly selected from each of the three LGAs. Jalingo LGA comprises ten wards (Abbare Yelwa, Barade, Kachalla Sembe, Kona, Majidadi, Mayo Goi, Sarkin Dawaki, Sintali, Turaki A and Turaki B); Bali LGA comprises eleven wards (Badakoshi, Bali A, Bali B, Gang Dole, Ganglari, Gangtiba, Gang Mata, Kaigama, Maihula, Suntai and Takalafiya); and Takum LGA comprises eleven wards (Bete, Bikashibila, Chanchanji, Dutse, Fete, Gahweton, Manya, Rogo, Shibong, Tikari and Yukuben). From these lists, five wards were randomly drawn in each LGA, giving a total of fifteen wards across the three LGAs.

In the third stage, the sample of 384 was then proportionally allocated across the five selected wards in the three LGAs. In the final state, within each selected ward, convenience (accidental) sampling was used to select the actual respondents. Trained enumerators approached adult residents (male and female, aged 18 years and above) who were available, willing, and accessible in homes, streets, or public areas during daytime hours over a two-week period, selecting one eligible adult per household where feasible. This final-stage approach may introduce selection bias by over-representing more accessible, mobile, or communicative residents and under-representing very remote or busy agricultural workers. To minimise this bias, enumerators covered multiple locations and different times of day within each ward, aimed for gender balance, and achieved a high response rate. Of the 384 questionnaires distributed, 366 were retrieved, representing a response rate of 95.3%. Findings are therefore most generalizable to accessible populations in the selected LGAs rather than to the entire Taraba State.

Table 1: Showing the Sampling Procedure

Zone	LGA	2026 Projected Population	Selected Ward	Questionnaires Distributed	Questionnaires Retrieved
Northern	Jalingo	258,397		111	106
			Abbare Yelwa	22	21
			Barade	22	21
			Kona	22	21
			Majidadi	22	21
			Mayo Goi	23	22
Central	Bali	388,602		167	159
			Badakoshi	33	31
			Bali A	33	32
			Bali B	33	32
			Kaigama	34	32
			Maihula	34	32
Southern	Takum	247,823		106	101
			Bete	21	20
			Chanchanji	21	20
			Dutse	21	20
			Tikari	21	20
			Yukuben	22	21
Total		**894,821**	**15 wards**	**384**	**366**

Source: Field Survey (2026).

Instrumentation and Data Collection

Data were collected using a structured questionnaire covering climate change knowledge, exposure to radio and television climate information, perceived message effectiveness, reported adaptive actions, and communication barriers. The questionnaire included closed-ended items on the study objectives.

Reliability and Validity

The questionnaire was subjected to a reliability test before the main data collection. It was pre-tested on 20 residents outside the study area. The responses were analysed using Cronbach's alpha, which yielded a coefficient of 0.761. This value indicates acceptable internal consistency for the instrument. Content validity was established by ensuring that the questionnaire items adequately covered the study objectives, including climate change knowledge, media exposure, perceived message effectiveness, adaptive actions, and communication barriers. The instrument was also reviewed for clarity and relevance before administration.

Ethical Considerations

Ethical approval for the study was obtained from the institutional ethics committee. An Introductory Letter was issued and approved, authorising the researchers to conduct the study in the selected Local Government Areas in the 3 zones of the State. Participation was voluntary, and informed consent was obtained from all respondents before the questionnaires were administered. Respondents were assured of confidentiality, and no personal identifying information was collected or published in the study.

Data Analysis

Data were analysed using SPSS version 25. Frequencies, percentages, means and standard deviations were used to summarise respondents' characteristics and study variables. Spearman's rank-order correlation examined the associations between broadcast media exposure and climate change knowledge, and between perceived message effectiveness and reported adaptive actions. Ordinal logistic regression assessed the predictors of climate change knowledge and adaptive actions, while multiple regression examined the contribution of broadcast media exposure to adaptive actions. Mediation analysis, using the Sobel test, assessed the mediating role of perceived message effectiveness in the relationship between climate change knowledge and adaptive actions. Statistical significance was determined at the 0.05 level.

RESULTS

Table 2: Demographic Characteristics of Respondents (N = 366)

Characteristic	Category	Frequency	Percentage
Sex	Male	233	63.7%
	Female	133	36.3%
Age group	18–25 years	20	5.5%
	26–35 years	70	19.1%
	36–45 years	152	41.5%
	46 years and above	124	33.9%
Highest educational qualification	No formal education	12	3.3%
	Primary	51	13.9%
	Secondary	87	23.8%
	OND/NCE	94	25.7%
	HND/Bachelor degree	95	26.0%
	Postgraduate	27	7.4%
Main occupation	Student	15	4.1%
	Civil/public servant	105	28.7%
	Private-sector employee	57	15.6%
	Trader/business owner	58	15.8%
	Farmer	75	20.5%
	Artisan/self-employed	41	11.2%
	Unemployed	15	4.1%
Length of residence in Taraba State	Less than 1 year	40	10.9%
	1–5 years	94	25.7%

	6–10 years	117	32.0%
	More than 10 years	115	31.4%
LGA / Zone	Jalingo	106	29.0%
	Bali	159	43.4%
	Takum	101	27.6%
Total		**366**	**100.0%**

Source: Field Survey, 2026.

Demographic characteristics of the 366 respondents are shown in Table 2. Males constituted 63.7% (233), while females accounted for 36.3% (133). By age, most were in the age group of 36–45 years (41.5%) and 46 years and over (33.9%). As far as educational qualification is concerned, the largest groups of respondents were those with HND/Bachelor's degrees (26.0%) and OND/NCE (25.7%). The highest proportion of occupation was civil/public servants (28.7%) followed by farmers (20.5%). As far as length of residence, it was observed that 32.0% of them lived in Taraba State for 6-10 years, and 31.4% lived for more than 10 years. Indonesia's top contenders by location were Bali (43.4%) with Jalingo (29.0%) and Takum (27.6%) coming in second and third place respectively. Percentages reveal that the study had participants with a wide range of demographic and socioeconomic profiles in the three selected areas.

Table 2: Knowledge of Climate Change among Respondents

Knowledge indicators	**Correct responses**	**Percentage**
1. Definition of climate change	173	47.3
2. Contributors to climate change	185	50.5
3. Consequences of climate change	184	50.3
4. Household preparedness	177	48.4
5. Impacts of climate change	174	47.5

Source: Field Survey, 2026.

Table 2 shows that correct responses across the five knowledge indicators ranged from 47.3% to 50.5%. Respondents performed relatively better in identifying the contributors (50.5%) and consequences (50.3%) of climate change. However, fewer than half correctly identified its definition, household preparedness requirements and broader impacts. The findings suggest that climate-change knowledge among respondents was moderate but incomplete, particularly regarding practical preparedness and the implications of climate change for households.

Table 3: Distribution of Respondents' Total Climate-Change Knowledge Scores

Correct answers (out of 5)	**Frequency**	**Percentage**
0	29	7.9
1	60	16.4
2	96	26.2
3	102	27.9
4	60	16.4
5	19	5.2
Total	**366**	**100.0**

Source: Field Survey, 2026.

Table 3 indicates that most respondents possessed partial knowledge of climate change. The largest proportion (27.9%) correctly answered three questions, followed by 26.2% who answered two correctly. Only 5.2% achieved a perfect score, while 7.9% answered none correctly. This distribution reinforces the evidence of knowledge gaps among residents and suggests the need for more consistent and informative climate-change communication.

Table 4: Respondents' Exposure to Climate-Change Information through Radio and Television

Broadcast exposure	Never %	Less than monthly %	Monthly %	Weekly %	Daily %	Mean	SD
6. Radio	18.9	16.1	18.9	19.1	27.0	2.19	1.47
7. Television	26.0	20.8	20.5	14.8	18.0	1.78	1.44
8. Broadcast explanations	22.7	19.4	19.7	16.7	21.6	1.95	1.46
9. Preparedness advice	30.1	19.1	19.7	15.0	16.1	1.68	1.45

Source: Field Survey, 2026.

Table 4 reveals that radio was the more frequently encountered medium for climate-change information (M = 2.19, SD = 1.47) compared with television (M = 1.78, SD = 1.44). Daily exposure was reported by 27.0% of respondents for radio and 18.0% for television. Exposure to practical preparedness advice was comparatively low, with 30.1% indicating that they had never encountered such information. This suggests that although radio provides relatively greater exposure, broadcast communication may not be delivering sufficient practical guidance on climate adaptation.

Table 5: Comparative Radio and Television Exposure across the Study Locations

Location	N	Radio Mean (SD)	Television Mean (SD)
Jalingo(Urban)	106	2.45 (1.39)	2.18 (1.42)
Bali (Rural)	159	2.19 (1.47)	1.84 (1.45)
Takum (Rural)	101	2.11 (1.52)	1.68 (1.46)
Total	**366**	**2.19 (1.47)**	**1.78 (1.44)**

Source: Field Survey, 2026.

Table 5 was designed to compare radio and television exposure in the study area. Data in this regards shows that Jalingo recorded the highest exposure to both media, with a radio mean of 2.45 (SD = 1.39) and television mean of 2.18 (SD = 1.42). This indicates that respondents in Jalingo reported greater exposure to radio and television broadcasts than respondents in the other study locations. Bali followed with a radio mean of 2.19 (SD = 1.47) and television mean of 1.84 (SD = 1.45). Takum recorded the lowest exposure, with radio and television means of 2.11 (SD = 1.52) and 1.68 (SD = 1.46), respectively. At the aggregate level, radio exposure (M = 2.19, SD = 1.47) was higher than television exposure (M = 1.78, SD = 1.44). The findings suggest that Jalingo had the highest reported exposure to both radio and television, followed by Bali and Takum. Radio exposure was also higher than television exposure across all three locations.

Table 6: Respondents' Perceptions of Broadcast Message Effectiveness

Message effectiveness indicators	Mean	SD
1. Messages are understandable	2.75	1.04
2. Messages provide practical guidance	2.50	1.03
3. Messages are locally relevant	2.41	1.02

Source: Field Survey, 2026.

Table 6 indicates that respondents rated the understandability of broadcast climate-change messages highest (M = 2.75, SD = 1.04), followed by practical guidance (M = 2.50, SD = 1.03) and local relevance (M = 2.41, SD = 1.02). The relatively lower rating for local relevance suggests that broadcast messages may not adequately reflect the environmental conditions and adaptation needs of different communities. This finding highlights the importance of developing context-specific climate communication content.

Table 7: Respondents' Reported Climate-Adaptive Actions

Adaptive actions	Never %	Once %	2–3 times %	4 or more times %
1. Checked/followed climate warnings	31.4	21.3	25.1	22.1
2. Prepared household/property	29.0	21.6	22.7	26.8
3. Changed practices	19.7	31.4	23.8	25.1
4. Shared climate-risk information	29.2	26.2	21.6	23.0

Source: Field Survey, 2026.

Table 7 shows that changing practices was the most frequently reported adaptive action, with 80.3% of respondents indicating that they had undertaken it at least once. Household or property preparation was reported by 71.1%, while 70.8% had shared climate-risk information. However, 31.4% had never checked or followed climate warnings. These findings suggest that although respondents reported some adaptive activities, important gaps remain in the use of climate warnings and household-level preparedness.

Table 8: Major Barriers to Effective Broadcast Climate-Change Communication

Communication barriers	Frequency	Percentage
1. Insufficient or irregular airtime/electricity availability	92	25.1
2. Technical language/language barriers	75	20.5
3. Few local examples/limited local relevance	60	16.4
4. Insufficient practical advice	51	13.9
5. Limited access to reliable information	50	13.7
6. Few opportunities for audience feedback	38	10.4
Total	**366**	**100.0**

Source: Field Survey, 2026.

Table 8 identifies insufficient or irregular airtime/electricity availability as the most frequently reported barrier (25.1%), followed by language-related difficulties (20.5%) and inadequate local examples (16.4%). Insufficient practical advice and limited access to reliable information were also reported. These findings indicate that effective climate communication requires more than increasing broadcast frequency; it also requires accessible language, locally relevant examples, practical information and opportunities for audience participation.

Table 9: Ordinal Logistic Regression Predicting Climate-Change Knowledge

Predictor	Estimate	SE	Wald	p-value
Broadcast exposure	0.423	0.090	22.042	< .001
Age group	0.086	0.180	0.227	.634
No formal education	−3.662	0.681	28.938	< .001
Primary education	−2.251	0.448	25.181	< .001
Secondary education	−1.680	0.410	16.758	< .001
OND/NCE	−1.395	0.407	11.764	.001
HND/Bachelor's degree	−0.315	0.398	0.629	.428

Model fit: $\chi^2(15) = 99.023$, $p < .001$; Nagelkerke $R^2 = .246$; parallel-lines test $p = .458$.

Source: SPSS Output, 2026.

Table 9 depicts that broadcast exposure was positively associated with climate-change knowledge (estimate = 0.423, SE = 0.090, p < .001), indicating that greater exposure was associated with higher knowledge categories after accounting for the demographic variables included in the model. Age was not statistically significant (p = .634), whereas several educational categories showed significant coefficients relative to the model's reference category. The overall model was statistically significant, $\chi^2(15) = 99.023$, p < .001, with a Nagelkerke pseudo-

R^2 of .246. These findings suggest that broadcast exposure and educational background are relevant correlates of climate-change knowledge.

Table 10: Ordinal Logistic Regression Predicting Climate-Adaptive Action

Predictor	Estimate	SE	Wald	p-value
Perceived message effectiveness	0.575	0.157	13.505	< .001
Broadcast exposure	0.926	0.102	82.093	< .001

Model fit: $\chi^2(15) = 152.684$, $p < .001$; Nagelkerke $R^2 = .344$.

Source: SPSS Output, 2026.

Table 10 indicates that perceived message effectiveness (estimate = 0.575, SE = 0.157, $p < .001$) and broadcast exposure (estimate = 0.926, SE = 0.102, $p < .001$) were positively associated with reported climate-adaptive action. The overall model was statistically significant, $\chi^2(15) = 152.684$, $p < .001$, with a Nagelkerke pseudo-R^2 of .344. This suggests that respondents with greater broadcast exposure and more favourable evaluations of climate messages tended to report higher levels of adaptive action. These findings support the relevance of both information exposure and message evaluation in understanding climate-related behaviour.

Table 11: Multiple Regression Analysis of Broadcast Exposure and Climate-Adaptive Action

Predictor	B	SE	β	t	p
Overall broadcast exposure	0.394	0.040	0.468	9.856	< .001
Radio–television exposure difference	−0.014	0.072	−0.009	−0.193	.847
HND/Bachelor's degree	0.447	0.207	0.268	2.157	.032
Other demographic (age, sex, etc) and geographical controls (urban & rural)	—	—	—	—	> .05

Model summary: $R = .503$; $R^2 = .253$; adjusted $R^2 = .214$; $F(18, 347) = 6.526$, $p < .001$.

Source: SPSS Output, 2026.

Table 11 shows that overall broadcast exposure was a significant positive predictor of climate-adaptive action (B = 0.394, β = 0.468, $p < .001$). The model explained 25.3% of the variation in adaptive action. However, the relative radio–television exposure difference was not statistically significant (B = −0.014, β = −0.009, p = .847). This indicates that although radio was more frequently encountered than television, the analysis did not establish a statistically significant difference between the two media in their association with adaptive action. The results therefore support an integrated broadcast communication approach rather than the superiority of one medium.

Table 12: Hypothesis Testing and Spearman's Rank-Order Correlation Analysis

Variables	Spearman's rho	p-value	N	Decision
Broadcast exposure and climate-change knowledge	.239	< .001	366	Reject H_{01}
Perceived message effectiveness and adaptive action	.363	< .001	366	Reject H_{02}

Source: SPSS Output, 2026.

Two null hypothesis were tested at the 0.05 level of significance i.e. **$H0_1$:** There is no statistically significant relationship between broadcast media exposure and climate change knowledge among residents of Taraba State and **$H0_2$:** There is no statistically significant relationship between perceived effectiveness of broadcast climate change messages and reported adaptive actions among residents of Taraba State.

Data in Table 12 further shows a weak but statistically significant positive association between broadcast exposure and climate-change knowledge ($\rho = .239$, $p < .001$). A moderate positive association was also observed between perceived message effectiveness and reported adaptive action ($\rho = .363$, $p < .001$). Both null

hypotheses were rejected at the .05 significance level. The findings suggest that greater exposure to climate-related broadcasts is associated with higher knowledge, while favourable evaluations of broadcast messages are associated with greater reported adaptive action.

Table 13: Mediation Analysis of the Relationship between Climate Knowledge and Adaptive Climate Actions through Perceived Message Effectiveness (N = 366)

Panel A: Regression analysis of mediation paths

Path	Relationship examined	B	SE	β	t	p
a	Climate knowledge → Perceived message effectiveness	0.161	0.026	0.309	6.203	<0.001
b	Perceived message effectiveness → Adaptive climate actions (controlling for knowledge)	0.350	0.055	0.323	6.344	<0.001
c	Total effect: Climate knowledge → Adaptive climate actions	0.134	0.029	0.237	4.660	<0.001
c′	Direct effect: Climate knowledge → Adaptive climate actions (controlling for perceived effectiveness)	0.077	0.029	0.137	2.703	0.007

Note. B = unstandardised regression coefficient; SE = standard error; β = standardised regression coefficient. The indirect effect was assessed using the Sobel test. Proportion mediated = ab / c.

Panel B: Test of the indirect effect

Mediation effect	Indirect effect (ab)	Sobel SE	Sobel Z	p-value	Proportion mediated
Climate knowledge → Perceived message effectiveness → Adaptive climate actions	0.05635	0.01270	4.438	<0.001	0.42

Source: SPSS Output, 2026.

The mediation analysis revealed that climate knowledge significantly predicted perceived message effectiveness (B = 0.161, β = 0.309, $p < 0.001$). Perceived message effectiveness also significantly predicted adaptive climate actions when climate knowledge was controlled (B = 0.350, β = 0.323, $p < 0.001$). The total effect of climate knowledge on adaptive climate actions was significant (B = 0.134, β = 0.237, $p < 0.001$). The direct effect remained significant after perceived message effectiveness was included in the model (B = 0.077, β = 0.137, p = 0.007). The Sobel test confirmed that the indirect effect was statistically significant (ab = 0.05635, Z = 4.438, $p < 0.001$), accounting for approximately 42% of the total effect. This pattern indicates partial statistical mediation: perceived message effectiveness accounts for part of the association between climate knowledge and adaptive climate actions, while a significant direct association remains. Accordingly, the null hypothesis that perceived message effectiveness does not mediate this relationship is rejected. Given the cross-sectional design, the findings should be interpreted as evidence of statistical mediation rather than causal mediation.

DISCUSSION

The findings indicate that residents of Taraba State possess a moderate understanding of climate change. Although respondents revealed some knowledge of its causes and consequences, gaps remained in their understanding of household preparedness and the broader implications of climate change. This indicates that awareness of environmental changes does not necessarily translate into comprehensive climate literacy. The situation may be associated with limited access to sustained environmental education and broadcast messages that explain climate change beyond reporting isolated environmental incidents. This finding agrees with the findings of Eke et al. (2024), Zakora (2025) and Igbokwe et al. (2025), whose studies identified limitations in public understanding of environmental issues despite the availability of media information. It also supports Oramah et al. (2025), who emphasised the importance of accessible language and contextual explanations in communicating climate information. The study's regression findings further establish broadcast exposure as a

significant positive correlate of climate knowledge, implying that regular engagement with climate-related information is relevant to public understanding.

Likewise, radio was used more often than television to get climate change information, pointing to the ongoing relevance of radio in communities where access to electricity, household income, and television equipment may restrict opportunities to watch TV. This is in line with Labiru et al. (2023) who reported radio to be a more significant source of information on climate change than the television to the people of Taraba State. The geographical comparison also revealed that respondents in Jalingo had the highest exposure towards radio and television, while Bali and Takum had the highest exposure. This pattern may reflect variation in settlement and/or media infrastructure and access to broadcast facilities between the centre and its more rural counterparts. In agreement with this finding, the availability and access to television were higher among urban farmers than among rural farmers and slightly higher for the rural farmers than among their urban farmers counterparts in Kogi State, Nigeria according to Adejoh et al. (2016). Likewise, Isa (2023) found that among farmers in Southern Taraba, Radio was the most prominent media in response to the information on climate change. This results shows that while radio is significant in various geographical contexts, the exposure of urban dwellers to both radio broadcast media can be greater due to variations in infrastructure and access.

Theoretically, these findings support Agenda-Setting Theory, which explains how sustained media attention can increase the prominence of environmental issues among audiences. However, the incomplete knowledge observed suggests that issue visibility alone is insufficient to guarantee comprehensive understanding. The study therefore contributes to the argument that effective climate communication requires both regular media exposure and informative, locally relevant content. In addition, the findings reveal that respondents considered broadcast climate messages relatively understandable, but their perceived local relevance and practical usefulness were comparatively limited. This suggests that the effectiveness of climate communication depends not simply on whether audiences receive and understand information but also on whether they can relate it to their environmental circumstances and apply it to everyday decisions. In Taraba State, where communities have different agricultural, socioeconomic and environmental experiences, generalised climate messages may not adequately address specific adaptation needs. This finding is in tandem with Adedowole et al. (2025), who examined television reportage of climate change and adaptive behaviour in Ondo State, and Oramah et al. (2025), who emphasised contextual understanding in climate communication. The finding also highlights an important dimension of communication effectiveness: understandable information may still have limited practical value when it lacks locally relevant examples and actionable guidance. Although respondents reported engaging in different adaptive activities, the findings also revealed limitations in the use of climate warnings and household preparedness. This suggests that the availability of climate information does not automatically produce consistent adaptive behaviour. Similar awareness-action gaps were identified by Apuke et al. (2025) in their study of climate change adaptation and mitigation in Taraba State, while Ezeaka et al. (2025) and Izuogu et al. (2025) highlighted challenges associated with translating climate information into practical responses among Nigerian communities.

The regression findings further showed that perceived message effectiveness and broadcast exposure were positively associated with adaptive actions. Importantly, the difference between radio and television exposure was not statistically significant in predicting adaptive action. This indicates that the greater frequency of radio exposure does not necessarily establish its superiority over television in supporting adaptive responses. Rather, the findings suggest the importance of an integrated broadcast communication approach. In relation to the Knowledge, Attitude, Behaviour Model, the results indicate that knowledge and favourable evaluations of climate messages are relevant to understanding reported adaptive practices, although structural and resource-related constraints may influence the translation of information into action.

The results based on the hypothesis showed that first hypothesis established a positive and statistically significant relationship between broadcast media exposure and climate change knowledge, resulting in the rejection of the null hypothesis. This means that respondents with greater exposure to climate-related broadcast information tended to demonstrate higher levels of knowledge. The relationship, although weak, reinforces the relevance of radio and television in disseminating environmental information. This finding is consistent with David (2024), Akpan and Udo (2024) and Ogwezi et al. (2022), whose studies highlighted the contribution of broadcast media to environmental awareness and public understanding. It also provides empirical support for

Agenda-Setting Theory, particularly its proposition that the prominence given to an issue by the media can influence the attention audiences devote to it. Nevertheless, the relatively weak relationship suggests that media exposure alone may not adequately explain variations in climate knowledge. Educational background, personal experience and access to alternative information sources may also contribute to public understanding. The study therefore extends the application of Agenda-Setting Theory by showing that although broadcast exposure is significantly associated with climate knowledge; its contribution should be considered alongside other demographic, socio-economic and contextual factors. Because this study was a cross-sectional design, the relationship is not interpreted as evidence of direct causation.

The second hypothesis revealed a positive and statistically significant relationship between perceived message effectiveness and reported adaptive actions. This suggests that respondents who considered broadcast climate messages more understandable, useful and relevant also tended to report greater engagement in adaptive activities. The finding agrees with Adedowole et al. (2025), Ejem et al. (2023) and Oyeyinka (2025), whose studies emphasised the importance of effective broadcast communication in influencing public responses to environmental issues. It also provides support for the Knowledge–Attitude–Behaviour Model by demonstrating that favourable evaluations of information are associated with reported behavioural responses. An important implication is that climate communication should move beyond general awareness creation to provide specific guidance on preparedness, adaptation and risk reduction. However, the relationship does not establish that favourable perceptions automatically produce adaptive behaviour, since financial limitations, access to infrastructure and other practical circumstances may affect individuals' ability to act. The present study therefore contributes evidence that perceived communication effectiveness is an important correlate of climate-adaptive behaviour within the selected communities.

A further contribution of this study is that it investigates the mediating role of the perceived message effectiveness in the relationship between climate knowledge and adaptive actions. The results confirmed that the perceived message effectiveness mediated this relationship, explaining about 42% of the effect. If there is a clear direct relationship that persists, then the direct relationship is a partial, but not complete explanation for the relationship between climate knowledge and reported adaptive actions. This finding implies that climate knowledge is relevant, but the perceived usefulness and relevance of information is also a key component of understanding the role of climate knowledge in adaptive response. When messages on the radio are general and do not apply to their context, residents might know what they should do about climate risks, but they may not be motivated or able to do it. This interpretation supports the argument of Kollmuss and Agyeman (2002) that intervening factors and practical constraints affect the relationship between environmental knowledge and responsible behaviour. The result also offers further empirical evidence to support the use of the Knowledge, Attitude, Behaviour Model as the processes of the message evaluation construct are shown to be relevant in the knowledge reported behaviour relationship. The present study also provides a deeper understanding of the communication path between climate knowledge and adaptive actions, as opposed to studies focusing more on climate exposure or overall climate knowledge. However, due to the cross sectional design of the study, the mediation result is a partial statistical mediation and not a proof of a causal process.

Furthermore, the findings identified insufficient or irregular airtime/electricity availability, language barriers, inadequate local examples and insufficient practical advice as major obstacles to effective climate change communication. These barriers suggest that the challenges facing broadcast environmental communication in Taraba State concern not only access to information but also the quality, consistency and contextual relevance of messages. The prominence of airtime limitations suggests that climate change may not receive sufficient and sustained attention in broadcast programming. Similarly, technical language may prevent audiences with different educational backgrounds from fully understanding environmental information. These challenges are particularly relevant in Taraba State, where linguistic and cultural diversity requires communication approaches that accommodate different audience needs. The findings are connected with that of Ogwezi et al. (2022), Sa'id and Mijinyawa (2026) and Oramah et al. (2025), whose studies revealed limitations associated with broadcast coverage, electricity availability, language accessibility and the communication of climate-related information. The findings of the present study, however, are broader than the ones mentioned above as it identifies the specific communication barriers reported by residents in the three selected Local Government Areas. The results indicate that there is a need for frequent airing, simple messages, local case-studies and information on preparedness and adaptation to improve climate change communication. There may also be

opportunities for the audience to interact with the programme, such as through community discussions and/or interactive programmes that increase the relevance of the broadcast messages. Furthermore, the potential for cooperation among broadcasters, meteorological services, environmental agencies and community groups would increase the usefulness and accuracy of climate information.

Finally, the study adds to the body of literature on climate change communication research taking evidence from three Local Government Areas of Taraba state, which are located in the Northern, Central and Southern Senatorial Zones. It not only explores the issue of media exposure and knowledge, but it also shows the importance of the effectiveness of messages in reported adaptive activities and how this partially mediates the link between climate knowledge and adaptation. Such results are used as a foundation to formulate more coherent, accessible and contextually relevant communication strategies in broadcast media. The results, however, must be understood in the light of the geographical scope of the study and the cross-sectional design used.

CONCLUSION

This study examined broadcast media and climate change communication in Taraba State, Nigeria. The findings showed that residents had some knowledge of climate change, although gaps remained in their understanding of its causes, effects and preparedness measures. Radio was a more common source of climate information than television, with residents of Jalingo reporting greater exposure than those in Bali and Takum. The study also found that exposure to broadcast climate information was associated with greater knowledge of climate change, while favourable perceptions of broadcast messages were associated with reported adaptive actions. Furthermore, perceived message effectiveness partly explained the relationship between climate knowledge and adaptive actions. However, irregular airtime, lack of adequate electricity supply, language difficulties, inadequate local examples and limited practical advice continued to affect the usefulness of broadcast messages. The study therefore concludes that radio and television have an important role to play in communicating climate change information in Taraba State. For this role to be more effective, broadcasters need to give climate issues regular attention and present information in simple language, using examples that reflect the experiences of local communities and provide practical guidance on preparedness and adaptation. Since the study was cross-sectional, the relationships identified should be understood as associations rather than evidence of cause and effect.

RECOMMENDATIONS

Based on the findings, the following recommendations were made:

i. The Taraba State Government should ensure adequate electricity supply and partner with community radio stations to deliver regular climate change programmes, particularly in rural communities.
ii. Broadcasting stations should be encouraged to transmit climate information in locally understood languages to improve comprehension and community relevance.
iii. The state government should provide financial support to public and private broadcasters to secure dedicated airtime for climate change education and early-warning information.
iv. Broadcasters should collaborate with environmental experts, agricultural extension officers and community leaders to develop programmes that address local climate risks and practical adaptation strategies.
v. Relevant government agencies should periodically assess the frequency, accessibility and usefulness of climate change broadcasts to ensure that programming responds to community information needs.

LIMITATIONS OF THE STUDY

Even though the study achieved its objectives and contributed to knowledge in broadcast media and climate change communication in Nigeria with evidence from Taraba State. There are some limitations associated with this study. The findings may be limited to the selected areas as three LGAs from the 3 zones in the state were selected and convenience sampling was used at the final recruitment stage to get the required sample size, which may have created selection bias. A number of estimates were also made based on projected figures from

the 2006 census, not on the latest census. Second, no content analysis was conducted to assess how often and accurately climate change was portrayed, so the study did not meet the standards for analyzing the actual portrayals of the phenomenon in the media. Third, the study was based on the KAP framework but adopted perceived message effectiveness as a proxy of the behaviour being assessed. Thirdly, causal inferences are not possible because of the cross-sectional design and factors like access to electricity, socioeconomic factors (income etc) and digital media exposure were not explored. These limitations could be addressed in future studies by increasing the scope of sampling and by the use of content analysis and longitudinal designs for broadcast studies.

Declaration of Generative AI Use

During the preparation of this manuscript, the authors used Chatgpt and Grok (developed by xAI) to assist with refining language, improving clarity, organizing sections, and ensuring consistency in academic style. The authors reviewed, edited, and take full responsibility for all content, interpretations, analyses, and conclusions presented in this article. No part of the data collection, analysis, or original findings was generated by artificial intelligence.

Conflict of Interest

The authors declare that there is no conflict of interest associated with this study.

Funding

This research was supported by the **Tertiary Education Trust Fund (TETFund),** Nigeria, under the College of Agriculture, Science and Technology, Jalingo **Institution-Based Research (IBR) Intervention, 2026.**

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