University Students' Perception of Community Information Centres as a Vehicle for Climate Change Awareness Creation in Ghana.

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ABSTRACT

Information has a significant role in the growth of people and societies. Yet access to information is unequal across communities, particularly in rural areas in developing countries. Given this, people's consciousness of climatic change differs by several factors including location and the type of medium employed. This paper examines community information centres as a vehicle for climate change awareness creation in Ghana. The paper adopted a quantitative approach with 205 participants randomly chosen from six public universities. The finding shows that selling of traditional medicines dominates information centres' activities. Environmental health and climate change education occupy infinitesimal place in these centres' activities with climate change occupying the very bottom. The study also shows that using local language, providing a platform for grassroot education, integrating scientific and indigenous knowledge, etc. are some of the ways these centres can be used to promote climate change consciousness.The results also disclose that community information centres face the problems of limited resources, lack of interest, unreliable power source etc. Regarding how to manage these challenges, the majority of the participants proposed the role of government in providing resources, community sensitisation, an alternative power source, among others. The paper concludes that although proper attention has not been given to climate change awareness creation in information centres' activities in Ghana, these informational hubs can be a medium to raise climate change awareness in the disadvantaged and marginalised rural communities in which they are situated to facilitate local adaptation.

Keywords: climate change, rural communities, awareness, community information centres

INTRODUCTION

Considerable attempts have been taken over the years to increase public knowledge of climatic change, to apprise individuals of the scholarly agreement that climate change largely results from anthropogenic actions, and to inform them of its negative ramifications (Eichhorn et al., 2020). Public consciousness and understanding of climatic variability and change are critical in mitigating climate change and its associated challenges (Ohene-Asante, 2015). People must be conscious of and knowledgeable about situations before they can take proper measures (Asekun-Olarinmoye et al., 2014; Upadhyay & Bijalwan, 2015). Samuel et al. (2018) opine that prioritising awareness of climate change results in successful adjustment. Adapting to

global warming impacts necessitates substantial understanding, consciousness, and communication, not only among scientists and administrators, but also among the general public. Fighting climate change will be successful if knowledge of adaptation is shared with the public (Upadhyay & Bijalwan, 2015). Most people are less conscious of the repercussions of climate change and the pressing need for a solution (Khan & Nawaz, 2020; Sraku-Lartey et al., 2020). This insufficient awareness has resulted in little or no attempt to effect change (Khan & Nawaz, 2020; Khatibi et al., 2021).

A person is said to be aware of the current climate state if they have knowledge or education about climate change (Samuel et al., 2018). Climate change awareness refers to the person's comprehension of the problem, its effects, causes, and consequences (Khan & Nawaz, 2020). Raising awareness also means teaching and enlightening individuals on a topic to change their behaviour to attain certain objective or target (Sayers, 2006). Fighting climate change is successful when knowledge of adaptation is shared with the general public, but the issue of how to get the strategies and tools to the last person standing in the line is still an issue (Upadhyay & Bijalwan, 2015). Timely information and awareness are critical for developing and enhancing the ability of a diverse range of stakeholders to participate in adaptation efforts at all levels (Upadhyay & Bijalwan, 2015).

Information has a significant role in the growth of people and societies. Yet access to information is unequal across communities, particularly in rural areas in developing countries (Ndinde & Kadodo, 2014; Selormey et al., 2019). Ifukor (2013) emphasised the ineffectiveness of transferring developmental knowledge to agrarian communities. According to her, the routes of information dissemination now employed by different agents tend to exacerbate the information divide between suppliers and consumers. Rural locations lack access to information that metropolitan cities do, making them "information-poor" societies (Ofori-Birikorang & Aggrey 2018). Due to vast awareness inequalities surrounding climate change, opinions from the grassroots are not sufficiently heard in the formulation of policies and adaptive information does not target the most marginalised groups (Bisht & Ahluwalia, 2014).

Information centres are one of the most common outlets used to obtain information in rural communities. However, they have been turned into avenues for extorting money from poor communities under the pretext of selling medicines (Appiah-Korankye, 2019), instead of using them to increase people's awareness of climatic change and its consequences on their livelihood in these agrarian communities. Again, rural folk mainly depend on unofficial and non-institutional outlets for their daily information (Mushunje, 2020). Although there exists some empirical studies on the role of information centres in societal expansion in Ghana, no study has considered its relevance to climate change awareness creation. This accounts for the novelty of this study. Thus, this paper examines how community information centres can be used as a medium to raise climate change consciousness and knowledge in Ghana. The paper examines the place climate change awareness creation occupies in information centres' activities. It also examines how these centres can be used to promote awareness of climatic change. Finally, it explores the challenges likely to confront these centres in raising awareness as well as how these challenges can be minimised. Insights from this study may shed light on how to ensure effective climate change awareness and knowledge in order to bridge the information divide among rural communities in Africa, notably, Ghana by using indigenous communication media.

LITERATURE REVIEW

Theoretical framework

Our research took the hypothetical foundation of Neelemeghan's (1981) theory of "information provision

and capacity utilisation". According to him, access to information varies among individuals based on profession, occupation, gender, age, culture, education, social status, marital status, and residence (Agwuna & Enweani, 2019; Odumegwu, 2019). The relevance of this hypothesis to the current research is the confirmation that there is a disparity in access to climate change information between categories of users. Moreover, the ability to effectively utilise climate change data varies across user classes. This suggests that the data presented must acknowledge that remote regions are denied the same access to climate change information compared to their counterpart in urban areas. The situation of having information resources offered and made accessible is known as availability in the survey's context. To achieve this, the data should be readily obtainable, precise, and trustworthy, and the origin should be in close contact with the recipients (Odumegwu, 2019). Utilisation is simply the action of using something (Odumegwu, 2019). Uhegbu (2007) argues that utilisation mostly aims to fulfill information requirements, obtain knowledge, or derive worth from amusement. We affirm the theory's postulate of information access differential between and among consumer categories, and, therefore, argue strongly for the utilisation of indigenous media to leverage the information gap between the rural and metropolitan districts in order to ensure equal degree of environmental change awareness and adjustment.

Conceptual framework

We conceptualised environmental/climate change communication media into two broad groups—mainstream press and indigenous media. Modern technology has introduced another information channel that combines features of mainstream press and indigenous media in its operations. Though it is often classified as a form of indigenous media due to its prevalence in rural communities, in our study, we designate it intermediary media due to its incorporation of dual characteristics of mainstream media and indigenous media in its modus operandi. This newly created channel is known as community information cnetres. Since access to information is not equal across communities, especially, in rural areas in developing countries (Ndinde & Kadodo, 2014; Selormey et al., 2019), literature has established a trajectory where the majority of environmental communication and awareness creation, have originated from the main press, leading to the urban-rural information rift as the majority of these media are located in urban areas making these areas have access to a variety of information they need, compared to the far-flung rural communities that do not have such access. Due to that awareness and knowledge of climatic change of people living in urban areas far outweighs that of their rural counterparts. As knowledge and awareness of climate changeare a precursor for people to take appropriate measures, as Asekun-Olarinmoye et al. (2014), and Upadhyay and Bijalwan (2015) have postulated, the urban communities are more properly adapted to climate change impacts, compared to the marginalised and disadvantaged agrarian folks.

Siding with Khan (2017), Ndinde and Kadodo (2014), and Obeng-Fosu (2021), information centres serve as a platform for those living in underprivileged areas, providing novel opportunities for residents and politicians to collaborate on community building, as well as ensuring equal access to information, or at very minimum reducing degrees of disparity. The relevance of thought management and informal interactions has drawn the focus of behavioural researchers to indigenous media (Sikdar, 2020). We, therefore, argue that due to the difficulty of climate science issues, indigenous communication mechanisms that have benefited local dwellers of Africa and can simplify intricate matters, are essential to climate change awareness-raising techniques. We stress that concerns about climatic change should not always be on the impacts it poses to people globally, but also on solutions that can help individuals to adapt and mitigate it. Part of the solution is to increase knowledge and awareness as the saying goes, "understanding a problem is part of the solution". When the public is aware of climate change, they can better adapt to its consequences in order to strengthen their resilience by engaging in local adaptation and mitigation measures. It is against this backdrop that we conducted this study to explore how information centres can be used to compensate for climate change knowledge and adaptation gap created by the mainstream press.
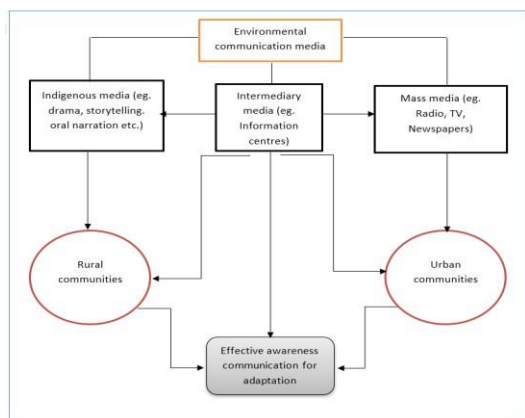
Figure 1: Conceptual framework

Source: Authors (2023)

Mainstream media

Climate change awareness creation requires the selection of an appropriate communication channel since information must be targeted to specific audiences to make it effective (Moser & Dillings, 2012). This is because understanding such sources allows climate change information producers to identify credible and accessible channels through which their knowledge may be disseminated (Siyao, 2021). Moser and Dilling (2012) argue that the most effective approach to addressing audiences about climate change is through mass communication. Literature has shown that the mass media which includes the radio, television, and newspaper constitutes the major outlet for climate change awareness for many people (Ogunbode et al., 2019; Sraku-Lartey et al.,2020). While offering a forum for involvement and empowerment, the media also serves as a watchdog, keeping governments, politicians, and individuals at all levels of existence responsible (Evans et al., 2018). Although it is commonly acknowledged that the press constitutes a major source of climate change scientific information, its effectiveness has been called into doubt, particularly in Africa, where media access is restricted and illiteracy rates are high (Chari, 2016). Given this, equal attention must be given to all sources of information to completely achieve full climate change awareness (Ogunbode et al., 2019). It is in furtherance to the above that we vouch for an indigenous communication channel to create awareness. We believe that balancing the two media will increase people's understanding and consciousness of climatic shift. It will also help to leverage the urban-rural information gulf. Predicated on these assumptions, we conducted this study to illuminate the prospects of information centres on climatic change awareness creation in Africa as a whole and in Ghana in particular.

Indigenous media/channel

A deeper examination of African communities reveals that indigenous messaging systems existed prior to the introduction of contemporary forms of communication or even the colonisation that introduced them (Adebiyi, 2015). Traditional information generation, storage, sharing, and utilisation occur through widely recognised messaging infrastructure in agrarian populations. Peasant villages receive knowledge on farming and routine activities through indigenous media conduits and systems (Efa et al., 2011). These means of communication are firmly ingrained in the culture and have been passed down orally from generation to generation. This type of conduits are often rechristened as "indigenous traditional folk media". They are simple, in-person, and tied to individuals' feelings and ideals. Hence, they are therefore very effective at increasing people's awareness. They are also affordable and devoid of outside funding (Sikdar, 2020). Wilson (1997) views indigenous communication media as "a multi-channel communication system which is employed in most rural areas". Numerous academics have defined indigenous messaging as the form of

interaction that originates with and emerges from the folks (Adebiyi, 2015). Feasts, community talks, festivities, events, telling stories, theatre, songs, and verbal narratives are examples of indigenous ways to communicate (Sikdar, 2020). This type of interaction cannot be achieved via newspapers, radio, or extension groups. It happens among households, at gatherings of community groups, in markets, or everywhere. Most of such interaction is unofficial and disjointed, intimate, verbal as opposed to penned, managed internally instead of by third parties, and employs little to no gadgets in its activities and operations (Mundy & Lloyd-Laney, 1992).

Community information dissemination centres (CIDCs)

Providing pertinent information in formats and methods that community members can understand is essential for community-based adaptation. Simple messages, proper transmission methods, native dialects, and social values relevant to the place must all be used to transmit information. In many developing nations, community information centre has gained popularity (Bisht & Ahluwalia, 2014; Islam & Mezbah-Ul-Islam, 2008). Community media can successfully facilitate the process of community-based climate change adaptation (Bisht & Ahluwalia, 2014). Obtaining equal access to information, or at very minimum reducing degrees of disparity, is the overarching goal of all localised information centres (Ndinde & Kadodo, 2014). "Community-based information centres (CBICs)" are places where knowledge is disseminated for society's sustenance and progress or for the information residents need to effectively manage the resources available (Ndinde, 2014). A community information centre is a public address system that includes a microphone, amplifier, a loudspeaker, and other accessories, that is used to broadcast information (Appiah-Korankye, 2019). According to Chatterjee (2017), community information centre is a facility that propagates local information.

People in information-poor communities have created ways to generate and disseminate information to close the urban-rural communication gap (Ofori-Birikorang & Aggrey, 2018). These recently established information outfits are designated "Community Information Dissemination Centres (CIDCs)" and are famously recognised as "Information Centres" in remote areas in which they are located (Obeng-Fosu, 2021). Community information dissemination centres (hereinafter "community information centres" or "information centres") arose as a substitute for the time-consuming gong-gong beating used to communicate information to residents (Appiah-Korankye, 2019; Ofori-Birikorang & Aggrey, 2018). These informational hubs have developed into media entities that supplement more conventional media. They fill in the informational voids left by the press, radio, television, and the internet (Al-hassan et al., 2011; Obeng-Fosu, 2021). Information centers provide a localised broadcasting signal to a specific geographic region (AMARC, 2019).

In Ghana, information centres play an important position in the gathering, creation, and transmission of information to communities. They assist in educating community members about health, agriculture, and societal matters. Information centres are also utilised to inform community members about issues (Obeng-Fosu, 2021)**.** They also play a vital role in establishing sustainable societies, strengthening residents, offering voice to disadvantaged populations, and advocating local issues before the government (CIMA, 2007). Local communitis run community media in their native dialects, frequently with content centred on matters crucial to community advancements, such as climate change and ecological deterioration (UNCC, n.d.). Community media has gained popularity previously as the media of low-level residents of impoverished locations, opening up opportunities for both policymaking community and grassroot residents to be involved in the advancement of their localities (Khan et al., 2017).

Most community media activities in the emerging nations now emphasise providing users with information and messages concerning short and medium-term predictions for peasants, notifications about catastrophic meteorological phenomena, and communication to prevent environmentally damaging behaviour (UNCC, n.d.). To maximise spread, the knowledge is packaged in a language that each group can understand

(Ndinde, 2014). A study cited by Khan et al. (2017) posits that rural radio can help isolated farming villages share agricultural knowledge more effectively. The community media provide numerous strategies for interactive messaging in this respect (Khan et al., 2017) that assist agricultural extension programmes by speaking directly to peasants and audiences in their native dialects (Al-hassan et al., 2011). Participatory communication is a dialogic strategy for raising consciousness, offering remedies, bolstering local voices, and inspiring marginalised and disadvantaged groups (Abdulai et al., 2021; Bisht & Ahluwalia, 2014; Mannar, 2014). The community media has enabled vulnerable and disadvantaged groups to be recognised and enlightened, form ideas, learn through informed dialogue, and become more decisive agents (Fombad & Jiyane, 2019).

Once more, a centre for information promotes understanding of local organisations and services while also giving these entities a platform to flourish. The community media support a rural community's interests due to their proximity to their audience (Al-hassan et al., 2011). To test the impact of radio programmes on environmental shift awareness, a pilot study in the Congo Basin through experimental design found that climate change understanding of individuals listening to radio improved after listening to the radio programme because the message was packaged in relevant formats (Perez-Teran et al., 2015). The community information centre offers a venue for members of different remote villages to meet and share expertise and information that can be more useful (Islam & Mezbah-ul-Islam, 2008). By broadcasting in indigenous dialects, community stations overcome the linguistic problem and expand their reach by appealing to a variety of listeners. Local languages empower communities, creating a sense of belonging and ownership. Communities understand information delivered in their language (Fombad & Jiyane, 2019). CICs perform the following roles: delivering timely information, attending to community needs, sharing developmental knowledge, delivering training at the grassroot level, and supporting mass messaging and training for grassroots progress (Ofori-Birikorang & Aggrey, 2018; GIFEC, 2015; Obeng-Fosu, 2021).

Despite the benefits attributed to community information centers, they cannot be without challenges. Any variables that compromise the desired information and/or hinder it from being heard or accurately understood can be considered obstacles to effective communication (Ifukor, 2013). Community radio stations struggle with funds, inadequate staff, a lack of expertise, a lack of information-gathering time, and antiquated technology (Fombad & Jiyane, 2019). Mtega and Ronald (2013) noted that information services in rural areas are limited owing to late delivery, irrelevant information, unaffordable costs, illiteracy, poor infrastructure, and a lack of audience research. In a study in Nigeria on "managing community information centers for effective provision of information for health women", Agwuna and Enweani (2019), summarised the challenges among others as insufficient understanding of local populations' information needs, a mismatch between services offered and real information sought, and a shortage of expert and a paucity of libraries. Last, but not least, the noise that wakes up folks before the morning is a problem. The locals are struggling with them since they are irritating (Obeng-Fosu, 2021). The inhabitants of beneficiary communities register some sentiments against these centres due to their intolerable noise. Given this, they do not give appropriate attention to these centres' programmes or recognise their operations in the communities in which they are established and operated. Despite the significant role of information centres in community advancement, in this modern era, such avenues are virtually blurry in respect of climate change awareness. Thus, providing the study's impetus.

MATERIALS AND METHODS

Study Area

Data was gathered from six public universities in Ghana. These universities include the University of Cape Coast (UCC), University of Ghana (UG), Kwame Nkrumah University of Science and Technology (KNUST), University of Energy and Natural Resources (UENR), University of Education, Winneba

(UEW), and Akenten Appiah-Menkah University of Skills Training and Entrepreneurial Development (AAMUSTED). Getting students representative (s) to assist us in the data collection by having access to the students WhatsApp platforms was easy as the majority of us are former students of these institutions. The geographical proximity of these universities to the researchers was another reason why we selected these universities in order to make judicious use of available resources by minimising the cost of transportation when the need arose.
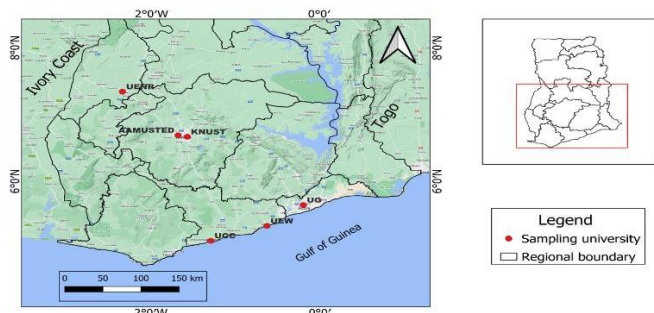
Figure 2: Study area map showing the sampling universities

Source: Produced based on diva GIS data

Research design

We adopted quantitative descriptive survey design. According to Orodho (2009), by interviewing or giving surveys to a subset of people, a descriptive survey technique can be used to generate data that will be beneficial for analysing current circumstances that have not been controlled or manipulated. A descriptive survey technique is suitable because it places greater emphasis on responses to a single question from all participants than responses to all questions from a single respondent. In this type of research design, the parameters are beyond the investigator's influence (Manjunatha, 2019). The researchers' use of descriptive survey is to monitor, characterise, and record parts of the phenomenon as it spontaneously unfolds (Orodho, 2009; Manjunatha, 2019).

Sampling procedure

This research adopted a simple random selection approach to gather data from public university students in Ghana. This gave every respondent an equal chance to participate in the study. In all, 205 university students drawn from six public universities in Ghana, were interviewed. These included both undergraduate and postgraduate students across disciplines. Contacted universities were eight (8) initially. However, after the data gathering, we realised that combined data from two other universities—the University for Development Studies (UDS), and the University for Professional Studies (UPSA) were only 5. Because of the scanty nature of the combined data, we, therefore, excluded them from the analysis since they did not affect the results in any way.

Data collection and procedure

We designed the survey questionnaire using the Kobo Toolbox. The questions were made up of both close and open-ended to allow the participants to tick and fill in the blank spaces (Igwenagu, 2017; Lois, 2014). Each question item on the survey was designed to achieve a certain goal (Mugenda & Mugenda, 2010). Students' representative (s) in each of the universities sampled was first contacted via phone and were briefed on the rationale of the investigation. The questionnaire was not pilot tested. However, we submitted the questionnaire to three experts, two of whom are lecturers, and a PhD student from both the humanities and the social sciences. This was done to ensure that the questionnaire will evaluate what it was designed to

measure. The link generated from the Kobo Toolbox interface was shared in the universities' students various WhatsApp platforms with the help of the representative (s) who were earlier contacted. The link generated allowed participants to respond to the questionnaire once. After they filled out and submitted the questionnaire, they did not have access to the survey. This was done to prevent multiple data from the same person.

Data processing and analysis

The completed survey was then downloaded as Excel file from the Kobo toolbox data interface. The downloaded-excel file was edited and coded serially before exporting into SPSS for final analysis. Open-ended responses were then edited, coded, and sought under themes following the Saldana coding manual for qualitative researchers (Saldana, 2009). The reviewed themes were given numerical values so that they could be analysed quantitatively. The data were analysed using SPSS version 25 and Microsoft Excel version 2019. Descriptive statistics, predominantly expressed through percentages, were used to present the data.

RESULTS

Respondents' demographic characteristics

The results present participants' demographic distributions. Table 1 demonstrates respondents' socio-demographic information. Concerning gender, majority (63%) were males and 37% were females. Regarding the age distribution, the majority (57%) of the participants fell within the age category of (20-29) whiles the lowest (1%) was found among the 50+ category. The educational level shows that (59%) of the participants were undergraduate students and (41%) of them were postgraduate students.

Table 1: Respondents' background information

| Variable	Category	Frequency (N)	Percentage (%)
Gender	Female	76	37
	Male	129	63
	Total	**205**	**100**
Age	< 20	33	16
	20-29	116	57
	30-39	41	20
	40-49	13	6
	50+	2	1
	Total	**205**	**100**
Level of education	Undergraduate	121	59
	Postgraduate	84	41
	Total	**205**	**100**

Source: Field Survey (2023)

Community information centres' activities in Ghana

This objective determined the place of climate change awareness in community information centres'

activities in Ghana. The analysis in Figure 2 demonstrates that selling of traditional/herbal medicines (39%) dominates information centres' activities, alongside preaching the word of God (32%), communal announcements occupy (19%), promoting environmental health and sanitation takes (8%), and public education on climate change assumes the very bottom with (3%).
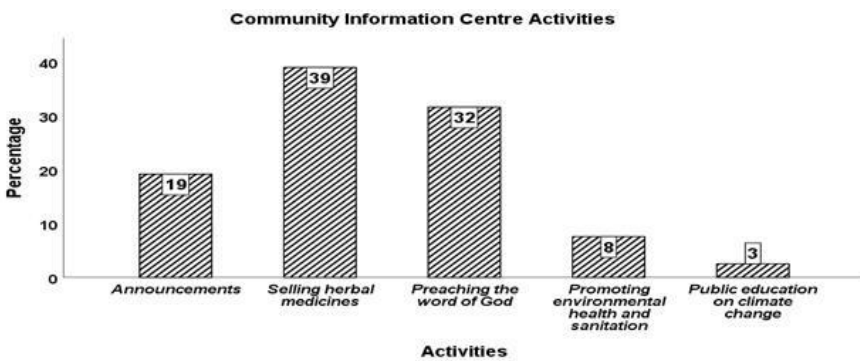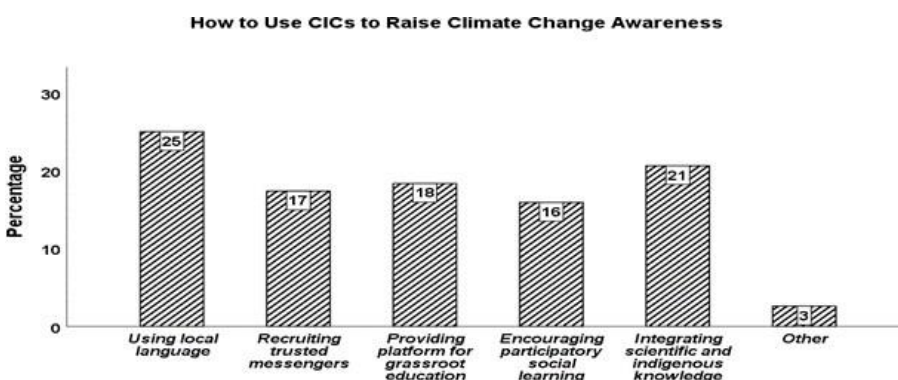

Figure 2: Community information centres' activities

Source: Field Survey (2023)

Community information centres (CICs) in raising climate change awareness

This section of the paper sought to unearth how community information centres can be utilised in raising audiences' awareness of climatic change. The analysis shows that community information centres can raise awareness through the use of local language in information spread (25%), recruiting trusted messengers (17%), providing a platform for grassroot education (18%), encouraging participatory social learning (16%), integrating scientific and indigenous knowledge (21%), and a small percentage (3%) of the respondents chose other where they proposed the involvement of the youth in climate awareness campaigns.
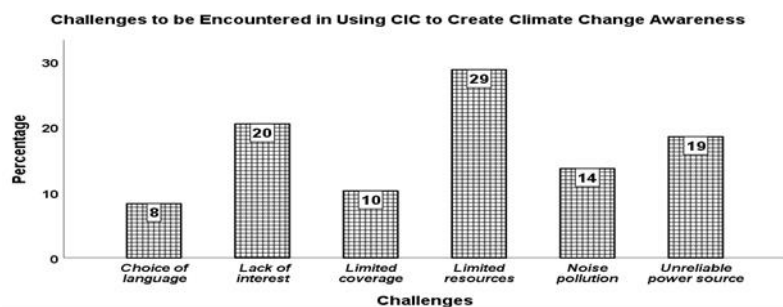

Figure 3: Raising awareness of climate change with CICs

Source: Field Survey (2023)

Community information centres in raising climate change awareness: The challenges

The paper sought to unearth the barriers that will likely constrain information centres in raising consciousness of climatic shift. The analysis shows that community information centres activities in Ghana likely faces the problems of limited resources (29%), lack of interest (20%), unreliable power sources (19%), noise pollution (14%), limited coverage (10%), and the choice of language (8%).

Figure 4: Challenges in using CICs to create awareness of climate change

Source: Field Survey (2023)

Managing the challenges

Regarding how to manage the challenges likely to hinder the use of information centres in raising climate change awareness, the analysis shows that a significant majority (28%) of the respondents proposed the role of government in providing resources, 20% of them suggested community sensitisation to whip up communities' interest, 19% proposed an alternative power source, 14% submitted the regulation of community information centres activities, 10% supported wider coverage, whiles 9% mentioned translation.
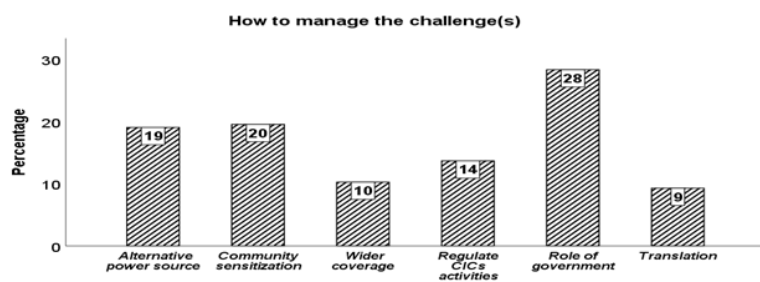
Figure 5: How to manage the challenges

Source: Field Survey (2023)

DISCUSSION

Community information centres' activities in Ghana

The results of the investigation discovered that selling or promoting traditional/herbal medicines mainly dominates community information centres' activities and to some extent, the preaching of the word of God, as well as giving communal announcements to the communities in which they are situated. Literature posits that information centres, instead of being an outlet for educating and disseminating information to people, have been an avenue to extort money from poor communities under the pretext of selling medicines (Appiah-Korankye, 2019). Information of communal significance is also announced to community members through information centres (Obeng-Fosu, 2021)**.** Theft cases, funerals, communal and social gatherings are announced to communities on these informational hubs. In this vein, these information centres are the origin of message delivery for the communities in which they are established. Promoting environmental health and sanitation as well as educating the public about climate change occupies only an infinitesimal place in the activities of community information centres. This means that proper attention has not been given to climate change and its awareness creation in these establishments, leading to a significant knowledge gap between rural and urban communities. Rifts in environmental change knowledge exchange prevent adjustment

messages from reaching vulnerable communities and limit the participation of local voices in policymaking (Bisht & Ahluwalia, 2014).

Community information centres in climate change awareness raising: How?

In line with the information provision and capacity utilisation model, which postulates that access and capacity to utilise information is spatially differentiated, the study discovered using local language in climate change messaging as a way of raising awareness among local communities in order to bridge the gulf in access to and utilisation of climate change information. The respondents claimed that when information is delivered in their native languages, they can better understand and respond to it. By broadcasting in indigenous dialects, community stations overcome the linguistic problem and expand their reach by appealing to a variety of listeners. To maximise spread, the knowledge is packaged in a language that each group can understand (Ndinde, 2014). Local languages empower communities, creating a sense of belonging and ownership. Communities understand information better when delivered in their language (Fombad & Jiyane, 2019).

Furthermore, recruiting and training members of the communities as messengers was also emphasised to promote climate change awareness. The reason alluded to it was that people understand information better when delivered by their own people. This means that messengers of climate change communication must be selected from among the community members and be trained to deliver awareness messages. Doing that will make people feel that they are part of the process. Research conducted in America discovered that when people who have similar viewpoints deliver messages, people are more likely to trust and believe them (Moser, 2010). These messengers not only share similar views and interest with people but also communicate with audiences in their indigenous dialects. Conversely, people are not inclined to believing in messages passed by people they do not know. As a result, these messages do not realise their efficacies. A report by The American Psychological Association (APA) cited in Hafner et al. (2019) posited that mistrust of government communications might be a major impediment to climate change action in the US.

Moreover, community information centres can promote climate change awareness by providing a platform for grassroot education about climate change issues. This supports empirical studies that community information centres offer avenues for communal learning on local and national concerns (Ofori-Birikorang & Aggrey, 2018; GIFEC, 2015; Obeng-Fosu, 2021) such as climate change. Community Information Centre offers a venue for members of different remote villages to meet and share expertise and information that can be more useful (Islam & Mezbah-ul-Islam, 2008). This helps to promote active climate change engagement and enables problems and solutions to be identified in the process. In this way, educating the public about climate change discourse can be considered an engine for public consciousness of climate change. According to literature, people must be conscious of and knowledgeable about situations before they can take proper measures (Asekun-Olarinmoye et al., 2014; Upadhyay & Bijalwan, 2015). A person is said to be aware of the current climate state if they have knowledge or education about climate change (Samuel et al., 2018). Fighting climatic change is successful if knowledge of adaptation is shared with the public (Upadhyay & Bijalwan, 2015), and with an appropriate format and medium in order to realise the efficacy of the message.

Last, but not least, the study unearthed that awareness of climate change can be raised in information centres by encouraging participatory social learning. According to the present study, participation can be achieved through calls or phone-in shows in community programmes where the local people can participate in the process and discussions. One crucial role of information exchange in the community development process is the creation of opportunities for dialogue and discussion among pertinent stakeholders (Aruma, 2018), which CICs must emulate. Participatory communication is a dialogic strategy for raising consciousness, offering remedies, bolstering local voices, and inspiring marginalised and disadvantaged groups (Abdulai et al., 2021; Bisht & Ahluwalia, 2014; Mannar, 2014). Interactive methods for information flow is a beneficial

tool for achieving social developmental goals which are—boosting public awareness of crucial issues, enhancing exposure to knowledge, a rising use of existing facilities, or organising communities together to achieve a similar goal (Vyver & Vyver, 2018). Additionally, it gives room for conversation and encourages group thinking and education among locals (Tufte & Mefalopolus, 2009). Furthermore, the collaborative method may claim to give everyone a fair opportunity to offer their knowledge and to allow individuals to be actively involved in dialogues in order to contribute ideas and solutions to issues (Vyver & Vyver, 2018). By involving local residents in programmes that affect their economic, social, and cultural development, their interest is stirred and they become more friendly in offering recommendations to better subsequent development initiatives (Mbakogu, 2015).

Finally, the finding discovered that community information centres can be used to raise climate change awareness by integrating scientific and indigenous knowledge. The respondents claimed that scientists must not be seen to be the repository of all knowledge and that there is a pool of knowledge that sits in the minds of the local indigenes which when tapped into, can enhance the awareness process. Achieving this, according to the study means that we must involve the local people in awareness campaigns. This is because a lack of stakeholder involvement constitutes an implementation challenge for CICs (Ibrahim, 2018). Evans et al. (2018) maintain that it is possible to suggest that ordinary people's lack of engagement in climate change discourse contributes to their poor knowledge and reception to climate change. A small number of participants submitted the involvement of the youth in awareness-raising campaigns. The youth should be empowered to join the awareness-raising campaigns due to their greater influence in societies.

Community information centres in climate change awareness raising: The challenges

The analysis revealed that community information centres face the problem of limited resources in terms of funds, logistics, and personnel. The cost of funding information coupled with a lack of logistics and a paucity of personnel with knowledge and skills in climate change constrains CICs in raising awareness of climate change. This agrees with Fombad and Jiyane (2019) who studied two community radio stations, and found that community radio stations struggle with a lack of funding, a shortage of staff, a lack of expertise, a lack of information-gathering time, and antiquated technology. Another challenge discovered is a lack of interest in information centres' activities. The respondents held that they do not have any interest in the CICs' activities because of their dominance in the selling of traditional medicines. These herbalists are extorting money from poor rural communities all in the name of medicines (Appiah-Korankye, 2019). Due to people's lack of interest in CICs activities, they do not regard CICs activities. The lack of recognition of CICs and what they offer can be seen in the people's rejection/refusal to listen to the information from these sources.

Furthermore, the study found unreliable power supply as constraint to information centres' activities of raising awareness of climate change. Communicating to people via electronic medium will be undermined in a country where there are frequent power outages. According to a study cited in (Mtega & Ronald, 2013), lack of electricity resulted in limited access to information services in most agrarian communities in Tanzania. The power crisis ("dumsor") in 2016 in Ghana, hampered CICs' operations where the dissemination of information to beneficiary communities was challenged. According to Obeng-Fosu (2021), erratic power supply was a challenge to the running of the "Ebenezer Information Centre in Obogu (Asante-Akyem South Municipal)". Due to the absence of a generator, power cuts make it unable to spread messages. Also, Noise pollution impedes climate change awareness raising. People consider these CICs a nuisance due to their unfavourable timing of information dissemination. As a result, community members sometimes have some sentiments against information centres. According to Obeng-Fosu (2021), CICs create an inconvenience with the noise that disturbs people's sleep at dawn. He went further to explain that it has been an irking phenomenon that beneficiary communities are battling with.

Again, the present study revealed limited coverage as a barrier likely to confront CICs in their activities of

raising awareness of climate change. These CICs have localised signals (AMARC, 2019), making it difficult to spread information to the entire communities in which they are situated. This can be considered a barrier as only areas within their coverage will hear the information to the detriment of the far-flung locations which are not reachable. Finally, although the local language was suggested to increase awareness, the choice of a particular local language can be problematic due to the cosmopolitan nature of Ghanaian cities and towns. When it happens this way, the only people in whose language the information is communicated will understand the information to the detriment of others. The net effect is the information gap between community members.

How to manage the challenges

Notwithstanding the challenges likely to constrain CICs in raising awareness of climate change, the study further discovered how the challenges can be managed. One of the outcomes is the role of government. The study calls for government in providing resources that will be needed for an awareness-raising campaign. The government must provide logistics, and funds, and train messengers/communicators of climate change to deliver climate information in languages easily understood by the communities in which these centres are located. Besides, the "Ministry of Information and Communication" must regulate information centres' activities, including their timing of dissemination. However, whiles some held the view that CICs should deliver information at dawn, others opposed to that holding that it will disturb their sleep, which reinforces the findings of Obeng-Fosu (2021) that CICs create noise and disturb people's sleep at dawn.

Also, some people suggested that the communities in which these centres are situated must be sensitised to whip up their interests in CICs activities otherwise awareness raising about climate change in these information centres will be undermined. In order to enhance people's living situations, a desirable strategy must be identified, assessed, prioritised, accepted, and implemented. This is the overarching goal of effective messaging (Aruma, 2018). Moreover, in managing the problem of power, a significant majority submitted alternative power sources such as generators, power plants, and solar panels. These alternative power sources can be used in case there is a power outage to ensure a smooth operation of CICs activities according to the study. In addition to using alternative sources, few participants call on the government to ensure a stable supply of power to ensure the smooth running of activities in general, and information centres in particular.

A number of respondents theorised that CICs must either be established at vantage points in communities or be supplemented with other channels like information vans, posters, and banners to ensure wider coverage. This will ensure that all the people in communities receive information in order to leverage any perceived information gap between and among the people. The respondents suggested adequate translation of one local language to another to deal with the deficit of choice of a particular local language. This is due to the cosmopolitan nature of Ghanaian towns and villages. This will ensure understanding so that awareness can be in total. Translating one dialect into another has the capacity of reaching a diverse populace at a particular period. Without the translation, only those in whose dialect the message is disseminated will comprehend the message. This can lead to a significant knowledge and awareness rift between community members. Broadcasting information in a language that the community can comprehend typically empowers communities.

LIMITATION

Although the data collection procedure ensured objective responses from the participants as the investigators were not in direct contact to influence the responses, there was a delay in the data collection as respondents felt reluctant in answering the questionnaire on time. Such delay also affected the sample size as only 205 filled-out questionnaires were received after three months of posting and prompting them on the various

universities WhatsApp platforms. Besides, assigning numerical values to textual data made it possible for quantitative analysis meant for generalisation. Consequently, the details of the issue were not fully covered as such analysis fell short of eliciting the details of the issue under scrutiny.

CONCLUSION

This paper examines community information centres as a vehicle for climate change awareness creation in Ghana, employing the descriptive quantitative survey design. The study found out that the activities of these information hubs are dominated by the selling of herbal medicines. For this reason, climate change education occupies the backseat of these centres' activities. Despite this, these centres can be used to raise awareness of climate change via the use of local languages, encouraging participatory social learning, integrating scientific and indigenous wisdom into climate awareness campaigns among others. Furthermore, community information centres faces the challenges of lack of interest, limited resources, unreliable power supply, among others in their operations. These challenges, according to the study, can be leveraged through the utilisation of alternative power sources, community sensitization to whip up people's interest in these centres' activities, role of government in mobilising funds and resources, and regulating the activities of these informational hubs.

The study perceives CICs as promising platforms for disseminating climate change awareness. It recognises the strategic positioning of these centers within local communities as effective channels for information dissemination and, therefore, expresses a desire for increased integration of climate-related content into the services provided by these centres. This underscores the importance of strategic planning and collaboration between educational institutions, governments, NGOs, CICs, and relevant stakeholders to optimise the potential of these information hubs in raising awareness about climate change. Again, the oversight and regulation of information centres fall within the purview of the Ministries of Communication and Information. As custodians of information dissemination, it is incumbent upon these ministries to ensure the orderly and responsible operation of these centres. By instituting robust regulatory frameworks, they can safeguard the integrity of information disbursed, guaranteeing accuracy and relevance, particularly concerning critical subjects like climate change awareness. This regulatory role not only upholds standards in information delivery but also cultivates an environment where community centres fulfill their potential as effective vehicles for societal education and awareness on pressing issues like climate change in Ghana. Finally, addressing the challenges and leveraging the potential of community information centres can have far-reaching effects, not just on climate change awareness but also on societal resilience, local empowerment, and sustainable development in Ghana. It requires a concerted effort involving multiple stakeholders, including government bodies, local communities, NGOs, and academia, to bring about these changes. The study makes a valuable contribution to knowledge by drawing attention to how indigenous messaging channel such as community information centres can be capitalised on to educate rural communities about climate change.

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REFERENCES

1. Abdulai, A., Chireh, V. K., & Tchoukaleyska, R. (2021). Engaging diverse audiences: The role of community radio in rural climate change knowledge translation. *Journal of Community Engagement and Scholarship*

, *13*(3).

2. Adebiyi, R. A. (2015). Communicating indigenous knowledge through exogenous channe: A comparative content analysis of Adelakun's under the Brown Rusted Roofs and Achebe's Things Fall Apart. *Journal of Culture, Society and Development*, *12*, 1–12. www.iiste.org

3. Agwuna, O. M., & Enweani, U. V. (2019). Managing community information centres (CICS) for effective provision of health information to rural women. *Library Philosophy and Practice* (*e-journal*). 2072.

4. Al-hassan, S., Andani, A., & Abdul-malik, A. (2011). The role of community radio in livelihood improvement: The case of Simli radio. *The Journal of Field Actions*, *5*(July 2011), 0–6.

5. Appiah-Korankye, H. (2019). *Community public address system: Now a prescribing tool*. Modern Ghana.

6. Aruma, E. O. (2018). Roles of communication in community development. *International Journal of Network and Communication Research*, *5*(1), 1–10.

7. Asekun-Olarinmoye, O, E., Odu, O. O., Olugbenga-bello, A. I., & Adeomi, A. A. (2014). Public perception of climate change and its impact on health and environment in rural southwestern Nigeria. *Research and Reports in Tropical Medicine*, 1–10.

8. Bisht, H., & Ahluwalia, N. (2014). *Community radios and climate change communication: Mapping grassroots experiences of the 'Shubh Kal' Project in Bundelkhand, Central India*. Development Alternatives.

9. Chari, T. (2016). Rethinking climate change communication strategies in Africa: The case for indigenous media. *Indilinga African Journal of Indigenous Knowledge Systems*, *15*(2), 217–232.

10. Chatterjee, A. (2017). Community information service (CIS). *Elements of Information Organization and Dissemination*, 279–303. https://doi.org/10.1016/b978-0-08-102025-8.00019-3

11. CIMA. (2007). *Community radio: Its impact and challenges to its development*. Centre for International Media Assistance and National Endowment for Democracy.

12. Efa, N., Musebe, R., Day, R., Romney, D., Kimani, M., Maulana, T., & Mallya, G. (2011). Integrating indigenous and exogenous communication channels and capabilities through community-based armyworm forecasting. *African Crop Science Journal*, *18*(3), 115–125. https://doi.org/10.4314/acsj.v18i3.68639

13. Eichhorn, J., Molthof, L., & Nicke, S. (2020). *From climate change awareness to climate crisis action: Public perceptions in Europe and the United States*. Open Foundation Society.

14. Evans, H., Dyll, L., & Teer-tomaselli, R. (2018). Communicating climate change: Theories and perspectives. *Handbook on Climate Change Communication*, Vol. 1, 1-16, Springer International Publishing.

15. Fombad, M. C., & Jiyane, G. V. (2019). The role of community radios in information dissemination to rural women in South Africa. *Journal of Librarianship and Information Science*. https://doi.org/10.1177/0961000616668960

16. Ghana Investment Fund for Electronic Communications (2015), Retrieved, 20th April 2018. http://gifec.gov.gh/index.phpx3Foptionx3Dcom_contentx26viewx3Darticlex26idx3 83.htm

17. Hafner, R., Elmes, D., & Read, D. (2019). Exploring the role of messenger effects and feedback frames in promoting uptake of energy-efficient technologies. *Current Psychology*, *38*(6), 1601–1612. https://doi.org/10.1007/s12144-017-9717-2

18. Ibrahim, M. (2018). *Exploring the implementation challenges of community information centre (CIC) programme in the Ga East Municipality of the Greater Accra Region of Ghana.* Master's Thesis: University of Ghana.

19. Ifukor, M. O. (2013). Channels of information acquisition and dissemination among rural dwellers. *International Journal of Library Information Science*, *5*(10), 306–312. https://doi.org/10.5897/IJLIS11.036

20. Igwenagu, C. (2017). *Fundamentals of research methodology and data collection*. Enugu State University of Science and Technology.

21. Islam, A., & Mezbah-ul-islam, M. (2008). Community information centers: A step to bring

connectivity of the rural communities in Bangladesh. *Planner*, 55–69.

22. Khan, A. A., Khan, M. R., Hassan, M., Almed, F. & Haque, S. R. (2017). Role of community radio for community development in Bangladesh. *The International Management Review*, 6(3), 94–102.

23. Khan, Z. A., & Nawaz, A. (2020). Impact of climate change awareness on climate change adaptions and climate change adaptation issues. *Pakistan Journal of Agricultural Research*, *September*. https://doi.org/10.17582/journal.pjar/2020/33.3.619.636

24. Khatibi, F. S., Dedekorkut-Howes, A., Howes, M., & Torabi, E. (2021). Can public awareness, knowledge, and engagement improve climate change adaptation policies? *Discover Sustainability*, 24.

25. Lois, M. (2014). *Effects of child abuse on academic performance in public primary schools in Waia Division, Mboni East District.* University of Nairobi.

26. Manjunatha, N. (2019). Descriptive research. *Journal of Emerging Technologies and Innovative Research* (JETIR), 6(6), 863–867.

27. Mannar, I. S. (2014). Communicating climate change using community radios. *Journal of Biodiversity, Bioprospecting and Development*, 1(1), 1–6. https://doi.org/10.4172/2376-Page

28. Mbakogu, I. (2015). Addressing the relevance of indigenous communication to communicating for development. *International Journal of Scientific Footprints*, 3(2), 1–14.

29. Moser, S. C. (2010). *Communicating climate change: History, challenges, process and future directions.* John Wiley & Sons. https://doi.org/10.1002/wcc.011

30. Moser, S. C., & Dilling, L. (2012). Communicating climate change: Closing the science-action gap. *The Oxford Handbook of Climate Change and Society*, *March 2022*, 1–18.

31. Mtega, W., & Ronald, B. (2013). The state of rural information and communication services in Tanzania: A meta-analysis. *Journal of Information and Communication Technology Research*, 3(2), 64–73.

32. Mundy, P., & Lloyd-Laney, M. (1992). Indigenous communication. *Appropriate Technology*, 19(2), 1–4. https://doi.org/10.1002/9781118505328.ch7

33. Mugenda, O. & Mugenda, A.G. (2010). *Research methods: Quantitative and qualitative approaches.* Nairobi: Acts Press.

34. Mushunje, M. (2020). *Customer perceptions of community information centres in Zimbabwe.* University of Pretoria.

35. Ndinde, S. (2014). The role of community-based information centres in development: Lessons for rural Zimbabwe. *Developing Country Studies*, 4(19), 107–111.

36. Ndinde, S., & Kadodo, W. (2014). The role of community-based information centers in development: Lessons for rural Zimbabwe. *International Journal of Learning, Teaching and Educational Research*, 2(1), 44–53.

37. Obeng-Fosu, K. (2021). *The role of community information dissemination centres in community development: A case study of Ebenezer Information Centre in Obogu in Asante-Akyem South Municipal.* Ghana Institute of Journalism.

38. Odumegwu, C. (2019). Availability and utilization of information and communication technology resources by undergraduate library users in Anambra State University libraries, Nigeria. *Library Philosophy and Practice*.

39. Ofori-Birikorang, A. & Aggrey, K. (2018). Horns over roofs: A study of locally designed rural information dissemination technology centres in Ghana. In IUCDS/CIUED- *Journal of Research Findings/Revue des Resultats de Recherche*, 1(2), 293-321

40. Ogunbode, T. O., Odekunle, D., & Asifat, J. T. (2019). Climate change awareness and its determinants in a growing city in the southwestern Nigeria using multivariate analysis. *Journal of Environmental Sustainability*, 7(1).

41. Ohene-Asante, S. N. (2015). *Climate change awareness and risk perception in Ghana: A case study of communities around the Muni-Pomadze Ramsar site.* Mphil Thesis: University of Ghana. https://ugspace.ug.edu.gh

42. Orodho, J. A. (2009). *Techniques of writing research proposals and reports in education and social sciences*. Nairobi, Kanezja publishers.

43. Perez-Teran, A. S., Tiani, A. M., Touko-tchoko, M., & Tchatchou, B. (2015). *Testing the influence of radio programs on climate change knowledge: A pilot experience from the Congo Basin*. Working Paper 173, Center for International Forestry Research (CIFOR)

44. Samuel, O. O., Micheal, A., & Nkonki-Mandleni, B. (2018). Determinants of climate change awareness among rural farming households in South Africa. *Journal of Economics and Behavioral Studies*, *10*(5(J)), 116–124. https://doi.org/10.22610/jebs.v10i5(j).2502

45. Saldaňa, J. (2009). *The coding manual for qualitative researchers*. New York: Sage.

46. Sarfo, I., Dontoh, J. I., & Otchwemah, H. B. (2019). Awareness and vulnerability to climate change among coastal communities in Ghana: The case of Dansoman of the Greater Accra region. *Current Journal of Applied Science and Technology*. https://doi.org/10.9734/CJAST/2019/45659

47. Sayers, R. (2006). *Principles of awareness-raising for information literacy: A case study* (pp. 1–114). UNESCO. http://unesdoc.unesco.org/images/0014/001476/147637e.pdf

48. Selormey, B. E. E., Dome, M. Z., Osse, L., & Logan, C. (2019). Change ahead of climate change in Africa. *Afrobarometer Policy Paper No.*, *60*(60), 1–28.

49. Sikdar, S. (2020). Indigenous communication channels: The obliterated splendor of extension communication. *Extension Education and Rural Development*, 1–3. https://www.researchgate.net/publication/340297703

50. Siyao, P. O. (2021). Sources of climate change information used by newspaper journalists in Tanzania. *International Federation of Library Associations and Institutions*, *47*(1), 5–19. https://doi.org/10.1177/0340035220985163

51. Sraku-Lartey, M., Buor, D., Adjei, P. O. W., & Foli, E. G. (2020). Perceptions and knowledge on climate change in local communities in the Offinso Municipality, Ghana. *Information Development*, *36*(1), 16–35. https://doi.org/10.1177/0266666918811391

52. Tufte, T., & Mefalopulos, P. (2009). *Participatory Communication: A Practical Guide*. World Bank Working Paper 170. Washington DC: The World Bank.

53. UNCC. (n.d.). *Community radio as a knowledge tool in responding to climate change under the Nairobi work programme*. United Nations Climate Change.

54. Uhegbu, A. N. (2007). *The information user: Issues and themes.* 2nd ed. Okigwe: whytem publishers.

55. Upadhyay, A. P., & Bijalwan, A. (2015). Climate change adaptation: Services and role of information communication technology (ICT) in India. *American Journal of Environment Protection*, *4*(1), 70–74. https://doi.org/10.11648/j.ajep.20150401.20

56. Vyver, J. V., & Vyver, C. V. (2018). Identifying the nature of participatory communication between stakeholders of a university incubator. *Angewandte Chemie International Edition, 6(11), 951–952.*, *9* (2), 10–27.

57. Wilson, D. (1997). *Communication and social action*. Port Harcourt: Footstep Publications.

58. World Association of Community Radio Broadcasters [AMARC]. (2019). Retrieved from https://www.devex.com/organizations/world-association-of-community-radio broadcasters-amarc-61159