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ASSESSING THE KNOWLEDGE AND PERCEPTION OF CLIMATE CHANGE AMONG ENVIRONMENTAL JOURNALISTS IN GHANA

BY

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DECLARATION

I, **Zephaniah Kwesi Danaa** hereby declare (i) that this thesis is my own original work and that all sourced secondary data have been duly acknowledged; and (ii) that it has been specially conducted for a degree of the Master of Science in Climate Change and Sustainable Development from the University of Ghana.

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DEDICATION

I dedicate this thesis to my dearest brother, Samuel Danaa.

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ACKNOWLEDGEMENT

The success of this thesis is not by my solitary effort but by divine help, hardworking hands and patient hearts.

To God be the glory for His blessings, protection and sustenance throughout my academic journey. Your name is worthy to be praised from the rising of the sun to the setting of the same.

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ABSTRACT

The public largely depend on the media for information including issues about the environment. Journalists are the principal agents to transmit climate change information from the producers of knowledge (scientists) to the consumers of knowledge (public). Their intermediary role is well defined by how they set agendas and frame the issues. Environmental journalists in Ghana have an important role to ensure that public understanding of climate change is improved. However, many environmental journalists in the country are not sufficiently abreast of climate change issues and this can either lead to low level of public understanding or misinformation. This study, therefore, is an effort to gauge the knowledge and perception of climate change among environmental journalists in the country. The data from this thesis was collected using questionnaires which were administered to environmental journalists as well as in-depth interviews with heads of environmental desks at some media houses and the head of climate change at the Ministry of Environment, Science, Technology and Innovation. Grounded in the Knowledge Deficit Model, the study show that environmental journalists in Ghana lack the requisite expertise to efficiently and effectively report on climate change. Additionally, it was found that there is a low degree of coordination between journalists and government in addressing climate change. These findings demand swift attention from all stakeholders if Ghana is really determined to achieve the Sustainable Development Goals, particularly, SDG 13.

Keywords: knowledge, perception, climate change, information environmental journalists, Knowledge Deficit Model, Sustainable Development Goals

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LIST OF ABBREVIATION

BBC – British Broadcasting Corporation

GBC – Ghana Broadcasting Corporation

GDP – Gross Domestic Product

GEJA – Ghana Environmental Journalists Association

GNA – Ghana News Agency

IPCC – Intergovernmental Panel on Climate Change

UN – United Nations

UNEP – United Nations Environment Programme

UNFCCC – United Nations Framework Convention on Climate Change

WMO – World Meteorological Organization

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CHAPTER ONE: INTRODUCTION

''There's one issue that will define the contours of this century more dramatically than any other, and that is the urgent threat of a changing climate''- Barack Obama

1.1 Background to the Study

Climate change has proven to be a nemesis of global development. It is one of the world's worst environmental threats (Pandve et al., 2011) and a major risks of the twenty-first century (Anderson, 1997) that undermines the sustainable development agenda of countries. The United Nations (2010), has argued that the phenomenon has dire global economic consequences and so there is the urgent need for swift response. Evidence abound to prove the extent to which climate change has adversely affected society.

The term climate change is defined simply, as the long term change in the climate of a place including variability and extremes. The Intergovernmental Panel on Climate Change (IPCC) is the leading international body for the assessment of climate change. It was established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) in 1988 to provide the world with a clear scientific view on the current state of knowledge in climate change and its potential environmental and socio-economic impacts. The IPCC defines climate change as, ''a change in the state of the climate that can be identified (e.g. by using statistical tests) by changes in the mean and/or the variability of its properties for an extended period, typically decades or longer'' (IPCC, 2013:5).

The United Nations Framework Convention on Climate Change (UNFCCC or FCC) also defines Climate Change in its Article 1 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" (IPCC, 2013:5).

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The definition offered by the UNFCCC provides a dichotomy between human-induced change of the climate and the changes or variability caused by natural factors.

Ghana, like many developing countries, is not left out in the devastating effects of climate change and its vulnerability is worse due to poverty levels and lack of technical capacity. Scientific evidences such as temperature rise, sea level rise and rainfall variability are rife indicating that all sectors are being affected by the phenomenon (Neville and Mohammed, 2010). According to policy-makers, Ghana's Gross Domestic Product (GDP) is under threat considering the impacts of climate change on key sectors like energy, agriculture, water and health. Ghana, like many of its counterparts in the sub-region, are highly vulnerable to the negative impacts of climate change. Some of the expected impacts are low agriculture productivity, land degradation, coastal erosion, water scarcity and so on (Ghana National Climate Change Policy, 2012). The over dependence on the above-mentioned climate sensitive sectors will continue to inhibit the economic fortunes of the country if urgent steps are not taken to either mitigate or adapt to the changing climate.

1.2 Climate Change and the role of Journalists

Undeniably, science rule the world and it is imperative for scientific knowledge to reach and be appreciated by all and sundry but the challenge is how to get the scientific information to travel from the producers of the knowledge (scientists) to the consumers (non-scientists and other groups in society) without being distorted or misconstrued.

One group of society that help in mediation process by brokering scientific knowledge between scientist and non-scientists are journalists via mass media. Studies have shown that people get most of their information from mass-media sources (NSF, 2004; Project for Excellence in Journalism, 2006). According to Stoutenborough and Vedlitz (2013), the media is a primary mechanism to disseminate scientific knowledge to the public. Journalists play a critical role in

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the identification and interpretation of issues relating to the environment (Schoenfeld et al., 1979; Spector and Kitsuse, 1977). By being good communicators, journalists can reach the public and impact their views by feeding them with scientific information. The mass media, are key actors in shaping discourse. The public get their knowledge of science through the media (Wilson, 1995). In Ghana for instance, it is from the media that most people have heard the term ‘‘climate change’’ (BBC, 2010). Journalists are professionally tasked to provide the public with factual information as a means to empower the public to be able to engage effectively with scientists in social dialogue, including but not limited to, policy-making (Dickson, 2005). The media serves as a link between scientists, policy makers and the general public in brokering climate change knowledge. This is significant because scientific information is usually difficult for policy actors and the public as a whole to comprehend and subsequently act upon it. The journalists by their training pick the complex scientific information and break it down for the populace to appreciate the value of the information. In this case, journalists have been challenged that the communication of scientific issues ‘should be presented at the sixth to ninth grade level to be comprehensible’ (Covello and Sandman, 2001:172) and as founding editor of the African Times newspaper, Frank Barton put it ‘‘the [climate change] reporter must strive to write for the man in the biscuit factory’’(Akingbe 2009:14). Thus, the journalists must be abreast of environmental issues that they write in a layman’s language that their audience which include among others, workers at the biscuit factory will understand the issues without any difficulty. What is more, journalists have also been advised to reduce complex environmental issues to the ‘‘lowest communication denominator’’ (Galadima, 2006:98) for the general public.

Ghana is blessed with a vibrant media that has set various developmental agenda for the country. Both state-controlled media houses such as Ghana Broadcasting Corporation (GBC), Daily Graphic, and Ghana News Agency (GNA) as well as privately owned media stations

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such as Joy Fm, and Citi Fm have dedicated reporters who professionally specialize in environmental reporting. As part of efforts to prioritize and show commitment towards environmental issues, a group of environmental journalists have come together under one umbrella to form the Ghana Environmental Journalists Association (GEJA). The association's main objective is to advocate for environmental sustainability and create public awareness about environmental challenges in Ghana. In partnership with international organizations, members of the association from time to time are equipped with the requisite skills and knowledge for informed climate change reportage by organizing training sessions, workshops and conferences for them.

1.3 Statement of Problem

Climate change is arguably the greatest crisis to ever face our planet Earth and considering the rate of the contributions of anthropogenic factors to the enhancement of greenhouse gases in the atmosphere, humans should expect more of its impacts.

The knowledge and perception about climate change is crucial since it plays a key role in determining how people will respond to the phenomenon. Different people will respond to the threat of climate change and its impacts differently depending on how much knowledge and perceptions they have in that subject.

One notable category of professionals that has bigger platform to deepen the understanding of the public on issues of climate change are journalists. According to Boykoff and Rajan (2007) the media is an integral source of acquiring information about climate change. The general public are usually educated on climate change and other scientific topics by the media (Lowe et al., 2006). Typically, the role of the media is to inform, educate, and entertain. The media therefore has a significant role in shaping citizens perceptions of climate change through forms of mass media including radio, television, newspapers and so on. The way that information

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about climate is framed and communicated can significantly influence the public's knowledge, attitude and perception (Sampei and Aoyagi-Usui, 2009; Sharples, 2010). However, a lot of journalists who should be more educated on the issue are either misinformed or completely ignorant and so their reportage has the potential of misinforming the general public on the real issues. Studies have revealed that there have been misconceptions and uncertainties among journalists with regards issues of scientific knowledge. Shava and Mapura (nd) suggest that one of the major reasons most journalists do not report on environmental issues is that they do not understand some of the environmental terminologies and concepts. Wilson (2000) argue that just one third of members of the Society of Environmental Journalists in the US admitted that the global warming theory is accepted by most climate scientists. The situation is dire in the developing countries context. According to the United Nations Environmental Programme (UNEP), many journalists in developing countries lack the requisite training, support from their media houses and access to relevant information or experts to interview. UNEP also bemoans the lack of knowledge of complex environmental issues among journalists in Africa and has already undertaken various initiatives to train journalists in environmental reporting (Moeti et al., 2008). In Ghana, studies have shown that the media do not give much attention to environmental issues but more interested in political and economic stories (Moeti et al., 2008). Besides not having special interest in environmental issues, journalists in the country do not have the technical expertise to report on the subject (Yankah, 1994). In an interview with the BBC (2010) most journalists admitted that they lacked the needed knowledge to effectively educate the Ghanaian public about climate change issues and engender public discourse. Unfortunately, little attention has been devoted to it to finding out the knowledge journalists have in climate change to enrich media coverage.

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1.4 Objectives of the Study

Generally, the overall objective of the study is to assess the knowledge and perception level of climate change among Environmental Journalists in Ghana and how they can develop their capacities to become climate knowledge brokers.

Specifically, the objectives of the study are;

- To assess the knowledge and perception level of climate change among Environmental Journalists.
- To investigate the misconceptions they hold with regard to climate change.
- To determine how Environmental Journalists can build their capacities as climate knowledge brokers.

1.5 Research Questions

- What are Environmental Journalists' knowledge and perception about climate change?
- What misconceptions if any, do they hold with regards climate change?
- How can they build their capabilities to serve as climate change knowledge brokers?

1.6 Justification of the Study

Literature has shown that some studies have been conducted pertaining to climate change knowledge and perceptions in Ghana. However, the study that seek to measure the knowledge levels and perceptions of environmental journalists with regard to climate change is woefully few. The scarcity of information in this regard makes it imperative for more studies to be conducted. Narrowing the responsibility on environmental journalists in crucial since they play a crucial role in the knowledge chain. The BBC (2010a) asserts that the limited reportage on environmental issues in Ghana is due to lack of requisite knowledge on the part of journalists.

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The arguments provided above obviously show that there is the need to carry on with this study so that the true state of climate change knowledge among environmental journalists would be made known to the academic world in particular, and to the wider audience in general.

Among the studies conducted in the field of climate science communication in Ghana, it is yet to be identified which study has specifically targeted environmental journalists and their awareness level in climate change. This study is significant because it will add to the knowledge of existing literature pertaining to climate change. The study will serve as a wakeup call to environmental journalists in particular on the need to further deepen their knowledge in climate change issues in particular and environmental discourse as a whole. It will also go a long way to reduce the ‘‘conflict’’ between environmental scientists and policy makers which is usually partly to blame on the wrong interpretation of environmental issues by journalists.

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CHAPTER TWO: LITERATURE REVIEW

> ‘‘A thorough, sophisticated literature review is the foundation and inspiration for substantial, useful research’’- Boote and Beile (2005:1)

2.1 Introduction

Given the importance of literature review in thesis writing, ‘‘a researcher cannot perform significant research without first understanding the literature in the field’’ (Boote and Beile, 2005:3). It is against this backdrop that relevant literature from scholarly articles, books, newspapers, conference papers, and websites related to knowledge and perception of climate change was reviewed to see what has been done before as well as possible gaps in the area of study.

This Chapter is sub-divided under the following headings:

1. Theoretical framework: The Deficit Model
2. Knowledge of Climate Change
3. Perception of Climate Change

2.2 Theoretical Framework: The Deficit Model

This study is appropriately situated in science communication, specifically, climate change communication. A popular approach which is widely associated with science communication is the Information or Science Literacy or Knowledge Deficit Model (simply Deficit Model). The theoretical underpinnings of this study is based on the Deficit Model. The term ‘deficit model’ was coined by social scientists in the 1980s and it captures the thinking of scientists that the public have knowledge deficit as far as scientific information is concern and this has resulted in a gap that need to be filled by educating them. The model asserts that there is a knowledge divide between scientists (experts) and the public (non-experts) and that the scientists have information while the public do not. The effect is that there is the likelihood that

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each will have a different view of the same issue (Kellstedt et al., 2008). It suggests that the experts have a better understanding of issues than the non-experts and so there is the need for shrinking the knowledge gap. The adoption and operationalization of the Deficit Model contributes to a better understanding of science by the public who are mostly sceptical about science and its impacts due to lack of information. The Deficit Model propose that the lack of knowledge in science makes the public not very supportive and less concerned (Nelkin and Lindee, 1995). The Deficit Model argues that by providing the public with the requisite scientific information, they will have a change of mind about science and environmental issues and accept what scientists say as valid and well grounded (Dickson, 2005).

Some proponents have also argued that in addition to scientific knowledge, other factors which are either personal, societal or a combination have contributed to the shaping of public understanding of climate change (Hamilton, 2011; Capstick *et al*., 2013).

Despite the widely accepted appropriateness of the Deficit Model for public understanding of science, it has been criticised by various scholars for its oversimplification. Opponents argue that the mere fact that the public are given a wealth of scientific knowledge will not automatically influence their behavioural change (Kearnes et al., 2006). They further argue that people want to be actively engaged in the decision-making process where they can have the opportunity to make inputs. Additionally, other factors besides knowledge are critical to change people's views. These factors, termed as 'externalities' include personal experience, culture, religion and ethics must be incorporated into the decision-making agenda, according to critics (Boykoff, 2009).

Staunch proponents of the Deficit Model such as Sturgis and Allum, (2004) have argued that despite the criticism, it is not fair to reject the model outright because they believe scientific knowledge is still complementary to the factors stated above. In a review of the Deficit Model,

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Schultz (2002) concludes that even though knowledge alone is not enough to change one's opinion, the lack of it can be a significant constraint to pro-environment engagement.

In the context of climate change, the application of the Deficit Model has provided evidence to show that those with more knowledge are more likely to accept that climate change is real and not hoax, and admit that they have a duty to solve the problem (O'Connor *et al*., 1999).

The role of the media is important here in the sense that to reduce the knowledge deficit of the public, journalists serve as intermediaries to transfer scientific information from scientists to the public. For journalists to be able to effectively educate the public in science, they need to understand the model themselves.

The study was guided by the Deficit Model to assess the knowledge and perception of climate change among environmental journalists in Ghana. This is justified by the fact that ''Knowledge is often measured in one of two manners. In one, respondents are asked to self-assess their level of knowledge on a particular issue. The second option is to create an index based on correctly answering a series of questions about scientific facts, which offers an assessed measure of specific issue knowledge'' (Stoutenborough and Vedlitz, 2013:2).

This approach was applied by the use of questionnaires to be self-administered in order to measure the knowledge of climate change among the journalists under study.

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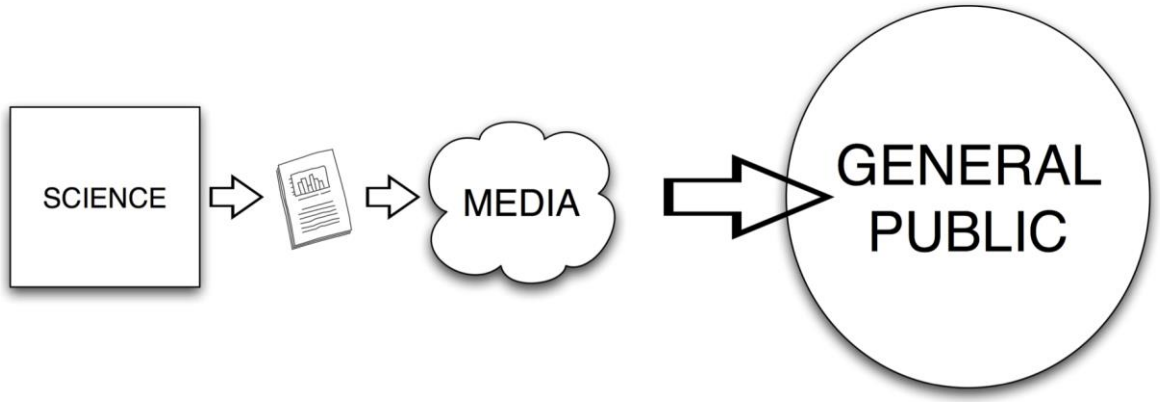

Figure 1: The Deficit Model highlighting the role of the media.

2.3 Knowledge of Climate change

"Knowledge is Power" is a widely used aphorism. The Holy Bible in Hosea 4:6 warns that my people (humanity) are destroyed for lack of knowledge. A quick interpretation of the scripture suggests that for any human or human's endeavour to succeed, knowledge is key.

By definition, knowledge is "the facts, feelings or experiences known by a person or group of people; awareness, consciousness, or familiarity gained by experience or learning; specific information about a subject" (*Collins English Dictionary*, 1991:860). Knowledge also refers to confident understanding of the topic/subject in question (Abhary et al., 2009). Knowledge is 'individual cognition […] which resides in people' (Burton, 2001:436). Knowledge can be acquired from various sources, including but not limited to, books, social interactions (family, friends, school, church, mosque and so on) and media sources such as radio, television, newspapers and the Internet. Knowledge functions as a process of decision making and it may influence behavioural change.

Knowledge is formed through cognitive processes of perception, learning, communication, association and reasoning (Abhary et al., 2009). Two main approaches are used to measure the knowledge someone has about a given topic. They are the objective and subjective assessment of one's knowledge (Stoutenborough and Vedlitz, 2013). Kellstedt et al. (2008) propose a

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different approach to measure knowledge. They argue that to evaluate an individual's knowledge on an issue, the easiest approach is to ask relevant questions and the answers provided will help you gauge their knowledge. In the context of my thesis, knowledge is referred to as how much theoretical or practical information an environmental journalist have about climate change.

Knowledge of climate change is therefore crucial considering its negative effects on society (Pandave et al., 2011). According to Pidgeon (2012), the last two decades have witnessed increasing level of awareness and concern about issues of climate change among the public and climate knowledge has improved globally between 2001 to 2008 (Brechin and Bhandari, 2011) . Notwithstanding global figures to support a general increase in awareness of climate change, the statistics vary in different regions. Whilst there is great improvement in the numbers for the developed countries, the population who have heard of climate change in the developing countries is still low and this is partly due to lack of relevant data to prove otherwise (Pidgeon, 2012). In the United Kingdom for instance, a study by Whitmarsh *et al.*, (2011) has revealed that more than 99% of the respondents surveyed indicated they are aware of climate change. Conversely, a survey carried by BBC (2010a) in Ghana, revealed that there is limited awareness and understanding of climate change among the public.

Sound climate knowledge and awareness is required to effectively tackle the problem of climate change (Acquah, 2011) and ‘‘valid knowledge is important as it predisposes journalists to report with precision’’ (Amu and Agwu, 2012:1).

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2.4 Perception of Climate Change

Perception is defined as "the way in which something is regarded, understood or interpreted" (*Oxford Dictionary*, 1999:1049). Perception helps an individual create meaning of the world around them and other biases (Quin, 2002). Individual's perception is significantly based on the knowledge available to them (de Jong & Ferguson-Hessler, 1996). Through knowledge gained, perceptions enable an individual to choose what is to be interpreted and how it is to be interpreted. In this study, perception means understanding or opinion about climate change. A lot of studies of public perceptions of climate change across the world have suggested that people see environmental disasters such as drought, hurricanes and floods as effects of a disturbed climate (Borick and Robe, 2012; Capstick *et al., 2013*). Africans perceive climate change as a less serious problem than non-Africans (BBC, 2010a, 2010b).

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CHAPTER THREE: METHODOLOGY

3.1 Introduction

This Chapter discusses how the study was conducted. It outlines the various methods and procedures that were used in a step by step manner to answer the research questions. The Chapter explains the research design adopted, the sampling techniques and data collection instruments used, as well as how the data collected were analysed.

3.2 Research Design

The study used both qualitative and quantitative research techniques, otherwise known as mixed method. The rationale for adopting mixed method is that, to be able to successfully answer the research questions in Chapter 1, I would require a combination of qualitative and quantitative methods. Qualitative approach helped me elicit more in-depth information since the study is more explorative in nature. On the other hand, quantitative summary in the work helped me quantify the proportion of journalists who are knowledgeable about the issues under investigation. My choice of mixed method is also justified on the basis that it helps overcome the limitations that is associated with either of the separate qualitative or quantitative methods (Denzin and Lincoln, 2000).

3.3 Sampling Method

A purposive sampling technique was used in the study.

"The purposive Sampling Technique, also called judgement sampling, is the deliberate choice of an informant due to the qualities the informant possesses. It is a non-random technique that does not need underlying theories, or a set number of informants. Simply put, the researcher decides what needs to be known and sets out to find people who can and are willing to provide the information by virtue of knowledge or experience" (Tongco, 2007:147).

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Cresswell (1994:148) asserts that the goal of the purposive sampling is to ‘‘purposefully select documents that will best answer the research question”.

The technique was employed in selecting thirty (30) environmental journalists from media houses based on their viewership, listenership, and readership depending on the type of mass media. Unlike general desk journalists who report on all type of issues without specialty, environmental journalists specialize in reporting on environmental issues.

The requirements of environmental journalists is summarized as:

> ‘‘To be an environmental journalist, one must have an understanding of scientific language and practice, knowledge of historical environmental event, the ability to keep abreast of environmental policy decisions and the work of environmental organizations, a general understanding of current environmental concerns, and the ability to communicate all of that information to the public in such a way that it can be easily understood, despite its complexity’’ (Nwabueze, 2007:88).

For this study, the thirty environmental journalists was drawn from GBC, Ghana News Agency, Daily Graphic, Ghanaian Times, Business and Financial Times, Daily Guide, Multimedia Group, TV3 and Metro TV.

3.4 Data Collection Methods

As part of the approaches to answer the research questions, primary data was sourced through semi-structured questionnaires administered to Environmental Journalists, interviews as well as secondary data from existing literature. The questionnaire comprised both closed-ended and open-ended questions. Closed-ended questions limit the responses from participant to only what is on the questionnaire (Cloke *et al*., 2004). Conversely, open-ended questions allow for some flexibility to afford the respondents the opportunity to give as much information as they wish (Demeritt, 2012). Open-ended allowed the respondents to comment

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using their own words to describe how they know and perceive climate change from their own perspectives of the subject matter. This helped me to elicit sufficient qualitative information.

The questionnaires sought information about the respondents' demographic characteristics, knowledge and perception of climate change, and climate change reporting. For more information about the questionnaires, see appendix I.

Additionally, in-depth interviews was conducted with three key informants. They are two editors and a policy maker. The two journalists are the heads of the environmental desks at GBC and GNA. For the policy perspective, I interviewed the Head of Climate Change at the Ministry of Environment, Science, Technology and Innovation (MESTI), Peter Dery. He summarizes his role as:

> ''I'm responsible for ensuring that I coordinate decision-making regarding climate change in Ghana generally. I ensure that necessary policies are put in place, make sure that I'm able to bring stakeholders to bare to understand government's direction and this direction must be in line with the global thinking so it's more of a coordination role because climate change is multifaceted. It involves a lot of institutions and so this is a focal institution. So you need to have somebody responsible for it and that is what I do here. In terms of reporting, we ensure that the reports go to the U.N and if there is any feedback coming from U.N, it comes to us.''.

The purpose of the in-depth interviews was to understand the wider context of climate change from the perspectives of the environmental reporters as well as policy makers.

3.5 Data Analysis

The results from the questionnaire were analysed by SPSS software and quantitative data was presented on frequency tables, bar and pie charts.

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3.6 Ethical Considerations

Before the study commenced, I formally sought permission from the heads of the various media houses. After that, the respondents were made aware of the rationale of the study and the type of data collection method to be used for their approval.

The respondents were assured that their responses will be held in strict confidence.

I also explained to the respondents that their participation in the study is of their own volition and so they are footloose to withdraw, if they so wish.

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CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

This Chapter presents the data obtained from the respondents of this study. The key responses were from questionnaires and in-depth interviews. The questionnaires were administered to thirty (30) environmental reporters while the in-depth interviews elicited information from three respondents.

The Chapter comprises two key elements. They are, the results and further discussions. Both qualitative and quantitative results are integrated to give a logical narrative. The results are represented using tables and charts for a graphical representation of the study. The results are put under various sub-sections to help readers understand clearly the whole issues covered in the field.

4.2 Section A: Demographics

This section captures the demographic characteristics of the respondents. The section deals with the sex, age, educational level and number of years in service of the respondents.

4.2.1 Sex of Respondents

A total of 30 respondents from GBC, Daily Graphic, Ghanaian Times, Ghana News Agency, Business and Financial Times, Daily Guide, Multimedia Group, TV3 and Metro TV participated in the study. Out of this number, 17 respondents representing 56.7 per cent were males. The other 13 respondents representing 43.3 per cent were females.

The results are summarized in Table 1 on the next page.

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Table 1: Sex of Respondents

Sex	Frequency	Percentage (%)
Male	17	56.7
Female	13	43.3
Total	30	100

The results from the study show that there were more males than females in the sample, even though the difference was not much.

4.2.2 Age of Respondents

The age of the respondents ranged from 25 years to 50 years. The ages were categorized as 20-30, 31-34, 35-40, 41-44, and 45- 50 years respectively. The age range that formed the majority of the respondents was 31-34 years representing 33.3%. The age range that occurred the lowest number of times was the 45 - 50 range representing 6.7%.

Most of the environmental journalists are in their thirties and this may mean that most journalists start specializing after some years of practice.

The age of the respondents are summarized in Table 2 on page 20.

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Table 2: Age Range of Respondents

Age Brackets	Frequency	Percentage (%)
25-30	6	20
31-34	10	33.3
35-40	7	23.3
41-44	5	16.7
45- 50	2	6.7
Total	30	100

4.2.3 Level of Education

Majority of the respondents have Bachelor's degree (70%). Five respondents had Diploma while the rest of the four had Master's degree.

There is a great relationship between education and understanding of climate terminologies. It was evident in the responses that respondents with higher educational level provided more detailed responses than their relatively less educated counterparts.

This finding corroborates a study by the BBC (2010a). It argues that people with lower levels of education mostly find it difficult to understand climate terms and concepts.

The results on the educational level of the respondents are summarized in Table 3 on page 21.

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Table 3: Highest Educational Level

Highest Educational Level	Frequency	Percentage (%)
Diploma	5	16.7
Bachelor's Degree	21	70
Masters	4	13.3
Total	30	100

4.2.4 Number of Years in Service

The number of years the respondents have served in the various media houses ranged between 1 to 25 years which was classified as 1-5, 6-10, 11-15, 16-20 and 21-25 years. It is observed from the table below that majority of them (18 respondents) have been in the service for between 6 and 10 years. One respondent has been in the service for 23years.

Most of the respondents have not practised for a very long time. This means that, all things held constant, climate change reportage will improve because the current crop of environmental journalists still have more years to practise. The results are represented on Table 4 on the next page.

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Table 4: Number of Years in Service

Number of Years	Frequency	Percentage (%)
1-5	5	16.7
6-10	18	60
11-15	4	13.3
16- 20	2	6.7
21-25	1	3.3
Total	30	100

4.3 Section B: Knowledge of the Concept of Climate Change

This section deals with the knowledge level of respondents with regards climate change. It is aimed at gauging whether they are aware of climate change, its causes, impacts as well as their sources of climate information. This section takes each of the specific questions on the questionnaire and provide the responses by the participants under sub-sections.

To start with, gauging the knowledge of environmental journalists about climate change will not be appropriate without first understanding what they know about their specialty. To find out whether the respondents really know their roles as environmental journalists, they were asked to clearly explain their roles. All the respondents said their roles are to report on environmental issues for authorities to take action. Limiting their roles to just transmitting scientific information from experts to the public is not enough. It is about time they move from being transmitters of knowledge to producers of knowledge. They can do this by building their capacities in environmental issues so that they do not only have to depend on the experts but depend on themselves.

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In response to what they understand about climate change, all the respondents said climate change is the change in weather patterns. Two of the respondents went further to add that climate change is as a result of bad environmental practices.

This question is important because it wanted to find out whether the environmental journalists have at least a fair idea about the concept of climate change. The findings show that they are not grounded in climate change knowledge. Their responses corroborate previous study by the BBC that Ghanaian public are not adequately informed about climate change. Their lack of knowledge means that they are likely to misinform the public and their reportage will not achieve the desired results and interpretations.

The findings of the study revealed that environmental journalists in Ghana have limited knowledge in climate change. Some of the responses from them show that their understanding of climate change was limited to weather and climate variability. Climate is a longer term phenomenon but explaining it as a result of changes in weather, which is a short term event, goes to add credence to the fact that environmental journalists have limited knowledge in the field. The fact that majority of the respondents (76.7%) said they have not heard about the greenhouse gases is also a strong assertion that the respondents had relatively low knowledge in climate change. The lack of knowledge in some of climate terminologies like ‘‘greenhouse gases’’ could affect the quality of their stories. This is supported by the claim by Shava and Mapura (nd) that one of the major reasons most journalists do not report on environmental issues is because they do not understand some of the environmental terminologies and concepts.

4.3.1 Knowledge on the causes of climate change

As part of efforts to adequately answer the first research question of this study, respondents were asked about what they think are the causes of climate change. If they claim they know

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about climate change, they should be able to explain the causes and so this question was imperative to find out the extent to which they understand the phenomenon.

All the respondents attributed the cause of climate change to human-induced activities. Majority of the respondents (73.3%) said the depletion of the ozone layer due to the release of toxic gases into the atmosphere caused the climate to change. 20% of the respondents said it was due to the cutting down of trees. 6.7% said they didn't have an idea about the causes of climate change.

The fact that they attributed climate change to human activities can be interpreted to mean that the efforts by scientists to blame humans for the changing climate is being widely accepted. The fact that no respondent mentioned natural events such as volcanic eruption, which has the potential to cause climate change further strengthen the argument of low climate knowledge among journalists.

The fact that depletion of the ozone layer topped the list of the causes of climate change shows that the respondents do not really understand the science of climate change. Even though, ozone depletion and climate change can be linked in various ways, it cannot be said to be a major cause of climate change. The respondents who cited ozone depletion may have done so based on the confusing that sometimes arise from the ozone depletion and global warming regarding which one lead to the other.

The 20% who said climate change was caused by deforestation means there is a fair knowledge of the role of forest as carbon sinks. Environmental journalists recognizing the importance of the natural vegetation in addressing climate change will therefore enhance their public education on the need to protect and conserve the ecosystem.

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The 6.7% of the respondents who said they have no idea may statistically be concluded as minute figure but in reality, this is significant. Environmental journalists who are absolutely ignorant about the cause of climate change will find it difficult to even educate the public.

The responses on the causes of climate change are summarized in Table 5 below.

Table 5: Causes of Climate Change

Responses	Frequency	Percentage (%)
Depletion of ozone layer	22	73.3
Cutting down trees	6	20
No idea	2	6.7
Total	30	100

4.3.2 Knowledge on the impacts of climate to change

The whole idea of making efforts to address climate change lies in the fact that climate change impacts all aspects of the global ecosystem. The impacts of climate change include increasing temperature, altered precipitation, sea level rise and extreme weather events such as drought, flooding and cyclone.

A question was therefore posed to find out whether the respondents know about these impacts or not and if they know, what were the common ones.

16 respondents representing 53.3% said climate change has resulted in too much heat in the system and that the earth's temperature has increased over the years. 26.7% of them identified drought as one of the impacts. 20% of the participants said climate change has reduced the amount of rainfall.

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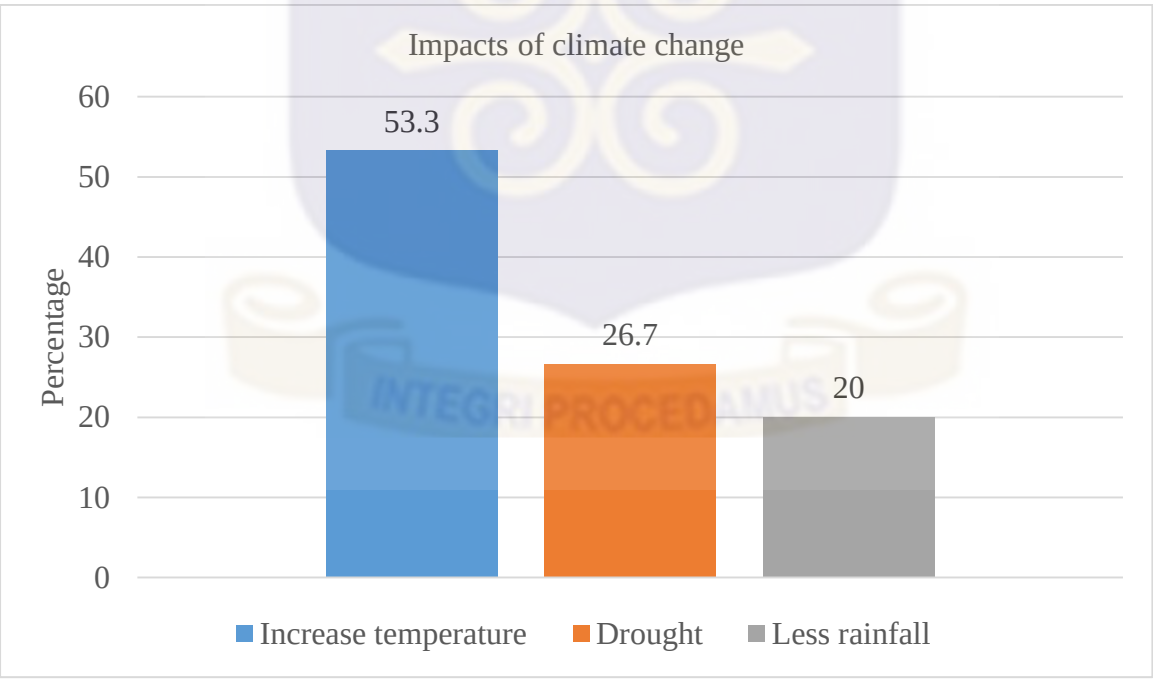
The responses show all the environmental journalists in the study know the impacts of climate change one way or the other. This may be due to the fact that these impacts are seen and felt by all and so it was easy for them get it right as projected by climate scientists. Unlike the causes of climate change which require some basic scientific understanding, the impacts of climate change do not require any scientific knowledge to observe.

The impacts enumerated by the respondents are not different from the study by Neville & Mohammed (2010) who argue that the most observed impacts of the changes in the climate of Ghana are increased temperature, decreased rainfall and sea level rise. Available climate data have shown that the mean annual temperature has since 1960 increased by 1˚C. The rainfall on the other hand is decreasing and becoming more erratic (Owusu and Waylen, 2009).

The results are graphically represented in Figure 2 below.

Figure 2: Impacts of climate change



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4.3.3 Role of human activities in causing climate change

Even though climate change can be caused by natural factors, the activities of humans play a greater role.

A question of what is the role of human activities to contribute to climate change was posed. The reason was to find out to what extent the respondents know about the role of human factors compared to natural factors.

All the respondents recognized that human activities have contributed to the changing climate. Various human activities were mentioned by respondents as to how humans have impacted the climate. A large number of the respondents (83.3%) said deforestation as a result of human activities has contributed to climate change. 10% of the respondent mentioned emissions from greenhouse gases by humans also contributed to the phenomenon while 6.7% said they had no idea.

The results are summarized in Table 6 below.

Table 6: Human activities that contribute to climate change.

Responses	Frequency	Percentage (%)
Deforestation	25	83.3
Production of GHGs	3	10
No idea	2	6.7
Total	30	100

The major cause of human induced climate change is the concentration of greenhouse gases (GHGs) in the atmosphere. These gases include carbon dioxide (CO_2), methane (CH_4), nitrous

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oxide (N_2O), hydro fluorocarbons (HFCs), per fluorocarbons (PFCs) and sulphur hexafluoride (SF_6).

Respondents were asked whether they have heard about GHGs and how they think these gases contributed to climate change.

The results show that majority of the respondents (76.7%) said they have not heard about greenhouse gases. The 23.3% who said they have heard about greenhouses gases had no idea about what the gases were all about and just 5% out of the 23.3% were able to mention carbon dioxide as a type of greenhouse gas (GHG).

Their responses to this question is another proof that the respondents lack the scientific knowledge in climate change.

4.3.4 Source of climate information

A general understanding of the sources environmental journalist get information about climate change is crucial for targeting communication to suit their information needs for comprehensive reportage on climate change.

Additionally, due to technological advancement and globalization, sources of information have increased. It was therefore necessary to pose a question to find out which source(s) were the respondents' most preferred choice(s). They were given options such as newspapers, radio, television, friends and family (interpersonal conversations), books, place of worship, and internet. Most of the respondents mentioned more than one medium. Internet topped the list with 8 respondents representing 26.7% saying they get their information from it. Radio and television followed closely with 7 respondents each (23.3%) indicating that they got climate information from radio and television. 5 respondents (16.7%) said they read about climate change from newspapers. 3 respondents (10%) said they gain climate knowledge from their interpersonal conversations with family and friends.

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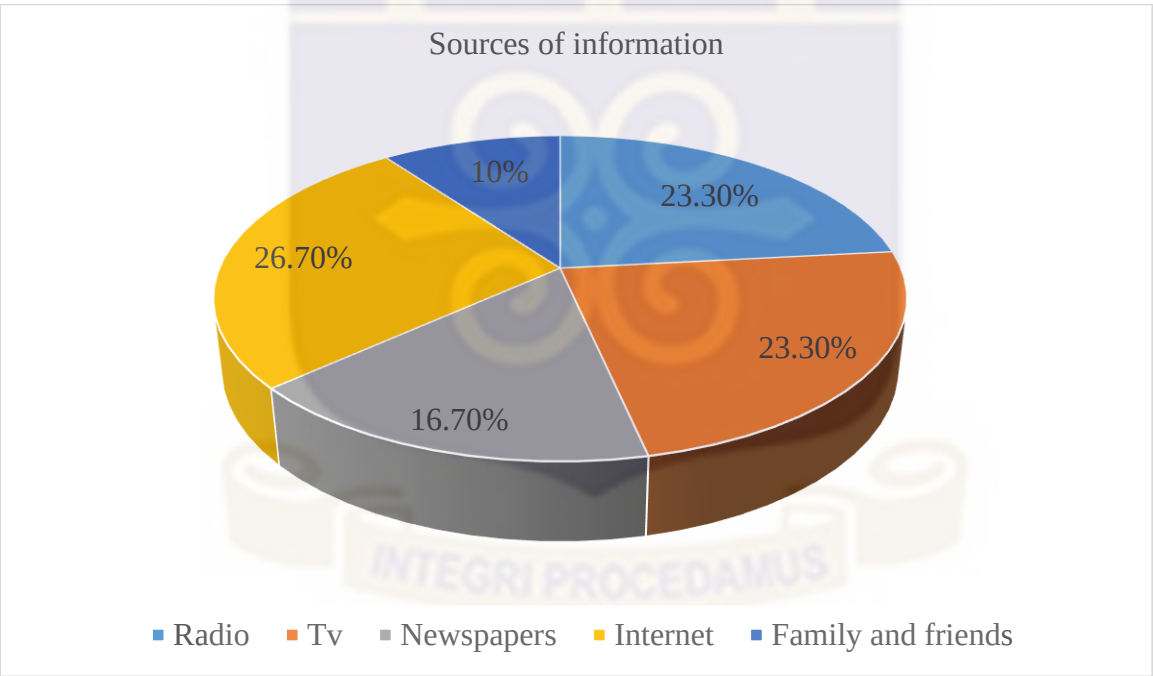
The internet is unsurprisingly the most used communication tool to get climate information because of the ability of respondents to easily assess it. The high internet connectivity across the world has made a lot of people particularly the youth to depend on it for information. Radio is still a common source for many while television is increasingly becoming popular and so many respondents also depend on it for their information. The least source where respondents got their climate information was from their day to day interaction with family and friends. This shows that many depended on what is reported on their various mass media platforms which they think are more reliable than interpersonal conversations.

A detailed results of the sources of climate information are shown below in Figure 3.

Figure 3: Sources of information.



What is more, the lack of expertise in reporting climate change coupled with the influence of climate sceptics and deniers sometimes lead to information sources being doubtful. It is expected that the respondents will consider a particular source more trustworthy than others. I therefore pose a question on which of the source they think is the most trusted source of climate

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information amidst the wide range of sources. All the respondents said the internet is the most trusted source when they want information about climate change. No wonder the internet is their main source of climate information because they trust they can reliably depend on it for accurate and truthful climate information.

4.4 Section C: Perception of Climate Change

People perceive climate change differently depending on a lot of factors. These perceptions have influenced how people have responded to the changing climate. This section is central to the study because it consist of series of questions that will elicit information about how the respondents perceive climate change. The main theme of this section was to find out the general observed changes of the climate and the changes in specific climatic elements such as temperature and rainfall.

4.4.1 Perceived changes in the climate

All the respondents said they have observed changes in the climate over the years and the changes are particularly felt in temperature and rainfall patterns. Respondents were given varying options ranging from 'increased', 'decreased', 'unsure/ don't know' to 'erratic'. For temperature, all the respondents said temperatures have increased. In terms of rainfall, majority of the respondents (73%) said it has decreased while 26.7% said it has become erratic.

The perceived changes in the climate among the respondents is not different from the reality. The Intergovernmental Panel on Climate Change (IPCC) has projected increase in global temperature and altered precipitation. In the tropics, rainfall is expected to become more erratic.

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Table 7: Changes in rainfall pattern.

Responses	Frequency	Percentage
Decreased	22	73.3
Erratic	8	26.7
Total	30	100

4.4.2 Dangers of climate change to society

Climate change is adversely affecting social groups and ecosystems across the world. The study therefore wanted to find out what the respondents perceived as dangers of climate change. A good number of the respondents (50%) said climate change leads to low agricultural yields. 33.3% of them said it destroys vegetation. 16.7% of the respondents said climate change has negative health implications.

The results show that the respondents have a fair knowledge of the negative impacts of climate change. However, their understanding is limited to the commonly cited dangers. This is understandably so because of their limited knowledge in climate science.

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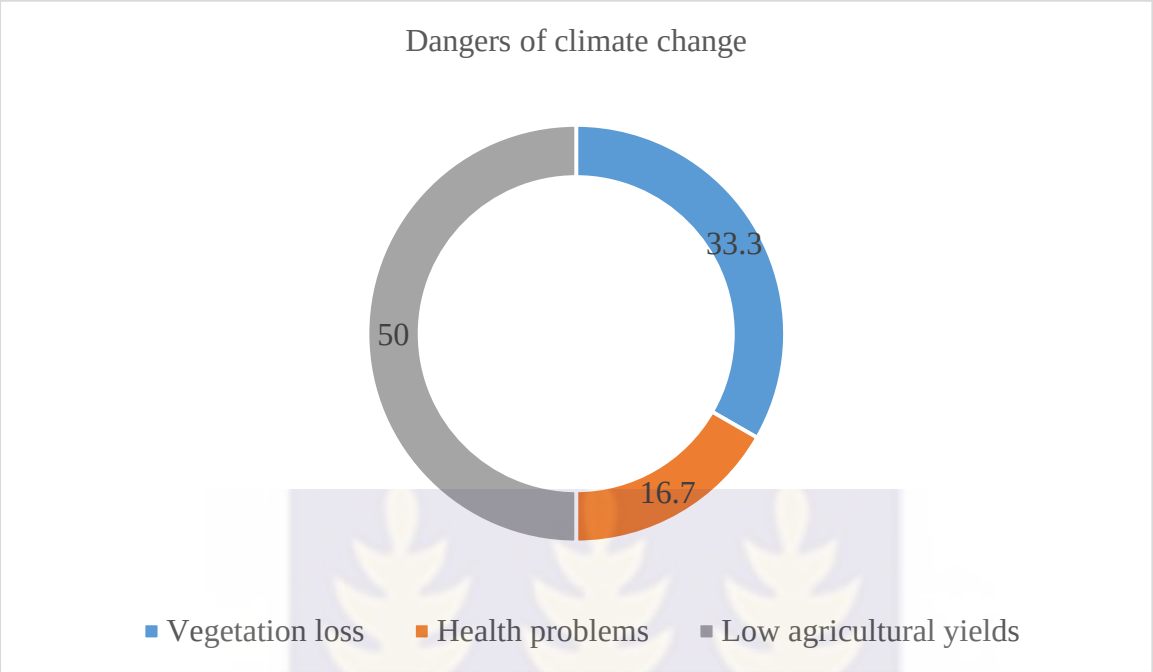
Figure 4: Dangers of climate change.



4.4.3 Measures of tackling climate change

Tackling climate change is a global concern and so various measures have been put forward by scientists and policy makers alike. The two broad measures adopted over the years and across the world are mitigation and adaptation. Simply put, mitigation tackles the causes of climate change whereas adaptation tackles the effects or impacts of climate change. There is a wide range of activities that can either be mitigation or adaptive measure. The question of what would be the most effective measure in tackling climate change and prevent further changes, was asked to find out whether the respondents knew about any of these measures. Majority of the respondents (46.7%) said the most effective measure is to plant more trees (afforestation). 33.3% of the respondents said humans should avoid indiscriminate cutting down of trees and other vegetation cover (deforestation). 20% of them said humans must stop polluting the environment.

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The measures suggested by the respondents are some of the effective ways to address climate change. However, the measures suggested are all mitigation without any adaptive measure. This may be due to the fact that they are more concerned about the biosphere (vegetation).

Table 8: Measures to tackle climate change

Responses	Frequency	Percentage (%)
Afforestation	14	46.7
Stop deforestation	10	33.3
Stop pollution	6	20
Total	30	100

4.4.4 Doubts that exist about the reality of climate change

A question on what the respondents think about doubts that exist about the reality of climate change was posed. The question was based on the premise that one of the greatest debate of the 21st century is about whether climate change is real or a hoax**.** This debate is increasingly fuelled and sustained by climate deniers and sceptics who oppose the thinking that climate change is real. While some argue that there is overwhelming evidences that the climate is changing and it is due to anthropogenic factors, others argue that climate change is not real. The study also wants to find out what environmental communicators in Ghana make of the reality or otherwise of the issue. Respondents unanimously agreed that indeed climate change is real and that the doubters should be abreast of the scientific evidences and agree with scientific consensus that the climate is changing.

The fact that all the respondents confirm the reality of climate change is critical. Psychologically, the belief held by environmental journalists with regards the reality of climate change will affect how they will manage climate information in terms of their reportage. This

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will go a long way to influence how they set agendas and frame climate change issues for the public to be convinced that climate change is real and it must be given the needed attention.

4.4.5 Personal ranking of climate change knowledge

This was an opportunity for the respondents to self-assess themselves and indicate how much they know about climate change. A list of options were provided including 'very well informed', 'informed', 'somewhat informed', 'a little informed' and 'not well informed', respondents were asked to select any one alternative that best described their level of knowledge about climate change. Majority of the respondents (46.7%) said they are 'a little informed' whilst 33.3% and 20% indicated they were 'somewhat informed' and 'informed' respectively.

The fact that the majority said they are a little informed means there is more room for improvement. It is also worrying because it is a potential barrier to the fight against climate change.

As an independent respondent, Dery summarized the level of climate knowledge of environmental journalists based on his encounter with them in the following statement:

''It's fair. It's not average. It's a little below average but you can say it is fair''.

I probed further on why he concluded that environmental journalists' level of knowledge in climate change is fair and this was his response:

''Because of the kind of questions they come to ask. You see, when someone asks you question on the subject area, the kind of question you will be asking tell me that you don't really understand it but you have some awareness of it. They don't understand the science of climate change.

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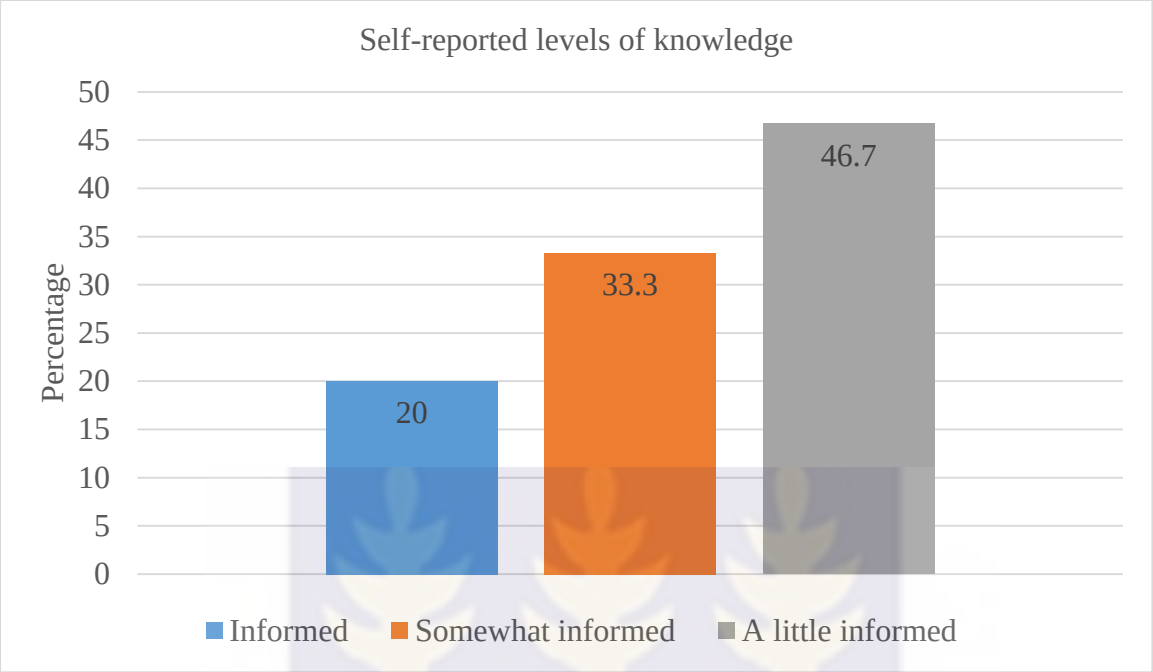
Figure 5: Respondents' self-reported levels of climate knowledge.



4.5 Section D: Climate Change Reporting

This section deals with how climate change is reported in the news media in Ghana. It looks at how environmental journalists are motivated, trained as well as the challenges they face in reporting climate change for the various media houses.

The responses to the questions in this section will not only include the ones collected using the questionnaires, but also the responses from the in-depth interviews I conducted.

4.5.1 Motivations to specialize in environmental reporting

There are a lot of specialized fields in journalism and so a journalist may choose a specialty depending on various factors. The respondents in this study who were purposefully sampled because of their specialization in environmental reporting, gave reasons why they decided to report on environmental issues instead of non-environmental issues, say, sports or business.

Four main reasons were given as to what motivated them to specialize in environmental reporting. The motivations are environmental protection, awareness creation, passion and the

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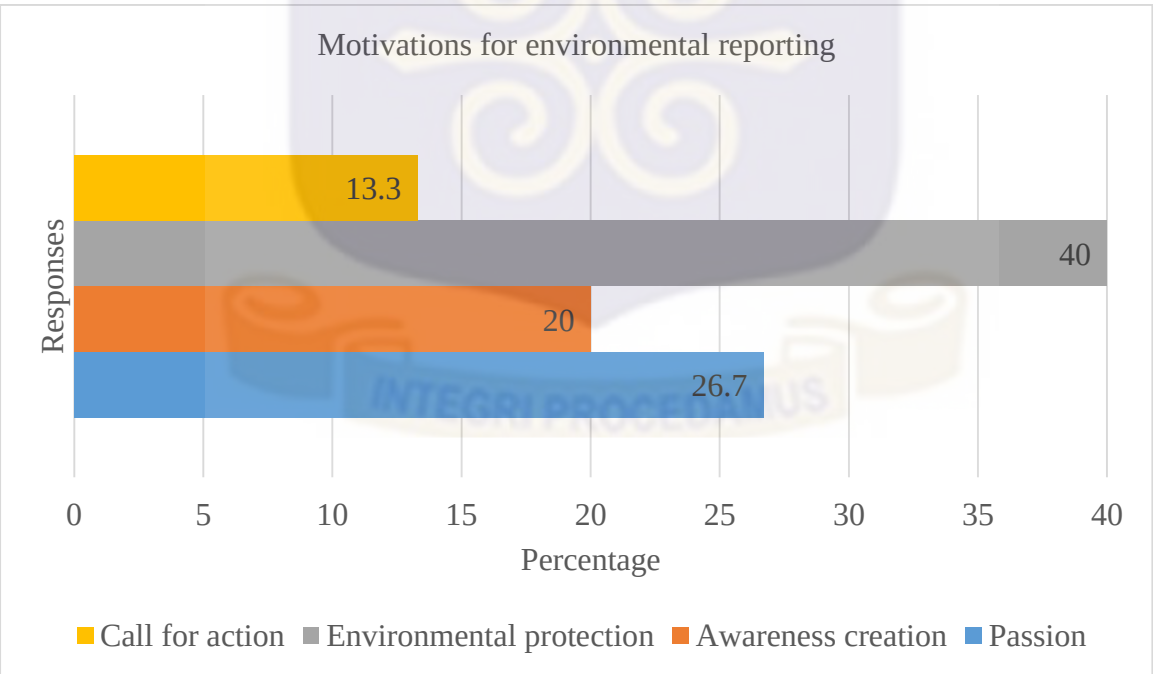
need to call stakeholders to act. Majority of the respondents (40%) said they want to play their part in protecting the environment. 26% indicated they are passionate about environmental issues. 20% of them said they want to create public awareness while 13.3% of the respondents said they want authorities to take action to address environmental challenges.

The findings indicate that there is a sense of responsibility being shown on the part of environmental journalists. They are not leaving the responsibility of protecting the environment to government or a particular group of people but they know it behoves them to also play their part through environmental reporting. They recognize that the media is a powerful tool to educate the public on how to protect the environment.

Figure 6 below graphically represent the motivations that made environmental journalists to specialize in environmental issues.

Figure 6: Motivations for specializing in environmental reporting.



In my interview with the Head of the Environmental Desk at the Ghana Broadcasting Corporation, Joyce Gyekye, she said her interest in environmental issues started since her

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school days at the Ghana Institute of Journalism. She had two main motivations. The first was her realization of how population growth will further exploit earth's limited resources. The second was the fact that specializing in environmental reporting means she will not be redundant in the newsroom like general desk reporters. She concluded:

> ''So the need for specialization came very early to me as a journalist and apart from doing all other things I got to realize that I have that interest in reporting environmental issues''.

The Head of the Environmental Desk at the Ghana News Agency, Lydia Asamoah indicated that:

> ''my motivation is my passion to see that humans survive in the world through protecting the environment which could be boosted by the kind of information I provide them as a journalist''

4.5.2 On-the-job specialized training in climate change reporting

On-the-job training is essential to improve the competence of journalists since such trainings build their capacities and sharping their skills. A question on whether they have undergone any on-the-job specialized training in climate change was posed. This question was necessary to find out whether the respondents have benefitted from such trainings and how it has improved their knowledge and reporting skills. Although some of the respondents have in the past participated in training in environment reporting as a broad field, only a few of them have undergone training that specifically focused on climate change reporting. Gyekye was among a few privileged environmental journalists to participate in such special training. Explaining the nature of the training, she said,

> ''It was on climate change and its effects on coastal areas. It was done last year[2017] by the University of Ghana in collaboration with USAID and we went to Shama, a place

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where the people there are being driven away by tidal waves as a result of climate change''

Overall, environmental journalists have not benefited significantly from trainings that will improve their climate change reporting. Communicating climate change requires a lot of work to enable the desired actions to be taken. Communicators need to know the appropriate channels and tools to communicate climate change. The lack of such trainings will therefore mean that the climate message will not reach the target audience and this will be a great challenge in mitigating or adapting to climate change.

4.5.3 Climate change reporting in the Ghanaian media landscape

Environmental issues in general and climate change issues in particular are not given the needed attention in the media landscape in Ghana as compared to political and business stories. As environmental reporters, they are used to the competition where their stories compete with other non-environmental stories. They are in the best position to paint the real picture of how climate change stories are not adequately given the needed space to be reported. Majority of the respondents (80%) said climate change issues were given low coverage. A few of the respondents (6.7%) said it was given a fair coverage. 13.3% of them indicated it was too occasional and so climate change only get reported when there is some natural disaster such as flooding, bushfires or severe drought. They went further to say that but for these natural disasters, climate change issues would have not been reported.

The results are summarized in Table 9.

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Table 9: Climate change reportage in the Ghanaian media.

Responses	Frequency	Percentage (%)
Low coverage	24	80
Fair coverage	2	6.7
Too occasional	4	13.3
Total	30	100

In her response, Lydia Asamoah said ‘‘climate change reporting in the Ghanaian media landscape is low because only a few media houses give priority to environmental issues. Some of these media stations do not even have reporters who have specialized in environmental reporting’’. Many reporters tend to report what their stations are interested in and so issues like politics, business and relationship dominate the airwaves across the country. Even with environmental issues, they are only prioritized when natural disasters such as flooding, rainstorms and bushfire occur. Peter Dery puts it as ‘‘environmental reporting is not very linear. It fluctuates depending on the activities at that time’’. He however thinks climate change reporting has seen tremendous improvement over the last ten years and that many journalists are now showing interest in that specialty.

4.5.4 Challenges environmental journalists face in climate change reporting

As a relatively new field, reporting on climate change could be challenging and so the study sought to find out the challenges. The foremost challenge that was offered by majority of the respondents (66.7%) is the lack of technical knowledge on their part to report on climate change. Lack of experts or resource persons in the field from whom journalists can get more reliable and accurate climate change information was the second most important challenge that

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23.3% of the respondents said they faced. 10% of the respondents said they lack relevant information to report on climate change.

Journalism training schools in the country do not teach climate change reporting. Moreover, on-the-job training that could have improved their knowledge in climate change is also lacking. This has partly contributed to the high percentage of respondents who lack technical expertise to report on climate change.

The lack of experts or resource persons clearly paints a picture of how relatively new the field is and so many people have not yet ventured into it to be trained as experts.

Due to technology advancement, accessing information has become easy but the challenge is how to shift the relevant information from the lot. This may be the reason why 10% of the respondents said they lack relevant information.

Climate change involves a lot of technical terms. The ability of journalists to understand these terms themselves and subsequently break the jargons down for the public understanding can pose a great challenge. This challenge was reiterated by Joyce Gyekye that ‘‘all these technicalities are really confusing. I now understand some of these technicalities but then to let my listeners understand, it becomes a problem. That is how come when it comes to the environment issues, most of times the stories are dropped in the course of the bulletin because it involves a lot of jargons.’’

In the newsroom, most editors feel uncomfortable editing climate change stories because of the technical terminologies involved. Any attempt to edit stories relating to climate change may lead to distortion of facts.

For the summarized results, see table 10.

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Table 10: Challenges of reporting climate change.

Responses	Frequency	Percentage (%)
Lack of technical expertise	20	66.7
Lack of resource persons	7	23.3
Lack of relevant information	3	10
Total	30	100

4.5.5 Improving climate change reporting

Since environmental journalists were the ones who are in the field and are abreast of the challenges, they were asked to suggest areas that needed improvement for their job to be efficient and effective**.** Half of the total number of the respondents (50%) suggested regular training for them to get conversant with climate change terminologies and to improve the overall understanding of the subject matter. 23.3% of the respondents said more climate change experts are needed to explain the science of climate change to them. 20% of them suggested that more climate change information must be made available so that they can improve their knowledge. 6.7% of the respondents called for the review of editorial policies of some media houses that will prioritize environmental issues. The respondents went further to suggest that all media houses must set up specialized environmental desks to show their commitment towards prioritizing environmental issues. Joyce Gyekye summed up her suggestion in the following words: ‘‘there is the need for regular training. I hear GIJ has now included environmental reporting in their curricular. I think that is fantastic. Also, we need resources to follow up on communities that have been impacted so much by climate change and what is being done to help them’’. Lydia Asamoah was also concerned about training for journalists. She however stressed on the need to strengthen the interaction between journalists and experts

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‘‘we also want more engagement with the technical people so that we can better understand the technicalities of climate change’’.

Due to lack of resources many a journalist are not able to follow up on stories as indicated by Joyce. The inability to follow up on stories do not help monitoring and evaluation of climate mitigation and adaptation projects. Dery suggested that environmental journalists should crosscheck their information before reporting. He also suggested that they should recognize the policy side of climate change ‘‘journalists may understand climate change but they may not understand it from the policy perspective so you may be talking about it and you will see some people lambasting you because they do not understand how it works’’.

4.5.6 The role of government in addressing climate change

As gatekeepers of society, journalists are supposed to know what government is doing about a critical issue like climate change and to follow up on it. According to the findings of this study, only one of the respondents knew what government is doing with regards climate change. Lydia Asamoah narrating what she knew about what government is doing said:

> ‘‘the government is partnering with other development partners and civil society organizations to formulate policies to mitigate and adapt to climate change. Government is also spearheading the REDD+ programme’’

On what more is required, she added that,

> ‘‘more engagement with stakeholders including academicians, media, and citizens to deliberate on measures to help adapt and mitigate climate impacts’’.

It was surprising that only one respondent knew what government is doing because their engagements with government officials should have given them a general idea, if not specific climate actions of government. The fact that many of the respondents did not know what government is doing about climate change shows that there is a communication gap between

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government and the media on their engagement on climate change issues. This has dire consequences in meeting the sustainable development goals particularly SDG 13 because without collaboration among policy makers and other relevant stakeholders such as the media, tackling climate change will be elusive.

Since Dery is with the Ministry of Environment, Science, Technology and Innovation (MESTI), he was better placed to outline what exactly government has been or is currently doing about climate change. Enumerating some of the actions government has undertaken, he said government has developed the National Climate Change Policy, and submitted the Nationally Determined Contributions (NDCs) to the UNFCCC. He added that government is mobilizing funding to undertake some adaptation projects across the country. He said personnel at the district assemblies are being sensitized on the impacts of climate change. He said MESTI has over the past years been sponsoring some selected journalists to participate at Conference of the Parties.

4.5.7 Environmental associations

Belonging to an organization comes with a lot of benefits including but not limited to, having a united voice, capacity building opportunities and supporting one another. Though an emerging specialty, environmental journalists are expected to form new or join existing associations to enjoy certain privileges. However, all the respondents said they do not belong to any environmental association.

This does not augur well for the efforts to tackle climate change considering the benefits associated with having or joining a group that have the interests of the members at heart.

Moreover, I acknowledged the fact that the various questions I posed to the respondents are not exhaustive enough and so do not capture all the views or information that some respondents may want to provide. For this reason, I concluded my questionnaire by giving the respondents

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the opportunity to provide any information they deem significant to the study. 10 respondents representing 33.3% provided responses here. All the 10 respondents called on all and sundry to come together to address climate change. One of the respondent said ‘‘protecting the environment must not be the sole responsibility of government. It is a collective effort’’.

Lydia Asamoah said:

> ‘‘the media need to be seriously engaged to help in the awareness and sensitization of the citizens regarding climate change issues’’.

Dery said:

> ‘‘This a very good topic that you are working on and once you are done, publish pieces of it in the papers so that people can read for them to get to know what you have done. So you take a particular area and you publish small. That could be an article or something in the papers and then we will all get the opportunity of reading these things and together, it will be able to improve on the situation as we move forward’’

Furthermore, the media remains the main source of climate information for environmental journalists. This is in consonance with a study by Boykoff and Rajan (2007) that suggest that the media is an integral source of acquiring information about climate change.

In summarizing Section D, climate change reporting is an emerging field and it is yet to be explored by many journalists. Environmental issues in general compete for airtime with other stories particularly politics where in most cases the latter get more attention from editors than the former. Despite the competition, many journalists have specialized in reporting environmental issues. The results from the study show that they have varying motivations in taking that journalistic path.

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Like any other specialized field, environmental journalism comes with its unique but complex challenges. Key among the challenges that the respondents enumerated include lack of technical expertise, resource persons and relevant information. These challenges have also been expressed in an earlier study by the United Nations Environment Programme (UNEP) that suggests that:

> ‘‘journalists covering climate change in many developing countries lack training, support from editors and access to information or people to interview’’ (BBC, 2010a)

On the way forward, they offered specific areas that required attention either on their part or on the part of other stakeholders in climate change issues.

What is more, an aspect of the findings that will be worrying to readers and policy makers is the fact that most environmental journalists are ignorant about government’s efforts towards tackling climate change. The findings show that only one journalist knew what government is doing about climate change in Ghana.

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CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

This study assessed the knowledge and perception of climate change among environmental journalists in some selected media houses in Ghana. The study was informed by the fact that the public depend on the media for information and so the role of journalists is critical in the dissemination of climate knowledge. However, journalists themselves are not grounded in the issues and this has hampered climate change reportage in the Ghanaian media landscape. It has led to low public understanding and affected how they respond to climate change.

The study was guided by the Knowledge Deficit Model. The Model is a widely used model in public science communication and it was appropriately used to collect data and answer the questions that this study sought to address.

The data collection tools used in this study were questionnaires which included both closed-ended and open-ended questions as well as in-depth interviews. The questionnaires were only administered to environment journalists while the interviews were conducted with both environmental editors and an official of the Ministry of Environment, Science, Technology and Innovation.

Purposive sampling technique was adopted to select the environmental journalists. The sample size was 30.

5.2 Conclusion

The findings of the study conclude that:

1. Environmental journalists are highly motivated to report on climate change, but, they lack the requisite knowledge to report on it. This is due to the fact that most of them do not understand the terminologies and concepts. Even the understanding of what climate change is and its variability is a great challenge for environmental journalists since most

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of them confuse climate change with changes in weather pattern. Many of the environmental journalists do not understand the science of climate change.

2. Most environmental journalists have not had the opportunity to benefit from on-the-job training on climate change. Therefore, they only learn from the climate related programs they cover and a few build their knowledge through individual research they mostly do online.
3. Environmental journalists do not have access to adequate climate information and climate experts to rely on to build their capacities, enrich their reportage and improve public understanding of climate change.
4. The coordination between environmental journalists and government in addressing climate change is somewhat weak. Most environmental journalists have absolutely no idea what government is doing about climate change.

The above are the main findings of the study which requires urgent attention and the study therefore offer some recommendations.

5.3 Recommendations

1. Environmental journalists should endeavour to train themselves by undertaking at least short courses in climate change to build their capacities. Climate change is now a specialist field and so there is the need for the media houses, government and other stakeholders to organize on-the-job training for environmental reporters.
2. The Ministry of Environment, Science, Technology and Innovation, through its climate change unit, should make climate change information readily available and accessible to environmental journalists. A Climate Change Information Centre could be set up for journalists to visit for more information sourcing.
3. Government should partner with other stakeholders to sponsor more environmental journalists to attend international climate change conferences such as the Conference

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of the Parties (COPs). The media houses which have the wherewithal should also sponsor their own reporters for such conferences. These opportunities are highly beneficial because it will educate the journalists and broaden their horizon as they will meet international experts and their peers from other countries.

4. Media houses should prioritize environmental issues by training and sensitizing their editors on its relevance to the development of the country. Media houses should also encourage their environmental journalists to conduct research in climate change for publication.

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APPENDICES

APPENDIX 1

RESEARCH QUESTIONNAIRE GUIDE

My name is **ZEPHANIAH KWESI DANAA** and I am an MSc student of the University of Ghana studying Climate Change and Sustainable Development (CCSD). I am conducting a study to assess the knowledge and perception of climate change among environmental journalists in Ghana. Your valuable input will go a long way to help me qualify for an MSc degree as well as inform policy makers and climate scientists to prioritize the role of environmental journalists in tackling climate change.

Please be informed that your participation in this study is entirely voluntary.

I assure you that all information provided would be held in strict confidence and would not be used for any purposes other than academic research.

Thank you very much for your time and responses.

I hereby consent to voluntarily partake in this study [ ]

SECTION A: DEMOGRAPHICS

Sex: Male [ ] Female [ ]

Age:

Highest Educational Level: Diploma [ ] Bachelor's Degree [ ] Masters [ ] Other, please specify…..

Number of Years in Service:

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SECTION B: KNOWLEDGE OF THE CONCEPT OF CLIMATE CHANGE

1. Please tell me about your role as an environmental journalist.

   ……

   ……

   ……

2. Please tell me what you understand about climate change?

   ……

   ……

   ……

3. What do you think cause the climate to change?

   ……

   ……

   ……

4. What do you think are the impacts of climate change?

   ……

   ……

   ……

5. (a) Have you heard of greenhouse gases? Yes [ ] No [ ]

   (b) What do you know about it?

   ……

   ……

   (c) Can you mention the types you know?

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……...

6. (a) What role do human activities contribute to climate change?

…….

……

……

……

7. Apart from covering programmes, where else do you get information about climate change from? You can tick more than one option.

Newspapers [ ] Radio [ ] Television [ ], Friends and family/ interpersonal communication [ ] Books [ ] Place of worship [ ] Internet [ ] Other, please specify…….. …….

8. Which of the source(s) in (8) above, would you say provide(s) you with the most trusted information about Climate Change?

Newspapers [ ] Radio [ ] Television [ ], Friends and family/ interpersonal communication [ ] Books [ ] Place of worship [ ] Internet [ ]

SECTION C: PERCEPTION OF CLIMATE CHANGE

1. (a) Have you observed any changes in the climate? Yes [ ] or No [ ]

   (b) If yes, what are some of the changes?

.....

.....

.....

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2. What has changed in terms of rainfall? Increased [ ] Decreased [ ] Remained the same [ ] Unsure/ Don‘t know [ ] Erratic [ ]

3. What has changed in terms of temperature? [ ]Increased [ ] Decreased [ ] Remained the same [ ] Unsure/ don‘t know

4. What dangers do climate change pose to society?

……

……

……

5. What would be the most effective measure in tackling climate change and for preventing further climate change?

.....

.....

.....

6. What do you think about doubts that exist about the reality of climate change?

.....

.....

.....

7. How would you personally rank your level of knowledge about Climate Change?

Very well informed [ ] Informed [ ] Somewhat informed [ ] A Little informed [ ]

Not informed [ ]

SECTION D: CLIMATE CHANGE REPORTING

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1. What motivated you to specialize in environmental reporting?

   ……

   ……

2. Have you undergone any on-the-job specialised training in climate change reporting?

   Yes [ ] No [ ]

If Yes, please briefly explain the nature of the training……

……

……

3. How would you describe climate change reporting in the Ghanaian media landscape?

   ……

   ……

   ……

4. What challenges have you encountered in your effort to report on climate change?.....

   .....

   .

5. What aspects do you want improved to help in the efficient reportage on climate change?

   .....

   .....

   .....

6. (a) Do you know what the government is doing about climate change?

Yes [ ] No [ ]

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(b) If yes, what is government doing?

.....

.....

(c) It is enough? Yes [ ] No [ ]

(d) What more is required?

.....

……

……

7. (a) Do you belong to any environmental organization/association? Yes[ ] No [ ]

(b) If Yes, which one(s)

……

……

8. If you have any additional information you think is significant to the study, kindly comment……

……

……..

Thanks very much for your valuable responses.

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APPENDIX II

INTERVIEW QUESTIONS FOR HEAD OF CLIMATE CHANGE AT MESTI

1. Please tell me about your role as the head of climate change at this ministry.
2. How would describe climate change reporting in the Ghanaian media landscape?
3. You have dealt with a lot journalists, what do you think about their level of knowledge of climate change?
4. In general, what is government doing about climate change?
5. Specifically, what is government doing about climate change reporting?
6. What aspects would you want journalists to improve?
7. What more can you add to our conversation?