



VOLUME 11 ISSUE 3

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The International Journal of

# Climate Change: Impacts and Responses

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## Coverage of Climate Change

Graduate Students' Climate Change Policy  
Awareness and Assessment of Ghanaian Media

THEODORA DAME ADJIN-TETTEY

**THE INTERNATIONAL JOURNAL OF  
CLIMATE CHANGE: IMPACTS AND RESPONSES**

<https://on-climate.com>  
ISSN: 1835-7156 (Print)  
<https://doi.org/10.18848/1835-7156/CGP> (Journal)

First published by Common Ground Research Networks in 2019  
University of Illinois Research Park  
2001 South First Street, Suite 202  
Champaign, IL 61820 USA  
Ph: +1-217-328-0405  
<https://cgnetworks.org>

*The International Journal of Climate Change: Impacts and Responses* is a peer-reviewed, scholarly journal.

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# Coverage of Climate Change: Graduate Students' Climate Change Policy Awareness and Assessment of Ghanaian Media

Theodora Dame Adjinn-Tettey,<sup>1</sup> University of Professional Studies, Ghana

*Abstract: Ghana's recognition of the adverse effects of climate change has compelled the government to put in place a National Climate Change Policy (NCCP), while highlighting the critical role of communication. In the light of this, the study attempts to establish what audience members (graduate students) perceive of how the media are taking up the role of providing the needed information on climate change. Results showed that there is high exposure to television and radio among this audience and the dominant source of climate change information is television. More respondents were aware of global policies and initiatives on climate change than national or local policies. Respondents also have a rather negative perception about the extent to which Ghanaian legacy media are communicating climate change. Respondents expect the media to give maximum attention to climate change communication. The top-three topics they want from climate change communication in the media are: effects of climate change; how to prevent climate change; and how to deal with effects of climate change.*

*Key words: Climate Change, Climate Change Communication, Climate Change Policy, Climate Change Awareness, Perception, Media, Graduate Students*

## Introduction

The climate of a place is the general atmospheric condition prevalent in that geographical area over a long period. The National Aeronautics and Space Administration (NASA) of the United States differentiates weather from climate by defining weather as the short-term changes observed in wind, temperature, precipitation, clouds, and humidity in a region, country, or city, whereas climate is that location's weather averaged over many years. In recent times, there have been concerns about the climatic conditions in various regions of the world changing. The concerns about climate change have brought about the formation of various organizations to assess the impact of the changes on humans and to find solutions to them, aside from other mandates that they have. One such organisation is the Intergovernmental Panel on Climate Change (IPCC). It was set up to "comprehensively, transparently and objectively, evaluate scientific and technical information about climate change" (Ohene-Asante 2015, 1).

The United Nations Framework Convention on Climate Change (UNFCCC) in 2001 defined climate change as "a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods" (UNFCCC 2001, 7). The role of humans in contributing to climate change is underlined by this definition. Both human and natural actions can result in the discharge of carbon dioxide into the atmosphere, reflection of sunlight back into space, absorption of sunlight, and raising of temperatures. These lead to the warming of the atmosphere and sometimes reduction in the amount of the sun energy reaching the surface of the Earth. The range of human actions that cause climate change and the factors that shape those actions—anthropogenic drivers (Rosa and Dietz 2012)—have been observed to be the main cause of climate change (IPCC 2014). The Union of Concerned Scientists (UCS) has identified human climate drivers, or what is otherwise termed "human finger print" linked to climate change, to include heat-trapping emissions from burning coal, gas, and oil in power plants and cars; felling of trees and burning forests; black carbon pollution; tiny pollution particles

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(aerosols); and changes in land use that affect the Earth's albedo, that is, the amount of solar energy reflected from the earth. This is in spite of identified natural factors such as energy from the sun; aerosols from periodic volcanic eruptions, dust, and salt spray; natural carbon cycle processes like termite mounds in Africa that emit methane; or tiny organisms in the ocean surface that take up carbon dioxide (UCN n. d).

African countries, which are regrettably predominantly underdeveloped, are considered to be the greater sufferers of climate change (Niang et al. 2014; Pachauri and Allen 2014; Pachauri and Reisinger 2007). Climate change trends in these countries show up in the warming of the inland subtropics; frequent occurrence of extreme heat events; increasing aridity/dryness; and changes in rainfall. A classic consequence of climate change is the fast decline in rainfall within the southern African regions while the eastern parts of Africa are recording a sharp increase (Serdeczny et al. 2017).

As this trend lingers, Sub-Saharan Africa's already high rates of undernutrition and infectious diseases can be expected to escalate compared to a scenario without climate change. Also, Africa's dependence on rain-fed agriculture, widespread poverty and scarcity of capital for adaptation measures, high population density, and the lack of economic development and institutional capacity (Davidson et al. 2003; Pachauri and Reisinger 2007; Serdeczny et al. 2017) will worsen the impact of climate change on Africa. This is because climate change leads to the lengthening of the growing seasons, rising sea levels, droughts, heat waves, floods, intense and frequent hurricanes, amongst others, which affect the livelihood of humans (NASA 2017; Greenpeace International n. d).

Ghana shares in the concerns about the effects of climate change. Aside from the challenges of environmental degradation (Neville and Mohammed 2010) that the country is grappling with, Ghana Agricultural News Digest (2012) reports that climate change is affecting Ghana's natural resources including water bodies, lands, vegetation, and forests. Ghana's climatic condition has become more inconsistent and drier in recent times (Ohene-Asante 2015). Smith-Asante (2016) cites torrential rains, unbearable scorching sun, uncertain rainfall patterns, severe and prolonged harmattan, and rising sea levels, which have rendered many communities in the Keta Municipality of the Volta Region of Ghana homeless, as evidence of climate change effect on the country. The nation's persistent experience of climate change will negatively affect crucial economic sectors, such as agriculture, fisheries, and food production, which will also consequently grossly affect the nation's food security (Ghana Agricultural News Digest 2012) on which residents greatly depend.

Acknowledging the potential effects of climate change, the Ministry of Environment, Science, and Technology (MEST) of Ghana, with the support of other state agencies, in 2013 developed and launched the National Climate Change Policy (NCCP) to ensure "a climate resilient and climate compatible economy, which addresses low carbon growth path for Ghana, while achieving sustainable development" (MEST 2013, vii). According to the document, the three objectives of the Policy are: effective adaptation, social development, and mitigation. Admittedly, the climate change policy document highlights signs of the direct manifestations of climate change in Ghana—increased temperatures and rainfall variability—which includes unpredictable extreme events and sea-level rise (MEST 2013).

A number of measures and programs to mitigate the effects of climate change have been detailed out in the NCCP, of which climate change communication is key, with the document spelling out that "communication is critical to engage all stakeholders on climate change" (MEST 2013, 14). Corner (2011) states that communication is a critical component of fighting climate change. Ladouceur (2015) also says the media is a key actor in climate change communication, since the general population pays more attention to and derives much of their information from the media as compared to scientific reports, specialist websites, or the reports or publications of environmental organisations. Ohene-Asante (2015) proffers that there is evidence to show that television and daily newspapers are primary sources of information,

positioning media as key to information acquisition or informal education. Therefore, discussions about climate change communication cannot be complete without considering the critical role of the media, more importantly, legacy media (also referred to as traditional media, such as newspapers, television, and radio, which were prevalent before the information age [Desjardins 2016]). This is because legacy media can consciously set the agenda for climate change discussions and appropriate actions thereof.

It, therefore, comes as no surprise that the bulk of studies on climate change communication pays attention to public awareness of climate change (e.g., Schmidt, Ivanova and Schäfer 2013; Corner, Markowitz, and Pidgeon 2014; Lee et al. 2015); climate change impacts, beliefs, attitudes, and perceptions (e.g., Kusakari et al. 2014; Melillo, Richmond, and Yohe 2014; Leiserowitz et al. 2013; Dunlap 2013; Hobson and Niemeyer 2013; Kihara et al. 2015); media framing of climate change (e.g., Ohene-Asante 2015; Midttun et al. 2015; Boykoff 2013; Schäfer, Ivanova, and Schmidt 2014; Schäfer and Schlichting 2014; Zamith, Pinto, and Villar 2013). A few also pay attention to university students' knowledge, perceptions, and attitudes about climate change, especially in the Ghanaian context (Wachholz, Artz, and Chene 2014; Öhman and Öhman 2013; Nigatu, Asamoah, and Kloos 2014), and even fewer on what perception about climate change communication in the media is among university students or even the general audience population.

It is in the light of this that this study deviates from the norm and assesses the perceptions of mass media audience about climate change communication in the media. It also assesses climate change policy awareness levels among respondents. By so doing, it is hoped that empirical evidence gathered will help Ghanaian mass media producers know how they are faring with climate change communication and adopt ways to improve what they do with the subject matter. It also provides evidence for policy makers and actors about awareness of local policies and initiatives to combat climate change.

## Research Questions

The study looks at climate change communication from the recipient of information. In doing so the research questions guiding the study are:

1. What are the knowledge/awareness levels of climate change among graduate students?
2. What is the perception about how media is communicating climate change in Ghana?
3. What is the expectation of graduate students about climate change communication in the media?

## Literature Review

Sampei and Aoyagi-Usui (2009) conducted a study into coverage of climate change in Japanese newspapers from January 1998 to July 2007 and how that influenced public opinion at the time. Their study gathered that there was a sharp increase in newspaper coverage for the period under study. They also discovered that coverage of this subject matter was associated with an upsurge in public concern for climate change. However, the researchers realized that public concern for climate change was immediate yet short-lived. The researchers, therefore, suggested that in order to ensure effective communication of climate change, approaches with the purpose of upholding mass media coverage of global warming was essential. This study only goes to affirm the importance of media in climate change communication to ensure consciousness and actions required to minimize, if not eradicate, climate change. For this reason, a study to establish what audience members think about climate change communication in the media is appropriate.

Midttun et al. (2015) carried out a study to explore newspaper coverage of climate change in Norway, China, and Ghana in order to settle on an intellectual basis for a shared climate policy action. They found differences in story types in all three countries studied. While Norway was involved in enterprising journalism, and academics used as leading sources, Chinese and

Ghanaian newspaper articles were routinized and politicians and public officials were the dominant news sources used in China. The Ghanaian press also used international sources a great deal. Additionally, findings from Ghana showed that Ghana was moving away from lamenting about how climate change is affecting her or portraying herself as a victim of climate change and rather finding solutions in the form of instituting a climate policy. Chinese newspapers portrayed China as leading energy efficiency and clean technologies for development; while the Norwegian press projected Norway as exporting its climate action. The researchers concluded that there was little common ground for climate change reduction through binding climate emission limits and carbon pricing in all three countries. They, consequently, suggested “green growth” policies for the three countries. This study was on newspaper articles and did not look at audience perception of media reportage.

In a meta-analysis of 133 relevant studies on climate change communication in the media, Schäfer and Schlichting (2014) report that studies in that area have intensely risen over the years, with the range of investigations growing to include more countries, additional types of media, including online and social media, and different methodological approaches. They, however, find that studies are heavily concentrated on Western countries and print media, making a case for a study like this one, which in addition deviates from what was investigated by Schäfer and Schlichting.

Realizing a host of studies had paid attention to climate change knowledge and attitudes among primary and secondary school children, Wachholz, Artz, and Chene (2014) surveyed college students on their knowledge and attitudes about climate change, intentions to reduce their personal greenhouse gas emissions, and their contentment with climate change content in teaching at the university and recommendations for improvement. They found that the majority of students considered climate change as reality and caused by human activities. Although most of the respondents had false impressions about the elementary causes and effects of climate change, they were worried about the occurrence. The researchers recommended that higher education curriculum gives space to climate change as a way of adding to the sharing of information about the phenomenon, in addition to contribute to finding solution to climate change.

In another study, Nigatu, Asamoah, and Kloos (2014) conducted a cross-sectional study to assess Ethiopian Health Sciences university students’ knowledge, understanding, and perception about the health implications of climate change. This study was done with the view to promote educational endeavors to raise awareness about health impacts associated with climate change and, in a way, enhance interventions. Over three quarters of the students had knowledge about the health implications of climate change, with females being a little more aware about it than males. The major source of information among respondents was electronic mass media, with almost all respondents (87.7%) selecting that. The researchers suggested that the programme curriculum be reviewed for students to benefit from a more comprehensive course on climate change and its health implications. The fact that the study showed that media played a significant role in the acquisition of climate change information serves as justification for studying audience perceptions about climate change communication in the mass media.

O’Neil et al. (2015) found that American media reported less on climate change compared to their British counterparts. This was evidenced in their analysis of media coverage of the three different reports published as part of the UN Intergovernmental Panel on Climate Change’s assessment in the UK and the US. Reports were framed in terms of health effects, ethical considerations, opportunities, as well as the economics of global warming while stressing disasters, scientific consensus, and scientific disputes and not engaging audiences. This is similar to findings by Hart and Feldman (2014), which found that most evening TV news reports dealing with the impacts of climate change failed to mention steps that can be taken to address the problem. It is observed that all of these studies looked at it from the content analysis perspective without seeking the views of audience members on how the media is championing climate

change communication. The novelty of this study lies in the fact that it turns attention to the a critical group of recipients of mass media messages (graduate students, who are considered to be of higher socio-economic status and are, hence, exposed to media content) for them to share their views on how the media is communicating climate change as well what they believe the media should pay attention to while communicating climate change.

### **Theoretical Framework: The Knowledge Gap Hypothesis**

The proponents of the theory, Tichenor, Donohue and Olien, defined the knowledge gap hypothesis as the following:

As the infusion of mass media information into a social system increases, segments of the population with higher socio-economic status tend to acquire this information at a faster rate than the lower status segments, so that the gap in knowledge between these two segments tend to increase rather than decrease. (Tichenor, Donohue, and Olien 1970, 159–60)

Mainly, the theory posits that although there may be increasing flow of information to the masses, there are segments of the audience who may not have access to information due to socio-economic disparities. Accordingly, Viswanath and Finnegan (2016) submitted that studies have shown inequitable information acquisition between groups of higher and lower socio-economic status (SES). This gives the theory significant policy implications. This is because in communicating public information, for instance, communicators must be mindful of the gap that may exist among people of diverse socio-economic backgrounds in order to vary communication content as well as communication channels to suit various groupings. Severin and Tankard (2001) argued, based on the knowledge gap hypothesis, that people of higher socio-economic status are more likely to be exposed to information that deals with public affairs or issues and science than less-educated people. The likely reason is because these are specialised areas that require some level of background information and relevant social context, which are two of the reasons the gap exists.

Graduate students form part of the higher socio-economic status that the knowledge gap hypothesis advances. The reason is that they have appreciable level of education and the requisite background information, social context, as well as communication skills and are likely to be interested in contemporary scientific information like climate change. Again, they wield other characteristics—communication skills, stored information, media target market and selective exposure—that the knowledge gap hypothesis postulates.

The theory also advances that the media targets the higher socio-economic status. Hence, programmes that have climate change content, like news bulletins, are largely targeted at this group. So, using graduate students in studying audiences' climate change policy awareness and assessment of media's coverage of climate change is not out of place. Being part of this group, they most likely have the means to afford media content, be it electronic or print media, and are thus exposed to and conversant with Ghanaian media content. They also possess the requisite background information, social context, and communication skills to understand climate change content communicated in the media. They are, therefore, considered fit to make an objective assessment of how the media is taking up climate change communication.

### **A Brief Overview of the Ghanaian Media Landscape**

Ghana is considered one of the leading media hubs in Africa (Portland PR 2019). The country enjoys proliferation and liberalization of the media (Owusu 2012). In terms of the broadcast media, Ghana is pluralistic as a result of the three realms of media regulation represented within the society (Philipatwura 2014, para. 15). According to the National Communications Authority

(NCA) (2018), Ghana has a total of 487 radio stations, which include public, private, community, and campus radio stations, as well as 133 analog, digital/satellite free-to-air and pay-to-view television stations. Many television and radio stations have local language programming content, which is extending citizen participation and wider circulation of information. The public broadcaster has radio stations in all regions of the country and five district radio stations. It also operates an analogue terrestrial network called GTV. It, additionally, runs five digital television channels.

Internet access is good with about fifty-four authorized internet service providers (ISPs) operating in the country (NCA 2018). As far back as 2007, there were 136 newspapers in Ghana (Freedom House 2007). In recent times, most of the newspapers have become dormant but the newspaper industry is still vibrant. The Graphic Communications Group is the state-owned newspaper publishing company. It was established in 1950 and produces *Graphic Sports*, *Graphic Business*, *Graphic Showbiz*, *Junior Graphic* and the *Graphic Mirror*. However, *The Daily Graphic*, the flagship newspaper of the company, is published daily, except Sundays. A recent study positioned the *Daily Graphic* as the most popular newspaper among fifteen other newspapers, with 1.5 million readers daily (Zurek 2018a).

A report cited in the *Daily Graphic* also indicated that 35 percent of Ghanaians have access to the internet (Zurek 2018b). Most legacy media outlets in Ghana have an online presence, with most of them having active websites as well as active social media accounts.

## Methodology

This study explored Ghanaian graduate students' perceptions about climate change communication in the media. It also assessed their awareness levels of local and international policies and initiatives. Reasoning from the knowledge gap hypothesis that those from the higher socio-economic status (SES) group have more interest in scientific information than those of low SES and the fact that the theory says such people typically have some background knowledge and are likely to seek additional information, the researcher settled on graduate students for the study. Precisely, the choice of graduate students was premised on the fact that the researcher assumed that graduate students will likely be interested in and exposed to information related to climate change, which is scientific information, since they fall within the description given by the theory for high SES group.

One of the requirements for selecting candidates for Masters' programmes in universities in Ghana, including the University of Professional Studies, Accra, is a minimum of a third-class degree and five years relevant working experience. For this reason most graduate students tend to be mature, have careers, and have young families. A significant number of them are also in middle-level positions in the organizations they work for and are likely to be concerned about the sustainability of those organisations. Therefore issues related to how climate change impacts the organisations and their personal livelihoods as well as their families are likely to be of concern to them. Settling on graduate students to assess climate change communication in the media was, thus, not inappropriate.

The quantitative method was settled on as appropriate to answer the research questions for the study. Creswell (2003) discusses that a researcher's choice of approach to use in a study is dependent on the research problem, personal experiences, and the audiences for whom one seeks to write and adds that "what" questions are best answered through quantitative approaches. The quantitative approach, characteristically, allows for the efficient gathering of a large amount of information with relative ease from a reasonably large number of people with diverse demographic details and characteristics (Wimmer and Dominick 2011). An example of quantitative research design is survey research. Survey research is used to measure thoughts, opinions, and feelings (Shaughnessy, Zechmeister, and Zechmeister 1990), which this study intended to do.



Through the structured questionnaire, data was collected from respondents who were selected through the probability sampling approach. A total of 130 respondents were selected from the overall population of 1,300 graduate students of the University of Professional Studies, Accra. The sample size of 130 was settled on based on Gay and Diehl’s (1992) proposition that 10 percent of the population must be sampled for descriptive studies. For a population of 1,300, a 10 percent sample size is 130, hence, the choice of that number to take part in the study. Descriptive studies produce evidence that can be positioned between exploratory and explanatory knowledge continuum and are intended to describe or explain relationships among phenomena, situations, and events as they occur (Thomlison 2001). This study is largely descriptive because it explores and describes or explains the views people have about how the media is communicating the climate change phenomenon.

The sampling method used to select the 130 respondents was the systematic random sampling technique. This sampling method was settled on because a sampling frame could easily be attained from the School of Graduate Studies (SOGS) of the University of Professional Studies. Again, students could easily be traced and contacted to be given questionnaires to take part in the study. Because this sampling technique requires that an interval is determined in order to select respondents, the usual procedure of dividing the population by the sample size was followed through. This resulted in getting an interval of ten. Accordingly, every tenth unit in the sampling frame was selected until the sample size of 130 was attained. After that, details of all sampled respondents were collated. Respondents were further regrouped according to programmes of study. Once this was done, the coordinators for the various programmes of study of the sampled respondents were contacted to assist in getting respondents to take part in the study. There was 100 percent response rate after the administration of questionnaires. The table below provides a summary of the demographic characteristics of respondents:

Table 1: Demographic Profile of Respondents

Gender		Frequency	Percent
	Male	62	47.7
	Female	68	52.3
	Total	130	100
Age			
	20–25	15	11.5
	26–30	32	24.6
	31–35	33	25.4
	36–40	22	16.9
	41–45	17	13.1
	46–50	9	6.9
	Other	2	1.5
	Total	130	100
Programme of study			
	MBA	103	79.2
	MPhil	3	2.3
	MSC	24	18.5
	Total	130	100

Source: Adjin-Tettey

**Results**

This section presents results of data analysis with the aid of SPSS Version 22. Results are descriptive in nature. It is organized along the lines of the objectives of the study.

***The Knowledge/Awareness Levels of Climate Change among Graduate Students***

In order to establish how much knowledge respondents had about climate change, respondents were asked whether they had heard about climate change, the source of climate change information, extent of knowledge about climate change, and awareness of climate change policies at the national (local) and international levels.

Table 2: Respondents’ Exposure to Climate Change Communication

Have you heard about “climate change”?	Frequency	Percent
Yes	128	98.5
No	2	1.5
Total	130	100.0

Source: Adjin-Tettey

The findings showed that all the respondents, except two (128, representing 98.5%), had heard about climate change. Although a marginal percentage had not heard about climate change, it is surprising that two graduate students who are exposed to media and are educated up to the university level claim not to have heard about climate change at all. This finding is similar to the levels of awareness recorded in a study by Yaro (2013) among two groups of farmers—small-scale farmers and commercial farmers. This means that even among a group who may not be considered typical high SES group, climate change has high awareness levels.

Table 3: Where Have You Heard about Climate Change?

Where have you heard about climate change?	Responses		Percent of Cases
	#	Percent	
Television	95	27.6%	73.1%
Radio	65	18.9%	50.0%
Newspaper	42	12.2%	32.3%
Internet (social media)	69	20.1%	53.1%
Specialist publications/academic journals	18	5.2%	13.8%
Environmental groups	15	4.4%	11.5%
School/ college/ university	40	11.6%	30.8%
Total	344	100.0%	264.6%

Source: Adjin-Tettey

This was a multiple response question. The percent of cases column indicates the number of times each respondent selected each item. The overall percentage column in the table is used in discussing results. Table 3 shows that of those who had heard about climate change, the majority selected television as the source, followed by internet (social media) and radio, respectively. More than two out of ten respondents (27.6%) selected television as the source of climate change information, making television the leading medium of climate change communication. Also, two out of ten respondents (20.1%) selected internet (social media), while slightly fewer than two out of ten respondents (18.90%) selected radio as the medium through which they heard about climate change. Considering the margin between the two (social media and radio), it can be

concluded that social media (which is touted as being appealing to the youth), is playing a significant role in climate change communication, albeit, not as much as television, which is a legacy media. Also 12.2 percent of respondents selected newspaper, as well as 5.2 percent selected specialist publications/academic journals. Environmental groups was selected by 4.4 percent of respondents. Worthy of note, educational institutions seem to play a key role in climate change communication, as 11.6 percent of respondents selected school/college/university as their source of climate change information.

Table 4: Extent of Knowledge about Climate Change

	Mean	Standard Deviation	Min.	Max.
I completely understand what climate change means	4.1231	1.09979	1.00	5.00
I know the causes of climate change	4.0077	0.96043	1.00	5.00
I know the consequences of climate change	4.0692	0.94162	1.00	5.00
I know what I must do to prevent climate change	3.6923	1.09152	1.00	5.00
Climate change is an urgent issue	4.4077	0.88656	1.00	5.00
Everyone has a role to play in minimizing the effects climate change	4.3692	1.02782	1.00	5.00

Source: Adjin-Tetty

Among the knowledge statements, four out of five items of measurement (completely disagree, somewhat disagree, neutral, somewhat agree, completely agree) recorded high mean scores (above 4.0), which demonstrates that respondents had appreciable knowledge when it came to measured items on climate change. The statement “climate change is an urgent issue” got the highest mean score (mean = 4.41, SD = 0.89), followed by the statement “everyone has a role to play in minimizing the effects of climate change” (mean = 4.37, SD = 1.03). Thus, the majority of respondents agreed and strongly/completely agreed that climate change is an urgent issue and that everyone has a role to play in minimizing its effects. However, the knowledge statements “I know what I must do to prevent climate change” had a relatively low mean of 3.69, which means that quite a lot of respondents did not know what must be done to prevent climate change. It is, thus, not surprising that quite a significant number of respondents, when asked what information they wanted in climate change communication, indicated wanting information on how to prevent climate change as well as how to deal with climate change. This means that climate change communication must concentrate on or include information on preventive actions and measures against climate change.

Table 5: Respondents’ Climate Change Policy Awareness

		Frequency	Percent
Are you aware about the environmental policies in your country concerning climate change?	Yes	38	29.2
	No	92	70.8
	Total	130	100.0
Are you aware of the global policies or initiatives taken by various organizations to reduce climate change/global warming?	Yes	56	43.1
	No	74	56.9
	Total	130	100.0

Source: Adjin-Tetty

The majority of the respondents were not aware of environmental policies in their country concerning climate change; seven out of ten (70.8%) respondents said they were not aware of any local environmental policies concerning climate change. Only close to three out of ten (29.2%) admitted knowing about local environmental policies. However, comparatively, more

respondents were aware of global environmental policies or initiatives. Yet, quite significantly, more than half of respondents (56.9%) did not know of such global policies or initiatives. Generally, more respondents were aware when it came to global initiatives or policies (43.1% saying yes) than local policies concerning climate change (29.3%).

### Ghanaian Media and Climate Change Communication

Respondents were required to appraise the work of the media regarding climate change communication. Findings are discussed below:

Table 6: Media Platforms Respondents are Exposed to

Which media platforms respondents are exposed to?	#	%	% of Cases
Television	87	33.5%	66.9%
Radio	60	23.1%	46.2%
Newspaper	34	13.1%	26.2%
Social Media	69	26.5%	53.1%
Other	10	3.8%	7.7%
Total	260	100.0%	200.0%

Source: Adjin-Tettey

Before asking questions that assess climate change communication in Ghanaian media, respondents were asked about the media platforms they regularly patronized. This was also a multiple response question. The overall percentages, rather than percentage of cases, are used in the discussion. The majority of respondents said they were exposed to television, social media, and radio, respectively. The findings showed that 33.5 percent selected television as the platform they were exposed to, followed by 26.5 percent who said they were exposed to social media. Again, 23.1 percent selected radio, making it the third most patronized medium and 13.1 percent selected newspaper. The medium of highest exposure, in this case television, also served as the medium of highest exposure to climate change communication. The ones that followed (social media and radio) were also the ones that respondents received their climate change communication from, respectively.

Table 7: The Extent to which Ghanaian Media are Communicating Climate Change

	Mean	Standard Deviation	Min.	Max.
To what extent do you think Ghanaian traditional media (Radio, TV and Print) are communicating climate change?	2.5231	1.01321	1.00	5.00
In your view, how much attention do you think Ghanaian traditional media is giving to climate change issues?	2.4692	1.21482	1.00	5.00

Source: Adjin-Tettey

Rating the extent to which Ghanaian media are communicating climate change saw a very small mean rating, as Table 7 shows. On the question of how much attention Ghanaian traditional media are giving to climate change issues, it is observed that there was a small average rating (mean = 2.67, SD = 1.22), which means respondents thought there was minimal attention given to climate change. Responses to the statement “to what extent do you think Ghanaian traditional media (Radio, TV and Print) are communicating climate change?” resulted in low mean rating (mean = 2.52, SD = 1.01). This shows respondents think Ghanaian traditional media outlets are

not communicating climate change at all or they are doing very little with climate change communication.

Radio falling behind social media in terms of climate change communication sends the signal that radio stations have to strive to communicate climate change. This is because, predominantly, a lot of youthful Ghanaians listen to radio in the mornings to keep up to date with current affairs. Radio stations could use that opportunity to include climate change communication content in such programming to achieve the objective of serving as a conduit for information and education.

Table 8: Respondents' Views/Perceptions about which Media Platform is Doing Well with Climate Change Communication

	#	%
Television	40	31.8
Radio	13	10
Newspaper	4	3.0
Social Media	11	8.5
None	62	47.7
Total	130	100

Source: Adjin-Tettey

Generally, close to half (47.7%) of respondents believed that none of the media platforms are doing well in climate change communication. This is very significant, bearing in mind the fact that it represents close to half of respondents. Nonetheless, views on which media platform is doing well in climate change communication saw about three out of ten respondents (31.8%) going for television and one out of ten respondents (10.0%) selecting radio. Again, eleven respondents representing less than 9 percent (8.5%) selected social media and four respondents (3.1%) indicated newspaper is doing well in climate change communication.

### Expectation about Climate Change Communication in the Media

It was important to establish expectations respondents had about climate change communication in the media. This even becomes more imperative when respondents did not believe the media is doing well with climate change communication. Expectations were measured in two-fold - amount of attention respondents thought media must give to climate change and what information respondents required from climate change communication in the media.

Table 9: Amount of Attention Ghanaian Media Must Give to Climate Change

	Mean	Standard Deviation	Min.	Max.
How much attention do you think Ghanaian traditional media should give to climate change?	4.5462	0.98918	1.00	5.00

Source: Adjin-Tettey

On how much attention respondents wanted Ghanaian traditional media to give to climate change, it is seen from the findings in Table 9 that respondents had high expectations of the media in communicating climate change. This is reflected in the high mean rating of 4.55 and a lower standard deviation of 0.99. Thus, the majority of respondents wanted maximum attention given to climate change by Ghanaian traditional media.

Table 10: Information Wanted/Expected from Climate Change Communication in the Media

What information do you want from climate change communication in the media?	%	% of Cases
Causes of climate change	21.1%	40.0%
Effects of climate change	27.2%	51.5%
How to deal with effects of climate change	24.0%	45.4%
How to prevent climate change	24.8%	46.9%
Other	2.8%	5.4%
Total	100.0%	189.2%

Source: Adjin-Tettey

Results showed that the majority of the respondents wanted information on the effects of climate change. The multiple choice question posed revealed (as Table 10 shows) “effects of climate change” as information wanted from climate change communication was selected by more than half (51.5%) of the respondents. In addition, more than four out of ten (46.9%) wanted information on how to prevent climate change as well as a little more than four out of ten (45.4%) wanted information on how to deal with climate change and four out of 10 (40.0%) respondents wanted information on cause of climate change. After a thematic analysis of the open-ended option provided for respondents, it emerged that other information respondents want from climate change communication in the media are: the benefits of climate change prevention and how to engage stakeholders on climate change.

## Discussion

Respondents’ exposure to climate change communication was very high, with just a minimal number saying they had no knowledge about climate change. Considering the educational levels of respondents and their high media exposure, it is almost surprising that some admitted not to have heard about climate change. However, since the greater majority had high awareness levels about climate change and policies on climate change, it somewhat lends credence to the postulation by the knowledge gap hypothesis that those with high SES tend to possess more information about issues relating to public affairs and science, albeit this is not a comparative study between high and low SES groups. Although it was not empirically tested, it is most likely that those who claimed not to have heard about climate change were those with limited exposure to media. This calls for concern about using both formal and informal education as well as appropriately varying language of communication when communicating climate change in different contexts, especially in the Ghanaian setting.

Television is the number one source of climate change information among respondents, followed by social media and radio, respectively. Newspaper had just 12.2 percent of respondents selecting it. This means that of the legacy media available to audiences, television is comparatively doing well with climate change communication. Since the order is similar to media exposure patterns, it is not surprising that television was the main channel for climate change information, followed by social media and radio. Similarly, newspaper trailed behind all of them.

Consequently, it can be deduced that climate change communication targeted at this and similar groups of people in Ghana is likely to do well when television is used as the channel. Also, considering content on social media is not controlled by any media house and mostly driven by its users, legacy media can deliberately leverage social media to drive the climate change communication agenda. Also, because there is high exposure to television among this group, TV content producers can consider including climate change content in news and general programing.

Other platforms, such as specialist publications, educational institutions, and environmental groups, play a crucial role in climate change information dissemination. This can only be encouraged. Environmental groups have to put more effort in climate change communication, while bearing in mind the diverse socio-economic grouping and varying communication content and format appropriately. Editors for specialist publications must also be aware of keeping communications simple and straightforward to ease comprehension by non-technical readers. Academic institutions also play a critical role in climate change communication. Hence, climate change can be factored into curriculum development, especially at the lower levels of education so that children grow into adulthood equipped with proper knowledge about climate change and act in ways to lessen its impact, eliminate or adapt to it.

Midttun et al. (2015) found that Ghana, instead of portraying herself as a victim of climate change, is rather finding solutions in the form of instituting a climate policy for development. However, results of this study show that this policy is not widely known among respondents. Ironically, more respondents were aware of international policies than national or local policies regarding climate change.

This, somehow, affirms what Midttun et al. (2015) found in the same study, that Ghanaian media use international sources rather than local sources. The reliance on international sources will likely influence information shared on policy initiatives at the international level rather than local or national levels. This means the media, policy makers, and implementing organisations and agencies need to work hard and collaborate to sensitize the populace about national policies and ensure compliance of same. This is because policies developed require the buy-in of those for whom they are made. No matter how good the policies are, if key stakeholders do not have good knowledge about them, policy objectives are not likely to be met (Hesse 2016).

Findings, furthermore, point to the fact that there is high exposure to television and radio among this group and the dominant source of climate change information is TV. This corroborates the knowledge gap hypothesis's postulation that high exposure to media is characteristic of groups with high SES, resulting in high information acquisition. In this instance, the information acquired from the media is climate change information. Nonetheless, respondents have a rather negative perception about the extent to which Ghanaian legacy media, including television, are setting the climate change agenda. This means the media are, likewise, not living up to the opinion Ladouceur (2015) held that media is a key player in climate change communication. Hence, Ghanaian traditional media need to give more attention to climate change issues, since the goal of media is to educate, inform and entertain.

Although they received climate change information from both traditional and new media platforms, the majority of respondents did not regard it as adequate. This calls for greater efforts by media houses to factor this urgent environmental issue in news as well as general programming. Social media, which is also at the disposal of legacy media at a comparatively minimal cost, can be used effectively to augment the dissemination of climate change information. Even though this group of respondents hardly patronizes newspaper publications, newspaper editors could consider including content on climate change so those who patronize them can benefit.

Respondents expect the media to give maximum attention to climate change communication, as shown in Table 9. On a scale of one to five ("no attention" to "maximum attention"), the mean score was 4.5, showing that respondents placed high expectation on the media for climate change information. This is why legacy media in Ghana have to champion that course. Disseminating information about climate change will mean that the media are fulfilling their mandate of being a conduit for education and information. This has to be intentionally and consistently done as Sampei and Aoyagi-Usui (2009) suggested—that mass media must effectively give space for effective communication of climate change.

O'Neill et al. (2015) and Hart and Feldman (2014) found that Ghanaian media, while communicating climate change, paid little attention to steps that can be taken to address the

problem. It is not surprising that respondents are demanding information on how to deal with effects of climate change as well prevention of climate change. Accordingly, the media, while communicating climate change, can give priority to respondents' call for climate change information that make them know about the effects of climate change; how to prevent climate change; and how to deal with effects of climate change.

## **Conclusion and Recommendations**

This study has shed light on the perception respondents have about climate change communication in Ghanaian media. It has also provided empirical evidence for climate change policy awareness among respondents as well as general awareness levels of climate change. What respondents (audiences) expect from climate change communication in the media has also been ascertained. It is suggested that Ghanaian media pay attention to communicating the effects of climate change and preventive measures that need to be adopted to minimize or do away with climate change.

Future research could look at attitudes towards climate change and personal intentions and actions to reduce climate change. An assessment of climate change content in specialist publications, which came out strong in the study as a medium of climate change communication for respondents, can also be undertaken. In curriculum development, academic institutions should also find avenues to include relevant climate change content, especially in the area of social and environmental studies, environmental management, and even architecture and planning.

The study revealed that this group of respondents hardly patronizes newspapers. This is something worth investigating further. Future studies can explore factors affecting newspaper reading habits, how poor patronage of newspapers is affecting newspaper publishing companies, and what measures publishing companies have put in place to stay afloat. Concerning those who still read newspapers, researchers could delve into how much time they spend reading newspapers; which Ghanaian newspapers are read most; sources of newspapers; and which sections of newspapers are read most.

It is also recommended that a comparative study be launched into the knowledge and awareness levels of climate change between Ghanaians with high SES and those with low SES as defined by the knowledge gap hypothesis. In doing so, statistical tests can be conducted to establish the nature of relationship that exists between the two groups in relation to climate change knowledge and awareness.



## REFERENCES

- Boykoff, Maxwell T. 2013. "Public Enemy No. 1? Understanding Media Representations of Outlier Views on Climate Change." *American Behavioral Scientist* 57 (6): 796–817. <https://doi.org/10.1177%2F0002764213476846>.
- Corner, Adam, Ezra Markowitz, and Nick Pidgeon. 2014. "Public Engagement with Climate Change: The Role of Human Values." *Wiley Interdisciplinary Reviews: Climate Change* 5 (3): 411–22. <https://doi.org/10.1002/wcc.269>.
- Corner, Adam. 2011. *Hidden Heat. Communicating Climate Change in Uganda: Challenges and Opportunities*. Kampala, Uganda: Panos Eastern Africa.
- Creswell, John. 2003. *Research Design: Qualitative, Quantitative and Mixed Methods Approaches*, 2nd ed. Thousand Oaks, CA: Sage Publications.
- Davidson, Ogunlade, Kirsten Halsnaes, Saleemul Huq, Marcel Kok, Bert Metz, Youba Sokona, and Jan Verhagen. 2003. "The Development and Climate Nexus: The Case of Sub-Saharan Africa." *Climate Policy* 3 (Sup.1): S97–S113. <https://doi.org/10.1016/j.clipol.2003.10.007>.
- Desjardins, Jeff. 2016. "The Slow Death of Legacy Media." <https://www.businessinsider.com/the-slow-death-of-legacy-media-2016-10?IR=T>.
- Dunlap, Riley E. 2013. "Climate Change Skepticism and Denial: An Introduction." *American Behavioral Scientist* 57 (6): 691–98. <https://doi.org/10.1177%2F0002764213477097>.
- Freedom House. 2007. "Freedom of the Press 2007." Accessed June 19, 2019. <https://freedomhouse.org/report/freedom-press/freedom-press-2007>
- Gay, L. R. and Diehl, P. L. 1992. *Research Methods for Business and Management*. New York: Macmillan.
- Ghana Agricultural News Digest. 2012. "Climate Change Threatens Ghana's Food Security." *IFPRI Ghana*. [gssp.ifpri.info/2012/04/03/Ghana-agricultural-news-digest](http://gssp.ifpri.info/2012/04/03/Ghana-agricultural-news-digest).
- Greenpeace International. n.d. "Negative Effects of Climate Change." Accessed November 2, 2018. <http://www.greenpeace.org/international/en/campaigns/climate-change/impacts/>.
- Hart, P. Sol, and Lauren Feldman. 2014. "Threat without Efficacy? Climate Change on US Network News." *Science Communication* 36 (3): 325–51. <https://doi.org/10.1177%2F1075547013520239>.
- Hesse, Andreas. 2016. "How to Communicate Policies and Procedures." *Clear HR Consulting*, November 10, 2016. <https://clearhrconsulting.com/blog/hr-smalltalk/how-to-communicate-policies-and-procedures/>
- Hobson, Kersty, and Simon Niemeyer. 2013. "What Sceptics Believe": The Effects of Information and Deliberation on Climate Change Scepticism." *Public Understanding of Science* 22 (4): 396–412. <https://doi.org/10.1177%2F0963662511430459>.
- IPCC 2013. "Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change" Edited by Thomas F. Stocker, Dahe Qin, Gian-Kasper Plattner, Melinda Tignor, Simon K. Allen, Judith Boschung, Alexander Nauels, Yu Xia, Vincent Bex, and Pauline M. Midgley. Cambridge, UK: Cambridge University Press.
- Kihara, Job, Dilys S. MacCarthy, Andre Bationo, Saidou Koala, Jonathon Hickman, Jawoo Koo, Charles Vanya, et al. 2012. "Perspectives on Climate Effects on Agriculture: The International Efforts of AgMIP in Sub-Saharan Africa." In *Handbook of Climate Change and Agroecosystems: The Agricultural Model Intercomparison and Improvement Project (AgMIP)*, Part 2, edited by C. Rosenzweig, and D. Hillel, 3–24. Singapore: World Scientific Press.
- Kusakari, Yasuko, Kwabena Owusu Asubonteng, Godfred Seidu Jasaw, Frederick Dayour, Togbiga Dzivenu, Victor Lolig, Samuel A. Donkoh, Francis Kwabena Obeng, Bizoola Gandaa, and Gordana Kranjac-Berisavljevic. 2014. "Farmers' Perceived Effects of

- Climate Change on Livelihoods in Wa West District, Upper West Region of Ghana.” *Journal of Disaster Research* 9 (4): 516–28. <https://doi.org/10.20965/jdr.2014.p0516>.
- Ladouceur, Sarah. 2015. “What Role Does the Media Play in Climate Change Discussion?” Accessed January 7, 2019. <https://sites.williams.edu/cop21/blog-posts/what-role-does-the-media-play-in-climate-change-discussion/>.
- Lee, Tien Ming, Ezra M. Markowitz, Peter D. Howe, Chia-Ying Ko, and Anthony A. Leiserowitz. 2015. “Predictors of Public Climate Change Awareness and Risk Perception around the World.” *Nature Climate Change* 5 (11): 1014–20. <https://doi.org/10.1038/nclimate2728>.
- Leiserowitz, Anthony, Edward W. Maibach, Connie Roser-Renouf, Geoff Feinberg, and Peter Howe. 2013. *Climate Change in the American Mind: Americans’ Global Warming Beliefs and Attitudes in April 2013*. New Haven, CT: Yale Project on Climate Change Communication. <https://doi.org/10.2139/ssrn.2298705>.
- Melillo, Jerry M., Terese T. C. Richmond, and Gary W. Yohe, eds., 2014. “Climate Change Impacts in the United States: The Third National Climate Assessment.” US: Global Change Research Programme.. [https://www.globalchange.gov/sites/globalchange/files/Ch\\_0a\\_FrontMatter\\_ThirdNCA\\_GovtReviewDraft\\_Nov\\_22\\_2013\\_clean.pdf](https://www.globalchange.gov/sites/globalchange/files/Ch_0a_FrontMatter_ThirdNCA_GovtReviewDraft_Nov_22_2013_clean.pdf).
- Ministry of Environment, Science, and Technology (MEST). 2013. “MESTI: Ghana National Climate Change Policy 2013.” <https://new-ndpc-static1.s3.amazonaws.com/CACHES/NEWS/2015/07/22/Ghana+Climate+Change+Policy.pdf>.
- Midttun, Atle, Paddy Coulter, Audrey Gadzekpo, and Jin Wang. 2015. “Comparing Media Framings of Climate Change in Developed, Rapid Growth and Developing Countries: Findings from Norway, China and Ghana.” *Energy & Environment* 26 (8): 1271–92. <https://doi.org/10.1260/0958-305X.26.8.1271>.
- NASA. 2017. “The Effects of Climate Change.” *NASA Global Climate Change*. Accessed December 5, 2018. <https://climate.nasa.gov/effects/>.
- National Communications Authority (NCA). 2018. “Licenses and Authorizations.” *National Communications Authority*. Accessed June 18, 2019. <https://www.nca.org.gh/industry-data-2/licenses-and-authorisations/>.
- Neville, Lucy, and Anu Mohammed. 2010. “Ghana Talks Climate: The Public Understanding of Climate Change.” UK: BBC World Service Trust. <https://assets.publishing.service.gov.uk/media/57a08b09e5274a27b20008fd/04-Ghana-talks-Climate.pdf>.
- Niang, Isabelle, Oliver C. Ruppel, Mohammed A. Abdrabo, Essel, Ama, Lennard, Lennard, Padgham, Jonathan and Urquhart, Penney. 2014. “Impacts, Adaptation and Vulnerability.” In *Climate change 2014: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, UK: Cambridge University Press.
- Nigatu, Anduaem S., Benedict O. Asamoah, and Helmut Kloos. 2014. “Knowledge and Perceptions about the Health Impact of Climate Change Among Health Sciences Students in Ethiopia: A Cross-Sectional Study.” *BMC Public Health* 14 (1): 587. <https://doi.org/10.1186%2F1471-2458-14-587>.
- O’Neill, Saffron, Hywel T. P. Williams, Tim Kurz, Bouke Wiersma, and Maxwell Boykoff. 2015. “Dominant Frames in Legacy and Social Media Coverage of the IPCC Fifth Assessment Report.” *Nature Climate Change* 5 (4): 380. <http://doi.org/10.1038/nclimate2535>.
- Ohene-Asante, Sussie N. A. A. 2015. “Climate Change Awareness and Risk Perception in Ghana: A Case Study of Communities around the Muni-Pomadze Ramsar Site.” PhD diss., University of Ghana.

- Öhman, Johan, and Marie Öhman. 2013. "Participatory Approach in Practice: an Analysis of Student Discussions about Climate Change." *Environmental Education Research* 19 (3): 324–41. <https://doi.org/10.1080/13504622.2012.695012>.
- Owusu, William Yaw. 2012. *The Ghanaian Media Landscape: How Unethical Practices of Journalists Undermine Progress*. London: Thomson Reuters Foundation.
- Pachauri, Rajendra K., and Andy Reisinger, eds. 2007. *Climate Change 2007: IPCC Fourth Assessment Report*. Switzerland: IPCC. [https://archive.ipcc.ch/publications\\_and\\_data/publications\\_ipcc\\_fourth\\_assessment\\_report\\_synthesis\\_report.htm](https://archive.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm).
- Pachauri, Rajendra K., and Myles R. Allen, eds. 2014. *Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Geneva: IPCC.
- Philipatawura. 2014. "Ethical Issues Within Ghana's Media Landscape." *Philipatawura's Blog*. Accessed June 18, 2019. <https://philipatawura.wordpress.com/2014/11/25/ethical-issues-within-ghanas-media-landscape/>.
- Portland PR. 2019. "Africa's Evolving Media Landscape: Insights from a New Survey of Leading Journalists in Six of Africa's Media Hubs—Ethiopia, Ghana, Kenya, Nigeria, South Africa and Uganda." Accessed June 18, 2019. <https://portland-communications.com/publications/africas-evolving-media-landscape/>.
- Rosa, Eugene A., and Thomas Dietz. 2012. "Human Drivers of National Greenhouse-Gas Emissions." *Nature Climate Change* 2 (8): 581. <https://doi.org/10.1038/nclimate1506>.
- Sampei, Yuki, and Midori Aoyagi-Usui. 2009. "Mass-Media Coverage, Its Influence on Public Awareness of Climate-Change Issues, and Implications for Japan's National Campaign to Reduce Greenhouse Gas Emissions." *Global Environmental Change* 19 (2): 203–12. <https://doi.org/10.1016/j.gloenvcha.2008.10.005>.
- Schäfer, Mike S., Ana Ivanova, and Andreas Schmidt. 2014. "What Drives Media Attention for Climate Change? Explaining Issue Attention In Australian, German and Indian Print Media from 1996 to 2010." *International Communication Gazette* 76 (2): 152–76. <https://doi.org/10.1177%2F1748048513504169>.
- Schäfer, Mike S., and Inga Schlichting. 2014. "Media Representations of Climate Change: A Meta-Analysis of the Research Field." *Environmental Communication* 8 (2): 142–60. <https://doi.org/10.1080/17524032.2014.914050>.
- Schmidt, Andreas, Ana Ivanova, and Mike S. Schäfer. 2013. "Media Attention for Climate Change around the World: A Comparative Analysis of Newspaper Coverage in 27 Countries." *Global Environmental Change* 23 (5): 1233–48. <https://doi.org/10.1016/j.gloenvcha.2013.07.020>.
- Serdeczny, Olivia, Sophie Adams, Florent Baarsch, Dim Coumou, Alexander Robinson, William Hare, Michiel Schaeffer, Mahé Perrette, and Julia Reinhardt. 2017. "Climate Change Impacts In Sub-Saharan Africa: From Physical Changes to Their Social Repercussions." *Regional Environmental Change* 17 (6): 1585–1600. <https://doi.org/10.1007/s10113-015-0910-2>.
- Shaughnessy, John J., Eugene B. Zechmeister, and Jeanne S. Zechmeister. 1990. *Research Methods in Psychology*. New York: McGraw-Hill.
- Smith-Asante, Edmund. 2016. "Climate Change is Here, No Doubt 20." *Graphic Online*, April 20, 2016. <https://www.graphic.com.gh/features/opinion/climate-change-is-here-no-doubt.html>.
- Thomlison, Barbara. 2001. "Descriptive Studies." In *The Handbook of Social Work Research Methods*, edited by Bruce Thyer, 131–41. Thousand Oaks, CA: SAGE Publications Ltd. <https://dio.org/10.4135/9781412986182>.
- Tichenor, Phillip J., George A. Donohue, and Clarice N. Olien. 1970. "Mass Media Flow and Differential Growth in Knowledge." *Public Opinion Quarterly* 34 (2): 159–170. <https://doi.org/10.1086/267786>.

- Union of Concerned Scientists (UCN). n.d. “How Do We Know that Humans Are the Major Cause of Global Warming?” Accessed January 5, 2019. [https://www.ucsusa.org/global-warming/science-and-impacts/science/human-contribution-to-gw-faq.html#.WkT4yvll\\_IX](https://www.ucsusa.org/global-warming/science-and-impacts/science/human-contribution-to-gw-faq.html#.WkT4yvll_IX).
- United Nations Framework Convention on Climate Change (UNFCCC). 2001. “Report of the Conference of the Parties on its Seventh Session, Held at Marrakesh from 29 October to 10 November 2001. Addendum. Part Two: Action Taken by the Conference of the Parties, vol. 1.” United Nations. Accessed January 20, 2019. [unfccc.int/resource/docs/cop7/13a01.pdf](http://unfccc.int/resource/docs/cop7/13a01.pdf).
- Viswanath, Kasisomayajula, and John R. Finnegan Jr. 2016. “The Knowledge Gap Hypothesis: Twenty-Five Years Later.” *Annals of the International Communication Association* 19 (1): 187–228. <https://doi.org/10.1080/23808985.1996.11678931>
- Wachholz, Sandra, Nancy Artz, and Douglas Chene. 2014. “Warming to the Idea: University Students’ Knowledge and Attitudes about Climate Change.” *International Journal of Sustainability in Higher Education* 15 (2): 128–41. <https://doi.org/10.1108/IJSHE-03-2012-0025>.
- Wimmer, Roger D., and Joseph R. Dominick. 2011. *Mass Media Research: An Introduction*. Boston: Wadsworth, Cengage Learning.
- Zamith, Rodrigo, Juliet Pinto, and Maria Elena Villar. 2013. “Constructing Climate Change in the Americas: An Analysis of News Coverage in US and South American Newspapers.” *Science Communication* 35 (3): 334–57. <https://doi.org/10.1177/1075547012457470>.
- Yaro, Joseph Awetori. 2013. “The Perception of and Adaptation to Climate Variability/Change in Ghana by Small-Scale and Commercial Farmers.” *Regional Environmental Change* 13 (6): 1259–72. <https://doi.org/10.1007/s10113-013-0443-5>.
- Zurek, Kweku. 2018a. “Over 10 Million Ghanaians Use the Internet – Report.” *Daily Graphic*. February 19, 2018. <https://www.graphic.com.gh/news/general-news/over-10-million-ghanaians-using-the-internet-report.html>
- . 2018b. “Daily Graphic Leads Print Media Readership in Ghana – GeoPoll” *Daily Graphic*. January 19, 2018. <https://www.graphic.com.gh/news/general-news/daily-graphic-leads-print-media-readership-in-ghana-geopoll.html>.

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