UNLEASHING THE NEXUS BETWEEN CLIMATE CHANGE AND FOOD SECURITY IN RURAL SOUTH AFRICA: ROLE OF THREE COMMUNITY RADIO STATIONS IN THE EASTERN CAPE PROVINCE

BY

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DECLARATION

I, **Foluke Bosede Bamigboye** (201814705), hereby declare that this thesis, "Communicating the impacts of climate change on food security in rural South Africa'' is my original work and that it has not been submitted and will not be presented at any other University for a similar or any other degree award.

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DEDICATION

I humbly dedicate this doctoral thesis to my wonderful jewels Oluwatosin Bamigboye (Husband), Omoyomade Bamigboye, Oluwakiite Bamigboye and AraOluwakiitan Bamigboye for their unwavering supports.

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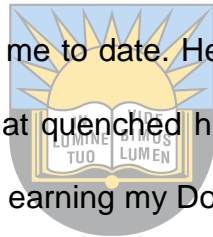
ABSTRACT

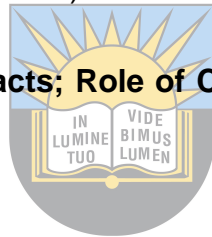This study investigates the role of Forte FM, Mdantsane FM and Rhodes Music Community Radios in disseminating the different kinds of messages on the nexus between the impacts of climate change and food security in the Eastern Cape Province, South Africa. Therefore, the study aims to investigate how these community radio stations play their informative, educative and entertainment roles regarding climate change and food security awareness programmes to their listeners. The study employed the qualitative research approach and convenience, and non-probability samplings techniques were subsequently used to select samples for this study. In-depth interviews were conducted individually for Forte FM, Mdantsane FM and Rhodes Music community radio programme managers respectively, who serve as the key informants. One focus group discussion each was held with residents of Golf Course, Mdantsane and Grahamstown areas where these radio stations broadcast from, with eight participants in each focus group. The total number of participants for the focus group discussions was 24 participants. The collected data were coded into themes using NVivo 12 software to generate the theme nodes and case nodes as key findings, analysis and then interpreted. The findings of this study confirmed that these three community radio stations do contribute to climate change communication through their programmes that focus on climate change and food security related issues. Another vital finding from the study showed that listeners do benefit immensely from these climate change and food security related programmes of the under-study community radio stations. Hence, listeners physical, social, and cognitive well-being of their climatic environment have been greatly impacted. In the same vein, the findings of this study

further revealed that the rural communities who are mostly affected by the impacts of climate change on food security have been well informed and enlightened on the suitable ways to enhance a sustainable food security and climate adaptation system through Forte FM, Mdantsane FM, and Rhodes Music community radio stations. Significantly, this study has been able to come up with two suggested models and the conceptual frameworks, which are the Local Action Adaptive Communication (LAAC) Model and the Indigenous Behavioral Change Conceptual (IBCC) Model. These models are focused on increasing listeners interests, adaptation, and behavioral change on climate change issues. The models are also aimed at ensuring better climate change and food security communication (Author).

Key Words: Climate Change Impacts; Role of Community Radios; Food Security; and Global Warming

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LIST OF ACRONYMS

ACC- Adaptive Capacity Concept

ANC- African National Congress

AR -   Action Research

ARI – Acute Respiratory Disease.

BCMM- Buffalo City Metropolitan Municipality

C4D- Communication for Development

CD- Compact Disc

CSA- Climate Smart Agriculture

DD – Diarrheal Diseases.

DVD-Digital Versatile Disc

FAO - Food and Agriculture Organization.

FRI- Farm Radio International

GEC – Global Environmental Change.

GHG- Green House Gas

HSRC – Human Science Research Council.

IBA- Independent Broadcasting Authority

IBCC – Indigenous Behavioral Change Conceptual

ICT – Information Communication Technology.

IKS -   Indigenous Knowledge System

ILM- Integrated Landscape Management

IPCC- Intergovernmental Panel on Climate Change.

IVR- Interactive Voice Responses

LAAC-   Local Action Adaptive Communication

LAC – Local Adaptive Capacity.

MDA- Marketing District Agency

NAF- National Arts Festival

NGO-   Non-Governmental Organization

O X – Oxfam International

RDP- Reconstruction Development Programme

RMR- Rhodes Music Radio

RSA- Republic of South Africa

SANC- South Africa Native College

SANCCP- South Africa National Climate Change Policy

SDGs- Sustainable Development Goals

SMS- Short Message Service

SSA- Sub-Sahara Africa

UK- United Kingdom

UNDP- The United Nations Development Programme

UNFCCC – United Nation Framework Convention on Climate Change.

UNICEF – United Nations International Children's Emergency Funds

US- United State

USA- United State of America

WBG- World Bank Group

CHAPTER ONE: INTRODUCTION AND BACKGROUND TO THE STUDY

1.1 Introduction

The United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as a change in climate that is attributed directly or indirectly to human activities (Poore, 2018). It alters the composition of the global atmosphere, which is in addition to the natural variability observed over a comparable period. Hence, Africa and small Island nations such as Indonesia and the Philippines have been seen to be the most vulnerable and exposed to climate change impacts because of the range of projected impacts, multiple stresses, and low adaptive capacity (IPCC, 2007). As a result, climate change affects some important agricultural areas of the world, such as the Mid-West of the US and the Northeast of Argentina. In addition, global warming equally affects some parts of Africa, such as Southern Africa. Southeast Australia has experienced extreme climate variability compared to other regions like Central Africa and Europe that encounter less climate variability. Thus, the extreme climate variability such as floods, heavy rainfall, droughts, and the rise in sea level experienced by the above-named continents reduces crop yields, fish and livestock numbers, and productivity (Henderson, 2017, Kc, 2018, & Poore, 2018). Esham (2018) notes that climate change affects all four dimensions of food security which are food availability, access to food, the stability of food supplies, and food utilization. These dimensions could therefore be further explained as, relating to the ability of the agricultural sector to meet food demands, the second dimension, access, implies individual access to adequate resources needed for acquiring appropriate foods for a nutritious diet. On the other hand, stability refers to an individual or a group of individuals in a community who

are at risk of temporarily or permanently losing access to the resources needed to consume adequate food. Lastly, utilization encompasses all food safety and quality aspects of nutrition.

Battersby and Haysom (2018) defined global food security as when all people always have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life. This study wants to note that for global food security to be achieved, adverse effects of climate change must not be felt, and the agricultural sector must be able to make food readily available for poorer nations. Hence, there must be even access to sufficient food required for a nutritious living. This is the key to a healthy lifestyle. Significantly, food and agricultural activities as well as the livelihoods of the rural populace are being affected by cyclones, wildfires, drought, and coastal flooding, among a host of others in South Africa. The present study notes that the Eastern Cape Province has been uninformed and lacks adequate messages related to the impacts of climate change on food security (Mditshwa, 2020), such as extreme weather conditions, heavy rainfall, storms, and droughts, among others, that affect agricultural productivity and cause food insecurity. Therefore, this study is significant in the sense that it would establish how community radios fill the voids created in the province by implementing developmental programmes that would address and create adequate awareness of how its listeners would mitigate and adapt to the impacts of climate change on food security.

This study aimed to investigate how the selected community radio stations communicate the nexus between climate change and food security to their respective listeners. Adopting community radio as a vital tool for this study would help reach out to

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the heterogeneous audience of the case study community radios. This study would help to create community awareness in the rural Eastern Cape Province, where communities contribute little to global warming but nevertheless are among its principal victims (Tantohet al., 2022).

Globally, it has been observed that households' food security would be affected by the impacts of climate change due to population, unemployment, and environmental degradation, amongst others (FAO, 2018, Nyiwul, 2021). The Food and Agriculture Organization of the United Nations (FAO, 2018) reflected on the dangers posed by climate change. Similarly, the understudied communities, rural and impoverished people will be particularly vulnerable to the impacts of climate change on food security (FAO, 2020). More so, a recent review of the impacts of climate change on food security in Sub-Saharan Africa admits that climate change affects all four dimensions of food security, which are food availability, accessibility, stability, and utilization of food (Nyiwul, 2021).

Significantly, developing nations are overwhelmed with formulating adaptation strategies to mitigate the impacts of climate change, key among which is producing quality and adequate food for all. Hence, Islam & Khan (2018) noted that about 220 million people located in Sub-Saharan Africa (SSA) reside in rural areas that lack quality and sufficient food, resulting in a higher dependency on farming to put food on the table. Apparently, there is a need to consider farming as a source of income in developing countries (Islam & Khan, 2018). This study wants to argue that to meet future needs, scholars must consider changes not only in communicating the impacts of climate change but also on the rate at which food production can be accessed for proper

adaptation. In addition, considering how to meet other necessities such as clothing and shelter that are often subjected to natural disasters such as rising sea levels, droughts, cyclones, floods, and wildfires, are some of the manifestations of climate change effects (Islam & Khan, 2018).

Furthermore, it must be noted that the development of community radio in South Africa is credited to the overthrow of the apartheid regime in 1994, when democratic elections were held. However, it is also revealed that ''the evolution of community radio in South Africa owes its history to supremacist organizations such as the Pretoria Boerkammando of Afrikaaner Volksfront (AVT)'' (Olorunisola, 2002:128). These were among the organizations that pioneered community radios that operated without permission from the media governing board. Presently, over a hundred community radio stations are licensed to operate officially in South Africa. A conceptual exposition on the impacts of global climate change on food security, as the defining crisis of the 21st century is paramount, considering several factors that are being affected by the phenomenon 'climate change', such as politics, conflict, disease, most especially the COVID-19 pandemic, unemployment, poverty, ignorance, and improper information.

The climate change in South Africa depends solely on the socio-economic status of the country as the effects of climate change set in (Niang, 2014). Thus, there is a need for research to investigate the impacts of climate change on food security in South Africa. This is due to ignorance and improper information about climate change messages. The case of South Africa, where this study is being investigated, is rich in a variety of mineral resources such as gold, diamonds, coal, and platinum, which contribute significantly to the country's economy. Yet, society is incapacitated and uninformed due

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to the impacts of climate change on livelihoods and animals. Apparently, solutions have been adduced from around the world and Africa about the impacts of climate change on food security, which must include communication in general and community radio. Hence, the need for a communication medium that would inform the citizenry necessitated this study. Adopting community radio as a vital tool for this study would help reach out to the heterogeneous audience of the case study community radios. This study would help to create community awareness in the rural Eastern Cape Province where communities contribute little to global warming, but nevertheless are among its principal victims (Tantoh et al., 2022).

Significantly, this study is unique in that studies have been limited to communicating climate change through community radio in the Eastern Cape Province of South Africa. Thus, the citizens of the Eastern Cape Province are not well informed about messages around the impacts of climate change, which lead to global food insecurity (Mditshwa, 2020). Therefore, this study aims to investigate how the case study community radio stations communicate the impacts of climate change on food security information in the Eastern Cape Province of South Africa. This is vital given that community radio has been identified as an important tool or medium for community development (Poore, 2018). Community radio has the ability to provide platforms for engagement and debate amongst its listeners. More so, identified communication- related issues that must be studied with regard to radio programmes on the impacts of climate change on food security include; the importance of communication, the various media and programmes for climate change/food security communication, media and behavior change communication among others. However, this study also wants to note that there is a

need to address communication related issues such as listenership, message, reach, media literacy, and interest in climate change as a media topic. Apparently, addressing the above-mentioned issues would be done considering the literature this study seeks to review in the subsequent chapters. The apathy has been that community radio's potential has been underutilized in rural South Africa for communicating the nexus between climate change and food security to the grassroots communities (Mditshwa, 2020).

Community radio stations are regarded as pillars of society because they serve as the voice of the communities within which they operate in a geographical area. This study seeks to know how well the community radio stations understudy are effective in communicating climate change issues to meet the study objectives. Thus, a lack of information on the potential impacts of climate change that could enhance future food security provided by community radio stations would result in a malformed society and food insecurity. Hence, this study seeks to find out how understudy community radios educate their listeners communities.

This study seeks to ascertain how messages about the impacts of climate change on food security should be encouraged to integrate rural development and adaptation plans. More so, seeking local knowledge and institutions in climate change communication This present study notes that the Eastern Cape Province has been uninformed and lacks adequate messages related to the impacts of climate change on food security (Mditshwa, 2020),such as extreme weather conditions, heavy rainfall, storms, and droughts, among others, that affect agricultural productivity and cause food insecurity. Therefore, this study is significant in the sense that it would establish how

community radios fill the voids created in the province by implementing developmental programmes that would address and create adequate awareness of how its listeners would mitigate and adapt to the impacts of climate change on food security.

Community radio stations such as Forte FM, Mdantsane FM, and Rhodes Music community radio stations are founded to implement educational, informative, and developmental programs (Milan, 2020). The three radio stations under study, like most community radio stations, have programs such as road shows, environmental-related topics, talk shows, and magazine programs that enhance listeners' education on various issues. The study would, therefore, investigate if such programs are adapted for food safety and quality aspects of nutrition as well as to address malnutrition, a healthy diet, and environmental communication to promote sustainable food stability and utilization.

It must, however, be noted that various governments, non-governmental organizations (NGOs), and other interested parties/bodies around the world have continuously sought ways of mitigating, managing, or controlling the effects of climate change and, subsequently, food security issues (Poore, 2018). At the heart of these campaigns and interventions is the use of media to educate and inform the populace through the various media interventions available (print, electronic, and new media). Considering the above, the productive use of community radio comes to mind, considering its assumed closeness to the community and absence of censorship, unlike public broadcasters (Milan, 2020). In addition, this present study wants to justify the role of community radio systematically and critically on the impacts of climate change on food security communication in the Eastern Cape Province of South Africa.

The work of Giustine (2018) is significant in ensuring the closure of the existing disparities between community media and public media. Hence, community radio is a potent and relatively common instrument that could regain effective communication with the indigenous communities. Thus, community radio's program interaction, inclusion, and timely information on climate change would positively impact its targeted audience.

Previous studies on community radio and climate change include those by Poore, (2018) and Whitmarsh (2019), which note that unlike urban areas, rural areas are local entities comprising of many vulnerable individuals that are affected by climate change and food insecurity. These associated impacts such as flooding, storm surges, cyclones, sea-level rise, and coastal flooding sit alongside a host of others.

Another previous research work on community radio and climate change was by Fox (2019), who noted that community radios involve engagement that enhances community participation based on climate change information services, human rights observation of the common groups of people, women's rights, gender equality, elders, youths, people living with disabilities, the vulnerable as well as the dominant groups. In a related view, Upadhyay and Bijal Wan (2015) established that community media should engage in dialogue with climate change experts to broadcast actions and measures that would protect community listeners against sudden weather-induced crises. This contains potential lifestyle changes along with behavioral changes that would help secure lives and livelihoods in the longer term.

According to Bolsen and Shapiro (2018), who found out from their study on climate change and community radio in the USA, this study noted that developed countries such as United States of America (USA), which possess a stronger economy, have

more skepticism in their coverage compared to other developed countries such as New Zealand. In another development, Whitmarsh and Capstick (2018), while researching climate change and community radio in Canada, observed that the use of new media for communicating climate change stimulates mostly urban dwellers interest, as they desire to get involved in climate change communication.

In another development, climate change research is being down streamed to the African continent, where this present study is being carried out to investigate the impacts of climate change on food security in rural Eastern Cape Province, South Africa.

The work of Niang (2014) on accessing adequate knowledge to communicate the impacts of climate change in rural South Africa established that the African continent comprises six regions, namely, West Africa, East Africa, North Africa, Central Africa, Northeast Africa, and Southern Africa which are constantly affected by the climate. These scholars noted that the African continent is vulnerable to the impacts of climate change, partially because of its relatively low capacity to adapt (adaptive capacity) to climate change impacts and partially because of the relatively strong climate change signals that were projected for Africa. Thus, Africa is limited in adaptive capacity despite her wealth of natural resources, well-developed social networks and small-scale enterprises, many of which are underpinned by Indigenous Knowledge Systems (IKS) for sustainable resource management (Niang et al., 2014).

There are also previous studies by Kang-Yi (2018), Matijila (2018), and Bamigboye (2019) about the role of community radio in community development generally and in relation to some specific developmental issues like HIV/AIDS awareness and COVID-19 awareness in the under-studied community radio stations. Community radio has been

instrumental in communicating basic knowledge about climate change. While all these scholars have discussed richly about climate change on community radio, there is still little knowledge about using community radio as a vehicle for communicating the impacts of climate change on food security in South Africa, especially in the rural Eastern Cape Province of South Africa.

Additionally, studies on community radio, climate change, and related issues of food security are very rare, especially when one looks at the rural areas in the Eastern Cape Province, as this study seeks to fill this gap. Notably, as the Eastern Cape has been identified as a "food basket" province, mechanisms should be put in place to harness these untapped resources towards addressing and adapting well to communicate the impacts of climate change on food security-related issues. Hence, studies around climate change and food security in the Eastern Cape Province are still limited, which justifies this present study's contribution to the body of knowledge by its novelty and uniqueness. The works of Reid and Huq (2007) and Mc Carthy (2018) note the role of community radio in community development generally.

Furthermore, understanding the socio-economic compulsions and constraints of developing countries, South Africa, and rural areas of the Eastern Cape Province in general would suggest the formulation of adaptation strategies to mitigate climate change challenges through community radio's role. These strategies would help the media set the agenda for a diversified society. Hence, this study is an attempt in these directions. Notably, this study would therefore seek to contribute to the growing scholarship on community radio and climate change communication globally. In addition, the climate change messages disseminated by Forte FM, Mdantsane FM, and

Rhodes Music radios would provide necessary feedback on sustainable food security to local communities, listeners of the selected community radios, environmental scientists, conservation scientists, as well as local and international food experts. Interestingly, this study would ascertain how listeners perceive community radio as a channel to communicate the impacts of climate change on food security information. It has been argued that community radio has the potential to encourage Communication for Development (C4D) by implementing advocacy communication campaigns through agenda-setting for public awareness and engagement on food security matters in Africa (Ouma, 2018).

1.2 Research Problem

It is noteworthy that several scholars such as Odongo (2018), Doelman (2019), and Maye (2020), have looked at the role of community radio as a tool for facilitating development, especially in rural areas. Considering the specific contributions that engaging community radio as a research partner or tool offers in investigations on climate change. Thus, climate change communication has been achieved through community radio, participatory action research (PAR), and community media in Africa and globally to communicate climate change information. Considering the above previous works on climate change, Action Research (AR) has revealed the power relations between systemic drivers of vulnerability and opportunities for sustainable action for social change in relation to climate impacts. Moreover, communicating the effects of climate change has been done by employing a systemic approach to action research. This approach has helped to provide insights into the interaction between the physical and environmental impacts of climate change and related systems including

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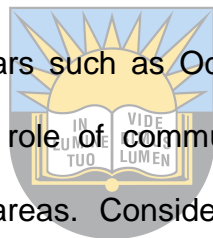
land tenure and agricultural production (Tantoh et al., 2022). Yet, most of these scholars have focused on some topical issues like HIV/AIDS awareness and COVID-19 pandemic related information. The role of community radio in addressing climate change and food security issues has not been fully researched in the Eastern Cape Province of South Africa. There is little research regarding communicating the impacts of climate change on food security in the rural Eastern Cape Province in an adaptation context (Mditshwa, 2020). This study would, therefore, seek to go further than that to fill a gap and look at the role of community radio in addressing the impacts of climate change on food security, especially in some selected rural areas of the Eastern Cape Province, since community radio has been identified as an important medium or tool for community development and with the ability to provide platforms for engagements and debates among its listeners.
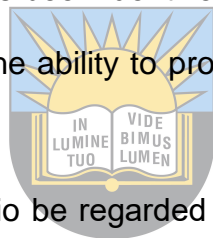
It is imperative that community radio be regarded as 'alternative media' on the African continent (Mustpaha & Omar, 2020). Alternative media are the established new localized media that provide lenient points of expression that carter to marginalized societies (Mustapha & Omar, 2020). Hence, the understudy community radios would expand their listeners' knowledge on the impacts of climate change on food security through their public awareness programs, which would include publishing development ideas, documentaries, interactive talk shows, and food- related programs. All these engagement platforms would be a great avenue to learn more and share experiences about the impacts of climate change on food security programs in underserved communities. Thus, this study would increase listeners interest in climate change as a topic and increase the understudied community radios feedback mechanism for

communicating the connection between climate change and food security programs. More so, it would also create an informed society for the understudied communities, the government, the environmental sector, and the country at large. Hence, Forte FM, Mdantsane FM, and Rhodes Music community radios would treat their listeners as subjects and participants in communicating messages around the impacts of climate change on food security in the Eastern Cape Province of South Africa.

1.3 Research Aim

The research aim is to investigate how effectively Forte FM, Mdantsane FM and Rhodes Music community radio stations communicate the different types of messages, around the impacts of climate change on food security in the selected communities in the Eastern Cape Province.

1.3.1 Research Objectives

1. To ascertain how Forte FM, Mdantsane FM, and Rhodes Music community radios communicate messages on the impacts of climate change on food security to Alice, Mdantsane and Grahamstown communities.

2. To explore the impacts of different types of messages around climate change on food security behavioural change at Alice, Mdantsane and Grahamstown communities.

3. To investigate how Forte FM, Mdantsane FM and Rhodes Music community radios, evaluate the impacts of climate change on food security programmes to enhance climate change adaptation and provide a sustainable food security.

4. To ascertain the challenges confronting Forte FM, Mdantsane FM and Rhodes Music community radio stations in communicating the impacts of climate change on food security messages.

1.3.2 Research Questions

1. How does Forte FM, Mdantsane FM and Rhodes Music community radio stations communicate messages on the impacts of climate change on food security to Alice, Mdantsane and Grahamstown communities?

2. How does Forte FM, Mdantsane FM and Rhodes Music community radio stations explore the impacts of different types of messages around climate change on food security behavioural change at Alice, Mdantsane and Grahamstown communities?

3. How does Forte FM, Mdantsane FM and Rhodes Music community radios evaluate the impacts of climate change on food security programmes to enhance climate change adaptation and provide a sustainable food security?

4. What are the challenges confronting Forte FM, Mdantsane FM and Rhodes Music community radio stations in communicating impacts of climate change on food security messages?

1.4 Significance of the Study

Community radio is a powerful tool that gives voice to the voiceless in the communities in which they operate. This study is important as it addresses relevant and topical issues confronting humankind in the 21st century. This study would contribute immensely to the communities under study, academia, community radio stations under study, as well as the media industry globally. Considering the above, this study seeks to

strengthen community radio's potential in communicating climate change issues. Additionally, the study addresses how to fill the gap by identifying proactive measures that would enhance climate change adaptation and provide sustainable food security to the community media in South Africa and globally. Community radio has over the years been used for facilitating various developmental purposes. However, it is expected that this study will make an incremental contribution in terms of originality. The study would establish the impacts of different types of messages around climate change on food security in the understudied communities. In addition, it is hoped that it would also be practically useful to address communication-related issues such as listenership rate, message reach, climate change program presentation mode and feedback mechanism for the case study community radios and media in general.

Furthermore, this present study is significant in that it seeks to explore the potential capacity of community radio stations as a tool for climate change communication. Considering that climate change is a global phenomenon and that its impacts affect the environment, the study would critically analyze the impacts of climate change on food security communication at Forte FM, Mdantsane FM, and Rhodes Music community radio stations. Apparently, there are some studies on community radio and climate change, focusing on community radio, but the impacts of climate change on food security communication in the Eastern Cape Province are limited.

Significantly, it is expected that this study will make an original contribution to the body of knowledge and ongoing debate in the study area. It is also hoped that this study would offer practical and useful findings for reducing the potential limitations and impacts of climate change on food security in the Eastern Cape Province, South Africa

as a whole and globally. The study, therefore, would contribute to the growing scholarship of community radio and climate change communication globally. More so, it would contribute its role in ensuring sustainable food security to local communities, listeners of the selected community radios, and food experts in the food security sector. In light of the above, this study also hopes to contribute significantly towards better communication of climate change information by ensuring climatic environmental friendliness and stability in food security in the selected communities and globally too. Communicating the impacts of climate change on food security through the understudy community radios is the most successful medium to reach out to the populace of the Eastern Cape Province. The views of the research participants in relation to the research context have no doubt been significant.

1.5 Structure of Thesis

Chapter 1: Introduction

This chapter introduces the background to the study. This chapter also discusses the research problem, aim, specific objectives, research questions and the significance of the study. It also gives an outline of the layout of the study.

Chapter 2: Literature Review

This chapter covers related literature on the direct role of community radio in addressing climate change and ensuring food security. The literature on the contextualization of food security, accessibility, availability, and utilization is presented. In addition, this chapter highlights the theoretical framework of the study. Two theories are discussed namely, the agenda- setting theory and the media dependency theory. The theoretical and conceptual frameworks of the study are discussed in relation to the study area. In

addition, the chapter also covers related concepts of stability and utilization that guide community radio as well as the impacts of climate change on food security communication.

Chapter 3: Methodology and Research Design

This chapter describes the research process in depth, the research design, the research paradigm, and the methods used to realize the objectives of the study. This chapter outlines the research design used, sampling techniques, data collection methods, data analysis methods, and ethical considerations. Also, this chapter highlights the application of NVivo 12 software.

Chapter 4: Data Presentation and Analysis

This chapter focuses on the presentation, analysis, and interpretation of results from the focus group discussions as well as the program manager interviews. Also, the researcher sums up the chapter with a general discussion on the findings of the study.

Chapter 5: Discussion of Findings, Conclusion and Recommendations

This chapter presents an overview of the research findings. Thereafter, re-state the problem of this study to ensure that the research questions and research objectives are answered. This chapter also summarizes the study's key findings. This chapter concludes the study by providing a summary of the study's findings, two suggested local models for climate change communication, a list of limitations of the study, and a conclusion to the study. Recommendations for further studies on community radio, climate change communication, and food security are all justified in this chapter.

1.6 Definition of Terms

ADAPTATION: Adaptations are measures or moderations in natural or human systems regarding actual or expected variations in climate as well as methods of utilizing new opportunities.

CLIMATE CHANGE: Climate change is a change in climate that is attributed directly or indirectly to human activities and ecosystems.

COMMUNITY RADIO: Community radio is radio run by and for communities in local languages, often with programming focused on issues at the heart of local development such as climate change and environmental degradation.

MITIGATION: refers to significant long-term solutions for providing a remedy to the present climate change and a way of decreasing its negative effects in future occurrences.
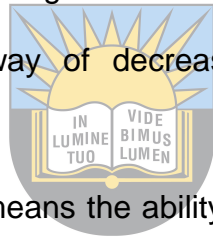
FOOD SECURITY: Food security means the ability of individuals and nations to obtain sufficient food daily.

1.7 Chapter Summary

This chapter presents the introduction and background to the study. It has mentioned the issue the study tends to address as well as why the nexus of climate change and food security is needed to study in rural South Africa. The chapter also presents the research problems and the study's research objectives and questions. More so, the significance of the study was discussed, and the thesis structure was highlighted, as well as the definition of terms used in the chapter. The next chapter will reflect several scholarly views related to the study's goal.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter reviews the literature on community radio, climate change, and related issues in food security. The review of the literature puts more efforts into linking various studies of community radio stations with the impacts of climate change communication on food security, most especially in Alice, Mdantsane, and Grahamstown in the Eastern Cape Province, as this study suggests. Significantly, this study would help identify gaps in the study of community radio, some of which this thesis addresses. An overview of the chapter includes climate change situations in South Africa; community radio as a tool for sustaining development; community radio's potentials towards ensuring food security. The chapter also discussed the theoretical and conceptual frameworks that ensure effective climate change communication on food security through community radio.

2.2 Overview of Climate Change Situation in South Africa

South Africa, like many countries in Southern Africa, faces significant vulnerability to the projected impacts of climate change, particularly in terms of water stress, land

degradation, and coastal zone erosion. These climate change impacts are expected to lead to a drop in agricultural productivity, resulting in food insecurity, power shortages, and the loss of valuable coastal land, among other impacts (Mditshwa, 2020). Notably, these projected impacts could underscore the fact that South Africa is particularly vulnerable to climate change, with warnings in the interior of Southern Africa occurring at about twice the global average rate (Assessment Report Six of the IPCC). According to the IPCC (2007), agricultural productivity will reduce from 21% to 9% by 2080 due to climate change in sub-Saharan Africa.

Figure 2 1: Overview of Climate Change in South Africa   Source: Google Map Images

The report indicates that rising temperatures during precipitation can lead to a reduction in the production of stable food by up to 50%. Thus, climate change mitigation and adaptation have posed a vital global concern in the past few decades, both in South Africa and globally (Mditshwa, 2020). This study wants to question the understanding of climate change experts that underpins the global discourse around the impacts of climate change on food security. Most especially on the need to provide proper

information on long-term measures that would help individuals adapt to the manifestations of the climate. This suggests that there is a need for societies to take adaptive measures to adapt to the unavoidable impacts of the climate, considering how to cut down Greenhouse Gas emissions (Henderson, 2017).

Mitigation encompasses all anthropogenic interventions or policies with the sole purpose of reducing greenhouse gas (GHG) emissions or promoting the sinks for GHG (Elum et al. 2017; Minx et al. 2017). Mitigation refers to a significant long-term solution in providing a remedy to the present climate change and a way of decreasing its negative effects in future occurrences (Elum et al. 2017). Adaptation, on the other hand, are measures or moderations in natural or human systems regarding actual or expected climate change variations as well as methods of utilizing new opportunities (Elum et al. 2017). This study wants to argue that the impacts of climate change affect individual livelihoods, ecosystems, and animals among others. Hence, the need for developing countries to make informed decisions on a few practical adaptive measures that would help in achieving a sound scientific climate system based on a technical and socio-economic basis by taking current and future climate change variability into account.

The United Nations Framework Conventions on Climate Change (UNFCCC, 2007), posit adaptation as a process through which societies adjust to unforeseen situations by taking precautionary and appropriate measures, making right adjustments to reduce the adverse effects of climate change. Hence, the negative impacts of climate change can be addressed and reduced only through adaptation literally, since constant mitigation already changed, climate is irreversible by mitigation. Thus, mitigation and adaptation complement each other, but never substitutes each other. Without doubts, long-term

adaptation can be reduced by present mitigation measures and practices such as adopting solar system as a renewable energy source.

Significantly, this study wants to note that it is necessary for government policy to inform the populace, especially the understudied communities, about its adaptive measures to global climate change effects that lead to food insecurity. Disseminating messages through community radio about the consequences of climate change for future purposes. Yet, Anderson (2016) noted that communicating the impacts of climate change on food security to the communities under study is vital and that adaptation to its effects would help to strengthen the community's resilience to climate change impacts. Certainly, in situations where adequate and proper adaptive measures are lacking, economic growth would be marred, as would day-to-day activities of human and natural well-being (Elum et al., 2017). Notably, climate change is challenging on a global level. Invariably, the call for adaptation is increasing among Third World nations such as South Africa, Zimbabwe, Nigeria, and Mozambique, to mention a few, where vulnerability is presumably taking an increasing stand (Minx et al. 2017).

Scholarly views noted that Africa's agricultural production will be adversely affected by climate change (Minx et al. 2017, Sultan & Gaetani, 2017). I want to argue from the onset of this study that agricultural sector is the core producer of livelihoods for the common, most especially rural populace. This is also attested to by media scholars who argue that it is necessary to guard the livelihoods of farmers to sustain food security (Henderson et al. 2017). Yet, this study wants to point out that to meet future needs, scholars must consider changes not only in agricultural production only; but also, on the rate to which food production can be accessed for proper adaptation.

It is noteworthy that the vulnerability of a society or system determines the extent to which it will adapt to climate change in that society. In other words, a society's functional system determines how well it will adapt to climate change (Henderson et al., 2017). Moreover, a vulnerable society is influenced or controlled by its level of exposure, risk, and sensitivity to the impacts of climate change. For instance, the incessant reoccurrence of droughts or flood hazards would lead to zero production, waste of resources, and inadequate farm produce. Hence, this study wants to note that calls for an increase in demand for climate change programming and announcements by Forte FM, Mdantsane FM, and Rhodes Music community radios through jingles, publicity, and face-to-face awareness campaigns are paramount. Thus, there is a need for adaptive measures such as more demands for climate change awareness and organizing discussions and rural meetings on techniques for broadcasting climate-related issues effectively through community radios to increase productivity amongst farmers (Auma et al., 2017). Community radios, as a branch of communication, must educate their listeners, most especially farmers and citizens generally. Optimizing the efficient use of the understudied community radio's interactive social learning programs, such as call-in shows, public announcements, jingles, music, and other forms of information around climate change that have been identified as significant for autonomous adaptation, is key (Minx et al., 2017). Furthermore, scholars such as Sultan and Gaetani (2017) emphasized that there are several pro-active adaptation measures that could enhance listeners, such as research, local partners, and farmers' groups collaborating with policy makers. The scholars further noted the need to select the most appropriate technological and institutional interventions based on global knowledge and local
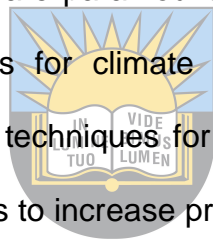
conditions that would enhance productivity, increase incomes, achieve climate resilience to enhance climate mitigation. This suggests that developing countries and small Island developing state must be assisted by able body or policy makers such as Food and Agricultural Organization (FAO) and the Intergovernmental Panel on Climate Change (IPCC) among others on the need to build rural dwellers resilience, mitigation measures and adaptation to climate change.

Scholarly views such as Moyo's (2016) and Doelman et al.'s (2019) noted three broad strategies for communicating and examining the impacts of climate change: agronomic modeling, agro-economic modeling, and Ricardian modeling techniques. This study wants to examine community radio's potential for communicating climate change issues related to food security. That is, presenting the only medium available to communities that have little or no access to other methods of conveying information and knowledge as the tool for exchanging messages around the impacts of climate change on food security.
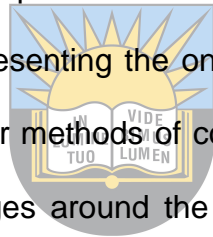
2.3 The Eastern Cape Province Map

Figure 2.5 showing Eastern Cape Province map, the location of the three selected communities (Alice, Mdantsane and Grahamstown) that participated in the research data gathering of this present study in 2021.

Figure 2 2: The Eastern Cape Province Map (Adopted from Goggle Map)

2.4 Community Radio as a Tool for Sustaining Developmental Goals

Community radio is an alternative to the mainstream media with a distinct preference and focus on a particular community, selected geographically or by interest (Fox, 2019). The need for an effective climate change programming cannot be over emphasized to achieve a sustainable development. Hence, utilizing community radio for public awareness in respect of the impacts of climate change on food security to the grassroots communities is significant for sustaining development. I want to point out that despite the various criticism put forward against the role of community radio, numerous of the community radio scholars' texts have documented that community radio helps

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bringing together people from frequently disconnected societies, stakeholders' groups such as livelihoods, stakeholders, community leaders, organizations, and governance (Poore, 2018). This is also supported by the theoretical frameworks that underpin this study: agenda-setting theory; uses and dependency theory. The theories hold that community radios help to motivate individuals' total reliance on the media for sustainable developmental goals. Hence, climate change information services generally, most especially messages around climate change on food security would enhance Sustainable Development Goals (SDGs) in Africa by 2030 (Henderson, 2017). Significantly, community radios have a social responsibility to promote a sustainable community awareness, information, education, entertainment, and empowerment. Community radio welcomes a platform that enhances community participation based on climate change information services, human right observation of the common groups of people, women's right, gender equality, elders, youths, people living with disabilities, the vulnerable as well as the dominant groups (Fox, 2019).

Furthermore, community radios communicate national development plans, policies, and Specific Natural Development Strategies mandate to achieve the SDGs (Demuyakor, 2021). The South Africa National Climate Change Policy (SANCCP) is based on some imperatives, adoption, mitigation, research, and observations in line with United Nations Framework Convention on Climate Change (UNFCCC, 2007). The framework emphasizes climate change adaptation which is caused by the mitigation of emissions. This suggests measures that allow the ecosystem to adapt naturally and enables sustainable development. Significantly, community radios apparently, are thriving
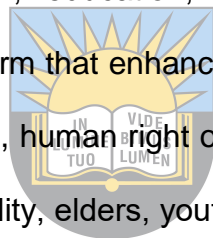
globally with community radio's Information Communication Technology (ICTs) diversification to the information society.

Previous recent studies such as Correia (2019) & Maye et al. (2020) emphasized the significance of community radio as networked governance through the advent of Information Communication Technology (ICT). Community radio's new role in the employment of ICT and Communication for Development Strategy (CDS) is vital. Yet, this study wants to argue that despite the exponential growth in access to the ICT in Africa, radio remains the continent's dominant mass medium. Radio has the widest geographical reach and the highest audiences.

Additionally, community radio provides two-way interactive learning through its educative programmes such as listening clubs, call-in talk shows and documentaries. This suggests that for community radios to improve it communication with the indigenous communities, climate change science must collaborate with the social science and the humanities discipline. Make use of qualitative-oriented methods to examine the impacts of climate change as not only a physical, but also as a social and cultural phenomenon.

In another development, changes in the economic and social organization are an efficient and effective mouthpiece of the communities and listeners around climate change information on food security. Most especially the new forms of economic and social organizations and state initiatives that is required not only to adapt to climate change but to achieve sustainable development. For instance, the exposition of internet-based modernized knowledge, open organizations, and state initiatives would facilitate the transmission of climate change information towards ensuring food security. More so,

local communities need to seek guidance from and among other societies with reference to the climate change impacts that they experience due to global warming. Similarly, climate change experts would broadcast actions and measures that would protect the community listeners against sudden weather-induced crises and potential lifestyle changes, along with behavioral changes that would help to secure lives and livelihoods in the longer term (Upadhyay & Bijalwan, 2015). Community radio has proven to be an asset in developing early warning signs and hazard risk information. A potent medium of communication is used to reduce and mitigate global warming.

Community media are responsible for diverse collections of news, sharing or exchange of information, ideas, emotions, thoughts, and expressions comprising both verbal and non-verbal (body language). Community media encompasses all forms of community (local) communication system such as cell phones (mobile phones), social network like Facebook, Internet, YouTube, Instagram, and electronic mail. Other formats include Television, films (cinemas), photography, videos, Compact Disc (CDs), Digital Versatile Disc (DVDs), printers (Printing Press). The argument advanced in this study is that Forte FM, Mdantsane FM and Rhodes Music radio must serve and play a sustainable developmental role to its listeners and communities at large.

Community radios are meant to serve the interests of the people by initiating development programs that will advance society. Apparently, these notable programs include the impacts of climate change, food security awareness, vital information jingles such as implementing regulations for ecosystems and wildfires, and other behavioral change programs. This implies that enabling communication and exchange of knowledge between listeners, environmental experts, and the public in a consumable,

deployable, and non-threatening way in local languages would empower its listeners to develop sustainable development goals.

2.5 Global Climate Change Debate through Radio in Africa

Africa and the small Island nations such as Indonesia and the Philippines have been seen to be the most vulnerable and exposed to the climate change impacts, because of the range of projected impacts such as multiple stresses and low adaptive capacity (IPCC, 2007). Community radio has become the indigenous public sphere where nation's issues in the national interest are discussed and debated. Yet, climate change being a global challenge effects causing food insecurity has the potential to be addressed by community radio. Additionally, research analyses on community media coverage around climate change have generated some debates. Community's perceptions of media have generated some sort of global debate. To date, the debates about communicating the impacts of climate change through the media have been well established both in developed and developing countries.
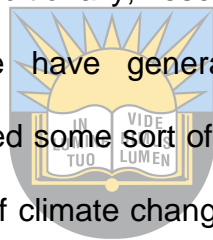
The theoretical frameworks guiding this study hold that the media is central to the provision of public information. That is, the under-study community radios help in shaping people's perceptions, awareness and setting the public agenda regarding communicating the impacts of climate change causing food insecurity (Zougmore,2019). A number of scholars such as Hoegh-Guldberg (2018) and Zougmore (2019) note that communicating climate change in developed countries stands in stark contrast to the dearth of research in developing countries. This implies that the rural citizens that contribute little to the global warming but nevertheless are among its principal victim's

worth researching. On the other hand, lack of in-depth research in investigating climate related issues will make an uninformed society generally.

Significantly, research process would help to ascertain their perceptions and understanding of the different types of messages around the impacts of climate change on food security in the under-study communities. Hence, the need to ascertain how Forte FM, Mdantsane FM, and Rhodes Music community radios communicate messages on the impacts of climate change on food security to Alice, Mdantsane and Grahamstown communities. Additionally, explore the impacts of different types of messages around climate change on food security behavioural change in the under-study communities. According to Mickiewicz (2018) developing countries and vulnerable societies are likely to feel and experience the adverse effect of climate change. Arguing, that the rural citizens, the disadvantaged people and developing countries will be particularly vulnerable to the climate change impacts on food security (FAO, 2020). This study wants to argue that climate change possesses a new challenge to the communication of urgent public issues the study asks: What are the challenges confronting the under-study community radios in communicating the impacts of climate change on food security?

In another development, the work of Leimgruber (2018) posits that a wealth of research on communicating the nexus between climate change and food security information have been centered on the Western World social context and ways, without considering the economic and systems of developing countries that dwells on macro-scale values. This study solely critiques the above notion and the sort of imbalances between the developed and developing nations in researching topical issues such as climate

change. Hence, the need for more collaborative awareness and assistance from all parties associated with the greenhouse gas emissions. Also, climate change policy reviewers must assist developing nations to increase climate change research output in rural communities.

Significantly, Oxfam International (2011) argues that climate change research is necessary in the developing countries to ascertain the effects of greenhouse gas emission. The body further notes that developing countries are highly vulnerable to the impacts of climate change such as food insecurity. Yet, the countries are the least responsible for carbon emissions. Similarly, professional media studies on climate change argues on several factual explorations on how to investigate and communicate the challenges and the impacts of climate change through the media most especially electronic media and community radio to public in developing countries (Oxfam International, 2011).

The argument advanced in this study supports the above notion to conduct investigative research in communicating the impacts of climate change on food security in rural South Africa. Most especially in the Eastern Cape Province, a Province embedded mostly with vulnerable communities in the country. Hence, the need to investigate how well the case study community radios communicates the impacts of climate change on food security to their listeners. This study also wants to note that since the early 1990's empirical studies on communicating the impacts of climate change have increased globally. Various scholars such as Bolsen and Shapiro (2018), Luck (2018) and Rose and River (2019) noted widely on trends and approaches of the climate change information services by drawing attention to media framings in climate change

communications. In the same vein, Whitmarsh& Capstick (2018) reflects on changing perceptions in climate change. According to Lewis (2019) climate change is viewed from ideological influence while Bossetti (2020) viewed the interplay between climate change coverage and public concerns. I want to point that despite expert's disparity in climate change perception, this study wants to emphasize that climate change on food security communication should recognize that climate change communication is a dialogical in relation. That is, it is based on the interest of its expert and its users in knowledge provision as well as through receiving proper information.

Furthermore, this study attempts to bridge the gap by helping investigate and examine how global warming (climate change) adversely affects people's livelihoods, which is also detrimental to an individual's health and wellbeing. Hence, messages on the impacts of climate change on food security must be disseminated through community radio. This study also wants to suggest that community media, most especially community radio such as Forte FM, Mdantsane FM, and Rhodes Music Radio, should focus on, implement, and analyze media policies that would aid listeners' local understandings of climate change in rural South Africa more especially the vulnerable communities in the Eastern Cape Province. Community radio should portray a reality through its actual programming, with national impacts that are caused by greenhouse gas emissions. Regardless of such variations, research shows that climate change is often portrayed in terms of debate or controversy, as noted by Scott et al. (2018). According to Bolsen and Shapiro (2018), developed countries such as the United States of America (USA) possess stronger economies. The scholars note that the USA has more skepticism in its coverage compared to other developed countries, such as New

Zealand. In a similar context, climate change discourse in the United Kingdom (UK) also appears to be confusing, with uncertainties described as terrible and beyond human capability, as noted by Bolsen & Sharpiro (2018).

This present study wants to note that such confusing and uncertainties in climate change media coverage discourse are thoughts to change and confuse public dispositions that could result to a helpless situation. However, Henderson et al. (2017) reflected vital ways in which media coverage and climate change debate between developed and developing countries may interplay and differ in media construction. On the contrary, Bossetti (2020) noted that climate change in the India press shows some lack of skepticism disparity compared to Western World climate change coverage messages in its reality. Relatively, the messages and challenges are portrayed as risks and impacts within the country, while the developed nations shoulder the responsibilities. In other words, in terms of sources of information, the dominance of informed individual's or literates are the subjects and beneficiaries of the climate change information with little or no attention to effects on more vulnerable citizens within the country.

The above-mentioned research gap is one of the ones that this study sets out to investigate through Forte FM, Mdantsane FM, and Rhodes Music radio. In addition, the argument advanced in this study is to investigate how effectively Forte FM, Mdantsane FM, and Rhodes Music community radio stations communicate the different types of messages around the impacts of climate change on food security in the selected communities in the Eastern Cape Province. Notably, this will enable the communities to be better capacitated and informed about climate change issues in Alice, Mdantsane,

and Grahamstown communities through community radio. Hence, community radio has emerged as the most powerful instrument for triggering positive cognitive, affective, and participatory communication in the 21st century by advocating for numerous sustainable development programs in a few countries in Asia and Africa.

2.6 Climate Change Communication for Diverse Audiences

According to Whitmarsh and Lorenzoni (2019) the history of climate change communication suggests that after 20 years of scientific debates over whether climate change is intensifying. There is no longer a contestation on this issue as the universe is overwhelmed with the impacts of climate change globally. In addition, new development has taken place in the media through public awareness campaigns by First World Countries to the point of saturation (Whitmarsh & Lorenzoni 2019). Invariably, the case is different in developing world especially in rural communities of South Africa. Research on communicating the impacts of climate change in rural South Africa is vital, most especially at the grassroots level where local entities and vulnerable farmers who are affected by food insecurity, climate change and its associated impacts such as water stress, land degradation, and coastal zone erosion (Poore, 2018).In light of the above, the Eastern Cape Province, particularly in rural areas are dependent on natural resource-base for livelihoods, especially farming and fisheries. These special features of rural South Africa specifically in the rural Eastern Cape Province, deserves adaptation to climate change vulnerability. Hence, the premise of this study, and key aspect of building adaptive capacity is to broaden community's knowledge & awareness.

According to Whitmarsh and Lorenzoni (2019), previous studies on perception, behavior and communicating climate change is recent when compared to the natural science tradition of climate change research. Significantly, some of the critical questions noted by a number of these scholars such as Ribot (2010), Mearns and Norton (2010) on communicating climate change information which are paramount to this study are as follows; what are the sources, media, modes, and messages of climate change communication? How do these differ around the world and how can climate change communication reach different audiences? Considering the above questions, the previous scholars suggest heterogeneity of audience, messages, media and contexts activity. However, this study wants to argue that, considering the relevancy of communicating climate change and its impacts in rural South Africa most especially in the rural Eastern Cape communities. The intention to focus on rural communities is important because most of the citizenry are ignorant of climate change. Yet, they are known to engage in several actions that damages the atmosphere and the food ecosystem, due to their lack of knowledge. However, considering the relatively cheapness of radio and its universality as a powerful tool for disseminating and receiving information by the case study community radios, programme participants, environmentalist, fishers, and general audience. Adopting radio as a powerful tool would help in disseminating information on the impacts of climate change such as food insecurity to all.

2.7 Community Radio's Potentials towards Ensuring Food Security

Climate change is likely to be understood by only a few people with a specialized knowledge or interest, and hence, initiating confusing model to several people (Pradhan

2018). Particularly, in the rural communities, some are likely to refer and identify disaster pictures as climate change. This is, however, very much possible in rural coastal communities with inadequate climate related messages. Reid and Huq (2007) suggest a possible way of preventing an uninformed society from being vulnerable. That is, by ensuring that climate change communicators (community radio stations) are trained to use each community's indigenous languages and terms that can be relevantly understood by all. The World Bank Group (WBG) 2004 similarly argues that vital information using indigenous means of communication such as art and theatre, or modernized methods such as the video could be effective in place of paperwork.

According to Mc Carthy (2018) the adoption of non- verbal medium for communicating climate change information would ensure a good and effective communication to the rural communities. In the same vein, Aziz (2020) established that rural populace or non- literates' source of receiving climate related information is the old media (Radio and Television). This study also wants to note that community radio stations such as Forte FM, Mdantsane FM, and Rhodes Music Radio should have the fore knowledge that they are representatives of members' station. Similarly, provide space for debate, localized exchange of experiences on climate change terms and services as well as cooperation amongst radio stations to organize radio listening club. More so, organizing relevant workshops, community meetings and production of localized jingles and drama that are voiced by the radio station's listeners' as well as publishing newsletters in listeners' various indigenous languages with cultural symbols of food security would judiciously increase community radios potentials in ensuring food security.

In another development, various scholars Pradhan (2018) and Mc Carthy (2018) note that one vital way of creating community awareness and acquiring more knowledge in rural communities is to get the upcoming generations informed, trained to become a skillful communicator of the causes and effects of climate change. Thus, the upcoming generations stand a better chance of understanding science of climate change processes compare to adults in the community. Hence, this innovation would be achieved if the school curriculum could be revised to include climate change sciences, to draw its adverse effects to rural livelihoods. According to Bossetti (2020) videos produced in a participatory form by younger ones can be a potent tool for creating awareness of climate change and its impacts to communities dominated by rural dwellers. Radio broadcasts (programmes) have wider reach, quality coverage and are powerful tools in ensuring climate change information on food security in rural South Africa (Considering radio's traditional one-way approach of disseminating information to rural communities, most especially farmers. Community radio broadcasts are fleeting, listeners and farmers can either get informed when climate change programmes are broadcast, and otherwise they are missed. Hence, listeners would be able to access the missed audio file (programme) or podcast via the radio station's website at a convenient time (Eshan, 2020).

2.8 Challenges on Mode of Communicating the Nexus between Climate Change and Food Security Information

Climate change communication poses great challenges on food security in rural communities globally. Some of the challenges vary from what messages to communicate, how to get a climate change expert as well as the mode of

communication that should be employed amongst others. Rizal and Anna (2019) note that localizing climate change is beneficial. The previous researchers posit that emphasis on the local nature of climate manifestations; both exposures and responses bring attention to environmental changes, where the motivation to address them was strongest.

In another development, Pradhan (2018) noted that the availability of place-based climate change engagement activities that is strategically founded in a reasonable geo-physical context will motivate and increase the inspiration of public on the phenomenon "climate change". In addition, it would also create an avenue for public dialogue and possible impacts of climate change on food security in rural communities. This study wants to argue that communicating the impacts of climate change on food security should be locally implemented. This would encourage engagement activities or programmes that would increase listeners' knowledge and motivate their individual interest in climate change and food security communication.
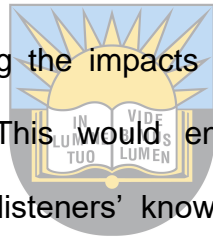
Invariably, another study by Scott (2019) noted that information and climate change-related messages are complex, and their impacts are resonant when integrated with the cultural norms and belief system of a particular community as well as the experiential meaningfulness of place. However, urbanization will cause adverse effects to households' food security in terms of high rates of employment, increased development of the informed sectors, deteriorating infrastructure, overcrowding, and environmental degradation. In addition, there is a lack of adequate quantities of nutritious and affordable food for urban dwellers with less water, land, and labor, among others. In contrast, venue-based learning acquisition together with experiential learning mostly

connects climate change with places and individuals or groups expertise. Thus, these two paradigms emphasize the notion of connecting people or a community to the land through applied learning and field experiences (Ross & River, 2019). Studies on the best modes and channels of communication for climate change related information is still on-going. Oyero (2018) noted the spectacular communication medium differences between writer (newspaper, report, and letter) and verbal communication (lectures, storytelling, dialogues, and conversations). More so, between channels of communication i.e., face to face communication (lectures) versus mediated (in print such as leaflet, pamphlets, newspaper, and magazines or electronically via email or the web television and radio). Additionally, noted that communication could take place between two individuals (inter-personal communication) within a small group (group communication) of people or mass communication. Battiston et al., (2018) & Shakeriet al., (2021) noted that face to face communication tends to be more persuasive and impactful on human perception and behavior compared to mass communication. This study also wants to note that community radio such as Forte FM, Mdantsane FM and Rhodes Music Radio are tools for mobilizing and educating communities on climate change related information as well as on the state of the country. Notably, these communities use this platform to voice their concerns, asks direct questions, and gives room for individual and groups of people to ask direct questions, express their opinion on any vital matter of discourse.

Berry (2019) similarly argued that one-way written or verbal communication is inefficient to boost acquisition of learning and proactive activities than dialogue and inter-personal forms of communication. Worthy of note, the argument advanced in this study is that

relevant and meaningful climate-related information is best communicated technically to policymakers and decision-makers. The information is based on pro-active measures to be taken in the techniques of communication. More so, which will enhance advanced knowledge sharing and create more awareness on the most suitable mode of communicating (via radio) the impacts of climate change on food security to rural dwellers? Hence, the modes of communication are very significant for understanding how to modify behavior at the individual or community level.

2.9 Exposition on the Economic Impacts of Climate Change on Food Security

According to Nyiwul (2021), climate change is presently admitted as the most pressing and far-reaching social and physical threat to the natural environment. Climate inconsistency and dynamism create pivotal limitations for communities. Hasegewa (2011) observed that hunger and malnutrition are still prevalent in South Africa, and this is due to inequalities in accessing productive land. Notably, these limitations and barriers manifest themselves through extreme weather settings such as droughts and temperature variations, among others. Considering these changes that constitute the social, political, and economic vulnerabilities for both the common citizens and the elites in a given system (Lewis, 2019), Thus, the vulnerable societies tend to be more constant, invariably observed as long-term changes in ecosystems that require more resources to enhance adaptive shifts in livelihoods. Diallo (2020) posits that in South Africa, a great number of households in rural areas are vulnerable to incidences of food insecurity.

According to Nyiwul (2021) vulnerability is referred to the aggregate measure of human welfare that includes environmental, social, economic, and political exposure to a range

of potential instability. Hasegewa (2018) similarly noted the assessment of vulnerability with the aid of concept of risk within the common communities. For this study, the researcher wants to argue on scholarly views that emphasized the rate of "exposure" the community encountered through rages of long-term and short-term effects that is greatly increasing their vulnerability (Velautham et al., 2019). Contextually, climate change effects in agricultural and rural communities are adversely challenging with the constant risk of extreme weather conditions such as floods, cyclone, sea-level rise, and coastal flooding besides a host of others that negatively hamper livelihoods.

Significantly, understanding the economic impacts of climate change for informing long-term planning and policy making that is, overall growth, employment, and welfare; regional development and activity; and vulnerable groups and regions being considered by providing efficient adaptation methods for grassroots citizens is important. In other words, policies that minimize the negative impacts of climate change require significant time to be implemented and effective (IPCC Third Assessment Report on Climate Change, 2001). This study therefore aimed at finding out if Forte FM, Mdantsane FM, and Rhodes Music community radios communicate the economic, social, and physical impacts of climate change on food security through adaptation to their listeners.

2.10 The Potentials of Community Radio to Unleash Climate Change and Food Security Communication

The use of community radios in assessing the effects of climate change services in rural communities cannot be overemphasized. Community radio means radio in the community, for the community, about the community, and by the community. Hence, the society needs to be motivated and fostered by a community-friendly policy environment. That is, resources and funding should be regulated to avoid overdependence on

advertising, sponsors, and founders, which could adversely affect the community's goal. In addition, advance and prompt feedback services should be available to ensure funding and licensing schemes are more effective and that the recipients and journalists comply with the requirement (Kholitz, 2019). Community radio is a conventional method of communicating climate change information and services towards safeguarding stability and utilization of food security by developing an innovative data base that would create a modernized knowledge base for listeners' and beneficiaries of Global Environmental Change (GEC). This data base innovation would be used for monitoring and measuring climate change as well as the impacts of the weather, which are being communicated through community radios (Schäfer & Painter, 2021).

The researcher wants to argue that community radio is an effective instrument for reaching marginalized communities. It is also potent for communicating adaptive and mitigating measures needed to reduce climate vulnerabilities. Community radio serves as a medium for increasing awareness and facilitating dialogue to communicate the impacts of climate change on food security to rural South Africans. In addition, community radio is a powerful tool for establishing mass projects aimed at creating awareness and developing sensitivity among the masses to enhance climate change services. For instance, the broadcast of early warning signs or systems on food and the rural populace in general concerning acute events about the eminent effects and dangers arising out of climate change (Diallo et al. 2020).

In line with the above assertion, the works of Schäfer & Painter (2021) emphasize the significance of community radio as a network governance tool through the advent of information and communication technology (ICT). Similarly, community radio's new role

in the employment of ICT through the Communication for Development (C4D) strategy in the changing economic and social organization is an efficient and effective mouthpiece of the communities and listeners on climate change information messages and services on food security. However, the new form of economic and social organization, as well as state initiatives, is required not only to adapt to climate change information but to achieve sustainable development. For instance, expositions of internet-based modernized knowledge, open organizations and state initiatives, and transmission of climate change information and services toward safeguarding stability and utilization. Hence, guidance should be provided to and between local communities with reference to impacts that they may be experiencing due to climate change. Furthermore, climate change experts would broadcast actions and measures that would protect the community listeners against sudden weather-induced crises, and potential lifestyle along with behavioral changes, that would help to secure lives and livelihoods in the longer term (Bell et al. 2019). However, a few studies (Kerr, 2018 & Hasegawa, 2018) on food security and rural sector in general established the constant use of community radio through ICT. Contextually, climate change will change the objectives of generating, organizing, and communicating climate change information on food stability and utilization. Also, climate change information would sensitize listeners about the effects emanating from climate change, climate fluctuations and extreme climate events. That is, prepare the listeners or communities on how to mitigate and adapt to climate change effects on food security and water supply.

Moreover, community radios through the aid of ICT would help in developing information systems within the food sector that would ensure and reflect households'

foods, availability, access to food, stability of food supplies and food utilization in the community and country at large. Hence, community radio proofs to be a justified asset in disseminating early warning signs and hazard risk information medium that reduces and mitigates global warming (United Nations Framework Convention on Climate Change, 2007).

2.11 Conceptual Frameworks

This study is guided by the food security conceptual framework. The framework holds to diagrammatically highlight the food system concepts (the concept of malnutrition, the concept of nutritional status at the household level, and food nutrition and health) that lead to food security outcomes. As the framework builds on the focus of the study, ''unleashing the nexus between climate change and food security in the Eastern Cape Province, In addition, this will be highlighted with relevance to the four elements of food security, which are availability of food production, access to food and ability to purchase food, sufficiency in terms of nutrition, including energy, proteins, and micronutrients, as well as safety, and the stability and utilization of foods.

2.11.1 Food Security Activities and Food Security Outcome

The concept of food security concept refers to incorporating measures of resilience to future disruption or unavailability of nutritious food supply due to various risk factors, such as shipping disruptions and economic instability, among others (United Nations' Committee on World Food Security). Food security is a multifaceted concept affected by climate change through food accessibility, availability, utilization, and affordability (FAO, 2011). Food security has evolved considerably over time. Food security is a vital

element of poverty alleviation. Food security is a priority for the Western world in developing countries. The diagram below shows the element of food security.
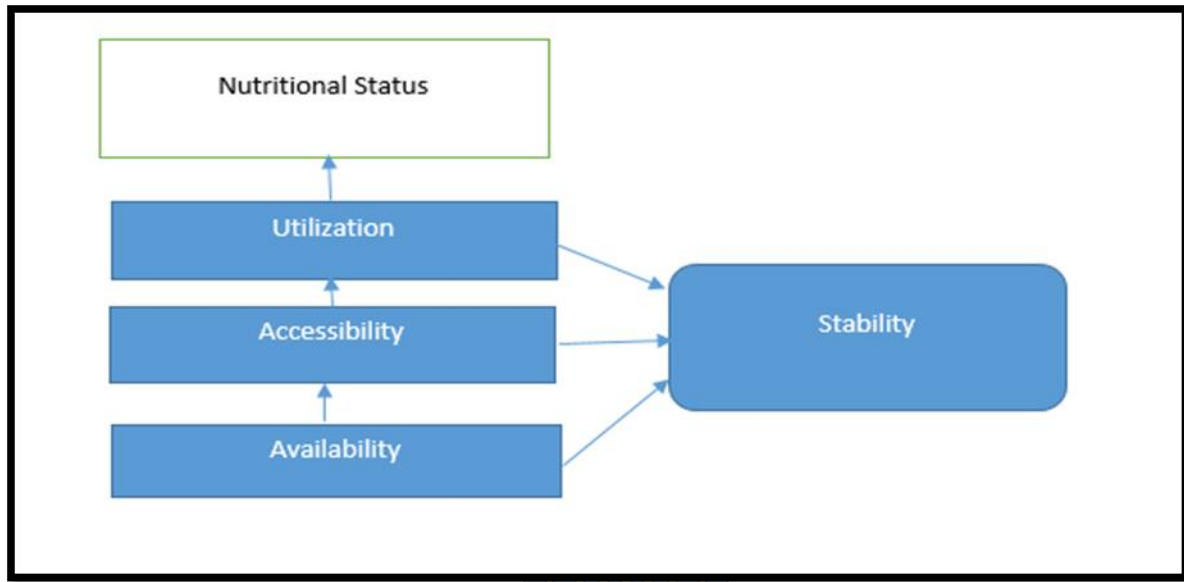
Figure 2.3 illustrates the intertwined nature of the categorical elements within the conceptual framework of food security. The above diagram shows the two vital determinants that influence the framework. The physical determinants of food flow are availability, accessibility, and utilization.

2.11.2 Concept of Malnutrition
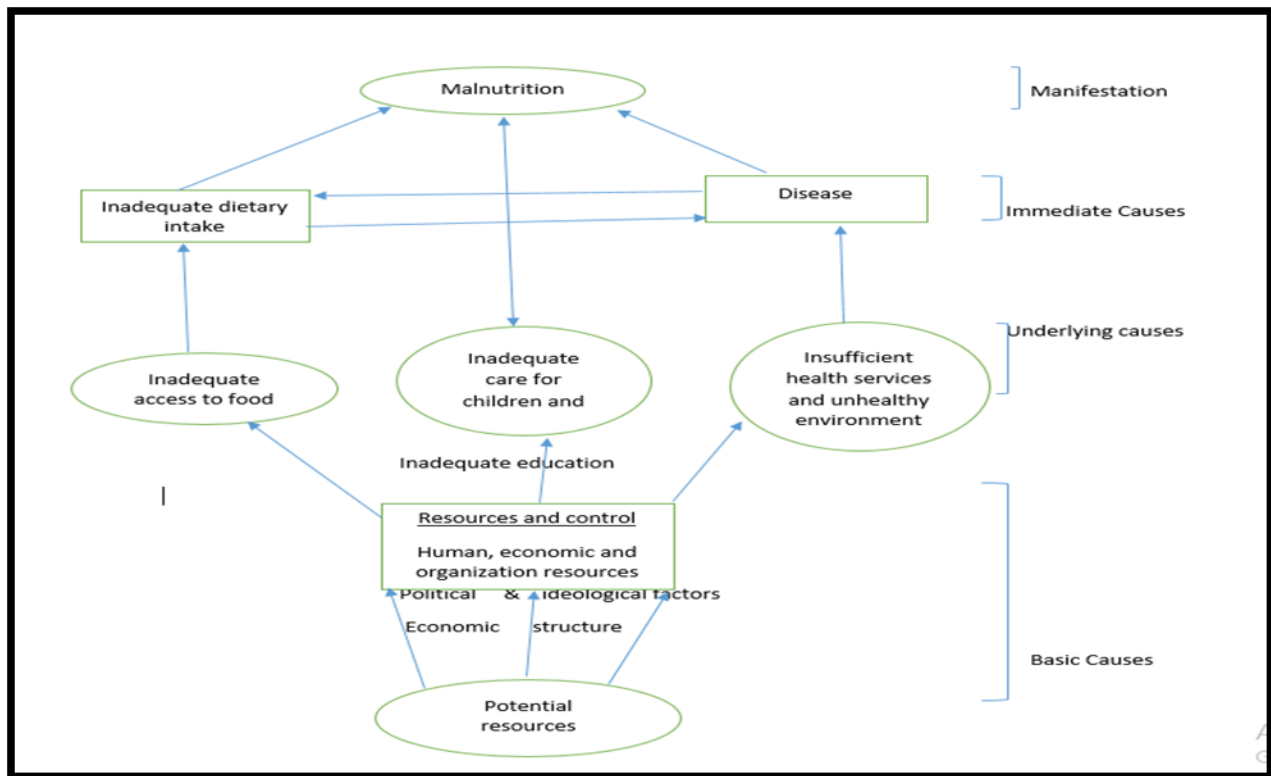
Figure 2 4: Concept of Malnutrition (Adopted by Aryeetey& Dykes 2018)

The above Figure 2.4 shows the conceptual framework of malnutrition, developed by UNICEF and widely accepted globally. This figure best suits this study because it is applicable in the context of under nutrition in rural areas of developing countries, such as the rural Eastern Cape Province of South Africa. Notably, the malnutrition conceptual framework occurs in common cases caused by immediate malnutrition, when dietary intake is insufficient, and health is unsatisfactory as this is evident in the understudy communities. Hossan (2018) suggests that in Third World countries, the most common diseases caused by malnutrition are acute respiratory disease (ARD) and diarrheal disease (DD). Yet, the common individuals who live in disadvantaged societies are experiencing the diseases, such as those in underprivileged communities. Significantly,

the above model shows that accessibility to food, timely health care systems, and a sound and healthy environment are some of the vital resources needed by individual households and communities to reduce malnutrition and invariably enhance food and nutrition security. Similarly, the conceptual framework portrays some basic factors that immensely contribute to malnutrition, namely, human, and organizational resources, economic structures, as well as political and ideological factors. Significantly, the UNICEF conceptual framework of malnutrition displays the causes, manifestations, and immediate causes of under nutrition as it affects individuals and communities, as well as the underlying causes for communities and families. Hence, the greater manifestation of under nutrition, the bigger the number of people and rural societies affected by malnutrition.

2.11.3 The Concept of Nutritional Status at Households Level

Figure 2.5 below shows a causal model that interchange between nutritional status and ecological conditions at household's level. Nutritional status conceptual framework is the evident of food intake and health status.
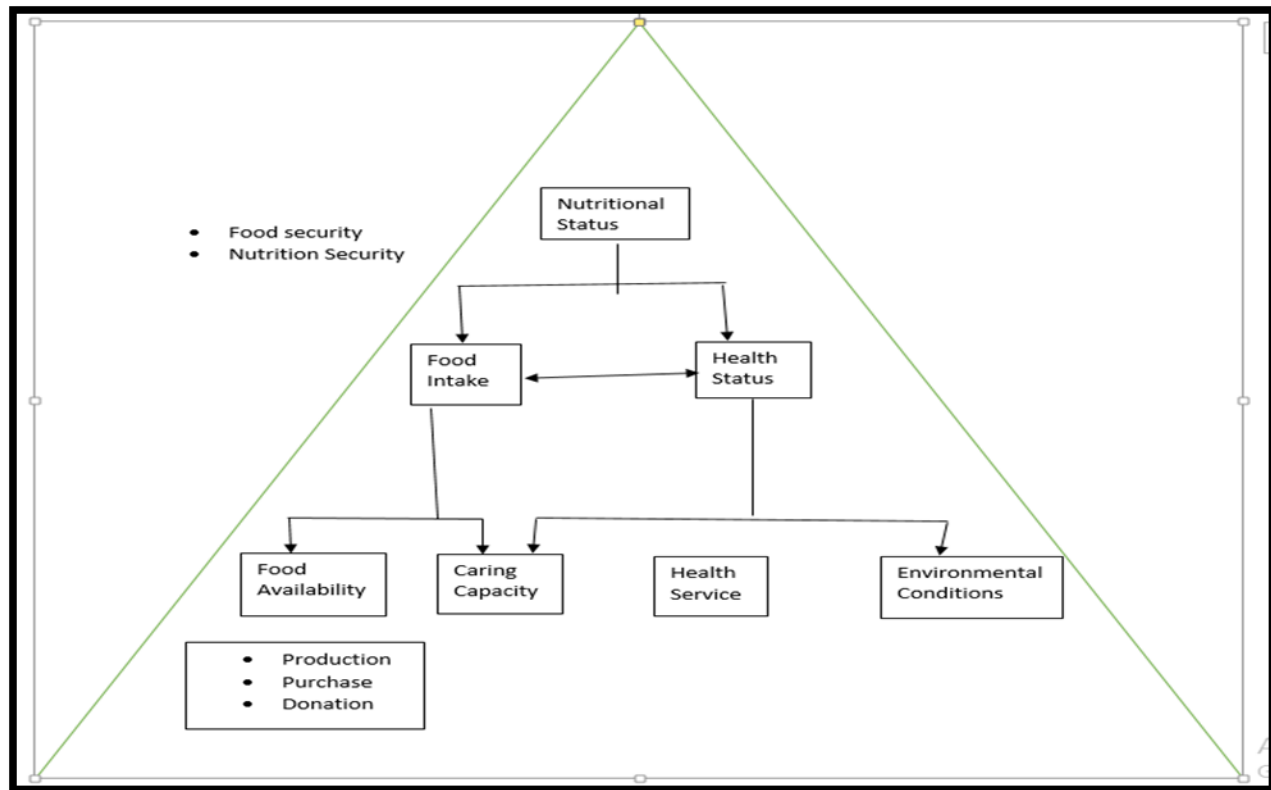
Figure 2 5: Nutritional Status at Household Level (Adopted from Gross 2000)

The two major determinants of health services for the under-study communities are environmental conditions and diseases. On the other hand, the shown underlying features of food intake and health status are based on basic determinants which are interwoven and dependent on one another. For instance, food availability is affected by food production purchase and donation. Hence, conceptual framework of the Nutritional status at household level states the distinct disparity between "Food Security" and "Nutrition Security". The former depicts the area of causes and effects of food availability, here illustrated separately as the biggest square on the left while the later shows the interplay that exist in the large triangle.

2.11.4 Food Nutrition and Health
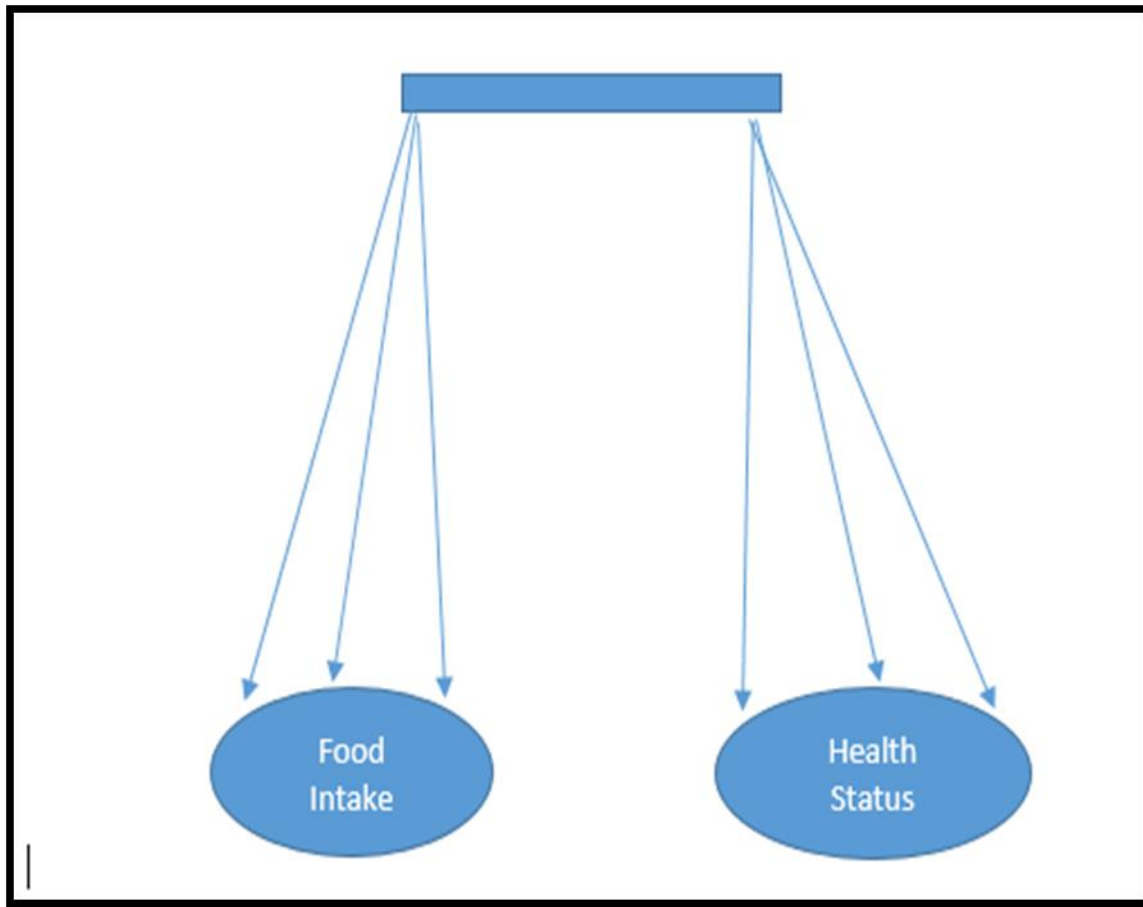
Figure 2 6: Food and Nutrition and Health Status (Adopted from Rainer Gross 2000)

The food security frameworks under-study in this chapter speaks volume on interdisciplinary paradigm that promotes food and nutrition security. More so, for a sustainable nutritional status to be achieved in the under-study communities and South Africa generally, food and other health services must be adopted. In other words, nutrition is the evident of individual's health status and food intake as shown in Figure 2.6.

2.12 Local Adaptive Conceptual Framework

This study is also guided by the "United Nations Framework Convention on Climate Change (UNFCCC) and local adaptive capacity (LAC). The concept focuses on

achieving a global stabilization of Greenhouse Gas (GHG) concentrations to prevent risk and vulnerability with the climate system. More so, this concept proposed a level of achievable timeframe to ensure the ecosystems adapt to climate change naturally. Hence, ensuring that food processes and production are not constrained in a long manner (UNFCCC, 2017). The Local Adaptive Capacity (LAC) concept is a framework that seeks to support adaptive capacity features by communicating the impacts of climate change on food security through understudied community radios (Jones et al. 2019). Furthermore, the concept possesses the ability to gather, analyze, and disseminate diverse knowledge and information in relation to the impacts of climate change on food security, as well as adaptation activities (Hasan et al. 2018).

The Intergovernmental Panel on Climate Change (IPCC) characterization of adaptation defines adaptation as an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects. Contextually, this study wants to note that adaptive capacity is the ability to apply and implement adaptive strategies, such as program jingles, call-in discussions, public awareness campaigns, and programs, among others. These programs would mitigate the impacts of climate change on livelihoods. More so, the programs implemented by the community radio would help to reduce the tendency of climate hazards, help to communicate local knowledge, needs, and demands beyond the communities on climate-related information, and help to understand the impacts of different types of messages around climate change on food security and behavior change in the Alice, Mdantsane, and Grahamstown communities. Significantly, the link between the study's theoretical framework and its conceptual framework best justifies the focus of the study on communicating the impacts of climate

change on food security in the Eastern Cape Province. For instance, Forte FM, Mdantsane FM, and Rhodes Music community radio stations should increase their media coverage of adaptive programs around the impacts of climate change on food security. This informed the study that as the public tended to view the issue repeatedly, more importance would be attached to the message about the adaptive measures required to cope with the current global warming. As a result, use educational and accurate information to help you adapt to the challenges of future climate change. In a related view, discussion programmes would help to build an informed society most especially by inviting relevant stakeholders or experts in food security sector to the studio. Alternatively, scheduling virtual interviews following the restrictions caused by the global COVID-19 Pandemic would enhance programme productivity.

Thus, this would increase online participation to this topical issue in form of a panel of discussion as the topic suggests. This illustrates, how the adoption of UNFCCC concept and Adaptive Capacity Concept (ACC) will ascertain how the study community radios communicate messages around the impacts of climate change on food security to the under-study communities and nationally too. Rightly put, through the building of strong social capital, which is capitalized on trust and reciprocity, community citizens develop a support system of social networks that would boost their adaptive capacity to react to global warming. Similarly, these strong social networks are effective because of their adaptive capacities to respond to the impacts of climate change. In contrast, while the above-mentioned social networks are reliable for fostering trust and reciprocity within communities, they are often limited and segregated from external networks. In another development, previous studies revealed that weak ties are the result of ineffective

communication, which is caused by inadequate information and unconstructive initiatives and ideas. Yet, the indispensability of community radio is underutilized by the intended community it serves. In addition, Hosan (2018) established that various external hands could help to make the network more resilient and adapt to environmental change. Notably, the local adaptive capability conceptual framework emphasized that these ties rarely tend to be fragile.

This study wants to note that Forte FM, Mdantsane FM, and Rhodes Music community radios must equally build strong ties with their listeners through their various social networks, such as WhatsApp, Facebook, Twitter, and listening groups, among others. Hence, creating informative climate change and food security programming that would increase listeners' and the community's adaptive capacity to the manifestations of climate change in society According to Abeele (2018), a social network serves as a medium for disseminating information, shaping how individuals or a group of people process and understand information in each context. In addition, this study wants to establish that social networks are significant resources for communicating the impacts of climate change on food security in the Eastern Cape Province, as this study suggests. Similarly, it would aid in determining the different types of messages around the impact of climate change on food security and behavioral change.

Hence, social networks help organize and investigate knowledge of social instances and vulnerabilities regarding the study's goal. In another development, Abeele (2018) noted in his survey of "help-seeking" that individuals turn to social networks such as neighbors and family members for immediate help before seeking an expert's consultation when situations demand it. Hence, individuals seek expert assistance

alongside social networks for consultation and more knowledge about which experts to consult to get timely information as regards mitigating and adapting to climate change and its effects.

In line with the above, contextually in this study, global warming impacts such as floods, food insecurity, droughts, heavy rainfall, and a rise in sea level, a rise in temperature (heat waves), wildfires, and many others are caused by climate change. The premise of this study is to investigate how Forte FM, Mdantsane FM, and Rhodes Music community radios communicate the impacts of climate change on food security to promote an informed society through social networks. As a result, community radio has become an important resource for investigating and communicating the effects of climate change on food security.

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2.13 The Nexus Between Community Radio, Climate Change and Food Security: Reflection on a Developmental Goal
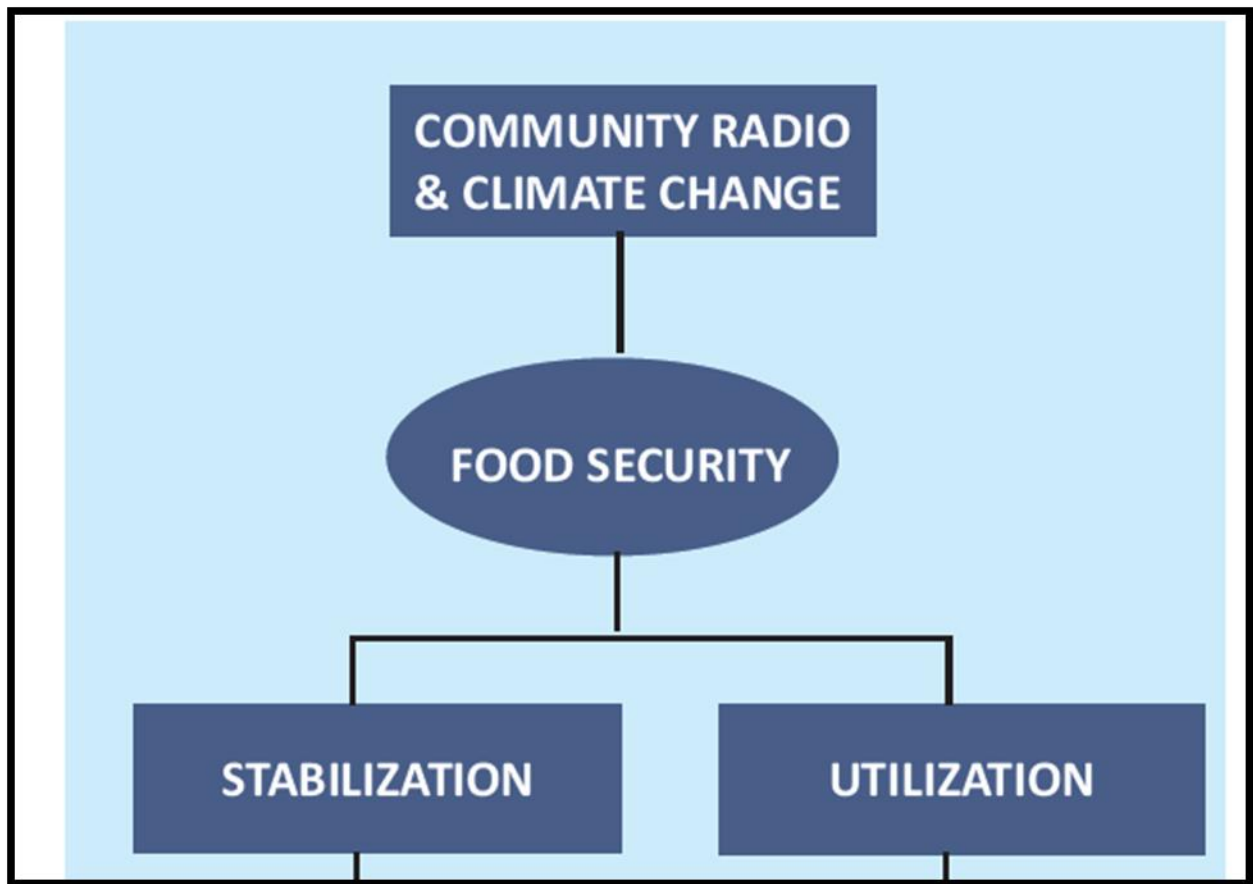
Figure 2 7: Linking community radio and climate change on food security (Mckune et al., 2018)

The above Figure 2.7 demonstrates the collaboration that exists between community radios on food security. Community radio is the medium and channel through which climate change messages are disseminated to the rural populace. The messages enabled the communities to be better capacitated and informed on climate change related messages. Notably, community radio is a vital tool that helps in the production of prototype broadcasts materials on the impacts of climate change on food security.

Hence, community radio enables rural communities to appreciate and understand climate change and food security meaning including its concrete manifestations as well as science innovation for its mitigation and adaptation by setting the agenda for the public on what to think about, such as messages around the impacts of climate change on food security.

Community radio's potential in addressing the impacts of climate change on food security globally and locally has been established. Considering this, community radio provides a healthy natural ecosystem that helps human adapt to climate change. Climate change information and services on food security related messages would not be effectively understood by the common audience and citizens in the absence of community radio. This implies that the understudy community radios role as a gatekeeper in the society must be properly utilized.

In another development, the United Nations Framework Convention on Climate Change (UNFCCC) defines climate change as a change of climate which is attributed directly or indirectly to human activities, that alters the composition of the global atmosphere, and which is in addition to natural variability observed over a comparable period of time. However, day-to-day dealings of human ranging from processing raw materials, producing and packaging, distributing, retailing and food consumption are all linked to changing the world's climate through emission of greenhouse gasses and changes in land use. These activities are interwoven to other parts of Global Environmental Change (GEC), such as changes in weather, fresh water supplies, air quality, land cover, soils, and nutrient cycling amongst others.

According to Pourreza et al., (2018) food security is when all people, always have physical and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life. Food utilization encompasses all food safety and quality aspect of nutrition. While food stability relates to individual or a particular community, who are at risk of temporarily or permanently losing their access to the resources needed to consume adequate food. Notably, the interplay that strengthens the above-mentioned concept results to rural poverty.

Significantly, community radios initiates modernized knowledge through ICT for development to educate and share new scientific climate knowledge with community listeners. In addition, community radio highlights and disseminates policies and interactive practices through climate change communication. Thus, these practices reduce and eradicate the potential limitations and negatives effects of climate change on food stability and utilization. Hence, organizing and implementing pro-active measures and programming rather than reactive planning and programming that undermines programme productivity. This study wants to note that, in spite the continued debate with respect to definitions and the precise relationship that exists between community radios and climate change. There is a considerable demand to understand the causal interplay and relationship that exists between community radios, climate change and food security. Also, to know the medium and communication tools that reduces climate change effects causing food insecurity, to boost both the media and listeners resilience in the rural Eastern Cape Province of South Africa.

Figure 2 8: Voice of the voiceless (Palakodety et al., 2020)

2.14 Contextualizing Components of Food Security in Rural South Africa

The four components of food security have been defined and viewed from various angles by researchers and media scholars. Ruszczyk (2021) defined food security in relation to the ability of individuals to obtain sufficient food daily. In addition, Ruszczyk (2021) argued that food security is affected by a few factors such as the ability to be self-sufficient in food production through own production, accessibility to markets and the ability to purchase food items. This present study wants to note that food availability is often used as a yardstick to measure food security; hence, the concepts are contextually the same. However, Perez-Escamillaet al., (2018) points out the disparity by observing food availability in terms of the existence of excess quantities. The Human Science Research Council (HSRC) observes food security from three dimensions, namely, food availability, food access, and food use. In addition, the council suggests

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that a country must acquire consistent large quantities of foods at both local and national levels.

Food access, on the other hand, implies the capacity or the ability of the nation and her households to have sustainable foods (Poweret al., 2018). In a related view, Loopstra (2018) observes access to food as the ability of the country, communities, and individual to buy foods in large quantities and quality. Similarly, the concept of food utilization as noted by Abdul-Rahman (2018) advanced the argument on food utilization saying, food utilization is based on how food is used, noting that although food availability and stability are the criteria for assessing food utilization, they are not perfect criteria to reduce poor feeding.

On the contrary, Ruszczyk, (2021) argues that the conscious effects of climate change on food security are impactful on food availability because of changes in agricultural productivity. However, the Food and Agriculture Organization (FAO) established that climate change negatively disrupts the production rate of various food items (Yadav 2019). Contrary to the above assertion, Power et al. (2021) reflects food security contextually as national food self-reliance, with the notion that a country should increase her production density, to enable its even distribution of sufficient food which is required by all citizens. In another development, Loopstra (2018) argued against the above assertion that food security does, however, not guarantee food availability at both local and households' levels. The United Nations Development Programme (UNDP) (De Amorim, 2018) established that the concept of food security is affiliated with lack and poverty, considering the interplay and influence of the two concepts globally. In light of this, the report emphasized that poverty and lack of secured employment are related to

food insecurity, noting that it begins with insecure employment and leads to a drastic reduction in the standard of living of a given country.

Accordingly, there's need to investigate how Forte FM, Mdantsane FM and Rhodes Music community radio stations communicate the nexus between climate change and food security information to their listeners in the Eastern Cape Province. In addition, this study wants to establish that communicating the impacts of climate change, such as droughts, heavy rainfall, hurricane, wildfires, cyclones, and erosion amongst others are all eminent causes of low agricultural productivity leading to food insecurity. Hence, acquiring an informed knowledge most especially through Forte FM, Mdantsane FM and Rhodes Music community radio stations would help in resolving local issues and limitations caused by threatened global warming in rural South Africa. Thus, help in adapting and mitigating with areas that are relatively dry like parts of Southern Africa (South Africa, Zimbabwe, and Mozambique) and South America (Brazil, Colombia, and Argentina).
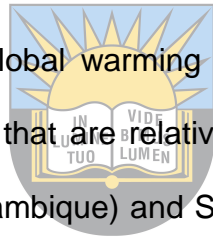
Furthermore, this present study takes cognizance of the fact that previous scholars such as Reuter (2018) and Doelma et al., (2019) emphasized the significance and has researched extensively on the role of community radio as a tool for facilitating development, most especially in rural areas. It is worthy to note that scholars such as McKee (2015) and De Vincenzi (2015) have focused on topical issues such as HIV/AIDS awareness and other developmental issues through community radios in South Africa. While all these studies addressed developmental issues, little and limited awareness is placed on communicating the impacts of climate change on food security through community radios. It is in light of the paucity of research, addressing the nexus

of climate change impacts on food security through community radio in rural South Africa that this present study seeks to investigate "communicating the impacts of climate change on food security in the rural Eastern Cape Province of South Africa" through community radio's indispensability.

2.15 Theoretical Framework

This study is underpinned by two relevant theories 'namely' Agenda-Setting Theory and Media Dependency Theory. The theories relevance to communicating the impacts of climate change on food security are discussed, which forms the theoretical framework for this study. In addition, it is significant to establish that this study is premised mainly on the media uses for eliciting information as they both highlights the importance and the impacts of climate change on food security. Most especially, to mitigate climate inconsistency that threatens natural environment causing food insecurity. Additionally, the link between these theories, the role of community radio as a vital tool for communicating the nexus between climate change impacts and food security to the grassroots citizens are discussed. These theories and their relevance are discussed below. Hence, Seyoum (2018) noted that it is wise to choose our theories according to how useful they are and not how true they are. Hence, the below theories are relevant to this present study.

2.15.1 Agenda-Setting Theory

The media's influence over public opinion has been a vital area in communicating the impacts of climate change on food security, and agenda-setting has been one of the primary theoretical constructs that justifies the media effect throughout the past 35 years (Gilardi et al., 2022). Agenda-setting refers to the process by which salience

issues are transferred from the media to the public: over a period, the rank order of issues to which the media give prominence will be reflected in the list of issues the public considers relevant (Gilardi et al., 2022). It is argued that mass media can transfer salient items from their news agenda to the public (Naser, 2020). This means that the mass media can show the listeners a mark of concern and influence them to consider such issues as their main agenda (Kweon et al., 2019). This order of words implies that community radio is also better placed to set an agenda (awareness) for communicating the impacts of climate change on food security for the continuous attention of their listeners. Furthermore, agenda-setting theory has been found to describe the media-public interaction on a hybrid of issues, such as immigration (Mccombs & Valenzuela, 2020), environmentalism (Wonneberger & Vliegenthart, 2021), foreign affairs (Sciarini & Tresch, 2019), and many others. The effects have also been revealed in several nations globally, including Japan (Kweon et al., 2019) and Germany (Gilardi et al., 2022), among others. More so, agenda setting theory has been utilized in survey and experimental research (Gilardi et al., 2022). Mass communication scholars have traditionally viewed the mass media as a primary gatekeeper in society. In this role, community radio can help the public understand topical issues such as communicating the impacts of climate change on food security by emphasizing the topic of discourse as a salient issue. The agenda-setting theory posited that as media increased coverage of an issue, such as communicating the impacts of climate change on food security, the public tended to view that issue as more important. The theory has shown that community radio's influence usually persists for a long period, depending on the portion

of the media (community radio programs vs. television programs) that transmit the agenda (Wonneberger & Vliegenthart, 2021).

This study builds on agenda-setting theory. The theory holds that the media is central to the provision of public information. The press may not be successful much of the time in telling people what to think about, but it is stunningly successful in telling people what to think about. This implies that community radio help in shaping people's perceptions, by telling them what to think about, and setting the public agenda regarding communicating the impacts of climate change on food security (Wonneberger & Vliegenthart 2021). For this study, the media oversees setting their own personalized priorities around the impacts of climate change on food security communication.

Agenda-Setting theory holds that the media influences the messages disseminated to the listeners, who are the information consumers. This suggests that the theory would help the listeners to evaluate the impacts of climate change on food security programmes to enhance climate change adaption and provide a sustainable food security system for the society. Adopting agenda-setting theory to this study would help the understudy communities to receive messages related to communicating the impacts of climate change on food security. Hence, the implementation of proper information on programmes that target listeners on how to be informed on adaptative measures or interventions that would enhance mitigation. This theory would also assist the media to educate, enlighten the listeners, and the society at large on novelty topics such as impacts of climate change on food security.

This study, therefore, investigated the awareness of the Eastern Cape rural dwellers and farmers regarding climate change. To ascertain how the radio stations,

communicate messages on the impacts of climate change on food security in the understudy communities. Yet, with the limitation, the study investigated the perceptions and behaviors of Mdantsane FM, Forte FM and Rhodes Music Radio listeners in the Eastern Cape Province to understand how the study communities perceive community radio in relation to the impacts of climate change on food security communication. That is, when these selected community radio stations set the agenda on climate awareness, then the listeners and communities stand a good chance to be well informed and educated. Thus, the inter-relationship between agenda-setting theory and media dependency theoretical frameworks best suits the study because it describes public-media interactions across the impacts of climate change on food security issues.

2.15.2 Media Dependency Theory

This study is also guided by Media and Dependency Theory. The theory was propounded by Sandra Ball-Rokeach & Melvin DeFleur (Nawi et al., 2020). Media attention alone is insufficient to model the effects of media on environmentally responsible behaviors. Some individuals may be attentive to media, yet feel it does not instruct their participatory role, positive cognitive, affective, and behavioral responses. The media dependency theory explains instrumental media uses towards communicating the impacts of climate change on food security (Elias, 2020). Moreover, the theory highlights the long-term effects of media usage on the audiences and society. That is, the more dependent an individual is on the media for having his or her entertainment, educational and informative needs fulfilled, the more important the media will be to that individual.

For this study, the understudy community radios would have more influence and power over their listeners for information. More so, the theory emphasized that community radio is the listeners' only source for information, and the media would easily set the agenda. The theory explains how the media's predictive power correlates with the importance of the media to an individual. Media dependence theory is relevant to this study because the understudied community radios are the listeners' source of eliciting community news. Hence, they are more dependent on the media for daily news. This shows the predictive and explanatory power community radio has on its listeners. The theory equally justifies the study because the Alice, Mdantsane, and Grahamstown communities need the community radio for all their information, entertainment, climate change news, weather report, food security-related programs, as well as all the local weather forecast for the day.

Significantly, several studies that adopted media dependency theory noted that the theory has informed cognitive attitudes on environment, health-related messages, and climate change public awareness. Elias (2020) surveyed individual media dependency following measures to combat the COVID-19 pandemic globally. The findings showed that individual levels of media dependency significantly influenced respondents' attitudes and behaviors toward COVID-19-related information. Furthermore, media dependency theory helps the understudied communities understand the impacts of the different types of messages around climate change on food security and behavioral change in the Alice, Mdantsane, and Grahamstown communities. This implies that the theory helps the listeners have a sense of the types of messages related to climate change through radio communication. Most especially, how radio communication

influences listeners affective and behavioral responses to messages on the impacts of climate change on food security in the understudied communities (Wonneberger & Vliegenthart, 2021).

2.16 Chapter Summary

The chapter reviews the various literatures on community radio, climate change, and related issues in food security communication. In addition, the study discussed the climate change situations in South Africa and globally, too. Hence, we identified the economic, social, and physical impacts of communicating global warming that causes water stress, land degradation, and coastal zone erosion, among others, in Africa. More so, the chapter discussed agenda setting and the media dependency theoretical frameworks guiding the study. Also justified are the conceptual frameworks that ensure stability and utilization in food security. The chapter also centered on an interdisciplinary paradigm to promote food and nutrition security. The next chapter will explain the research design, research paradigm, and research methodology of the study.
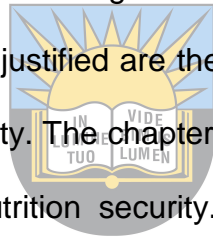
CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter explains the research design and methodology the researcher used for the study. The chapter's focus is on the tripod of research methodology namely, research design, data gathering, and data analysis. Also, this chapter highlights the sampling and sampling procedures to establish the research subjects. Furthermore, this chapter discusses the research population and target population of the study. Issues regarding the justification for using qualitative research methods for the study were discussed. Data collection techniques, data collection procedures and data analysis methods through NVivo 12 software were all discussed. Also, validity and reliability of research instruments, as well as study limitations, and ethical considerations are justified in this chapter.

3.2 Research Methodology

This study utilized the qualitative research method, basically the focus group discussions and the interviews. Qualitative research best suits the research in many ways, as it is usually used when dealing with several types of inquiry to help in understanding and explaining the meaning of social phenomena (Merriam & Grenier, 2019). Rahman (2020) discussed qualitative research as any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification. This research work made use of a descriptive research approach to investigate the impact of climate change messages in rural South Africa through community radio. Research paradigm is a perspective on research taken by a board of

researchers that is based on a shared set of assumptions, concepts, values, and practices (Tau & Huang, 2021). A researcher selects a method that best suits the research topic on epistemological grounds, based on the methodological rules and norms for data collection and theory testing (Thomas et al. 2020). The epistemological assumption under the qualitative approach can be described as the theory of knowledge that is evidenced for researchers in the social sciences (Headley & Plano, 2020).

3.3 Research Design

According to Bryman (2012), a research design gives a framework for the compilation and examination of data. This is a road map that the researcher follows in the collection, measurement, and analysis of data. A descriptive qualitative research design was used as it was best suited to answer the research questions for this research project since the study sought to investigate the impacts of communicating climate change on food security-related messages in Forte FM, Mdantsane FM, and Rhodes Music programming. Al-Bargi (2019) defined qualitative research as a system that makes use of interviews, focus group discussions, participant observation, or case studies as research methods to bring in narrative and descriptive information by answering the 'how' and 'why' questions.

 In other words, qualitative methodology is usually aimed at acquiring a deep description and understanding of a specific phenomenon rather than a surface description of a large sample of the population. This form of research therefore lets the meaning emerge from the participants (Al-Bargi, 2019). This therefore makes a research design a crucial aspect to consider when doing research because the whole study is centered on it, and evidently addresses research questions and objectives. It is argued that a fixed plan of

data collection is applicable to qualitative research design. In qualitative research, the researcher has room to alter the set steps depending on the researcher's choice, and actions as they lead to the decision of the design or plan (Mohajan, 2018).

The research design is significant as it helps the researcher follow the set steps during the data collection and data analysis processes. It is also useful for determining the total expenditure incurred in the completion of the research in terms of time, efforts, and money. Bloomfield and Fisher (2019) defined a research design as a blueprint for conducting a study with maximum control over factors that may interfere with the validity of the findings. It could also be referred to as a roadmap that describes how, when and where data are to be collected and analyzed. Hence, it is on this foundation that the researcher leans more on qualitative methodology of data collection to gather responses from Forte FM, Mdantsane FM and Rhodes Music listeners to investigate their views on the impacts of climate change messages broadcasted in Forte FM, Mdantsane FM and Rhodes Music community radio stations.
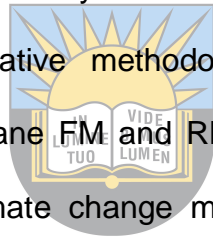
This study is of the descriptive research type. The researcher does not have control over the variables; the meaning emerges from the research participants. The researcher has no reflections on the population values as well as the participants. According to Al-Bargi (2019), descriptive qualitative research is a system that makes use of interviews, focus group discussions, participant observation, or case studies as research methods to bring in narrative and descriptive information by answering the "how" and "why" questions. Additionally, Mohajan (2018) noted that descriptive research is designed to provide a picture of a situation as it naturally happens. Hence, descriptive research is

often adopted to justify a current phenomenon or practice and also make judgments to develop theories.

Throuvala (2019) reflects that qualitative research is undertaken when a new area is being investigated or when little is known about an area of interest. It is often used to investigate the full nature of the phenomenon and other factors related to it. The researcher understood the contents of the topic under study, and in order to provide first-hand information, a qualitative approach to data collection and analysis was adopted. In this research work, the researcher has a keen interest in unpacking how Forte FM, Mdantsane FM, and Rhodes Music communities (listeners) perceived climate change messages towards ensuring stability of food security and utilization in the selected areas as well as in the programming of their community radio.

3.4 Research Paradigm

According to Kaushik and Walshman (2019), paradigms are the philosophical frameworks that give researchers a blueprint on the precise reflection of what to search for, what they believe in, why they view them as such and what philosophical frameworks shape them. Researchers are guided by a philosophical framework that enhances the feasibility of principles that systematically result in significant stages as phenomena are observed. Thus, lack of research paradigm influence as the basis makes a researcher lose subsequent choices in the projected study's method, literature, or research design (Ling & Ling, 2017). Therefore, it is paramount for researchers to choose a suitable research paradigm for the intended study. Hence, a paradigm is selected based on the research questions that each study seeks to answer. Considering this, the most accepted research paradigms, according to Kaushik and Walshman

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(2019), are positivism, interpretivism and post-positivism. This study therefore chose the interpretivist paradigm because of its suitability to the study.

3.4.1 Interpretivist Paradigm

According to Thanh and Thanh (2015), interpretivist scholars establish that interpretative research is more subjective than objective. Thus, they chose the inter-subjective ontological belief and epistemology that reality is socially made. According to Schwandt (2018), interpretivists are anti- foundationlists who strongly believe that there is no one specific method or route to knowledge. Similarly, Walshman (1995) adds that in the tradition of interpretivism, there are no incorrect or correct theories. Instead, they are judged based on how relevant they are to the research and its subject. In addition, interpretivist researchers develop hypothesis by examining the phenomenon. Hence, it derives its meaning and knowledge from the interpretation. That is, knowledge is empirically independent of the perception of man (Walshman, 1995). The premise of the interpretive philosophers is that either contact is informally created or given only through social constructions like consciousness and languages as well as shared meanings.

According to Ling & Ling (2017), research that adopts the interpretive paradigm utilizes both observation and interpretation. The processes entail retrieving information on a particular phenomenon by observation, while interpretation encompasses explaining the meaning of the collected information by using individuals' discretion to draw interpretations and implication between the information and some abstract patterns. In addition, the interpretation of data in interpretive research strives to inquire and be more knowledgeable about a phenomenon via the meanings that individuals attached to it. As established by Reeves and Hedberg (2003), the interpretive paradigm focused on the

importance of including in any given research analysis so as to attract a detailed individual disposition on the subject of discourse.

Kaplan and Maxwell (1994) argued that, in interpretive research, there are no predefined independent and dependent variables, but that it focuses on the complexity of the human disposition as the situation unfolds. Data are collected in interpretive research through participants' observation or interviewing, which rely on the subjective relationship between the subjects and the researcher. This paradigm aligned with this present study as the researcher adopted an inductive approach to this study. This means that the researcher collected data that were relevant to the title of the study. After a substantial amount of data was gathered, the researcher looked for patterns in the data. The researcher developed a model that could justify the qualitative method for the study. Moreover, the researcher discovered diverse opinions and perceptions of the communities under study in relation to climate change and food security communication. Hence, investigate the extent to which the messages around climate change affect food security for the community's understudies.

This study looked at how Forte FM, Mdantsane FM, and Rhodes Music community radios communicate messages about the impacts of climate change on food security in the understudied communities in the Eastern Cape Province. In light of this instance, it was important to ascertain the kinds of climate change and food security messages that are communicated in the study communities by the selected community radio stations. To understand how the study communities perceive Forte FM, Mdantsane FM, and Rhodes Music community radios in relation to climate change and food security communication. In addition, the study wanted to ascertain the challenges confronting

these community radio stations in communicating the impacts of climate change on food security messages in the Alice (Golf Course), Mdantsane, and Grahamstown communities, respectively. Adopting this paradigm was, therefore, key to the information that the researcher gathered and how this information was interpreted. Understanding the context in which the communities perceived the impact of climate change and food security messages sheds light on how the communities understood climate change, its meaning, and its manifestations locally and globally.

Thus, revealing the challenges the community radio stations are encountering in communicating climate change information to rural communities. The qualitative methods that the researcher adopted for this study guided the application of this paradigm. It provided a context that enabled this study to address the need for more climate change awareness and an integrated policy approach from government and stakeholders that would ensure a sustainable food security system in the society. Thus, receiving climate change information would help listeners' adaptive capacity and improve their Indigenous Knowledge System (IKS) in coping with the impacts of climate change on food security in their respective communities. According to Thomas (2003), qualitative methods are usually supported by interpretivism because the interpretive paradigm portrays a world in which reality is socially constructed, complex, and ever-changing. Interpretivists believe that the world is socially constructed and that there are as many intangible realities as people are constructing them; thus, they view reality as mind-dependent and personal or socially constructive (Creswell & Creswell, 2017, & Mertens, 2009). There are individual realities as well as group-shared realities, but

utmost interest is how these assumptions about nature are built into the research processes.

Based on Table 1 below, the positivist researcher prefers working with observable social reality and such research would produce generalization, like those produced by the natural scientists. Positivists also believe that an objective reality exists outside personal experiences with its cause-and-effect relationships (Neuman, 2006; Babbie & Mouton 2008; Muijs, 2011). Knowledge or research findings are also believed to be gained objectively and independently. The positivist methodology involves experimentation or manipulation in which questions and hypotheses are empirically tested under controlled conditions (Guba &Lincoln, 1994). On the other hand, Gratton & Jones (2010) indicates that in post-positivism, it is not easy to ascertain reality because understanding is merely through measurement. Therefore, for this study, post-positivism and positivism are irrelevant as they are quantitatively based paradigms.
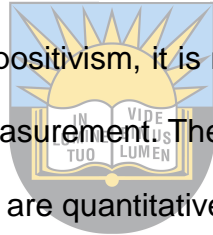
Table 1: Assumptions of Positivism, Post-Positivism and Interpretivism

Item	Positivism	Post-positivism	Interpretivism
Ontology	Realist: reality is driven by natural. mechanisms and is Apprehensible.	Critical realism: Real-world exists but cannot be fully. Understood due to human imperfection.	Like constructivism: Subjective view of reality.

Epistemology	Objectivist: Investigator is Independent of the inquiry.	Objectivist, but Modified.	Subjective: Knower and known are. Inseparable, investigator is a Passionate participant in the inquiry.
Methodology	Experimental/ Manipulative with the aid of questions and hypotheses	Modified experimental/ manipulative	Emphasis on realism or naturalistic settings
Method	Purely quantitative	Primarily quantitative	Qualitative

Adapted from Bryman (2008); Creswell (2014); Denzin & Lincoln (2011).
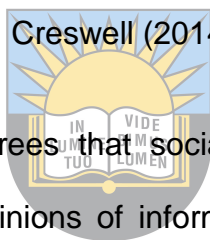
On the contrary, interpretivism agrees that social reality is personal and nuanced because it is formulated by the opinions of informants as well as the principles and ambitions of the researcher. Interpretivists also believe that interpretive understanding is grounded in an interactive, field-based inductive methodology, which, in turn, is intertwined in practice within a specific context. Livesey (2011) states that better methods within the interpretive research paradigm are observation and interpretation. Therefore, Creswell (2014) sees this position as more suitable for qualitative research than it is for quantitative research because, in qualitative research, researchers use words to portray reality, unlike in quantitative research, where numbers form the main analysis of the study.

3.5 Justification for Using Qualitative Research Method for this Study.

Qualitative research as noted by Al-Bargi, (2019), is any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification. As pointed out by Kaae & Trauslen (2020), qualitative research design usually helps to discover underlying motivations, feelings, values, attitudes, and perception of participants in a research setting. This method therefore suits this research as it helps to discover the feelings, values, attitudes, and views of the listeners of Forte FM, Mdantsane FM and Rhodes Music radio stations. Another reason for choosing and using qualitative approach is because qualitative research is typically used to answer questions about the complex nature of phenomena, often with the purpose of describing and understanding the phenomena from the participants' point of view (Kaae & Trauslen, 2020). In addition, Al-Bargi, (2019) observed that qualitative research also helps researchers to decode, describe, analyze and interpret data.

It is also a way of learning and knowing about different experiences from the perspective of individuals and radio listeners involved in this study. The researcher also paid attention to all these in this study.

Al-Bargi (2019) noted that qualitative research is any kind of research that produces findings not by means of statistical procedures or other means of quantification. As pointed out by Kaae & Trauslen (2020), qualitative research design usually helps to discover the underlying motivations, feelings, values, attitudes, and perceptions of participants in a research setting. This method therefore suits this research, as it helps to discover the feelings, values, attitudes, and views of the listeners of Forte FM, Mdantsane FM, and Rhodes Music radio stations.

Another reason for choosing and using a qualitative approach is that qualitative research is typically used to answer questions about the complex nature of phenomena, often with the purpose of describing and understanding the phenomena from the participants' point of view (Kaae & Trauslen, 2020). In addition, Al-Bargi (2019) observed that qualitative research also helps researchers decode, describe, analyze, and interpret data. It is also a way of learning about and knowing about different experiences from the perspective of individuals and radio listeners involved in this study. The researcher also paid attention to all these in this study.

3.6 Research Domain

The Eastern Cape Province was chosen as the research domain for this study. However, to narrow down the research domain in respect of proximity and each radio station's program content, the researcher focused on and chose one location from each research case study, specifically Golf Course, Mdantsane, and Grahamstown residential areas. These are the areas that are closest to the community radio stations selected for this study. The distance from the radio station to the first houses in these residential areas can both be estimated at close to a kilometer, and the distance to the farthest houses from the radio station can be estimated at six kilometers. Hence, reception of radio waves in these areas is not a challenge.

Alice is a small town in the Amatole District of the Eastern Cape Province in South Africa. It is one of the historical places in South Africa whose history traces back over 150 years (ASPIRE, 2011). These include the founding of the black-controlled newspaper at Lovedale and the establishment of a university. One of the first South

African alternative presses started at Lovedale, that being Isigidimi samaXhosa (The *IsiXhosa* Messenger) in 1873 during the apartheid era (Rutledge, 2018). Additionally, the University of Fort Hare, one of the historical universities' main campuses, is in this small town of Alice. The University of Fort Hare, formerly known as the South African Native College (SANC), was founded in 1916 on the site of the earlier British Military Stronghold (UFH, 2014). These are some of the serene educational environments attached to Alice.

The Golf Course residential area was established under the South African government's Reconstruction and Development Programme (RDP), which redressed economic and social disparities (Manomano, 2018). The South African government embarked on this housing project to help the disadvantaged population, especially in rural areas, secure better housing under the RDP. Regardless of their relocation to this new location, the people were under the reach of Forte FM's band width. As such, the listeners are familiar with Forte FM's climate change radio programming and have a huge following of Forte FM's programming.

On the other hand, Mdantsane is a South African urban township situated 15 kilometers away from East London. It is the second-largest township in the Eastern Cape after Bhayi near Port Elizabeth and the second-largest residential location in South Africa. The township is part of the Buffalo City Metropolitan Municipality (BCMM) in the Eastern Cape Province. It is also the largest township in the Eastern Cape by population. However, Mdantsane is home to several South African political stalwarts and veterans. The major language spoken in Mdantsane is IsiXhosa. However, English or Afrikaans is

spoken as the second language by the inhabitants, with a growing middle class and average individuals.

Grahamstown, also known as Makanda, was once the second-largest city in South Africa after Cape Town. The city is part of Makana Municipality. The city's rapid pace of growth was halted by development in the education sphere with the foundation of schools, including Rhodes University. Grahamstown has evolved to become a melting pot of diverse culture, with academic and legal excellence at the forefront of the town's identity. The languages spoken in Grahamstown are Xhosa, Afrikaans, and English. Grahamstown's eventful history is brought to life through its monuments and the exhibition of its unique heritage sites. The city has also become the hub for cultural development and diversity, with the National Arts Festival (NAF) being hosted within its confines annually.

3.6.1 Background of Study Area

3.6.1.1 Brief on Forte FM

Forte FM (Forte Community Radio) was founded in 2000 as the first campus-based community radio station by students from the University of Fort Hare in Amatole Municipality. The students expressed interest in radio broadcasting. Forte FM is broadcast from a partial digital studio at the University of Fort Hare at 88.2 FM. The radio station is on the air seven days a week on 24-hour transmission services. However, just like a number of community radio stations, the radio station started with a few volunteer staff members from Alice and its environs, such as Ntselamanzi, the Golf Course, Middledrift, and Fort Beaufort. However, in 2002, Forte FM commenced internal broadcasting via the intranet, which is accessible to all offices within the university. In

2003, community members were interested in accessing the only community radio station in town (Forte FM), and after a series of dialogues, consensus was reached. The radio station often broadcasts community news, talk shows, music, sports, environmental news, natural disaster programs, discussion programs, agricultural-related programs, and entertainment programs to its audience.

3.6.1.2 Brief on Rhodes Music Radio

Rhodes Music Radio was a campus radio station that evolved into a community radio station. It started in 1981 as a campus radio station and later became a community radio station. It was quite populated during the years when the Khowa traditional festival came and provided platforms for educational discussions. Rhodes Music Radio, licensed by Rhodes University, has evolved into a community radio station covering a 50-kilometer radius around Grahamstown. Currently, it is broadcasting to the Grahamstown, Makanda community, where it focuses on youths and young individuals' such as high scholars as well as young adults (university students and adult employees in town). Rhodes Music Radio operates 24 hours a day as a fully-fledged community radio station. Its frequency ranges from 89.7 MHz, the radio station's programming includes, among other things, entertainment programs, music, news, current affairs, and talk shows such as the breakfast show between 7 a.m. and 9 a.m. (broadcast on weekdays), environmental-related programs between 4 p.m. and 5 p.m., lifestyle programs between 6 p.m. and 8 p.m., and Hence, Rhodes Music Radio addresses climate change in food security-related programs.

3.6.1.3 Brief on Mdantsane FM

According to Malingo (2011), Mdantsane FM was officially licensed in November 2011 by the then mayor of Buffalo City Metro Municipality (BCMM), Zukiswa Ncitha. This was because Mdantsane residents and the surrounding area had a need for a community radio station, which necessitated the establishment of Mdantsane FM in 2011. The station is situated at the heart of the Mdantsane community. It is located presently at Mdantsane City Mall (NU6), and this unit is situated at the core center of the township. The radio station broadcasts not only to Buffalo City Metro, where it is situated, but also equally transmits to Great Kei, Ngqushwa, and Amahlathi local municipalities to fulfill its mandate of providing information, education, and entertainment to its listener communities. Mdantsane FM radio station is locally run, with presenters, managers, and volunteers of staff who are residents of Mdantsane, to support local content through its sports program, current affairs program, climate-related program, community development program, and musical content, amongst others. Hence, Mdantsane FM has local content programs that address climate change and environmental-related matters.

3.7 Research Population and Sampling Size

Mc Dougall (2020) defines a research population as a cluster of people or objects on which the research work focuses. Streeck et al., (2020) defined population as the total number of units from which data can be collected, such as individuals, artifacts, events, or organizations. Hallett et al., (2015) described the population as all the elements that meet the criteria for inclusion in a study. However, for this study, the research population is individual adults who listen to and participate in the programs of the

community radio stations under study. This research population consists of individuals, namely the listeners and management of Forte FM radio station, the listeners and management of Mdantsane FM radio station, and the listeners and management of Rhodes Music radio station. The researcher considered it inappropriate to gather data from a single source that is, choosing only one of the radio stations. Hence, the researcher decided to interview the program managers (the trio of radio program managers) to complement the collected data for analysis. This, therefore, shows the significance of identifying the research population in the study, as it will enable the researcher to have a focus area. The key informants for the study were the trio radio station programme managers. The senior managers were selected, as they were in the best position to get first-hand information regarding the study. The focus group discussion was conducted with 8(eight) participants in attendance who were asked questions ranging from behavioral change messages, community involvement, listenership, and frequency of messages. The interview guide is attached as Appendices B. In addition, during the interview, some participants chose to express themselves in their "mother tongue" *isiXhosa* language which is also acceptable in data collection. The transcribed responses in *isiXhosa* language to English language were successful with the aid of the research assistant.

However, the participants were individuals who reside at Alice and speak *isiXhosa* language. The participants' ages range between 18-50 years for both male and female. Participants from Golf Course (Alice) focus group discussions comprises both commercial and subsistence farmers. More so, pseudonyms would be used for the 8 participants namely, Focus Group Participant (FGP) 1 Alice to focus Group Participant

(FGP) 8 Alice; Focus Group Participant (FGP) 1 Mdantsane to Focus Group Participant (FGP) 8 Mdantsane and Focus Group Participant (FGP) 1 Grahamstown to Focus Group Participant (FGP) 8 Grahamstown. However, the participants all attested to listening to Forte FM's radio programmes while at work, in their cars as well as at their various houses and farms. Hence, the group participants were all relevant for this study. Furthermore, the researcher's sample size is the actual number of people to be selected from the entire study population for data collection. In respect of the population size of each residential area (Golf Course in Alice for Forte FM, Mdantsane and Grahamstown), the researcher deemed it fit to come up with three focus groups for the study for data collection. For this study, eight participants were selected for each focus group discussion from Golf Course for Forte FM radio listeners, Mdantsane for Mdantsane FM radio listeners and Grahamstown for Rhodes Music Radio listeners to sum up a total of twenty-four participants for the sample size of the three focus group discussions. However, it was revealed that managing a large group of people poses some challenges and on the other hand, very small groups of people will lead to inaccurate findings and result due to limited views.

In line with this, Throuvala (2019), noted that an ideal focus group should not be less than six, and more than twelve participants to achieve a representative results. Therefore, selecting an average number of samples enhances effective management by the researcher. The participants comprising of male and female between the ages of eighteen and fifty were selected using convenience sampling for Golf Course, Mdantsane and Grahamstown residential areas. The researcher believed that variance in age and gender would enhance numerous views on how Forte FM, Mdantsane FM

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and Rhodes Music Radio communicate climate change on food security messages in its activities and programming.

In addition, other samples for the study include the Forte FM, Mdantsane FM, and Rhodes Music radio program managers, who were also selected purposefully. The researcher felt the radio program managers are responsible for planning the programming content of Forte FM, Mdantsane FM, and Rhodes Music radio stations. This was done to avoid being biased if the collected data was from a single source. The responses from the three parties aided the researcher in investigating the extent to which the radio stations communicate the impacts of climate change on food security-related messages in the programming of the radio stations. Hence, the sample size for this study consisted of twenty-seven people, a number that is manageable, especially when conducting qualitative research using focus group discussions and in-depth interviews as sampling techniques.
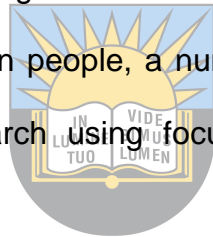
3.8 Sampling Procedure

This section of the study focuses on how the researcher selected the participants of the research populations based on qualitative, non-probability sampling methods. Sampling is the act, process, or technique of selecting a suitable sample or a representative part of a population for the purpose of determining parameters or characteristics of the whole population (Latham & Locke, 2019). Makkar and Basu (2019) refer to sampling as a process of selecting a group of people, events, or behaviors with which to conduct a study. In addition, Houghton and Keynes (2018) observed that in sampling, a portion that represents the whole population is selected. It is not possible to study the entire population of a geographical area. However, comparing this study's population selection

with other relevant methods of sampling, such as random sampling, where everyone in the entire target population has an equal chance of being selected would be unsuitable for a qualitative study.

A sample consists of elements of the population to be studied or a subset of measurements drawn from a population in which we are interested. Sampling is sine qua non to the generalizability of the finding. Non-probability sampling is a technique that helps researcher select units from a population that is interested in a study. Researchers use their discretion or predisposition to pre-select the participants to be involved in the study, considering their knowledge of the phenomenon to be studied (the impact of climate change on food security).

More so, this study is not judgmental in its sampling process since the purpose of the study is to investigate the impacts of communicating climate change messages and food security to rural South Africa through community radios (Forte FM, Mdantsane FM, and Rhodes Music Radios). The researcher therefore felt the need to conduct interviews with listeners who frequently listen to and participate in radio programs on the air as well as food security-related messages. The participants were selected randomly to get first-hand information in relation to the study. Therefore, for this present study to achieve its aim, the researcher used non-probability sampling because it is convenient. This study, therefore, opted for a non-probability sampling technique as highlighted in the following sections: purposeful and convenience sampling methods in selecting the sample for the study.

3.8.1 Sampling Techniques

Sampling technique is the process of selecting a representative group from the population under study. That is, selecting a group of individuals from a population to study them and characterize the population. The sampling techniques used for this study is non-probability sampling. Hence, on-probability sampling involves non-random selection criteria. The selection of sample is based on convenience and willingness of individuals to be part of the study (Baltes and Ralph, 2020).

3.8.2 Convenience Sampling

Convenience sampling relates to how easy it is for the researcher to obtain a sample, the ease and cost of locating elements of the population, the geographic distribution of the sample, and obtaining the interview data from selected elements (Klar & Leeper, 2019). This implies that researchers have to look for information related to the study in relevant places like recreation centers, business avenues, and student residences. Hence, surveying or conducting Vox-Pop interviews from available and easily accessible sources will be convenient. For this thesis, convenience sampling was used to organize focus groups in Mdantsane, Grahamstown, and the Golf Course. Convenience sampling refers to a sampling process of getting units of analysis without a set formula but by using the expediently available units (Baltes& Ralph, 2020). In the process of conducting qualitative research, a research sample comprises acquaintances, which are readily available to elicit information to aid data analysis. In other words, this type of sampling has some drawbacks for the researcher in the sense that one could interview or form a focus group from the people they are acquainted with, which could be tempting. For this study, the focus group discussions comprise people

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from various parastatals and races from the Golf Course, Mdantsane, and Grahamstown residential areas who "only" shared this forum in common for this research project.

3.9. Research Assistant

a. Since this study used human participation as part of its sample, it was necessary that the researcher keep ethical principles in mind. The researcher, therefore, obtained permission from the University of Fort Hare ethics committee to conduct the study. In keeping with the institutional guidelines on research that involves human subjects (find a copy attached as Appendix A), the following were the guidelines the researcher put in place: All the focus group participants, key informants (programme managers) as well as the research assistant were fully briefed by the researcher about the study aims and goals. Each participant signed a consent form prior to the data collection process.

b. Confidentiality of participants was ensured as participants' responses were coded and their name unrevealed.

c. Data collected were validated with the respondents before analysis to avoid omission or misrepresentation of statement.

d. This study employed the service of a research assistant because of her lack of proficiency in *isiXhosa* language, which is the medium of communication in the Eastern Cape Province. The research assistant is a trained researcher who was trained on the ethical implication of research and confidentiality of the study participants. The research assistant was used during the translation process of data collected in isiXhosa language to English language. In addition, the

research assistant was helpful for the focus group discussion, and the interpretation of the focus group discussion questions for comprehension.

The analysis of the gathered data and findings from the study participants will be discussed in the subsequent chapter. The data analysis was done with the aid of the research assistant, who helped in translating the focus group questions from isiXhosa to English and vice versa for better understanding.

3.10 Data Collection Techniques

According to Roberts (2019), a research instrument is a tool used to collect data. An instrument is a tool designed to measure knowledge, attitude, and skills. As pointed out by Assarrondi (2018), the data collection stage is the crucial phase of research work, which clearly leads to data analysis. Data collection techniques are the tools or instruments that the researcher uses to gather raw data from participants and other sources for analysis. Eliciting data from participants with various opinions and experiences enhances the credibility of the information and prevents information bias.

3.10.1 Focus Group Discussion

The researcher therefore used focus group to gather the relevant data from listeners of Forte FM at Golf Course in Alice, Mdantsane and Grahamstown areas in Eastern Cape Province as mentioned in section (4.2). A focus group each was organized at the selected areas where Forte FM, Mdantsane FM and Rhodes Music radios had huge listenership, and were recorded and transcribed for analysis. The information collated enabled the researcher to investigate the impacts of communicating climate change messages on food security to the community members in Forte FM, Mdantsane FM and Rhodes Music programming.

3.10.2 Interviews

For this study, Forte FM, Mdantsane FM and Rhodes Music radio station programme managers were interviewed in order to unpack the impacts of climate change on food security at Forte FM, Mdantsane FM and Rhodes Music radio programming. Interviews can have one or two basic structures; they can be structured, unstructured, or semi-structured interviews. This study adopted semi-structured interviews, whereby the researcher possesses a semi-formal list of questions to be covered during the sessions that serves as an interview guide. Similarly, when conducting a structured interview, the researcher follows the language and set questions accordingly. In line with semi-structured interview, the researcher deems it fit to employ semi-structured interviews so as to obtain wealth of information from the interviewees which would yield enough data. A copy of interview guide for the focus group discussion and interviews are attached as Appendices B & C. Additionally, thematic analysis involves transcribing the collected data. Nevertheless, the researcher's involvement in the processes of transcribing, the interview and focus group discussion inevitably helps the research assistant becomes more familiar with the data (Tailor et al, 2018).

The researcher at this stage listened to the recorded data collected during the focus group and interview sessions. The recorded data from the interviews were later transcribed and typed out into Microsoft word and NVivo12 software which is user friendly for data interpretation. Furthermore, recording of focus group discussions helps to capture all the responses of the participants that were helpful to the study. The researcher was also able to write and note pertinent issues while the interview was on. The raw data collected from the interviews were easily transcribed because the

research participants expressed themselves in English language during the interview sessions. For the focus group discussions, an interpreter (research assistant) was employed to translate the collected data from English language to *isiXhosa* language where participants did not understand and vice-versa, to explain to the researcher where understanding was less. The translation of *isiXhosa* explanations to English language assisted the researcher to come up with general themes as this was now comprehensible.

Subsequently, the data was thematically analyzed, that is, the examination of the converted data to attain major themes that could be distinguished from each other (Tailor et al. 2018). Furthermore, the identification of themes was made easy by grouping each theme into its main category. The organization and coding of raw data helped the researcher to handle and analyze the entire data for reporting with the aid of NVivo12 software. This entailed the identification of pertinent issues from all the research participants. According to Jost et al. (2018), who noted that it is important not to think of the substance of the information, but rather of the underlying meaning when generating themes. Finally, the researcher gave a descriptive qualitative analysis regarding the themes which emerged from the collected data. These themes were given separate headings, put in each section, and discussed as preliminary analysis. Subsequently, the research findings were reported.

3.11 Data Analysis

3.11.1 Analysis of Focus Group at Golf Course (Alice)

One focus group was established on the golf course, consisting of eight (8) participants for discussion. The participants were individuals who reside at the golf course and

communicate in isiXhosa, ranging in age from 18 to 50 years, comprising both males and females. The Golf Course focus group comprises eight participants who are eligible (listener communities) to be sources of data for this study based on the research questions and objectives. Participants from the first focus group discussion comprise both literate and semi-literate individuals with working-class status. However, they all attested to listening to Forte FM about climate change and other varieties of programs such as sports, breakfast shows, and evening talk programs while at work, in their cars, and at their various houses. This makes the group participants relevant for this study. The analysis of the gathered data and findings from the participants, researcher, and her assistant were analyzed in the subsequent sections below with the aid of the research assistant, who helped in translating the interview guide questions from isiXhosa to English and vice versa for better understanding.

3.11.2 Analysis of Focus Group Discussion at Mdantsane

In line with the above, a focus group was also organized at Mdantsane. They all consisted of isiXhosa speaking people who had sojourned in Mdantsane for a couple of years. The occupational activities of participants ranged from employed and unemployed as well as students in higher learning. The participant's ages vary from 18 to 50 years for both male and female. These were all fully involved in Mdantsane FM's programming. In addition, the focus group also consisted of eight participants who were active listeners of Mdantsane FM programming.

3.11.3 Analysis of Focus Group at Grahamstown

Majority of the participants with regards to gender were mostly female. However, this had no effect on the credibility and trustworthiness of the delved information. The

employment or occupation activity of participants ranged from employed to unemployed in the formal and informal sectors as well as higher learning students. They all consisted of IsiXhosa speaking people who had resided in Grahamstown for a number of years. The participant's age varied from 18 to 50 years for both genders. These were all fully involved in Rhodes Music programming. In addition, the focus group also consisted of eight participants who were active listeners of Rhodes Music programming.

3.12 NVivo 12 for Thematic Analysis

Thematic analysis is a qualitative analysis process that is used to identify patterns in data, such as commonalities or contrasts (Fang & Wang, 2020). This study applied NVivo 12 analysis software to analyze the collected data after transcribing. NVivo is qualitative data analysis application software that allows you to collect, organize, analyze and visualize unstructured and semi-structured data. This software was installed on operating system window 10, 64 bits and on Core i5 system. See Attached Appendices D.
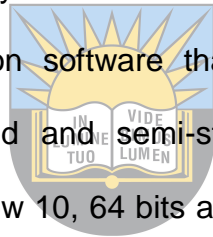
3.12.1 Importing of Transcribed Documents into NVivo

The collected data was transcribed according to the case study of the focus group discussions. The NVivo Software application has the option of importing the data file folder in a focus group folder based on each location. Notably, NVivo allows importing of data in range of file formats, organized demographic data, and code sources. Also, NVivo imports captured ideas, run queries, and visualize project items. See Attached Appendices E.

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3.12.2 Creation of Nodes on NVivo 12

The NVivo Software Application has the flexibility for the creation of Nodes which forms the thematic subject for the uploaded files. Nodes are the general heading given to a particular text or response from the participants interviewed. The Nodes could be classified as parent or child Nodes, depending on the text identified as child Nodes within parent Nodes. See attached Appendices F.

3.12.3 Coding of Nodes on NVivo 12

The adoption of NVivo 12 software, which is user friendly for creation of Nodes and headings from the data collected was helpful. The coding was carried out by matching the content of each focus group into the appropriate Nodes as references. Thereafter, the categorization was done in a repeated format for all focus groups for each case study. Hence, the coding forms the part of who says what under the generated Nodes as subject heading. See attached Appendices G.

3.13 Reliability and Validity of the Research Instrument

Validity and Reliability are the most important criteria for evaluating qualitative instrument. This study also tried to consider this and ensure the reliability and validity of the instrument used in this study. To ensure this, the study merged a variety of validity procedures. The use of a construct; qualitative method therefore in several ways helps to avoid misinterpretation and ensure reliability and validity of the result. Interviews and focus group discussions served as data collection tools ensured that data was reliably gathered from the under-study communities. The data gathered from the listeners of the

trio community radio stations reflects investigating the impacts of climate change on food security in these radio stations, and results are generalizable to some extent. The connection of listeners, the focus group discussions and the programme manager responses have also allowed for some sort of triangulation.

3.13.1 Trustworthiness

Trustworthiness is essential concepts that researchers must adhere to when conducting research. Conversely, Amin et al. (2020) pointed out that the perceptions of credibility and trustworthiness continued to be significant for evaluating qualitative study; however, they need a different application to hold the explanatory paradigm and qualitative research. Credibility helps to ensure trustworthiness, dependability of research techniques, credibility, confirmability, and transferability of research findings (Clark & Watson, 2019). In qualitative research, credibility and trustworthiness are mainly used to assess quality and scientific firmness of the research techniques employed in the study. This research project, therefore, ensured credibility and trustworthiness of the research instrument used to investigate communicating the impacts of climate change on food security in Forte FM, Mdantsane FM and Rhodes Music radio programming.

Trustworthiness can be described as the credibility, dependability, consistency, stability, and representativeness of research findings (Amin, 2020). In other words, contextually, reliability implies assessment, stability and consistent in producing credible results over a period (Clark & Watson, 2019). In line with the above, Almanasreh (2019), asserted that reliability in qualitative research has a purpose of generating understanding of the research phenomenon. Hence, qualitative research deals with reasoning and meaning

of the collected data, the use of the above-mentioned data collection techniques contributed to this study's reliability.

3.13.2 Credibility

Credibility can be expressed in terms of trustworthiness, credibility or legitimacy of the research techniques and findings (Amin et al., 2020). According to Almanasreh (2019), credibility is one of the most critical steps in instrument development, and the degree to which one of the items in an instrument adequately represent the domain of content. Credibility is enhanced by the researcher, describing his or her experiences as a researcher and verifying the research findings with the participants (Clark & Watson, 2019). In addition, Amin et al., (2020) described internal credibility as the degree to which a study measures what it proposed to measure. On the other hand, external credibility refers to the degree to which study results are generalized to a broader population beyond the study of discourse. This therefore means that the results found in this study should not show a greater difference, with other researchers' findings when using the same research methods. However, when using questionnaire, a degree of variance of results can be accredited to the research participants' responses and attitude towards the researcher.

3.13.3 Dependability

Dependability refers to the consistency and reliability of the research findings and the degree to which research procedures are documented. For this study, dependability helps the study's collected data and findings to be consistent and repeatable. This means that the data collected for this study could also be interpreted by other researchers' and similar findings would be arrive at. In order words, this research wants

to assure that there was not anything missed in investigating the different types of climate change messages communicated at the under-study community radios (Berry, 2019).

3.13.4 Transferability

Transferability is one of the elements of qualitative validity. It refers to the degree to which results of qualitative research can be generalized or transferred to other contexts (Eshan, 2020). For this study, the researcher enhanced transferability by describing the research context and the general assumptions that people have regarding the phenomenon climate change on food security. The researcher ensures that the collected data were detailed description of the study areas through qualitative research method. This makes it transferable to other situations or context since the impacts of climate change on food security affects individual livelihoods and the ecosystem generally. This implies that the case study results are detailed and specific. Hence, the detailed nature of the findings of this study makes them ideal for transferability. For instance, the findings revealed from the under-study communities show some similarities in the mode of communicating climate change messages by the trio community radio stations. Another researcher may recognize some dissimilarity in another community or situation. This means that our reports do not apply to other situations. Instead, they may report their findings and make suggestions about how to mitigate and adapt to each community's climate challenges.

3.14. Ethical Consideration

Ethical consideration is set of principles guiding social science researchers namely, showing some regards and respect for participants while conducting research,

prohibiting researcher against falsifying research data (Robertson, 2021). The researcher complied and abided by ethical rules and regulations by obtaining ethical clearance certificate from the institution before commencing the research.

3.14.1 Confidentiality and Anonymity

Confidentiality refers to concealment of information that is discussed between researcher and research participants during data collection (Scott, 2019). Confidentiality and anonymity are used interchangeably in research work. The researcher assured her sources (participants) of anonymity by not disclosing names and identities while carrying out the research work. Also, by ensuring ethical consideration, informed consent and making the environment harmless to the participants.

3.14.2 Informed Consent

Possessing an informed consent implies exposing the study participants to the rationale, procedures, benefits, risks, and nature of the study should they be participants. The study participants were given an informed consent form to read and attest their signatories. Hence, keep study participants abreast of voluntary participation which would not affect them negatively should they choose to be part of the research work participants.

3.14.3 Voluntary Participation

Participation in research work should be void of threat, individual is expected to decide whether to participate or not. For this study, the researcher encouraged her research participants to participate voluntarily. Hence, the researcher ensured participants were not intimidated and was transparent to disclose the aims and intentions of the study which is for educational purposes.

3.13.4 Avoidance of Harm

According to Bryant (2021), avoidance of harm is related to inform consent whereby harms does not mean physical abuse or damage; but entails emotional publicize, distress and psychological harm. The researcher however, informed the participants and got their consents before commencing the interviews and focus group discussions at Golf Course, Mdantsane, and Grahamstown residential areas. The researcher assured her participants that their identities would not be to protect physical and emotional interest but for educational reasons only.

3.15 Limitations and Delimitations of the Study

This study accessible population was limited due to time frame, financial constraint, and accessibility of some areas. As in most studies, there were few limitations to the study. The researcher found it challenging communicating with her research participants in the indigenous language (*isiXhosa)*, due to her low proficiency in isiXhosa Language. Thus, the main transmitting language of Forte FM, Mdantsane FM and Rhodes Music Community radio stations is isiXhosa language. The study focused on limited areas because of time frame and financial constraints. To delimit the study, the researcher worked with listeners communities who also served as the study's research assistant. The interviewees were also assured of their confidentiality as well as the information the team would come across purposively for this study, should the need to avail the information to a third party, their permission was sought.

3.16 Chapter Summary

This chapter elucidates the methodology the researcher employed from research approach, research design, research paradigm, data collection techniques, and data

analysis. The chapter also explains how the author justifies the qualitative method used. In addition, this chapter evaluates the reliability and validity of the study's goal. Also, it outlines the sampling procedure, research type as well as the strength for adopting qualitative methods of research. The principles of ethical consideration, confidentiality and anonymity, informed consent, as well as avoidance of harm were all justified. Hence, making sure the participants were morally and ethically protected. The next chapter would turn the situation of the thesis by analyzing the data.

CHAPTER FOUR: DATA PRESENTATION AND ANALYSIS OF FINDINGS

4.1 Introduction

This chapter presents the data and its analysis. The details of the qualitative data that have been collected through personal interviews and focus groups were analyzed. Also discussed are the collected data from the Forte FM radio program manager, the Rhodes Music radio program manager, and the Mdantsane FM radio program manager, as well as their listeners. The responses of the participants are discussed and compared to answer the research questions and fulfill the aims of the study. It is also significant to note that the findings arrived at in this chapter will then be utilized to provide the basis for the conclusions of this study and equally pose directions on suitable models and recommendations to be considered for further studies at the end of this study.

4.2 Analysis of Data from the Focus Groups

This sub-section introduces the collected data from the three communities under study. The analysis of the data from Forte FM, Mdantsane FM, and Rhodes Music community radios is presented below.

4.3 Analysis of Forte FM Focus Group discussions

The analysis of the gathered data and findings from the study participants are analyzed below. The research assistant helped in the process of translating the focus group questions from *isiXhosa* to English and vice versa for better understanding. For this study, eight participants were selected for each focus group discussion from Golf Course for Forte FM radio listeners, Mdantsane for Mdantsane FM radio listeners, and Grahamstown for Rhodes Music Radio listeners, for a total of twenty-four participants for the sample size of the three focus group discussions.

4.3.1 How often they listen to Forte FM

All the participants indicated that they listen to Forte FM always. When asked how often they listen to Forte FM, A participant noted that. "Forte FM is one of my favorite radio stations ….. I like listening to it always." (FGP 8 Alice)

Another participant also added that:

> "I listen to Forte FM programmes every day. I realized that they have local programmes that please the community. So, I like their programmes". (FGP 1 Alice)
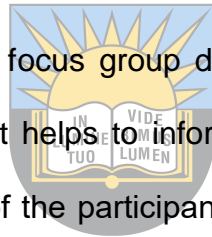
As indicated from the Golf Course focus group discussion, Forte FM radio is a well-known community radio station that helps to inform and educate listeners through its program contents. The evaluation of the participant's opinions implies the frequency of listening to the radio station. Interestingly, they all attested to tuning in to programs on Forte FM radio. The fact that participants confirmed listening regularly to the radio station shows their satisfaction with the station's programming. This implies that Forte FM radio's content was well received and served the needs of the listeners. This encourages listeners to keep listening to its programs on a daily basis. This is the core purpose of community radios such as Forte FM and is also supported by scholars such as Aziz (2020) and Diallo (2020), who both noted that community radio must continuously address issues that affect listeners and the community in order to attract full-fledged and continuous participation in its programs. The agenda-setting theory and media dependency theories also supported the above notion. The theories posit that the

listeners, who are the program consumers, would be influenced by the messages disseminated through its programs to attract community members and listeners.

4.3.2 The Impacts of climate change on food security programming on listeners

The researcher asked the participants about the impacts of climate change on food security programming. Interestingly, one of the participants said that:

"Yes, the messages are always helpful, most especially on community news, funerals cover, music and weather forecast; it informs us on how to keep warm, and healthy. Mostly, messages on floods, heavy rain and farming". (FGP 1 Alice)

Generally, half of the participants confirmed that the messages on weather forecast help the community and individuals to make plan for future occurrences.

Another Participant expressed himself in isiXhosa that

"Hayi, unomathotholo we-Forte FM akanayo inkqubo enempembelelo ekutshintsheni kwemozulu kwinkquboyokhuseleko lokutya ngaphandle koqikelelo lwemozulu, oluyelwabaluncedo kuthi sonke njengoluntu. Imiyalezoiyasazisaukubaizakunaninikwaye phi imvulaenkulukwaye mhlawumbineziphumozayoezibikubahambingeenyawo, uluntukunye namafamangokubanzi." (FGP 7 Alice)

Here is the interpretation of his opinion which was translated to English with the help of the research assistant.

"No, Forte FM radio does not have impactful programme on climate change in food security programming besides weather forecast, pollution, land which has been helpful to us all as a community. The messages

inform us when and where a heavy rain would be falling and peradventure

its adverse effects to pedestrian, community and farmers in general."

(FGP 7 Alice)

The participants believed that the radio station's messages are always informative and educational about weather services and other environmental-related messages. This implies that programs on accessibility and quality of foods that promote healthy living are implemented and broadcasted by the radio station. Hence, programs on climate change and its effects, which cause food insecurity, are included in the radio station's programming. This supports the objective of the study on the impacts of the different types of climate change-related messages broadcasted by the radio station. This suggests that the massages have added more cognitive value to the listeners. This is the sole responsibility of a community radio station to broadcast messages that would reduce and eradicate the limitations and effects of climate change. This is also supported by Hasan (2019), who reflected that community radio is one operated in the community for the community and by the community. It serves as a source for eliciting information and providing programs to educate and enlighten its listeners. This therefore confirms that Forte FM radio is a source of climate change and sustainable food security programs for its community members.

4.3.3 Frequency of climate change on food security messages

Participants were asked how often Forte FM communicates climate change messages on food security to its listeners. Two of the participants who were youth said that:

"Very good question, since I have been listening to Forte FM radio,

information has always been heard on weather services and about

agriculture. It was just programme about farming, fishing, and other environmental programmes, funeral services, adverts, funeral covers, community news and sports. The radio station always has messages on climate change on food security broadcast". (FGP 1 Alice)

"I always connect and listen to Forte FM radio programs on my cell phone; the station sometimes gives updates on weather, flood, and rise in temperature and climate change……all these occur when programmes are on air. The problem I am facing is that my phone is faulty and connecting to its social media platform has been challenging, so I am out of phone……" (FGP 4 Alice)

Two of the participants who are much older added that

"Forte FM programmes are very much informative on local news as well as agriculture, politics, most especially being a citizen of Alice……. we always enjoy the entire programme outline about climate change and food security programmmes" (FGP 6 Alice)

"Messages on weather services are usually broadcasted to the public through public service announcement……. I am not sure of the times they broadcast it, but always publicize when due. Otherwise, messages on climate change, green gas emission and food security, rise in sea level and the likes are communicated to listeners' communities". (FGP 7 Alice)

Most of the participants confirmed that the radio station has a climate change-related food security program. This justifies that the radio station disseminates discussion

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programs related to climate change, food security, and weather updates. This implies that Forte FM radio engages in topical issues such as climate change. Yet, the frequency of the program's dissemination is unclear. This suggests the need for more awareness so as to increase the frequency of the station's climate change-related programs. Hence, broaden listeners' knowledge of climate change communication. It suggests that the radio station must explore more behavioral change content on a daily or weekly basis. As this would help to identify the various areas where climate change is causing food insecurity and threatening communities, their needs can be frequently addressed through effective planning and food security program implementation.

This is also supported by Onyelowe (2017), who noted that community members play a significant role in effective capacity building and empowerment, portraying the present social movement to help one another. The agenda-setting theory that underpins this study argues that the media sets agendas and continuously presents some neglected topics into the limelight for listeners benefit (Nyiwul, 2021).

4.3.4 Listeners involvement in climate change on food security programming

It was important to know whether the participants are involved in climate change for the food security programming of Forte FM. There were mixed reactions. One of the participants said that:

> "Yes, I often make request for my favorite songs, sends shout-out and special greetings to my loved ones when they are been celebrated. But I am not involved in the station's climate change and food security programming". (FGP 4 Alice)

Two of the participants also noted that

> "No, I am not involved in Forte FM's programming………the radio station has programme on food security and climate change, as well as programmes on sport, religion, and community development. So I am just a listener……..I have never participated or call in when programmes are aired". (FGP 1 Alice)

> "I don't call……not involved in the programming, of the radio station. I only listen to the presenters sometimes when a programme focuses on pollution and how to have a healthy environment" (FGP 5 Alice)

Most of the participants noted that they are delighted to listen to Forte FM's climate-related programs but are not involved in calling in during programs. The participants' responses indicated that they all loved listening to the programs. This suggests that listeners are not getting enough knowledge regarding the program on climate change that causes food insecurity and threatens livelihoods. Most of the listeners would have been involved in the programming because it affects the livelihood of individuals. Otherwise, intensifying program creativity in the understudied communities would increase listener interaction and involvement. This means that the radio station must strengthen its efforts to increase listener involvement to create a friendly environment for its listeners. This will equally create an informed citizen.
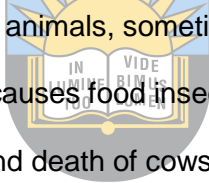
This view is also supported by the work of Carthy (2018), who established that a top-down approach to building up-and-coming community radios will ultimately result in a developmental sector whose incentive and purpose will ultimately move away from the accepted definition and understanding of community radio. The agenda setting theory and media dependency theory that underpin this study also revealed that the

community media helps to influence listeners' positive cognitive and affective behavioural responses to the intended message. Hence, selecting messages based on their geographical locations and organizing community meetings would increase the listeners club's involvement in its programming (Islam & Khan, 2018).

4.3.5 Listeners perception on the impacts of behavior change messages

When asked to express how the listeners perceived the impacts of behavioral change messages all the participants were eager to share their personal stories. There were mixed reactions from the participants as to how they individually perceived the messages. They all confirmed how the messages had helped and transformed them. Two of the participants said that

> "The problem is it affects animals, sometimes when there is bush burning, drought, so the drought causes food insecurity, rapid population growth also causes food insecurity and death of cows. After the death of cows, the cows get problem, they be if it has a calf or it's giving birth, it get a problem, for example it can't breastfeed the calf. Another thing is that there is problem when all this happen there's a problem even in the way we are living. We don't eat healthy food, we eat process foods and it's not healthy, so that thing cause us not to be healthy in our bodies…..All these would be helpful and change people's behavior and basic nutrition if addressed by Forte FM radio". (FGP 4 Alice)

> "Eem…. Just I can say the impact is felt adversely in developing countries but we tried to develop but we get case after another case. So, the other thing that affects us is that other people from our home, they work at the factories that is using…… mostly so much they can recall Continental Tyre at Port Elizabeth in Nelson Mandela Bay. A person works 4 - 5 years. If even you are looking at the

environment, if you are looking there no, it's not green there…... There is no tree

that is growing you see that's a big impact in health, even in the

environment….you see, it does that". (FGP 1 Alice)

Some other participants added that

"The messages of Forte FM radio are always appealing and persuasive to stop

and desist from unlawful acts. I could remember one of their jingle messages that

addressed human activities that affect the soil in our communities. This is so

informative for all, to say NO to soil pollution. (FGP 8, Alice)

"The impact has been positive; a guy was interviewed about service delivery,

about preserving the coastal resources, about informing the community... All this

firsthand information is only available through Forte FM and has been a big help

for behavioral change messages and acquiring more knowledge on climate in our

community" (FGP 3, Alice)

As indicated by the findings, many of the participants were of the view that behavioral

change messages can be achieved if listeners listen to the program on climate change

and food security, which must be targeted at youth and adults to bring about a change

in the community. This was pointed out by a participant, who noted that it is not green

down here; this phrase, as noted by the participant, implies protecting the environment

and responding to global climate change so as not to be left out in the world.

In addition, embracing a narrative climate change with the new ways of doing things.

This means that Forte FM radio should embrace the diversification of programming so

as to achieve more positive behavioral changes locally and nationally. Thus, the change

could be positive or negative. Hence, if the radio station implements more programming

on climate change and food security, ultimately the expected change will be realistic to reduce the negative effects of climate change exposure. This view is supported by the theoretical frameworks that underpin this study. The theories further noted that when the processes of media dependency on a topical issue such as the impacts of climate change on food security are communicated through community radio over a period amongst members of a social system, they will form norms and positive changes that will motivate both listeners and non-listeners to adapt and depend on the media to fulfill their needs.

4.3.6 Influence of climate change on food security messages

All the participants noted how Forte FM's messages about climate change and food security had influenced them all. The listeners' attested to the changes that all of Forte FM's messages about climate change and food security have brought to them individually and as a community. Two of the participants answered in *isiXhosa*, which are equally one of the official languages and the medium of broadcasting at Forte FM.

> "Imiyalezo kunyenolwazi lweForte FM lubonisaukulingana kwezopolitiko kunyenamalungelo okubangummiolinganayokwinkquboyayoyoluntu"(FGP 4 Alice)

> "Ulwazi, ukubhengezaesidlangalalenikunyenemiyalezoyeForte FM ngobundlobongelaobujolisekwisini, indikhuthazile Ukubandingazibandakanya kwisenzoesinje…Ayisiyontointle.Uyabona, ububibayo". (FGP 8 Alice)

Below are the interpretations in English with the aid of the research assistant.

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"Messages and information of Forte FM shows and encourages me on

how to control environmental pollution in our communities".

(FGP 4 Alice)

"Information, public announcement and messages of Forte FM on land

use, how to protect fish, trees, plants and animals has motivated me to

conserve other natural resources". (FGP 8 Alice)

Another two participants buttressed that

"The programmes I listen to are more on politics of our country and part of

international, national and Africa as a whole. Not only in Forte FM alone,

has made me an informed citizen." (FGP 6 Alice)

"Yes, the messages have been impactful, helpful and enlighten since we

have been listening to it. People are living a carefree life, the messages

teaches and informs people…… they live nonchalant attitude, carelessly.

Forte FM's information on pollution has brought me a positive change.

For instance, I got to know that if you want to burn bushes you must be

extremely careful that burning bushes may be dangerous, planting trees is

helpful, I got informed by the radio station, that bush burning could also

affect the climate". (FGP 1 Alice)

In addition to the above opinion, two other participants who were much older added that

"Forte FM radio regularly broadcast climate change and food security

messages to its listeners' when casting the news. Something that helps me in

listening there, other things, for example, may be, mos I love to listen to Forte

FM, in the news I hear about what is happening, may be about the weather in the community, and something I didn't know I…I get it there, I get informed".

(FGP 2 Alice)

"Forte FM's radio messages have helped listeners' to be informed about weather update, heavy rainfall, storm and droughts and other impacts of climate change". (FGP 5 Alice)

Following the focus group discussion, most of the participants confirmed that Forte FM's messages had indeed educated and informed them better on how to manage and conserve the natural resources at their disposal. This implies that Forte FM's messages targeting the grassroots level, where local entities and vulnerable communities are affected by food insecurity, climate change, and its associated impacts such as land degradation, water stress, and coastal zone erosion, among a host of others, have been impactful to the communities. It suggests that the radio station is performing one of its mandates, which is to inform its listener communities as the only community radio station in Amatole District. Hence, community radio stations must inform their respective listeners on how to conserve and preserve natural resources so as to enhance their listeners' resilience to the current global warming. Thus, lack of timely and wealth of information about climate change will increase an uninformed community. This view is also supported by the works of Whitmarsh and Lorenzoni (2019), who noted that creating an informative climate change on food security programming would influence climate change on food security programming for rural communities. The agenda-setting theory that underpins this study postulates that the media sets the agenda by telling people what to think about through the continuous broadcasting of its

programming. That is, the media makes relevant information such as climate change and food security messages accessible to their respective audiences to create a positive influence on the listeners (Diallo, 2020).

4.3.7 Listeners opinions on how Forte FM could improve its climate change on food security programming

When asked about listeners' opinions on what Forte FM could do to improve its climate change and food security programming, interestingly, most of the participants expressed themselves on the areas that need urgent improvement based on this study. Two of the participants who were younger adults said that

"They should teach their broadcasters, to teach the community on what listeners and community should do to get informed, create 30 minutes to teach and inform the community on how to clean their environment and to do certain thing that will not affect the community negatively. People need to be thought and be informed to not throw their cigarettes anywhere any time, people are not well informed, instead of planting tree, they cut down trees, a lot of people does not even know what food security and climate change is all about, publicity and awareness is needed in this field".

(FGP 1 Alice)

"A lot has to be done, you can't be sitting in your office and know what the community wants and needs they are supposed to have a research group or department to reach out to people, approach them to enlighten and inform them on any program. They must employ qualify personnel. Most of the workers are incompetent, if you are competent and knowledgeable passing across information to people sharing of information, dissemination

of information will be known. This is applicable to all media, both public

and private media" (FGP 2 Alice)

Another participant who was a youth added again that

"I am not totally encouraged. That was a very brilliant question, just as you are

here; you have enlightened and educated us all on what climate change on food

security programming is all about. Likewise, we want Forte FM radio to have

more programmes on this very topic to better inform the entire community. More

so, the programme should be broadcasted at the right time when listeners would

have all returned from work". (FGP 4 Alice)

As evidenced by the findings, most of the participants noted that Forte FM radio has to

seek guidance from and among local communities with reference to the impacts that

each community experiences due to global warming. In other words, Forte FM radio

should consult listeners and communities by asking them about their community need

so as to meet their pressing needs. Interestingly, much awareness is needed on what

the impacts of climate change on food security entail, including situations where the

food system is stressed and when adequate foods are inaccessible in a local and

simple language. Thus, enlightenment, forming research group platforms as noted by

the participants, would enhance gathering data and seeking listener opinions on climate

change-related matters.

This view is also supported by Onyelowe (2017) and Faisal and Alhassan (2018), who

established that, for advocates of grassroots development, seeking listeners opinions

becomes the benchmark for measuring the effectiveness of grassroots processes.

Hence, community radio needs to be not only a channel for transmitting information to

people but also a means of receiving it from them. The agenda-setting theory and media dependency theory that underpin this study establish that groups, organizations, and grassroots communities should be well informed and kept abreast through community radio stations, with the sole aim of creating public awareness so as to meet the needs of their listeners. That is, providing two-way interactive social learning through listening clubs, call-in shows, and other forms of exchange would help the study achieve its objective of ascertaining the different challenges confronting Forte FM in communicating the impacts of climate change on food security in the understudied communities.

4.4 Analysis of Mdantsane FM focus group discussions

4.4.1 How often they listen to Mdantsane FM

The researcher inquired from the participants if they listen to Mdantsane FM. All the participants said "yes". They also replied affirmatively when asked whether they listen to the radio station regularly. There were mixed answers from the participants as to when they listen to Mdantsane FM, as they all confirmed listening to the radio station at various times ranging from early in the morning, during the day, in the evening and late at night. In addition, some of the participants also, confirmed listening to other radio stations within the same district.

Two of the participants said that

> "I usually listen to Mdantsane FM and Mhlobo Wenene radio FM mostly every day". (FGP 1 Mdantsane)

> "Mdantsane radio is one of my favorite radio stations... I enjoyed all the vibes". (FGP 3 Mdantsane)

Another participant, who was an adult, noted that

> "I listen to the news. I love the news mos; I listen to the news at 1pm and 7pm. So, it is where I see what the story does, there on the radio when it is news and entertainment shows". (FGP 6 Mdantsane)

> "I listen to their programmes regularly; it's one of my favorite radio stations". (FGP 7 Mdantsane)

The statement above suggests the frequency of listening to the radio station. Interestingly, all the participants are ardent listeners of Mdantsane FM, which makes them relevant to this study. Thus, if they are not regular listeners, it would be impossible to elicit the information needed for this present study. Most of the participants also supported this view by confirming that they always listen to Mdantsane FM programs on their phones as well as at their respective places of work. Hence, community radio's new role in collaboration with the ICT and communication for development strategy shows that radio is an effective mouthpiece of the community and listeners around climate change and food security information. As discussed above and looking at the opinions of the participants, this confirms that the sole mandate of community radio is to regularly disseminate developmental messages to its listeners. This is also supported by scholars such as Onyelowe (2017) and Pradhan (2018), who all established that community radio should be portrayed as a tool for facilitating development, especially in rural areas.

4.4.2 The impacts of climate change on food security programming on listeners

All the participants confirmed how Mdantsane FM's programmes have impacted their communities and listeners generally. Two of the participants indicated that:

> "Yes, I benefit on it because they educate. There are programmes that educate learners, aged ones on how to eat and stay healthy. It helps me to be aware of things that happen in the world, because at times in the news you will find out that women are being abused by men. Even yesterday there was something I was listening to from Xhorha; a young man was sentenced life in jail, because he killed the kids and their mother. So bad thing is happening, even the rapping of children, a person kills the children and their mom, all that thing. So, it's wrong, and it is not right. It is not nice, because we are also parents. The other one poisoned her children; I was listening on the radio. The woman and the children died. Things are painful, even the rapping of children, a person kills the children and their mom, all that thing. So it's wrong, and it is not right. It is not nice, because we are also parents. The other one poisoned her children; I was listening on the radio. The women died and the children also died …. All these are lessons for us as listeners". (FGP 1 Mdantsane)

> "Yes, Mdantsane radio has programs about climate change.........they have it where we hear about the weather forecast." We know how to dress warmly, especially in the winter and spring seasons." (FGP 5 Mdantsane)

Another participant added that

"Okay for me on my side, I like to listen to the programme 12:00 (hygiene) down because it encourages me in so many things that I do not know about it., and the things that I was not alert about then……the programmes broadens my knowledge as a care giver. I listen to the morning programme, the one for sister Thozi; she comes with experts and health workers who are educating us about things we do not know about. For example, may be things about agriculture and conservation, you see they explain those things people needs to know about how to conserve natural resources like water and many more things you see that's why I like those programmes". (FGP 2 Mdantsane)

Following the focus group discussion, most of the participants' comments revealed that Mdantsane FM informs its listeners around climate change on food security programme. The participants emphasized that programme on weather update has been helpful on how to dress warm especially during winter and spring seasons as noted by the listeners. Hence, to ascertain the messages and information around climate change on food security implies that climate change programme is usually broadcasted based on the weather update and other climate related information to the listeners. While majority of the listeners said that weather updates is similar to climate change as noted by a participant who added that:
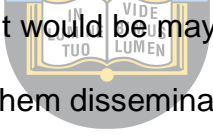
"Yes, Mdantsane FM has programme about climate change …they have it, it is where we hear about the weather forecast". (FGP 5 Mdantsane)

Thus, there is a need to broaden listeners understanding of the word "climate change", hence, the need to increase proper climate change information so as to eradicate climate ignorance in grassroots communities. This view is also supported by Onyelowe (2017), who noted that the broadcast of early warning signs of systems in food, in particular and the rural sector in general conserves acute events of climate change. Hence, the eminent effects and dangers arising out of climate change would reduce the effects of climate change on livelihoods.

4.4.3 Frequency of climate change on food security messages

Participants were asked on the frequency of messages around impacts of climate change on food security by Mdantsane FM. Interestingly, their responses were affirmative. Two of the participants who were adults noted that:

> "Yes, I do remember. It would be may be, once when it is news time. I
>
> remembered hearing them disseminating such messages
>
> to listeners. You see, when it is time for the news where I remember
>
> well……. They are broadcasting about what is happening
>
> to us, you see". (FGP 2 Mdantsane)

> "The radio station usually has messages on climate change and broadcast
>
> it always, when the need calls for it especially in all season. It informs the
>
> community on how to keep warm and eat healthy foods". (FGP 4
>
> Mdantsane)

Three of the participants who were youths added that

> "The radio station has programs of food security and climate Change.
>
> Whenever the weather will be chill, rise in temperature the presenters

always informs us so as the keep ourselves warm. The radio station

usually gives us early warning updates for bad weather days……. I cannot

remember…. but they usually update listeners".   (FGP 7 Mdantsane)

"I have always heard the radio station broadcasting messages on food, on

how to clean the environment to avoid polluting the earth. Otherwise,

messages on the weather forecast are going to be communicated often,

especially during winter and summer when temperature rises". (FGP 8

Mdantsane)

"Mdantsane Radio broadcast messages about flood, heavy rain and

weather forecast daily, when they are broadcasting about the weather of

that day". (FGP 5 Mdantsane)

Most of the participants indicated that Mdantsane FM often broadcasts climate-related

messages to its listeners. They all ascertained that Mdantsane FM frequently

broadcasts messages about weather updates, especially when the need arises. It

suggests that the radio station have climate-related programs that inform the needs and

demands of the listeners. Hence, frequently communicating adaptive and resilient

measures needed for reducing climate vulnerability is paramount. Thus, effective

communication would help to improve the status of agriculture and food security and

prevent food insecurity. This is also supported by Titifanue (2017), who noted that

mechanisms should often be put in place to harness resources and messages towards

addressing and adapting well to the impacts of climate change on food security-related

challenges. The agenda-setting theory and the media dependency theory that underpin

this study explain the long-term effects of media usage on audiences and society. That

is, the more frequent and dependent an individual is on the media for his fulfillment, the more important the media would be to that individual. Grassroots communities should be well informed and kept abreast through community radio stations, with the aim of creating a public announcement and an informed society by addressing developmental issues that pose a threat to citizens livelihoods (Fox, 2019).

4.4.4 Listeners involvement in climate change on food security programming

In response to listeners' involvement in climate change on food security programming of Mdantsane FM. Interestingly, there were mixed reactions as to their involvement in the radio stations programming. Two of the participants expressed themselves saying

> "I am a silent listener…… I don't phone-in or make request when
> programmes are on-going". (FGP 1 Mdantsane)

> "Yes, I am always involved in the radio station's health talk show and
> breakfast show of the radio station but not climate change on food security
> programming of Mdantsane….I only listen to the programme".   (FGP 3
> Mdantsane)

Another two participants added that

> "No, I have an interest of sending shout-out to friends but presently, I am
> not working. I am out of gadget (phone) that I can use to send messages
> and participate on its social media platform…you see that is a problem;
> otherwise, I have always been interested". (FGP 2 Mdantsane)

> "Yes, I sometimes call in when exciting topics are been
> discussed, I also send shout-outs to my friends in the course of the
> programme".   (FGP 6 Mdantsane)

Another participant added in isiXhosa language that

> *"Hayi, ndingumphulaphuli nje ……… .. Andithathinxaxhebakuyonayiphi na*
>
> *inkqubo".* (FGP 5 Mdantsane)

Following is the interpretation in English as assisted by the research assistant

> "No, I am just a listener………..I don't participate in any of their
>
> programmes". (FGP 5 Mdantsane)

As indicated by the findings, most of the participants revealed that they are silent listeners. However, there were mixed reactions, as noted by participant three (3) above, who said "he was interested in sending shout-outs to friends but was unable due to lack of cell phone". This implies that listeners are not fully empowered through the radio station's development programs, which could afford listeners full involvement. The participants also noted the friendliness of the presenters on the radio station's online platform. This shows that the radio station is performing its social responsibility role in other programs such as sports, the breakfast show, and talk shows, among others. However, this present study wants to note that Mdantsane FM must equally perform its mandate by putting mechanisms in place for listener involvement in all its educational programs on climate change information towards ensuring food security in its communities. This is also supported by Steininger (2016), who observed that community radio has the potential to encourage communication for development by implementing advocacy communication campaigns through agenda setting for public awareness and encouragement to increase the community's involvement on food security matters in Africa. The media dependency theory that underpins this study also supported the above opinion. The theory further noted that community radios must

inform and keep their listeners informed by addressing developmental issues such as the impacts of climate change on food insecurity and threats to livelihoods. Hence, listeners' involvement in climate-related programming on community radios must be encouraged. Community radio must be a vehicle to achieve sustainable development in rural communities (Pretty, 2018).

4.4.5 Listeners perception on the impacts of behavioral change messages

The researcher asked the participants on how listeners perceive the impacts of behavioral change messages around climate change and food security. All the participants attested to the impacts of behavioral changes. However, one of the participants had a mixed reaction.

Two of the participants said that

"Most of the time, we only get information about some certain food that are not edible at the mall maybe due to expiration dates, poor manufacturing, and its effects on our body. At times too, I heard there's a drought in certain area which affects the production of food. I heard about the prices of eggs rises cos Hen doesn't lay eggs during this period and there will be side effect of that on the consumer. So, the messages have really impacted and changed my behavior for good". (FGP 5 Mdantsane)

"Listen, I like Mdantsane on Saturdays and Sundays, you see. I like them, there is a programme for health. I am saying during the day I like it. You can see that I am old, there's that programme designed for the aged people that starts at 10am to up until 1am. ……this programme has critical

messages that benefit the community especially we older people.

(FGP 2 Mdantsane)

Three more participants added that

"Agricultural programmes have impacted me many times because as much as I love farming, you can see outside……... Even now, I was chopping corn; I planted the corn, spinach, cabbage. I like vegetables, so I love farming. Most of my time, I spent it in the garden farming doing everything. I also pick *Xhosa* vegetables here and planted them in my garden because I don't want to pick them in dirty places. I want them here in the garden".   (FGP 3 Mdantsane)

"It has helped and changed my behavior since I have been listening to the station because I wanted to know about the weather, agriculture, healthy habit, pollution and how to control it…..the messages from Mdantsane FM has broaden my knowledge generally about life…..so helpful".

(FGP 4 Mdantsane)

"Sure, the impacts of the messages on weather have always helped us to keep the little ones in the family warm, by selecting warm or hot wears as the weather suggested. The messages from Mdantsane radio have enlightened listeners on how to use and manage natural resources to serve us better".   (FGP 8 Mdantsane)

Thereafter, one other participant expressed herself in isiXhosa language and said that

"Ndiyibonanjengomyalezoobalulekileyokwayeophambiliudlulisiwexakungekhokuty akutyaokanyekuthengwayo.Ukugqibelakwamukuvakunomathotholoukubaabanye

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abantwanabaswelekengenxayendlala,akukhokutyakusapho.Ndivilenangentoebuh

lungungendlelaabantuabaswelekangayo,iibhulorhoziyawakwayengekhekubekhon

dlela,abantwanabesikoloabayikubanakhoukuyaesikolweni.Abanyebayabanjiswab

azebafune   indawo   yokulalakwamanyeamakhaya.Kulusizi   ke   oko,

ayontointlekubanathisikhulesinjalo……kubandikhuleleefama,

kexaumlambougcwelekwayesingakwaziukugoduka,kuyekwafunekasilalekwelinye

ikhayaenyeilalikubaumlambowawuzele,sasingenakukwaziukugqithaukuzesikwazi

ukuyaekhayakwelinyeicalalomlamboAyisiyontointleleyo….Yonkeimiyalezokunyen

olwazioluvelakwisikhululosikanomathothololubeLuncedokwayelwasetyenziswaku

makhayaethu,zonkezizimvozesimosengqondoesifanelekileyoesifaneleukusilingis

anjengommiolungileyo".   (FGP 6 Mdantsane)

Find the English interpretation below
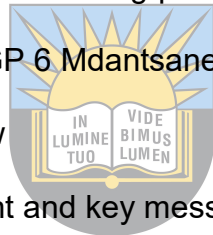
"I see it as an important and key message been passed a crossed when

there is no food to eat or buy. The last time I heard in the radio that

some children passed away because of starvation, no food for the family. I

also heard about the sad thing on how people die, the bridges are

collapsing and there would be no way, the school children won't be able to

go to school. Others get trapped and go seeking a place to sleep in other

homes. So that is painful, it is not nice because even us grew up like

that…… because I grew up in the farm, so when the river is full and we

were unable to go home, we had to sleep in the other home in the other

village because the river was full, we were unable to pass so that we can

go home on the other side of the river. That thing is painful it is not

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nice….all the messages and information from the radio station has been

helpful and applied to our own households, they are all representations of

the positive attitudes, what we should emulate as a good citizen".

(FGP 6 Mdantsane)

As indicated by the findings, most of the participants expressed how Mdantsane FM radio has been helpful in its behavioral change messages. They all confirmed how the impactful messages had given listeners "a sense of awareness of something around us…. Maybe there is something coming and the radio station inform us….. You see". As noted by one of the participants.

Another participant added that messages on pollution, health living are all important for listeners social and behavioral change. This means that Mdantsane FM listeners perceived community radio as a channel to communicate climate change on food security information. This has informed how positively their behaviors had changed, based on their perceptions of Mdantsane radio as a channel to communicate climate change on food security messages. This means that messages from Mdantsane FM radio had enlightened listeners on how to use and manage natural resources efficiently. This view is also supported by Onyelowe (2017) who established that community radio has been at the center of development programmes for information sharing in respect of climate change communication. Thus, Mdantsane FM radio should intensify more efforts on the quality of programme, so as to win more listeners to its programmes contents. This view is also supported by the agenda setting and media dependency theoretical frameworks underpinning this present study. The theories postulate the need for community radio stations to disseminate climate change information to listeners so

as to have a sense of their environment. That is, the media must help in satisfying the curiosity about radio communication, most especially how radio communication influence listeners' positive cognitive and behavioral responses on the impacts of climate change on food security (Henderson, 2017).

4.4.6 Influence of climate change on food security messages

All the participants noted how Mdantsane FM's messages around climate change and food security had influenced them all. The listeners' attested to the motivations that all of Mdantsane FM's messages about climate change and food security had brought to them individually and as a community. Significantly, the climate change messages had helped the communities adapt to present climate occurrences. A male participant confirmed that

> "They message helped me because I learnt from them. I learnt that water is dangerous, you see other people they don't know how to enter the water while the river is full, then when a person is in the middle of the river, he flows with water. Listening to programmes about water management has influenced me. Mdantsane radio is always a good source of getting firsthand information relating to water resources". (FGP 6 Mdantsane)

A female participant added that

> "Yes, the programmes are informative and educative. Most especially, topics related to food, health, and environment. Some of the programmes informs listeners about food production, how to get nutritious foods and stay healthy". (FGP 4 Mdantsane)

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Another two participants added their opinions in isiXhosa that

"Imiyalezoendiyifumenekwisikhululosikanomathotholomalunga

nomngcwabo, intengiso, imekonezintoezenzekayokumasipala

waseBuffalo City iziseutshintshooluncomekayo, kwayenokwazisa

uluntu." (FGP 8 Mdantsane)

"Imiyalezongezolimoindenzendakhulakwayendityaleimifunongexesha

lokutyala…..yonke le miyalezoibeluncedokuluntu". (FGP 3 Mdantsane)

Find the interpretation below in English language

"The messages I got from the radio station on weather update, heavy

rainfall, droughts are useful. The programmes educate listeners' on how

drought, erosion, wildfire degrades the lands. I think all these causes

rising food prices because it affects farm produce". (FGP 8 Mdantsane)

"The messages on agriculture has enabled me to grow and plant some

vegetables during planting season…..all these messages has benefitted

the community".   (FGP 3 Mdantsane)

Majority of the participants attested to Mdantsane FM radio as a good source of getting

firsthand information relating to water resources, nutrition, agriculture and environmental

health. The research participants mentioned that Mdantsane FM's radio messages has

added value to them in the area of agriculture by growing vegetables, which is also a

way of empowerment to control food insecurity in the communities. However, this is the

core mandate of community radio stations as supported by scholars such as Moyo

(2017) & Carthy (2018) who observed that community radio is intended for the sole

purpose of communicating. Hence, it is a platform for the media to bring about social

change, empowerment and development to their respective communities. This present study wants to note that Mdantsane FM radio station should keep pursuing its social responsibility roles accurately. More so, sets in appropriate media agenda for its programmes, to keep motivating and empowering its listeners.

4.4.7 Listeners opinions on how Mdantsane fm could improve its climate change on food security programming

It was significant to know how Mdantsane FM radio has served its community and how to serve its community listeners better as a community radio.

Two older participants noted in *isiXhosa* language that

Okay…. into endingayithetha, mhlawumbindinqwenelaukubabangatshintshandizothethangoMhlobowene nengobandimamelekakhulu. I meant as for uMdantsane FM, ndimamelengomgqibelobayathandaukubekaabantwanandiqinisekilebaqala ngo 9:00-10:00. Bancinci mos, abo bantwanabanqwenelaukuthethangezintozolutsha.Ngokungafaniyonokuthet hangezintozabantuabadala. Ngenxayoko, ngalolonkeixeshaxainkquboiqalisa, ndiyayicimairediyo. Uyabonaukubandinqwenelaukubaabantwanabaqeqeshweukuzexabekhon a… uveukubaabanyeabantwana babe nomdla.Umzekelo, njengokobeqala ngo-9-10am akukhomntuubafowunelayokwiminyakayabo, uyayibona le ntondiyithethayokubabathethaizintoezinkulu."

Bayandincedakubandifundekubo.Ndifundileukubaamanziayingoziubonaab anyeabantuabaziukubabangenenjaniemanziningelixaumlambougcwele,

emvakoko umntu xaephakathikomlambo, uhambangamanzi, kwaye ke khangeaboneingozinangonaseleyenzekile.Kubuhlunguoko.Unomathotholo waseMdantsaneuhlalaungumthomboolungileyowokufumanaulwazioluvelak uwe". (FGP 2 Mdantsane)

"Ndinqwenelaukubabakheleabantwanabesikoloiibhulorhokubaiibhulorhoza bantwanabesikoloabangakwaziyoukuyaesikolweni.Yakhaiibhulorhokwezo ndawozingaphandlenjengeelali.Ukuzeabantwanabakwaziukuwelaumlamb o,   kwayebangakhukulisekingumlambo.Mabakheleabantwanaiibhulorho, iindlela, kubaeyonantoibalulekileyokulemihlayimfundo, kufunekaumntwana ayeesikolweniazameukuhambisaumntwanaesikolweniakafaninathi.Kuthisi yaesikolweningamaxeshaathilekubasasicocaizindluzabelungu (apartheid).Ezonkumbuloazimnandikangako.Kalokusaphelasingafundanga ".(FGP 6 Mdantsane)

Find the interpretation in English language below

"Okay…. what I can say, maybe I wish they can change I am going to talk about Mdantsane FM because I listen to it so much. I meant as for Mdantsane FM, I listen to it on Saturday they like to put the children I am sure they start at 9:00-10:00. They are young most, those children wish they could talk about youth stuff unlike talking about old people's stuff. As a result, every time when the programme starts, I switch off the radio. You see how I wish the children can be trained so that when they are there… you can hear the other children can have an interest. For example, as they

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start at 9-10am no one who is phoning them who's in their age, you see what I am saying because they talk big things." (FGP 2 Mdantsane)

"I wish they can build the bridges for the school children because the bridges for the school children who are unable to go to school. Build the bridges in those outside places like villages. So that children will be able to pass the river, and not get washed away by the river. They should build the bridges for the children, roads, because the most important thing these days is education, a child needs to go to school and try to send the child to school unlike us. For us we are going to school in certain times because we were cleaning the houses of whites (apartheid). Those memories are not so nice because we ended up uneducated." (FGP 6 Mdantsane)

Another three participants who were young adults added that

"Yes, the radio station can do well by printing their names on the Tee- shirt to promote their identity, acquire mobile broadcast station, have a designated time and programme slot for climate change and food security just like we shared it, there is a need for great awareness on this topical issue of climate change and food security in our community through community radio. The radio station should increase the presenter's skills and training". (FGP 7 Mdantsane)

"I think the radio station should improve better in its service delivery especially programmes on climate change because the citizen and community have less knowledge on what climate change on food security

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is all about. Much awareness and update are needed by the radio station to listeners. More so, the radio station should organize programmes by inviting experts, relevant professionals to give talks and experiences on educative programmes, good health, and agriculture and food security". (FGP 8 Mdantsane)

"I think the radio station should form a listening group, selected from listening community organization and network to listen to Mdantsane programmes. This would increase listeners' participation in their activities and programme. Also, take notes on the timing, topic of discourse, presenter's skills and approach". (FGP 3 Mdantsane)

As evidenced from the findings, most of the participants expressed themselves based on their communities' areas pressing needs. It suggests that some of the station's programmes are wrongly targeted at its audience as noted by one of the participants who said that she wished they could change the children which they could be trained and talk about youth stuff. All these comments show listeners plights in respect of Mdantsane programmes. Another participant again noted that much awareness is needed on the part of the radio station to its listener's communities, as indicated by listener's opinion. The participant's opinions revealed that appropriate information on the word "climate change on food security programme is required". Hence, publicity and extensive awareness are required, ranging from the presenter's skills, to conferences, workshop, and trainings. The analysis revealed that some participants are contented with the radio station's broadcasting as noted by a participant who added that

"They are always on ……what do you call it" Basoloko" (They are always) be on point all the time every programme they are on point all the time".   (FGP 1 Mdantsane)

Another participant added that

"I only listen; there is nothing wrong with their broadcasting/programme". (FGP 4 Mdantsane)

The opinions above show listeners feelings and dispositions toward what is expected of Mdantsane FM. This view is also supported by scholars such as Ouma (2018), Carthy (2018), and Lester (2018), who noted that community radios would encourage their listeners, especially farmers and citizens generally, to optimize the efficient use of public announcements on climate change, which has been identified as significant for autonomous adaptation. According to Fox (2019), the media dependency theory that underpins this study supports climate change mitigation on food security through the organization of a series of public awareness trainings and workshops for both the media and community members. Hence, the theory is needed and essential to investigate how the case study community radios evaluate the impacts of climate change on food security programs to enhance climate change adaptation and provide sustainable food security.

4.4.8 Encouraging listeners to be active and participate in climate change on food security programming

The researcher asked the participants if they actively participate in Mdantsane FM's climate change on food security programming. Interestingly, this question generated a mixed reaction amongst the participants.

Two participants noted that

> "Mmm… Yes, I am enjoying it and I am encouraged to listen to it because
> you get something more important from it. You can get more information
> that you can use to other people, you see". (FGP 1 Mdantsane)

> "Yes, I even know Dadobawo who usually tune in at 6:00 am. If I turn off
> Mhlobo Wenene, I tune to Daps to prepare for his programmes".

> (FGP 2 Mdantsane)

Another two participants who were young adults added that

> "Yes, there is need to improve on their radio station programme for old
> people, as they broadcast when they are asleep it will be better, if they
> would change may be, they broadcast the programme when the targeted
> group (old people) are awake or eating while listening (wrong timing of
> programme). There are programme that are educative, they broadcast
> them around evening, maybe when people are sleeping, they are old
> people as result they miss the intended messages because they are
> already sleeping. You see………   for the youth they don't like to listen
> to things that are educative some prefer and love the station that plays
> music all through as entertainment".   (FGP 5 Mdantsane)

> "Personally, I am not encouraged in most of their programmes because,
> some of their educative programmes targeting younger children are
> always broadcasted at the wrong time when the children are still at school,
> so this discourages me". (FGP 8 Mdantsane)

Most of the participants noted that they always enjoy the radio station's breakfast show…. It is very fascinating. All the participants had different testimonies based on how Mdantsane radio had enriched them except one participant who had a mixed reaction and pointed out that……" personally, he is not encouraged because some of its educative programmes targeting younger children are always broadcasted at the wrong timing ….so it discourages him. This means that Mdantsane radio's information and educative programmes are targeted and transmitted at the wrong hour to the intended audience (children). Automatically, this makes the intended messages to be void as the targeted group of people is not readily available to listen and grasp the message at that particular time. Thus, it reduces the radio station's listener's participation as the audience rate would diminish and affect the radio station's programme productivity. Hence, a pro-active measures and programming are needed rather than a reactive planning and programming. The agenda setting theory posits that the press may not be successful much of the time in telling people what to think about, but it is stunningly successful in telling people what to think about. This implies that community radio help in shaping people's perceptions, by telling them what to think about, and setting the public agenda and programming regarding communicating the impacts of climate change on food security (Henderson, 2017).
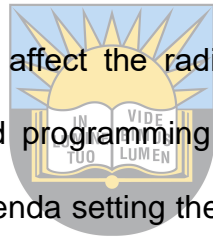
4.5 Analysis of Rhodes Music Radio Focus Group Discussions

4.5.1 How often they listen to Rhodes Music Radio

The researcher asked the participants how often they all listen to Rhodes Music Radio. All the participants actively responded that they all listen to Rhodes Music Radio at different hours based on their schedules. Some of the participants also noted that they

have other community radio stations they listen to aside from Rhodes Music Radio. When asked how often they listen to Rhodes Music Radio. Two participants noted that

"Rhodes Music is one of my favorite radio stations".

(FGP 6 Rhodes Music Radio)

"I listen to it almost every day; I listen to Mhlobo Wenene FM too. Yes, there is a radio worthy… I don't like to listen to Link FM". (FGP 3 Rhodes Music Radio)

Another two Participants added that

"I always listen to it especially on Thursday when they have women programme. It usually starts at 10: 00 am".

(FGP 8 Rhodes Music Radio)

"I always listen to the radio; it's the best communication channel we use here at home for update and news. I use country wide connect call with DSTV Multichoice to radio through TV, the C and R are not integrated to DSTV". (FGP 2 Rhodes Music Radio)

The responses gathered from Rhodes Music Radio's focus group discussion show that Rhodes Music Radio is one of the listeners' favorite channels, although some of the listeners indicated that they equally listen to other radio stations alongside Rhodes Music Radio. This suggests how listeners valued information diversity within the same community. In addition, it informs the study on the frequency of listening to the radio station. The fact that the participants confirmed listening to the radio station at various times was noted by one participant, who said that he always listens to it late in the

evening and at noon. Another participant added that "I listen to the radio two times daily". This reflects on the listeners' regularity and passion for Rhodes Music radio. This shows that Rhodes Music Radio is performing its mandate as a community radio station to its diverse listeners as the best communication channel, just as noted by the participants in this study. This also suggests that Rhodes Music radio station facilitates the exchange of news and programmes diversity, conversely to gain more listeners frequency. Hence, the implementation of programme on food stability and utilization would enhance the community's food security as well as the radio station's frequency rate. The works of Kohilitz (2019) & Reid (2020) are significant in ensuring that community radios build an informed society through its frequent adoption of indigenous language as a medium of communication.

4.5.2 The impacts of climate change on food security programming on listeners

When asked if the messages of Rhodes Music radio about the impacts of climate change on food security programming are impactful to listeners. Interestingly, most of the participants noted that:

> "Rhodes Music radio's messages on weather forecast and its effects have really been impactful to listeners as well as its food and health related programmes". (FGP 1 Rhodes Music Radio)

> "Yes, mostly the health information is always helpful". (FGP 3 Rhodes Music Radio)

> "Yes, the messages are very influential and informative and impactful but very less information on climate change except weather forecast. Rhodes

music weather updates helps us too because we got to know how the day would look like". (FGP 4 Rhodes Music Radio)

"Yes, the messages educate, enlightens farmers and individuals about agriculture, healthy living and informs the community". (FGP 5 Rhodes Music Radio)

Another three (3) participants said that

"The messages of the radio station on climate change are really comprehensive and detailed as expected. Climate change messages are helpful and educative to the audience. Yet, the messages on weather forecast and food related programmes have made an informed community". (FGP 6 Rhodes Music Radio)

"The program that I listen to, it helps me so much. I get knowledgeable in so many things that I didn't know about. Yes, I benefit on it because it educates. There are programmes that educate students, schools, old people, and farmers that's it". (FGP 8 Rhodes Music Radio)

"Yes, Rhodes Music radio's messages are always appealing,

persuasive, educative and entertaining to listeners and

community as a whole". (FGP 7 Rhodes Music Radio)

As evidenced by the findings, the participants revealed that Rhodes Music Radio's messages on health and food-related programs are mostly helpful. This shows that listeners health is being prioritized, which is also relevant to food security programming. However, listeners noted that climate change messages are as helpful to the audience as weather forecast updates. This implies that public awareness is indeed visible on

programs that depict protecting the environment; programs on quick responses to global warming that would help to achieve a sustainable and friendly environment. This view is also supported by scholars such as Pradhan (2018) and Carthy (2018), who established that community radio has a social responsibility to promote sustainable community awareness, information, education, entertainment, and empowerment. This is so because community radio welcomes a platform that enhances community participation based on climate change information services and human rights observation of the common groups of people, the vulnerable as well as the dominant groups.

4.5.3 Frequency of climate change on food security messages

It was important to know how often Rhodes Music communicates messages on food security to its listener communities. Half of the participants indicated that

"Rhodes Music radio always update its listeners on warning signs of the climate such as floods, erosion, rise in temperature, cold fronts and wild fires and weather forecast in the course of all their programme and during announcement, and also about food security related programmes".

(FGP 2 Rhodes Music Radio)

"Yes, there is daily warning about weather, heat waves, bush burning, air and water pollution …… the radio station often gives us notice on how to be   cautious when driving and how to stay safe".

 (FGP 3 Rhodes Music Radio)

"Regular weather updates are always gotten from the radio station…..I am not so sure of the number of times, but I did get information from its weather desk". (FGP 7 Rhodes Music Radio)

"I am not sure about the number of times it broadcast the programme. But they do…. May be the coming of winter, people must dress warm, *uyabo* (you see)". (FGP 8 Rhodes Music Radio)

Another 3 participants said that.

"Rhodes Music radio has programme slot for climate change which causes food insecurity. The radio station usually disseminates messages in respect of that." (FGP 1 Rhodes Music Radio)

"Weekly……. Rhodes Music gives update about stormy days, heavy rainfall, thunderstorm, hurricane and all the likes in its season."

(FGP 4 Rhodes Music Radio)

"Yes, there are   messages about the environment, and how to live with climate change impacts on food security…. they are teaching and educating listeners about weather updates."   (FGP 5 Rhodes Music Radio)

Another participant added that.

"Rhodes music disseminates climate change and food security related messages in its news bulletin, they have got climate change programme that educate listeners about saving water" (FGP 6 Rhodes Music Radio)

As evidenced by the findings, all the participants indicated that Rhodes Music Radio has programs that inform the listeners on how to manage natural resources, such as using water sparingly for future use and providing regular weather updates to its listeners. The participants further noted that climate change-related messages had made them aware that climate effects are normal. Hence, adaptive measures and more public awareness

are necessary for all. This implies that the radio station's programs are climate-related, and there is a need for more knowledge to understand how natural resources should be well managed for future purposes. Hence, identify that climate change ignorance must be eradicated in rural communities so as to conduct research on the insufficient focus on communicating climate change and food security through community media.

Furthermore, the work of Greschke (2018) argues that, despite the challenges faced in the present and future, climate change is not directly perceptible. Hence, the previous researcher noted that proper information about the causes and impacts of global warming has to be passed on to the indigenous communities and can only be relevant through community radio. This study also supports the notion above, as this would serve as a yardstick to measure how well the listeners are informed to understand the different kinds of messages broadcasted by Rhodes Music Radio.
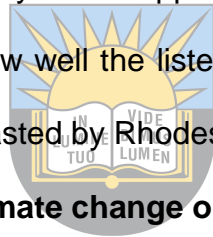
4.5.4 Listeners involvement in climate change on food security programming

When inquired about the participants' involvement in climate change on the food security programming of Rhodes Music Radio, there was a mixed reaction to their involvement in the radio station's programs. Half of the participants expressed themselves in isiXhosa, saying:

> "Ewe, ndiyabandakanyekakwinkquboyabo, ndithetha kuphela kwiphephalika Facebook ukwazisangokuthi hi- ndi pasha.Sisolokosihlaziywamalunganemozulukodwautshintsholwemozuluku nyenokukhuselekakokutyaakusasazekikancincingaphandlekwasehlotyenia phoufumanaulwazimalunganentoekufunekauyenzileukunciphisaukukhutsh wakwegesi,kunyenomlilowasendle.Iingcebisoneengcebisomalunganokuts

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hiswakwamatyholokodwaingcebisongentoekufunekauyenzile,

ungalahliimidizayecubanaphi na ngaphakwetyholo." (FGP 1 Rhodes Music Radio)

"Hayi, andibandakanyekikwimisebenziyesikhululosikanomathotholo, kodwakunqabileukubandithumeleimikhwazokubahlobokwayendenzenomculoendiwuthandayo". (FGP 2 Rhodes Music Radio)

"Ewe, ndingomnyewabalandelibesikhululosikanomathotholo ... (FGP 4 Rhodes Music Radio)

"Ndihlalandibatsalelaumnxebangethubalenkqubo ……. *UmzekelonjengokoizakubanguLwesine (xainkqubo) yonke into ukuzengoLwesineinkquboiquletheizintoezifundisayo…… ubizanefowuniyakhouceleukuthandazelwaokanyeuchazeimicelimngeniyakho…….*

Ndihlalandincedwangemithandazo.Kodwamalunganemiyalezoyokutshintshakwemozulu, andiqinisekangaukubandiyivileiRhodes Music Radio."

(FGP 7 Rhodes Music Radio)

Below are the interpretations in English language

"Yes, I am involved in their programmes, I only chat on Facebook page to introduce by saying hi- I am Pasha. We are always updated about weather climate change on food security are broadcasted in summer season where you get informed on what you must do to reduce gas emission, and wildfire. Advice and suggestions on bush burning but advice on what you

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must do, not to drop cigarette sticks anywhere by the bush." (FGP 1 Rhodes Music Radio)

"No, I am not actively involved in the activities of the radio station, but I seldom send shout-out to friends and make some musical request of my choice". (FGP 2 Rhodes Music Radio)

"Yes, I am one of the radio station's fans……. their programmes are all amazing, I always connect to its social media platform." (FGP 4 Rhodes Music Radio)

"I usually call them during the programme……. for example, as it will be Thursday (when program) all so that Thursday the program entails educative things…… you call with your phone then request for a shout out or question but for climate change messages, I only listen to the messages on Rhodes Music Radio." (FGP 7 Rhodes Music Radio)

Thereafter, another two participants who were much older said that

"I only listen, because I can't write a SMS or use the phone, so I listen to the messages, and also listen to agricultural program. I also instruct my wards to tune to Rhodes Music to listen to our favorite programmes."

(FGP 3 Rhodes Music Radio)

"I don't usually participate, I am just a listener, you see." (FGP 5 Rhodes Music Radio)

Another two participants added again that

"Yes, I got to connect on its social media platform regularly…. I like it."

(FGP 6 Rhodes Music Radio)

"No, I am not involved in the radio station's programmes; I usually listen

and learn from it."   (FGP 8 Rhodes Music Radio)

The findings indicate that most of the participants noted that they get connected to the Rhodes Music Radio social media platform. They also established ways of connecting and performing various activities, such as sending shout-outs to friends, making musical requests of their choices, and greeting each other on the radio's Facebook pages. Invariably, one of the participants responded that Rhodes Music Radio always updated its listeners about the weather. Another participant who was much older noted that "she only listens because she cannot operate a phone, which makes her always listen to the station's programs, most especially agriculturally related programs." This suggests that the radio station's social media platform is an interactive platform where messages and timely information can be acquired. Hence, Rhodes Music Radio should fulfill its social responsibility mandates as an asset, by developing and utilizing its social media platforms, as well as its studio, to disseminate messages that would reduce and mitigate global warming. This view is also supported by the work of Shalizalal (2019), Maye (2020), and Mbatha (2021), who reflect that interactive radio programming brings perfect interpretative radio programming either on request or purposefully. Hence, Rhodes Music Radio should encourage Interactive Voice Response (IVR) systems and SMS services to increase listener involvement in its climate-related programming.

4.5.5 Listeners perception on the impacts of behavioral change messages

It was significant to know how the listeners perceive the impact of behavioral change messages around climate change on food security of Rhodes Music Radio.

Interestingly, all the participants shared their individual behavioral changes. Two of the participants who were youths said that:

> "Well, I think the effects of climate change behavioral messages is very complex, it negatively affects human livelihood…….it has helped to regulate our behavior to drive less, increase one's healthy eating to promote long term health". (FGP 7 Rhodes Music Radio)

> "Yes, Rhodes Music radio has programmes addressing climate change, but generally I think if the radio station could rebrand all its programme such as climate change on food security messages, with an even policy solution that focuses on participation, on energy efficiency…. bottom –top participation and adoption of new technology would also enhance positive behavioral changes to its listeners communities". (FGP 8 Rhodes Music Radio)

Three more participants added their opinions in *isiXhosa* language that

> *"Ngamanyeamaxeshakuyanceda kwezinye izintoezinjenge.Ikunikaezemidlaloezifanelekileyo, o.k.t. Ndenzaumzekelo, ndimamelaumdlaloofanelekileyo, ndimameleumculoomnandi, ndimameleiindabaezilungileyozabahlali, umz.EsekwekuAlice.Siva nje kancinciukuba…*
>
> *nkqunakwimfundongamanyeamaxeshabathethangemfundo, ukunqongophalakwamanzikunyenokunyukakwamaqondoobushushu.Imiya lezoyongezekulwazilwabaphulaphulikunyenendlelayokulawulanokongaam anziukuzeuwasebenzisekwixaelizayo".* (FGP 6 Rhodes Music Radio)

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"Ngamanyeamaxeshakukhoiinkquboezinxulumenenentoekuyiyoxakuvuthu zaumoyaakufunekiukubasitshiseizinto, umlilouyakuthiusasaze, ungcolisekolokusingqongileyo, ungcolisekolomoya, ungcolisekolwamanzikunyenentoenjalo. ……. Yonke le miyalezonenkquboitshintsheindlelaabahlaliabaziphethengayongokulawulai mozulu… uyabona". (FGP 4 Rhodes Music Radio)

"ImiyalezokunyeneenkqubozomculozikanomathotholozaseRhodeszihlalazi nomtsalanekwiinkcubekozethu, ngakumbiiSukuleLifaleMvelileSizwe, sihlalasifumanaiintlobongeentlobozeenkqubozenkcubekoezinomtsalanene zisikhuthazaukubasifundesingazesilibaleukwahlukakwelizwe.Ngelishwaku yekwakhookuncincimalunganotshintsholwemozulukunyeneenkqubozokhu selekolokutya". (FGP 1 Rhodes Music Radio)

Below are the interpretations in English language

"Sometimes it's helpful to another things like e.g. it gives you proper sport, e.g. I am making an example, I listen to the proper sport, I listen to good music, I listen to may be community news, e.g. from Rhodes Music. We hear a little bit that is… an even on education sometimes they do talk about education, scarcity of water and rise in temperature. The messages have added to listeners' knowledge and how to manage and safe water for future use." (FGP 6 Rhodes Music Radio)

"There are sometimes programmes relating to something they be when it's windy we are not supposed to burn things, fire will spread, environmental pollution, air pollution, water pollution and something like that. ……. all these messages and programme has changed the community's behavior on how to manage the climate…. you see."

(FGP 4 Rhodes Music Radio)

"Rhodes Music radio messages and programmes are always appealing to our cultures, most especially on National Heritage Day, we always get a variety of cultural programmes that appeals and motivate us to learn and never forget the country's diversity. I think only a few understand the word climate change. We need more awareness about the climate change."

(FGP 1 Rhodes Music Radio)

Another participant noted that

"Rhodes Music radio is representing the community's voice, messages on climate change is designed to appeal to listeners' behavior change…. you see, representation of what people can do and by adding value would motivate more participation and involvement in all its programming most especially this climate change you are sharing with us because it is a topic that affects individuals live and animals from its effects to us. The erosions and droughts cause food scarcity" (FGP 5 Rhodes Music Radio)

As evidenced from the findings, majority of the participants indicated how they perceived the impact of behavioral change messages mainly on the programmes broadcasted by Rhodes Music radio. This was evident as one of the participants noted

that the insight received from the messages has modified their behaviors towards adapting with the climate effects. Hence, listener perceptions on the impacts of weather update were strongly justified. This suggests that some participants opinions on the behavioral change messages was the knowledge and information gathered from their various careers or disciplines. Thus, lack of ignorance and proper messages around the impacts of climate change on food security would hinder development programmes and information sharing regarding climate change in the community. This is also supported by agenda setting theory and media dependency theory which underpins this study.

The theories posit that when salience issue is transferred from the media to the public: over a period of time, the rank issue order of issues to which the media give prominence will be reflected in the list of issues the public considers relevant (Wonneberger & Vliegenthart, 2021). It is argued that mass media have the ability to transfer salient of items from their news agenda to the public agenda (Gilardi et al., 2022). This means that the mass media can show the listeners mark of concern and also to influence them to consider climate change messages as their main agenda (Elias, 2020). This means that Rhodes Music radio listeners' perceptions towards behavioral change messages would be influenced by the media content implemented and broadcasted by the radio station.

4.5.6 Influence of climate change on food security messages

All the participants answered affirmatively when asked if Rhodes Music Radio's messages about climate change on food security has influenced them individually or as a community at large. Two of the participants noted that:

"Very well, Rhodes Music Radio's announcement and messages on topics like pollution, wildfire, environmental news and climate change are always educative, informative and helpful to all listeners' ". (FGP 2 Rhodes Music Radio)

"I am always inspired listening to its breakfast show, nutritional programmes, water related topics, and nature generally, because these topics affects the communities. The indigenous programmes are informative and powerful. I am always inspired to not change the dial." (FGP 3 Rhodes Music Radio)

Another participant added that:

"The messages from Rhodes Music Radio are appealing and helpful. Community leaders are invited to the studio to debate on topical issues and also sensitize listeners on how to manage water, encourage planting of trees, how to live and eat healthy foods on its talk shows. The community forum, community development programmes and debates in Makana Local Municipality has influenced, and informed the communities" (FGP 5 Rhodes Music Radio).

Two male participants said that

"Yes, the messages have influenced me; especially its weather update has informed the communities on how to stay warm. The messages about the climate, heavy rainfall, droughts, cyclone, erosion, and thunder storm

are always helpful to prepare us for the future climate effects and how to manage through it". (FGP 1 Rhodes Music Radio)

"Mmm… what am I going to say? You see, when it is warm ……. I get swollen because of the weather that has changed……Rhodes Music radio also provides public and community development programmes. For example, the radio station conducts programmes to assist the physically challenged persons and listeners affected by storm surge or flooding. This has also served as an empowerment for the communities and special needy." (FGP 8 Rhodes Music Radio)

Following the findings from this present study, the majority of the participants revealed that Rhodes Music Radio is always helpful, most especially in communicating educative and informative messages in respect of climate change and food security, as noted by a participant. Another participant also indicated that Rhodes Music Radio's community forum and developmental programs in Makana Local Municipality have influenced and informed the communities. He noted that Rhodes Music Radio informs the communities with indigenous news and community development programs. It can therefore be deduced from the focus group participants' discussions in Grahamstown that listeners often receive impressive programming from Rhodes Music Radio. This was evident as they all attested to how the radio station's messages had transformed, informed, empowered, and assisted listeners to be better informed. Thus, this informs the study that a lack of disseminating indigenous topical programs such as climate change to the listeners would have deprived them of timely and relevant news. This portrays Rhodes

Music Radio as a source of educational, informative, helpful, and inspirational messages. This is the core responsibility of community radio as established by Foluke (2019), who opined that community radio should provide space for debate, the exchange of experiences, and cooperation between listeners and radio stations. As a result, organizing meetings, publishing newsletters, and creating websites about food security would have a positive impact on food security messages to the community and citizens at large.

4.5.7 Listeners opinions on how Rhodes Music Radio could improve its climate change on food security programming

When asked about what Rhodes Music radio can do to improve its broadcasting skills. Interestingly, there were mixed reactions to it.

Two participants noted that
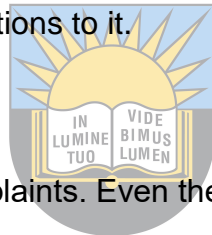
> "I don't have any complaints. Even the radio station said if we have complaints we can phone. I do not have a complaint. They must contact those who have complaints." (FGP 7 Rhodes Music Radio)

> "Eeh…what am I going to say? Because I am satisfied with the way they are broadcasting, you see. Because in that Thursday programme, I like it'' (FGP 8 Rhodes Music Radio)

Another three of the participants said that

> "The radio station must not focus on one thing…..community news, they should focus on national news and international sports, and I think these would improve their services." (FGP 1 Rhodes Music Radio)

"The radio station should come closer to the society and not vice versa. The radio should publicize and mobilize people to gain their interest and participate in programme. ……..programmes like "Love Life" where you do recreational programmes, bring society, where you have discussion programme on debatable topics by the youth and how learners must conduct themselves at school."   (FGP 2 Rhodes Music Radio)

"So far so good, all the programmes are always interesting especially the breakfast show. Also, the radio station should organize a listening club; organize lunch programmes and other programmes that give food to people in need, not only for learners, but for all, without requiring any commitment in return."   (FGP 3 Rhodes Music Radio)

The remaining two added that
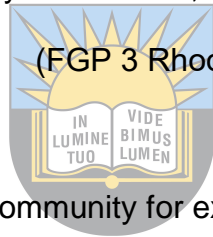
"A lot of things in our community for example, most of us sitting down here never knew what climate change or food security is, so the radio station should improve its programme by creating community awareness to inform the listeners and community in a simple language that everyone would understand. The radio station must also have programme and talks or public spheres on this topic."   (FGP 5 Rhodes Music Radio)

"As a listener I can say, you know, if ever you are in a community, what is happening outside, you have to teach the insiders about what is happening to another province. What is the cutting edge, what can we do to improve the standard of our living. You see, so what I can say is they can improve in bringing things that are more focusing in our living and in

our health, education, you see and then later on entertainment because there is a lot of entertainment there you see…..instead of the programmes that are …..I know that a lot of people get bored when there is no entertainment."   (FGP 6 Rhodes Music Radio)

As indicated by the findings, the opinions above imply that some are contended with the broadcasting skills of Rhodes Music radio and therefore, sees no need for improvement, while others see the need for more publicity that would assist Rhodes Music radio to gain more listenership. Interestingly, a participant also noted that Rhodes Music radio should conduct and create community awareness to inform listeners in indigenous (*isiXhosa)* language that would be understood by all. Hence, implementing programmes and talks or public sphere on topical discussions such as climate change on food security programming would fulfill the informative function of Rhodes Music radio's mandate as a community radio station. Thus, absence of programmes that addresses how adequate food can be readily accessed, for not only school learners but for all, without requiring any commitment in return would equally increase listeners perception of Rhodes Music radio in relation to the impacts of climate change on food security communication. This view is also supported by Hasan (2019) who established that community radio encourages reasonable participation at all phases which include but not limited to involving listeners and implementing pro-active activities such as ownership, consultation on topics and formats, training, production and distribution of messages and audience research amongst others.

Hence, implementing the above mentioned pro-active measures to community radio stations, most especially Rhodes Music Radio implementing climate change

communication would improve its climate change on food security programming as well as reduce and eradicate the potential limitations and negative effects of climate change through a pro-active measures and programming, rather than a reactive planning that lacks responses to climate change adaptation and a sustainable food security in the Eastern Cape Province. The agenda setting theory that underpins this study also holds that community radios and media houses such as Forte FM, Mdantsane FM and Rhodes Music Radio should indeed set the agenda, design and implement programmes that addresses community's needs, so as to improve programme productivity (Elum, 2017).

4.5.8 Encouraging listeners to be active and participate in climate change on food security programming

The researcher asked if listeners actively participate in programmes about climate change on food security. Interestingly, this question generated a mixed reaction among the participants. Three of the participants who were youths said that

> "I am partially encouraged to be an active radio listener through climate change on food security and weather forecast updates" (FGP 5 Rhodes Music Radio)

> "Some of Rhodes Music Radio programmes are informative, entertaining and educative, as I have earlier said, in the things of climate change; we are not fully encouraged because not everyone understood the word climate change or food security. The rural communities need more information and awareness on climate change." (FGP 6 Rhodes Music Radio)

"Yes, Rhodes Music Radio programmes inspire, enrich and encourage me to continue listening…. I would like to suggest that in order to increase the radio station's programme awareness and involvement in its programming, feedback mechanism must be improved to strengthen and enhance collaboration between Rhode Music Radio and its stakeholders as well as listeners communities."   (FGP7 Rhodes Music Radio)

Another two older women noted in isiXhosa that

"IinkqubozomculoiRhodeszihlalazinomdla ………. kakhulu, nangokusekulixeshalokumamelainkquboyecaweyangoLwesine, ayikhoenye into endiyifunayo …… enomdlakakhulu". (FGP 8 Rhodes Music Radio)

"Ewe, Uyabona ... umamelayonke into oyibonayoukubailungile, uyabonaukubandithetha into elungileyooyibonayo mos….yu uyabonaukubaubuncinciyimfundisonenkquboelungileyo; ukubaayilungangauyabonaukubaayilunganga, kodwaukubaichanekileilungile." (FGP 4 Rhodes Music Radio)

Find the English language interpretation below

"Rhodes Music programmes are always encouraging … so much, even now it's almost time to listen to the Thursday programme, there is nothing else I want……very fascinating."   (FGP 8 Rhodes Music Radio)

"Yes, you see…. you listen to everything you see that this is right, you see that I mean like the right thing you see mos….you see they are at least

alright with the programme; if it's wrong you can see that its wrong, but if it
is right it is right."   (FGP 4 Rhodes Music Radio)

While two men also expressed themselves in isiXhosa

*"Ndiyakhuthazekaukubandimamelekakuhleunomathotholokubaisikhululosi
kanomathotholosincedauluntungezixhobozaloezinqongopheleyongeenkqu
bongolwimilwesiXhosa."* (FGP 1 Rhodes Music Radio)

*"Ewe   ndiyakhuthazekangenkquboyabo,
ndikwamamelaiinkquboezikwezinyeizikhululozikanomathotholoezinjenge"r
adio   2020".Ndiyathandaukumamelaumbonisowesidlosakusasangentsimbi
ye-9: 00 kusasa…. Inkquboyokonwabisaisikhululosikanomathotholo ngo-
1:       00   emvakwemini-   ngo-3:   00
emvakweminiegxilekwimicimbiyoluntukunyenendlelaonokuziphathangayon
okuqhubaukhuseleko."* (FGP 2 Rhodes Music Radio)

Find the English Language interpretation below:

"I am encouraged to be an active radio-listener because the radio station
serves the community with its limited resources with programmes in
isiXhosa."   (FGP 1 Rhodes Music Radio)

Yes, I am encouraged with their programme; I also listen to programmes
in other radio stations like "radio 2020". I like listening to breakfast show at
9:00am……because the programme is informative on lifestyle, health
related programme at 12:00pm, which covers topic on topical issues in the
country. The radio station's entertainment programme at 1:00 pm-

3:00pm, focusing on societal issues and how to conduct yourself and drive

safely." (FGP 2 Rhodes Music Radio)

All the participants noted that they are encouraged to be an active radio listener, because Rhode's Music radio always disseminates its messages in *isiXhosa* language. All the participants had diverse opinions, as some youths noted above when asked if they are encouraged to be an active radio listener. They all opined that Rhodes Music Radio programmes are entertaining and educative, otherwise programmes on climate change need more education in order to grasp the proper information required to mitigate the impacts of climate change on food security. Hence, messages on climate change on food security require more information and public awareness.

Thus, if programs are implemented to combat global warming (climate change) based on each community's needs, Rhodes Music Radio would be able to know the extent to which the intended messages benefit its communities. Hence, Rhodes Music Radio must create a room that would enhance the station's feedback mechanism for all programs. This suggests that Rhodes Music Radio should involve and implement climate change communication that would apparently encourage mediums for inter-personal, inter-group, and socio-cultural communication. This is supported by scholars such as Islam (2018) and Eshan (2018), who observed that when listeners identify and implement their intended messages based on their geographical location, it would increase their program participation. Also, organizing climate-smart groups for farmers would motivate sustainable development and encourage an active radio listenership. The above view is also supported by the agenda-setting theory that underpins this study, which postulates that the media, or community radio, as this study suggests,

should make relevant information accessible to their audience and give room for feedback (Schilling, 2020). That is, to encourage listeners and community members to actively participate in climate change through the food security programming of the radio station.

4.6 Programme Manager's interviews

The researcher also conducted a few in-depth interviews with the program managers of Forte FM, Mdantsane FM, and Rhodes Music radio stations on communicating the impacts of climate change on food security to their listeners. These would help to seek their opinion and to supplement the views of the focus group discussions conducted at Golf Course (Alice), Mdantsane, and Grahamstown residential areas. The opinion of the program managers is reflected below, just like the opinion of the focus group discussions. Please be informed that follow-up questions were not incorporated in the interview guide as they arose naturally based on the flow of the interviews.

4.6.1 Presentation and Analysis of Forte FM Programme Manager's Opinion

The programme manager identified himself as Forte FM programme manager that oversees the defining of programme implementation and arrangement. According to the programme manager:

> "Forte FM was established back in 2005 as a non-profit organization. The sole purpose of creating Forte FM was to serve the then Nkonkobe Municipality, afterwards the station expanded its foothold broadcast to the whole of Amatole District Municipality comprises about 5 Municipalities and Metro Municipalities "The funding was going to be received from MDA(Marketing District Agency) which is now the sole custodians of all

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radios, in the sense that it is the one that sponsors all radio stations, but unfortunately due to negligence that we lost our funding and rely on advertisement and media partnership".

4.6.1.1 Forte FM on communicating the impacts of climate change on food security messages to its listeners

The researcher asked the programme manager how Forte FM communicates the impacts of climate change on food security to its listeners. The programme manager revealed that:

"The radio station usually invites guests to educate listeners on topics related to the climate. It would be a topic brought up by an expert in the field, that person would want to partner with us and we offer a time slot for that person to be able to present and in so doing we encourage public participation through our WhatsApp line and send voice note, some can call in to ask whatever they want to ask. And then from there on, we can create a sort of podcast whereby a person, if they miss such programme they can go on the station's website to click and play".

As indicated by the findings, the above response shows that Forte FM radio has programs centered on communicating the impact of climate change on food security. The radio station broadcasts topics, which are usually initiated by professionals and co-anchored by the program forum. Hence, this means that Forte FM radio is involving the community in a significant development program, that is, in programs that address how listeners can be informed about climate change effects such as droughts and floods that cause frequent and short-term fluctuations in food production. Thus, a lack of implementing a program slot for listeners on how to mitigate and reduce climate change

impacts affecting individual livelihoods through drought, flood, erosion, and hurricanes, amongst others, would hinder development. This would make for an informed society on what climate change and its effects mean to communities and farmers who are affected by its threat. This is also supported by agenda setting theory and media dependency theory, which underpin this study. These two theories emphasized the significance and advantages of initiating programs for listeners that would increase media coverage of climate change communication (Bossetti, 2020).

4.6.1.2 Listeners interest in climate change on food security messages

It was significant to ask how Forte FM radio put listeners' interest into consideration when broadcasting messages about the impacts of climate change on food security. The programme manager noted that:

> "For instance, the other time they were talking about global warming and people will need to understand what global warming is and on our side since the news is mainly talking about the global effect of climate change, we try to narrow it down in terms of how does that means the way you see things in your community, what does it means not the mere facts that winters are no longer cold, what does it mean now when flowers start blossoming early, what signs you need to look out for, so that you narrow it down in terms of speaking to individuals in the villages, because most of these bombastic words, they tend to distract our people. We do have translators, including a professional translator at the radio station who takes an English speech and translates it into isiXhosa, which is how we communicate with listeners."

As evidenced by the findings, the program manager revealed that listeners are always prioritized when broadcasting climate change and food security messages. This shows that when such a need arises, the radio station's professional translator does well to ensure that listeners get the intended messages using an appropriate medium of communication, most especially the adoption of the indigenous language *(isiXhosa)* as a medium for disseminating messages. This implies that listeners' rights to media content are properly exercised and not infringed upon according to their dispositions and priorities. This view is also supported by the World Bank Group (WBG), which argued that community radios assist the common to interchange information in indigenous languages, motivate debate on developmental initiatives, and encourage ordinary people to identify and get more opportunities (World Bank Group, 2004; cited in Panos 2005:20).

4.6.1.3 Listeners involvement in climate change on food security programming

When asked if Forte FM radio involve listeners in its climate change on food security programming. The radio programme manager indicated that

> "Yes, it does through engagement probably via road show, organized meeting from relevant stakeholders who are nominated to represent the communities. Unfortunately, due to COVID-19, all meetings are done virtually".

As indicated by the response above, it informs this study that Forte FM radio as a community radio never involves listeners in the planning, decision making and implementation of their programming except through engagement such as road shows and stakeholders meetings. Hence, community members should be a means of

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receiving programme ideas that can be conceptualized to have an informed community. In other words, welcoming the need to be motivated and fostered by a community-friendly policy environment. This implies that the quality and productivity of the radio station's programmes (content) would be affected, and thereby reduce its audience flow and involvement in programme implementation. This is also supported by scholars such as Handerson (2017) & Poore (2018) who established that involving listeners in the media content is key for developmental projects.

4.6.1.4 Programmes related to climate change on food security

It was significant to ask if Forte FM radio has programmes related to climate change on food security. The programme manager indicated that

> "The radio station has programmes that addresses environment. For instance, we have evening talks on Mondays – Thursdays (7pm-9pm). This is where we target working class adult who must have returned home so as to educate them. For example, we partner with department of forestry's for example when there is an awareness campaign that has to do with preserving nature and all of that, and then we are able to broadcast it on that show. We have another show on Mondays -Thursdays ''Your Community Calendar'', where we discuss whatever is trending on the news and get relevant guest and at the same time, we use it as a platform   where various departments can make announcement and come to present whatever they want to the public. I would say that we have programme related to the impacts of climate on food security".

As indicated by the findings, the program manager established that Forte FM radio has programs that address climate change in food programming. However, the manager noted that the radio station is always in partnership with the Department of Forestry to collectively campaign for nature preservation. This implies that Forte FM radio raises environmental awareness among its listeners through various parastatals. This suggests that programs around the impacts of climate change on food security would be promoted through collaborations with relevant environmental sectors. For instance, the messages could encompass all food safety and quality aspects of nutrition. This could be disseminated in the form of drama, dance, or songs that would attract listeners and the community's attention. Thus, if programs related to climate change and food security, which affect livelihoods, are excluded, listeners' perceptions of the benefits of climate change messages in ensuring sustainable foods from farmers to local communities would be jeopardized. This opinion is supported by Abdulla (2016), who established that dance and drama enhance a message that tackles an identified challenge through the reflection of participants to add new knowledge and bring about positive change.

4.6.1.5 Listeners involvement in climate change on food security messages

It was important to ask about the involvement of listeners in broadcasting the impacts of climate change messages on food security. The programme manager noted that

> "It is via our WhatsApp line, phoning – programmes and Facebook pages, as well as Twitter pages. Whatever we are taking about and is of interest to the listeners' community, we put it then we can get what their responses are, in terms of what people think and what they said must be done".

As indicated by the findings, the programme manager noted that listeners get involved basically through the radio station's social media platforms to interact and share what they think must be done to serve them better. Hence, this is also a means of meeting to know how listeners' participation is encouraged. Thus, lack of platforms such as WhatsApp, Twitter pages and phone-in programmes where messages on how to reduce and mitigate climate change effects are absent. Ultimately, climatic vulnerability in substantial food production would be on the increase. This view is also supported by agenda setting theory and media dependency theory that underpins this present study (Pretty, 2018).

4.6.1.6 Feedback frequency on social media platforms

The researcher asked the programme manager if feedback is encouraging. The programme manager added that

> "Yes, they are encouraging on such platforms because most people are not on DSTV in most of the communities or parts we broadcast, because deep down where our frequency are reaches and listened to, some sent SMS line, they use their phones for communicating if they hit the same time. Most people ranging from 14-17 years, they might not be having a job and at the same time they have WhatsApp data, whereby they can send voice notes for them to get involved, and there are those that are technically inclined, who use inboxes, twitter, so their messages get faster because we are also technologically savvy at the same time".

As indicated by the findings, the manager revealed that online platforms as well as SMS feedback mechanism are encouraging from listeners. This implies that dialogue and

participation between the community members and the radio station are evident. Thus, lack of feedback in media content would reduce programme productivity at every level of programme presentation. This view is also supported by scholars such as Poore (2018) & Hasan (2019) who noted that mobile phones could be used as a means of communication and as a means of media for listening to radio and sending or receiving SMS to and from radio station to increase feedback mechanism.

4.6.1.7 Behavioral change messages around climate change on food security

It was important to ask how Forte FM unpacks the impacts of behavioral change messages around climate change on food security to its listeners. The programme manager expressed himself saying

> "Community radio stations, Forte FM in particular use podcast to further encourage participation because some of the people might be busy at that time, but if they could take a play on the internet, they can do that. And then, in terms of a plan going forward, well, let me say I foresee Forte FM being very active in terms of discussion on food security at the same time and now we have this pandemic of looting, and it's going to affects us, but we are going to be focusing much more on some of the least discussed topics , because most of the topics had been done more than once, but you find that global warming has been on SABC television, and also on community radio stations. There is going to be a plan in terms of how to collaborate more, because it's steaming starting to show now and I

can see that the government as well is not really focusing on global

warming or climate change, we need to be the pioneer now, there should

be a plan that would improve behavioral messages".

As evidenced from the findings, the radio programme manager noted that Forte FM radio employed the use of podcast through the internet in passing messages across to listeners. Hence, this would afford listeners who might have missed the live programme the opportunity to listen at a convenient time. Notably, the programme manager added that, Forte FM radio will make future plan to improve its behavioral change messages. This is vital in order to meet listeners' needs in communicating the impacts of climate change on food security in the Eastern Cape Province. There is also, a need for more collaboration with professional bodies and the government on programs such as climate change. This implies that the radio station is performing one of its mandates as a community radio station, which is to serve the communities according to their priorities and pressing needs.
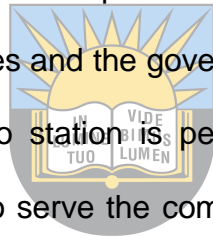
Thus, a lack of diversification to embrace the narrative of climate change with new ways of content programming for radio stations would hinder individual access to adequate resources needed for acquiring appropriate food and a nutritious diet. More so, it would hamper the community radio's productivity rate. The agenda setting theory and media dependency theory also argued that long term effects of media usage on the audiences and society would influence some positive behavioral changes in listeners. Most especially how radio stations influence listeners positive cognitive, affective and behavioral responses by communicating climate change information around food

security would increase listeners knowledge and services in order to reduce greenhouse emission (Velautham, 2019).

4.6.1.8 Promoting climate change awareness through community radio

It was important to know if government partners with community radio stations to promote climate change awareness. The programme manager noted that

> "There is no government partnership on climate awareness…. You would find out that some ministers are having a speech somewhere and radio stations should broadcast it, you would find out that climate change is just something in between the speech, but the main speech was not centered on climate change".

As indicated by the findings, the programme manager revealed that climate change awareness from the government is not encouraging. The manager noted that government's speeches are not basically focusing on climate change. This suggests that the governments are not doing enough to encourage climate change communication in rural South Africa as this study is concerned. Hence, there is a need to promote pro-active awareness around climate change on food security through community radios. Considering the fact that community radio has been identified as an important medium or tool for community development (Fox, 2019). Thus, absence of creative awareness would increase the potential limitations and negative effects of climate change on livelihoods, farmers and food insecurity at large.

This view is also supported by scholars such as Berry (2019) and Valautham (2019) who noted that relevant and meaningful climate related information are best communicated technically through policy makers and decision-makers. In addition, pro-

active measures such as engaging with local partners, farmers' groups, policy makers and government should collaborate to select appropriate technological and institutional interventions based on global knowledge and local conditions that would enhance productivity.
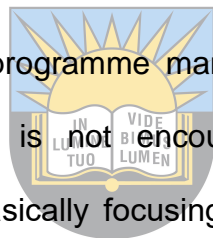
4.6.1.9 Challenges of climate change on food security information

When the researcher inquired if Forte FM radio encountered any challenges in broadcasting the impacts of climate change to listeners, in response, the radio program manager noted that:

> "I would be lying if I say no in this sense, as I said earlier before that we often invite guest to the studio to start the conversation around such. It would be the external stakeholder that is coming in assistance to pushing messages foreword, and we create a platform and messages around climate change whereby there will be discussions. We don't have challenges in that aspect. Looking at the longevity of this climate change awareness, as I have said we have been participating, we haven't tapped enough in the market. Currently, receiving aids from the government would be helpful"

As evidenced by the findings, the radio programme manager revealed that the radio station creates platform for discussions around climate change, as this is crucial to listeners' livelihoods. The manager also noted that the longevity of climate change awareness would probably pose a challenge as the radio station seeks for government financial aids. I want to note that since the impacts of climate change on food security is a general phenomenon affecting the public and animals. Yet, community radios are funded by the intended communities, so efforts must be put in place by the government

for financial supports, so as to keep the society well informed on climate change messages. This implies that, climate change awareness is posing a great challenge to rural communities as pointed out by the focus group participants. Hence, ascertaining these challenges confronting Forte FM in communicating climate change on food security messages is paramount. Thus, lack of community radio's role in addressing the impacts of climate change on food security messages would adversely affect all (Coa, 2017).

4.6.1.10 Forte FM's challenges in getting sources for climate change on food security programme

It was significant to ask a follow-up question as regards getting sources for climate change on food security programme. The radio programme manager said that:

"For example, speaking outside of climate change, there are challenges in

terms of funding, there are certain things that doesn't require funding to

push forward. For instance, even in climate change, we don't need

resources like going to interview people outside, transport, for outside

broadcast, where the challenge is where to get information or expert in the

field that would be able to create a dialogue on the subject matter maybe

on a daily or weekly basis. Because you find out that in terms of the

law, there are so many lawyers, you might find that in the health industry,

there are so many Doctors to look out for you, you may find out that when

you are dealing with climate change or global warming, there are two or

three people who are experts in the field, this becomes a challenge

especially in Amatole District".

As indicated by the findings, that because climate change information is scientifically related, getting a resource person is sometimes challenging in rural communities. The programme manager revealed that the main challenge has been where to get an expert in the field. However, I want to suggest that the concept of the "5W's and H" could be applied to this scenario that is: who is to be interviewed, what topic is to be discussed, when it must be discussed, where to get an expert or professional in the field, why should it be discussed and how must it be discussed. Yet, answers to these questions are not farfetched; it is through Forte FM community radio. The radio programme manager noted that one of the challenges is getting an expert who is knowledgeable about the subject, most especially in Amatole District.

This suggests that messages around climate change effects on food security requires more supports and interventions in order to bridge the gap between rural and urban media broadcasting in Amatole District. Thus, lack of public awareness, improper information from unskilled individuals will result to an uninformed society. This view is also supported by agenda setting theory and media dependency theory that underpins this study. These two theories explain the instrumental media uses and long dependency on media messages to create awareness on how to mitigate threatened global warming (Cowley, 2020).

4.6.1.11 Forte FM as a tool of climate change on food security messages

It was important to know how listeners perceive Forte FM as a tool for communicating the impacts of climate change on food security. The programme manager said that.

> "Well…. I would say they are grateful from time to time to talk about things which may not necessarily upset them now, but they may accept them in

the future or children's future. Most of the time you will get them on live radio or via twitter and all social media platform, whereby the community is always thanking us for bringing such topics to the fore front, so that now even though they are in the villages and uneducated or walking around there is change, how things are in their days and it is now we get the sense, it is what Forte FM radio was talking about when they talk about climate change, so it is a positive response".

As indicated by the findings, the program manager revealed that listeners perceived Forte FM with great enthusiasm. They acknowledged that they are always thankful for bringing changes to their present and future through its diverse topics. This suggests that listeners are always fortunate to have gotten Forte FM as a community radio that performs its social responsibilities. Otherwise, the perception would have been negative. Thus, absence of information and educative programmes received from Forte FM would make an uninformed community. This view is also supported by media dependency theory that underpins this study, which postulates that community radio are powerful tools in communicating the impacts of climate change on food security in rural communities.

4.6.1.12 Listeners perception on the impacts of behavioral change messages

It was significant to know the roles played by Forte FM radio in exploring behavioral change of its listeners through climate change on food security. The programme manager noted that.

"It is impressive now as I mentioned that we do have plans in terms of communicating and exploring behavioral change. Community radio's role

is to ensure there is positive change in terms of behavioral change and the only way to be able to monitor that is to say…. I would say give some incentive in terms of competition, whereby you are supposed to mention a few things that were said to join a fight against climate change. That kind of competition or participation would be able to create more awareness at the same time give us data in terms of the behavioral change.''

I want to point out that community radio's mandate is to serve as an agent of development. As indicated by the findings, the program manager argued that the radio station has the vision to explore behavioral change by communicating and exploring behavioral change messages through participating in the fight against misrepresentation or inappropriate information on the impacts of climate change on food security. That is, by presenting appropriate climate change information and enlightening the rural citizens who lack climate change knowledge yet are known to repeatedly engage in actions that damage the atmosphere and the food ecosystem.

This implies that Forte FM is performing one of its mandates as an agent of change in the community. Hence, performing the above-mentioned mandate would also serve as a token and contribution in reducing and mitigating climate change vulnerability that causes food insecurity. On the other hand, non-familiarization of media broadcasters with climate change concepts would reduce listeners' capabilities in accepting behavioral change messages. This means that organizing workshops and seminars for media broadcasters on climate concepts would increase listeners' cognitive and behavioral change. This view is also supported by the agenda-setting theory that

underpins this study, which states that the media are placed to set an agenda that focuses on the impacts of climate change on food security programs for listeners' dependency and continuous attention, so as to improve behavioral changes.

4.6.1.13 Awareness /publicity around climate change on food security

The researcher inquired how Forte FM radio encourages awareness in respect of climate change on food security. The radio programme manager said that:

> "For us to be able to reach the masses, we need a solid partner or department, and this drive must be headed by them with as a medium because that is the only way community radio could be used as a media. If community radio could be used as a media vessel to promote what the officials or experts of climate change on food security aspire. In term of their programmes and messages, but they could seriously partner with community radio not as once off thing but continuously".

As evidenced by the findings above. The program manager noted that in order to encourage awareness and publicity about communicating the impacts of climate change on food security, there must be strong partnerships and correlations between relevant departments and stakeholders. As this would make community radio recognized as one of the branches of the media as well as a catalyst for information awareness. This implies that a continuous partnership is strongly suggested for listeners and communities to know and understand the impacts of climate change and its evident manifestations on livelihoods. Thus, a lack of awareness and a strong partnership with relevant departments, corporate bodies, sectors, and organizations would increase

vulnerable communities and food insecurity. This view is also supported by the agenda-setting theory that underpins this study.

4.6.1.14 Benefits of climate change on food security messages

It was important to ask if Forte FM radio have gotten success stories from its listeners on the benefits of climate change on food security. The radio programme manager said that:

> "Yes, to my knowledge, because as I have said, we have programmes related to environment, with positive feedback. These messages are helpful. But we need to push more, it is a matter of people saying '' I am now aware of this, thank you for bringing it to my knowledge. I am now aware of the importance of climate. I am going to be able to conserve water. Also, in terms of people who have been properly informed, comes back to say: I am aware now and all of that. We have got a lot also about environmental pollution"

As indicated from the findings above, the programme manager's response was encouraging. The manager attested to feedback received from the listeners on programmes addressing the impacts of climate change on food security. Ultimately, this means that the radio station is thriving in terms of climate information and facilitation of developmental programmes, especially in the rural areas. Hence, community radio is a potent tool in addressing the impacts of climate change on food security issues. Thus, community radios are meant to serve its listeners and community's pressing needs through pro-active measures and programming, rather than reactive planning that reduces development and productivity of both listeners and the radio station (Poore,

2018). This view is also supported by agenda setting theory which holds that community radio can help the public understand topical issues such as communicating the impacts of climate change on food security by emphasizing the topic of discourse as salience issue.

4.6.1.15 Programme manager's opinion on how Forte FM could improve its climate   change on food security communication

The researcher asked the programme manager about what Forte FM could do to improve its programming around communicating the impacts of climate change on food security. The programme manager noted that:

> "If it wasn't for COVID-19, road shows promoting such would be a high volume and it would also assist radio station's listenership in terms of who would be the one that are bringing in the information for her and over radio stations would be following Forte FM. Under COVID-19, people respond quickly to social media, Facebook post. Forte FM radio's post would have an influx, would push this topic in term of creating awareness via online questions for people to access them and at the same time have posters to say the Fort Hare is in partnership, advises people and have regular tip on Monday- Friday that contain food security and climate change communication. I think in order to have success stories and monitor people's behavioral change, we are the ones that would flood

social media platforms because that's the most relevant medium of communication under COVID-19".

As indicated by the findings above, the program manager revealed that publicity and road shows had been the perfect medium for creating program awareness. Presently, the radio station's social media platforms via Twitter, Facebook, and WhatsApp have been a very good source of creating awareness due to the COVID-19 pandemic. I want to note that online interaction affords listeners quick responses at their fingertips. Hence, institutions, organizations, and parastatals are encouraged to partner with community radio stations. Thus, social media has been an agent of change to monitor listener behavior as regards the impacts of climate change on food security. This view is supported by the agenda-setting theory that underpins this study. According to Kerr (2018), agenda setting refers to the process by which salience issues are transferred from the media to the public: over a period, the rank order of issues to which the media give prominence will be reflected in the list of issues the public considers relevant.

4.6.1.16 Pro-active actions about climate change on food security communication

It was paramount to know if Forte FM radio was planning any pro-active actions in respect of climate change on food security communication. The programme manager indicated that:

> "As I say, there should be a plan but currently there is no plan beside for waiting for the department of forestry to decide on what people must do because they do have awareness campaigns from time to time, so the radio probably wait for them, but in this instance, we are going to be having a plan which is to flood the airwaves in terms of social media platform so that we do have a conversation

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around this thing and also we can be able to open the local municipality in terms of now trying to figure out what is their plan".

As evident from the findings above, the programme manager revealed that, just as aforementioned that Forte FM radio often partners with forestry department for community awareness as regards preserving the nature. Hence, Forte FM as a community radio must fulfill one of its mandates by making plans to flood the social media with creative and constructive conversation as well as making consultations with local municipality. This study wants to note that, organizing community awareness would eradicate climate change ignorance, misrepresentation of information, uninformed societies and many other misconceptions causing food insecurity in the community at large. Notably, these will increase Forte FM's programming productivity. This view is also supported by media dependency theory that underpins this study.

4.7 Mdantsane FM Programme Manager's interviews

4.7.1 Presentation and Analysis of Mdantsane FM Programme Manager's Interviews

The manager introduced himself as the programme manager of Mdantsane FM. He is the operational manager, responsible for planning programme content of the radio station. According to the programme manager:

> "Mdantsane FM community radio was officially licensed in November 2011 by the then Mayor of Buffalo City Metro Municipality (BCMM). Mdantsane residents and surrounding had a need for a community radio which necessitated the establishment of Mdantsane FM in 2011. The station is situated at the heart of Mdantsane community. It is located presently at

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Mdantsane city mall, and this unit is situated at the core center of the township. The radio station broadcasts not only to Buffalo city metro where it is situated, but extends its frequency to Great Kei, Ngqushwa and Amahlathi local municipalities to fulfill its mandate of informing, educating, and entertaining its listeners communities. Mdantsane FM radio station is locally run, with presenters, managers, and volunteers of staff residents in Mdantsane, to support local contents through its sport programme, current affairs, community development programmes and musical contents among others."

4.7.1.1 Mdantsane FM on communicating the impacts of climate change on food security to its listeners community

It was significant to know how Mdantsane FM radio communicates the impacts of climate change on food security to its listeners. The programme manager said that:

> "The radio station has got online platforms such as WhatsApp, Twitter and Facebook where we communicate educative, informative and inspiring local contents to our listeners. These programmes are in various topics which addresses community interest through entertainment, news and talk-shows where we invite guests to educate listeners on a particular topic"

As indicated by the findings above, the radio programme manager noted that Mdantsane FM radio disseminates its various forms of programmes via its online platforms. This implies that the radio station is fulfilling one of its mandates as a community radio station to its communities. Hence, inviting guest to its talk shows is evident that the radio station's public-sphere programme is active. Thus, lack of

implementing and inviting guest on a programme slot, to inform and educate listeners on how to mitigate and reduce the climate change impacts affecting individuals' livelihoods would increase climate change misinformation. More so, if inadequate information is acquired regarding these impacts of climate change that manifests through droughts, floods, erosions and hurricane, and many others. It would make an uninformed society on what climate change and its effects means to communities and farmers who are being affected by its threat. This is also supported by agenda setting theory and media dependency theory that underpins this study. These two theories emphasized the significance and advantages of implementing topical programmes such as communicating the impacts of climate change on food security as this study suggests, for ensuring stability of food security (Poore, 2018).

4.7.1.2 Mdantsane FM on programmes that addresses the impacts of climate change on food security

The researcher inquired on programmes that address the impacts of climate change on food security. The radio programme manager said that

> "We have climate change related programme, environmental programmes, and water related programmes where we discuss topics around the effects of climate change and environment. As these effects challenges lives of individuals and animals generally"

As evidenced by the findings, the program manager revealed that Mdantsane FM radio has climate-related programs. That is, programs that address the impacts of climate change on food security. This implies that the radio station is fully exercising its mandate as a medium. Thus, preventing listeners from receiving information on how to

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mitigate; reduce, and cope with the effects of global warming will lead to food insecurity. According to the theoretical framework of this study, listeners would only be informed and able to use and depend on the climate change information or program if the media explored and broadcasted repeatedly the different types of messages around the effects of climate change on food security. Conversely, disseminating climate change information would occasionally endanger livelihoods because one can only be informed by what one knows. This suggests that programs around climate change and food security are meant to be broadcast frequently and repeatedly. For instance, the frequent messages could encompass all food safety and quality aspects of nutrition. This could be disseminated in an innovative way, such as via jingles and promotions, so as to attract listeners and the community's attention.

Thus, if programs that address the impacts of climate change on food security, which affect livelihoods and farmers, are excluded from radio programming, listeners' perceptions of the benefits of climate change messages in ensuring sustainable foods from farmers to local communities would be threatened. This opinion is supported by the media dependency theory that underpins this study, which highlights the long-term effects of media usage on audiences and society. That is, the more dependent an individual is on the media for having his or her entertainment, educational, and informative needs fulfilled, the more important the media will be to that individual (Auma, 2017).

4.7.1.3 Listeners interest in climate change and food security messages

It was significant to know how Mdantsane FM put listener interests into consideration when communicating messages around the impacts of climate change on food security.

The programme manager noted that:

> "Mdantsane FM as a community is mandated to present listeners with informative, educative and local content programmes that are of community's interest. We interact with the community members to know their opinions on a particular programme in order to increase participation. Most especially topics around climate change, the radio station disseminate programmes that inform listeners on weather update, planting of trees, health talk all in *isiXhosa* language so as to ensure effective communication."

As indicated by the findings, the programme manager revealed that Mdantsane FM's mandate is to present listeners with informative and educative local contents. This suggests that the community radio station always consider the recipients interest on the intended messages (listeners) by communicating in their 'mother tongue' (*isiXhosa*), so as to ensure an effective communication. Thus, disseminating information to listeners in an unacceptable language would mar the climate change intended messages. Hence, interactive communication attracts listeners to climate change programme. This means that community capability would be increased. This view is also supported by scholars such as Okoro (2019) & Hasan (2019) who established that community radio provides significant community building functions and contribute to cultural identity through its medium of broadcasting.

4.7.1.4 Mdantsane FM on involving listeners/Community in broadcasting the impacts of climate change on food security programmes

It was significant to know how listeners are involved in broadcasting the impacts of climate change on food security. The radio programme manager indicated that

"Listeners are always involved in the station's programming via WhatsApp Facebook, and Twitter. Listeners' involvement in the programme is evident through the podcast and social media platforms of the radio station. Perhaps, it requires more impactful programmes and media advocacy generally in our communities for a huge listener's involvement."

As evidenced from the findings, there is need for the radio station to broadcast more impactful programs that would steer up listener involvement and participation around topics related to climate change. This implies that there is need for Mdantsane FM to create more impactful and educative climate change programmes that would tackle evidence of ignorance through proper information dissemination on developmental programmes. Considering the fact that climate change is a global phenomenon that affects human livelihoods. Hence, its broadcasts must be well received by Mdantsane communities. Thus, media advocacy, info-tainment programmes must be encouraged in Mdantsane communities and its surrounding areas, so as to inform listeners on how to reduce and cope with climate change manifestations in order to achieve food sustainability. This view is also supported by previous scholar, Schilling (2020) who established that top-down approach to building up-coming community radio will ultimately result to developmental sector whose incentive and purpose will eventually move away from accepted definition and understanding of community radio. The agenda setting theory that underpins this study also hold that the media is responsible to set the agenda on significance issues such as climate change on food security (Bossetti, 2020). Hence, selecting messages based on listener geographical location

and by organizing climate smart group for farmers would increase listener involvement in its programming.

4.7.1.5 Mdantsane FM on increasing listeners involvement in climate change on food security programming

The programme manager's response established that listener involvement in climate change on food security programming requires more impactful programmes. However, it was important to know the radio station's efforts towards increasing listener involvement. The radio programme manager noted that:

> "As a community radio, we are meant to perform our social responsibility roles via our informative programming; the subject requires more information and awareness in our communities. Community radio programmes are being initiated by the community members. So, if awareness and partnership are initiated with government and non-government organizations, perhaps, listener involvement would be increased."

As indicated by the findings, the program manager revealed that community radios are mandated to perform their primary role of informing the communities, among others. It was also emphasized that a lack of adequate partnership and resources from the government is not helping the matter. This suggests that government and non-governmental interventions are needed in addressing, coping with, and mitigating the impacts of climate change in rural communities. Hence, partnership is vital in determining and appreciating community radio's efforts. Thus, a lack of partnership

would increase food insecurity and vulnerability in communities. This view is also supported by the media dependency theory that underpins this study.

4.7.1.6 Mdantsane FM on unpacking the impacts of behavioral change messages around climate change and food security.

When asked how Mdantsane FM unpacked the impacts of behavioral change messages around climate change on food security, the radio program manager established that:

> "Topics related to climate change on food security are usually addressed when we have experts who are more knowledgeable in that area. We usually disseminate such topic on our talk show that addresses climate change, for instance the station has talk show such as "Let's make SA green again" where topics related to environment and how to preserve nature are addressed to inform and educate listeners. The radio station equally partners with the department of health in order to provide the community with more relevant health and nutritional information."

As indicated by the findings above, the program manager revealed that Mdantsane FM usually unpacks the impacts of climate change on food security through experts who are vast in such a specialized area. The program manager also noted that topics related to environment and nature conservation are often addressed via talk shows so as to keep listeners abreast of how significant nature is. This suggests that Mdantsane FM radio is performing one of its developmental roles by educating listeners on how relevant and crucial it is for communities to be knowledgeable on climate change-related issues as well as their manifestations. Hence, partnering with various

departments on developmental programs and campaigns in relation to food security and healthy living would equally enhance the community members' sound minds.

Thus, if the aforementioned pro-active measures and talk shows are not implemented, organized, and disseminated, it would endanger achieving a sustainable food security system. Invariably, this causes the radio station to be less productive. This view is also supported by agenda setting theory, which underpins this study, and holds that grassroots communities and groups should be well informed and kept abreast through community radio stations, with the sole aim of creating public awareness and an informed society by addressing developmental issues that pose threats to citizens livelihoods (Doelman, 2017).

4.7.1.7 Mdantsane FM's feedback on climate change programmes

It was important to ask if feedback is encouraging. The programme manager said that:
> "Interestingly, the radio station usually communicates via its social media channels to responses from the listeners, feedback is always encouraging regarding climate change and food security, agricultural and health related programs."

As evidenced from the findings above, the programme manager revealed that online responses are encouraging from listeners on all its educative programmes such as agriculture, climate change on food security and health related programmes. This implies that dialogue and participation between the community members and radio station are evident to an extent. This suggests that there is a need for continuous

awareness and door-to-door campaigns on climate related programmes so as to keep encouraging its feedback mechanism. Thus, lack of feedback in media content would reduce programme productivity at every level of programme presentation. This view is also supported by scholars such as Auma (2017) & Okoro (2019) who noted that the media makes relevant information accessible to their audience, that is, give room for feedback and apparently encourage medium for inter-personal communication, inter-group communication, interest communication and sub-culture communication.

4.7.1.8 Mdantsane FM on broadcasting weather updates

The researcher inquired from the programme manager if Mdantsane FM radio disseminates weather update. The programme manager said that:

> "Yes, Mdantsane FM often broadcast weather update to its listeners".

As indicated by the findings, the programme manager noted that the station always broadcast information from its weather desk to its heterogeneous audience. This shows that the radio station frequently broadcast climate-related messages to its audiences. Hence, performing its social responsibility to inform and educate its listeners. Thus, lack of disseminating such important updates would increase an uninformed society and endanger lives and properties. It would also affect crop produce and livestock, which could cause low productivity and thus, food insecurity. This view is also supported by the work of Sellami (2017) who established that community radios should inform listeners and farmers on the local impacts of some weather extremes, such as heavy rainfall, floods, droughts, coastal flooding, hurricane, thunderstorm, and hails amongst others.

4.7.1.9 Mdantsane FM's challenges in broadcasting messages around the impacts of climate change on food security

The researcher inquired from the programme manager if Mdantsane FM encounters any challenges in broadcasting messages around the impacts of climate change on food security to its listeners. The programme manager noted that:

> "Yes, community radios generally encounter challenges in respect of climate change because it's a new niche area that needs more campaign and awareness so as to have an informed society. Also getting experts and professional in this field possess a great challenge to disseminating the programme. The station also struggles in terms of partnering with relevant organization that promote and publicize more awareness in respect of the subject."

As indicated by the findings, the radio station programme manager revealed that disseminating climate change messages is generally challenging for all community radio stations. Most especially sourcing for experts and professionals as well as partnering with relevant sectors in the field is always challenging. The programme manager also noted that this is due to its relatively new niche area that requires more awareness and campaigns so as to enhance an informed society. This implies that, climate change awareness is posing a great challenge to rural communities as pointed out by the focus group participants. Hence, ascertaining these challenges confronting Mdantsane FM in communicating climate change on food security messages is paramount. Thus, lack of community radio's role in addressing climate change on food security issues would reduce the number of crop yields, fish and livestock numbers as well as their

productivity as noted by (Coa, 2017). This view is also supported by agenda setting and media dependency theories that underpin this study.

4.7.1.10 Mdantsane FM as a tool for communicating the impacts of climate change on food security

It was significant to know how listeners perceive community radio as a tool for communicating the impacts of climate change on food security. The programme manager said:

> "Individual perception differs in terms of how they perceive community radio as a tool for communicating the impact of climate change. Listeners perceive community radio as a source of information and education. Listeners also perceive Mdantsane FM as a source of getting local contents such as cultural programmes, weather updates, health programs, sport programmes amongst others. While some perceive Mdantsane FM as the community mouth piece that provide service delivery to its communities".

As evidenced from the findings, the radio programme manager revealed that individual's disposition differs as regards a community radio station to other media. This means that Mdantsane FM has been perceived as a source of information and education to its heterogeneous audience. Hence, listeners perceived Mdantsane FM radio station as a source of getting local content such as cultural and heritage programmes, sports and health programmes in their 'mother tongue' (*isiXhosa)*. Thus, empowering listeners with indigenous programmes does the following increases listener involvement in Mdantsane programming, enhances community development and promotes national as well as local heritages. On the other hand, disempowering listeners would make an uninformed and vulnerable community. Media Dependency Theory that underpins this study justifies

communicating the impacts of climate change on food security. Hence, the understudy community radio stations are instrumental towards exploring listener perception on communicating the impacts of climate change on food security.

4.7.1.11 Mdantsane FM's role in exploring behavioral change messages

It was significant to know the roles of Mdantsane FM in exploring behavioral change of its listeners through climate change on food security communication. The programme manager noted that:

> "Community radio's mandate is to disseminate informative, educative as well as environmental news and campaign that would promote behavioral change in Mdantsane community and its suburb. Community radio must provide listeners with environmental jingles and public announcement that would motivate listener behavioral change".

As indicated by the findings, Mdantsane radio programme manager revealed that one of the mandates of community radio stations is to disseminate informative and educative information. He added that, organizing community campaign on environmental jingles and public announcement would motivate behavioral changes in the communities. This implies that Mdantsane FM's role in disseminating behavioral change messages is taking a positive shape. Thus, lack of behavioral change messages would constitute a vulnerable community. Also, it would diminish the radio station's reliability and credibility status. The above view is also supported by agenda setting theory that underpins this study, which holds that community radios must furnish its listeners with educative campaigns and public service announcement that would enhance positive behavioral changes. In addition, the theory further posits that groups, organizations and grassroots

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communities should be well informed and abreast through community radio stations, with the sole aim of creating public awareness and an informed society and thereby fulfilling audience needs through addressing developmental issues that cause threats to citizenry livelihoods. In other words, listeners are meant to be served with behavioral changes messages such as the different types of messages around the impacts of climate change on food security based on individual geographical locations. Thus, organizing campaigns and environmental protest that would inform and educate listeners as well as farmers on how to cope and mitigate the impacts of climate change, so as to achieve a sustainable climatic environment.

4.7.1.12 Mdantsane FM on benefits of climate change messages on food security from listeners

The researcher asked the radio programme manager on the benefits of climate change on food security programming from listeners. The programme manager said that

> "Currently, there have always been testimonies about benefits of all programmes via the radio station's social media platform. We usually receive feedback on how best a piece of information on healthy tips, environmental related programmes, etc had benefitted individuals. Perhaps, if campaign is enhanced, it could promote more success stories for all station's programmes"

As indicated by the findings, the programme manager revealed that Mdantsane FM often receives feedback and testimonies about all the radio station's programmes on its social media platforms. This suggests that climate change programming has brought a sort of enlightenment to the under-study communities. Hence, more awareness would ultimately advance such a germane topic as communicating the effects of climate change on food security in the rural Eastern Cape communities. Thus, lack of

empowering climate change programming would limit anticipatory adaptation measure for the listeners' communities, the community radio as well as the country at large. This view is also supported by agenda setting theory and media dependency theory that underpins this study.

4.7.1.13 Mdantsane FM on improving climate change impacts on food security communication in rural communities

The researcher inquired what Mdantsane FM could do to improve its climate change impacts on food security communication in rural communities. The programme manager indicated that

> "I would suggest that more campaign groups and organizations must be willing to partner with Mdantsane FM for more improvement in climate change programmes. I think if the radio station is well supported by institution of learning and scholars as well as experts in the field of climate, it would also improve more sources for the programme. Exceptional skills and training should be organized for presenters to advance climate change on food security broadcasting."

As indicated by the findings above, the radio programme manager revealed that, partnering with campaign groups would have a positive impact on climate change programming. Perhaps, if institution of learning could support the subject it would serve as a source of getting first-hand information for listener knowledge. Hence, higher institutions, organizations and parastatals are encouraged to partner with community radio stations. As this would enhance community radio's climate change broadcasting skills. Thus, lack of credible partnership with relevant sectors in the field would reduce the feasibility of achieving a sustainable food security system locally and globally. This

view is supported by agenda setting theory and media dependency theory that underpins this study.

4.8 Rhodes Music Programme Manager's Interviews

4.8.1 Presentation and analysis of Rhodes music radio programme manager's interview

The radio programme manager identified himself as the station's manager who oversees the day-day activities and running of the programmes, fund raising, budgeting as well as the coordination of event of the radio station. According to the radio station programme manager:

> "Rhodes Music radio is a campus radio station that evolve from been a caster to being a community broadcaster. It started in 1981, as a campus station and intra-success radio station. It was quite populated during the year when the festivals of *Khowa's* came and have a platform where they would discuss. But revolved into a community radio station covering 50km radius of Grahamstown, where Rhodes University is situated and broadcasting from. It was licensed by the University itself. Currently, it is broadcasting to the Grahamstown Makanda community, where it focuses on youths and young people, such as high scholars as well as young adults (University students and young employees in town)."

4.8.1.1 Rhodes music radio on communicating the impacts of climate change

It was significant to know how Rhodes Music radio communicates the impacts of climate change on food security to its listeners. The radio programme manager noted that

> "That comes in our various forms of shows. We have got numerous shows coming in different formats, some are in infotainment while others are in

strict news and current affairs, or actuality shows. That will be part of the various topics that we run and deal with. We have a very good composition of actuality shows in our programming, that will see us dealing with various issues and climate change and food security is one of them. Considering the fact that Grahamstown found itself as one of the poorest communities in South Africa, whereby we have got 68% unemployment as par last statistics analysis, most been affected being the youth and that leads to them finding a means to continue having food and perhaps finding way within the community to ensure people putting food in their stomach by having backyard garden".

As indicated by the findings, the radio programme manager revealed that, Rhodes Music radio have got various forms of programmes in different units such as infotainment, current affairs as well as strict news. This suggests that Rhodes Music radio is fulfilling one of its mandates as a community radio station which is to educate, inform and entertain its listeners. Hence, the manager noted that issues around climate change on food security are one of them. This informs this present study that, Rhodes Music radio communicate messages around agriculture by encouraging listeners to cultivate backyard garden which is also a means of promoting a sustainable food security system. Thus, lack of messages on agriculture would affect livestock, plant and animals which could result to food insecurity. More so, inadequate information on agriculture would affect farmers' seedlings by reducing the number of crop yield, fishes and livestock numbers as well as their productivity. The agenda setting theory and media dependency theory are significant in communicating the impacts of climate

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change on food security, as they both support the marginalized communities' cultural values. The under-study theories help to communicate both local and electronic climate change information that would be useful to farmers and listeners (Sultan & Gaetani, 2017).

4.8.1.2 Rhodes music radio on programme that addresses climate change on food security

It was important to ascertain Rhodes Music radio programmes that addresses climate change on food security. The radio programme manager said that

> "We have got programmes that address the climate; we usually unpack climate related topics to our diverse listeners through the station's environmental related programmes".

As indicated by the findings above, the radio programme manager ascertained that Rhodes Music radio has programmes and messages around climate change on food security. These messages are disseminated to listeners via environmental programmes. This implies that listeners are often informed on messages around climate change on food security, which is a fulfillment of its mandate as a community radio. This means that Rhodes Music radio is living up to expectation as regards fulfilling its social responsibility role as a community radio station. Thus, depriving listeners of their needs, interests and aspiration as the receivers of information, would make an uninformed community. This view is supported by agenda setting theory that underpins this study which postulates that community radio should provide relevant information and programmes to their audience with the aim of addressing developmental and social

issues that affects communities such as the impacts of climate change on food security (Demuyaka, 2021).

4.8.1.3 Rhodes music radio on considering listeners interest when communicating such messages

The researcher inquired how Rhodes Music radio put listener interest into consideration when communicating messages around climate change on food security. The radio programme manager said that:

> "The best way as par the broadcasting standard of South Africa is to ensure we provide information that is accurate, educating, and fair in terms of commentary, because we understand that when you talk about climate change, there are numerous opinions around it, even within the science sphere, there are various ways and means that people perceive it. Ours is to make sure we provide information that is accurate, fair of commentary but also informative and educative as possible, so we can help listeners make informed decision on how they engage and move forward, how they conduct themselves with their businesses` and day to day running".

As indicated by the findings, the radio programme manager revealed that Rhodes Music radio ensures it keep listeners abreast with accurate, fair and educative information. This would enable listeners to make an informed decision at the same time help the under-study community radios to fulfill their mandate as a community radio. The programme manager noted that generally, individual opinions and perceptions differ when analyzing the term climate change, most especially within the science sphere when one focus on climate changes. This implies that Rhodes Music radio which serves

duo purposes as a campus radio and a community radio stations to Grahamstown and its environs understood the implication of disseminating inaccurate information to listeners as regards to what climate change means.

This suggests that climate change is synonymous with weather condition but differs in meaning and application. Thus, assisting listeners to make sense of the informative ideas shows that Rhodes Music radio is helping its listeners to perceive and understand what climate change means, its effects as noted in the literature of this study, as well as its concrete manifestations to livelihoods and farm produce.

This view is supported by media dependency theory that underpins this study, which postulates that, community radios must address developmental issues that cause threats to citizenry livelihoods (Sellami, 2017). In other words, listeners are meant to be involved in identifying their intended messages based on their geographical locations, organizing climate smart group for farmers, and motivating sustainable development programmes that would aid in communicating the impacts of climate change on food security through Rhodes Music radio station (Sellami, 2017).

4.8.1.4 Rhodes music radio on involvement of listeners in broadcasting climate change on food security programmes

The researcher inquired about listener involvement in broadcasting climate change on food security programmes. The radio programme manager noted that:

> "At the moment we involve experts, listeners also get involved via the social media platforms, because the subject matter itself, when you look at *Makanda* community, it is something that needs more education. Hence, we are able to have climate related programmes. Our listeners are involved through the radio station's social media platforms. So, it is something that perhaps need some

more awareness, so that within the community, there can be strong talks from an informed-on point of view so that we can end up getting the community dealing with this mater accordingly".

As evidenced by the findings, the radio program manager revealed that experts and listeners are involved in climate change programming. Listener involvement is through social media platforms. Thus, community radio programs are community-informed; this means that programs around the impacts of climate change and food security are initiated and well informed by the community, thereby attracting listener involvement. Hence, listener involvement could be displayed through the station's drama, songs, folktales, jingles, announcements, playlist, placards, workshops, seminars, community forum, farmers union, as well as its social media platforms, all of which must be used judiciously by Rhodes Music radio station. This view is supported by scholars such as Zelda (2016) and Lester (2018), who noted that an increase in demand for public and community radio's announcements through jingles, publicity, and face-to-face awareness campaigns on the need for adaptive measures would increase listener involvement in its programs. The above notion is also supported by the two theories guiding this study. This measure demands organizing discussions and rural meetings that would motivate listener involvement in programs that address mitigating climate-related issues effectively through community radio.

4.8.1.5 Rhodes music radio on efforts to improve listeners involvement in climate change on food security messages

It was significant to know the radio station's role in improving listener involvement in climate change on food security. The radio programme manager said that

"At the moment the role has been minimal, because as a community radio station, we have been informed by the community, we do not put the cat before the house, the community dictate what kind of programme they want from us. It is just from us, from time to time we put some subject matters before and they can bring the results on such programme to us and to what extent or percentage. For instance, when we have gender base violence, which is one of the largely spoken about during programme meeting, the community would discuss what they want, we had to quickly design a programme that deals with that, because the community wanted us to. During the programme meeting, the community will discuss what they wanted, our programme is informed by the community during programme meeting, because some matter people might have interest but not necessarily much affected by them but interested. Now, we are still trying our best because the community itself still requires high need".
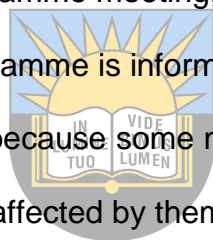
As indicated from the findings, the radio programme manager revealed that the role has been minimal. Yet the community radio stations are being informed by the community. This means that the community members need proper information to understand what climate change on food security encompasses, there would be a need to organize public awareness, community meetings, or town hall meetings that would tend to enlighten the community members. Hence, the radio programme manager noted that it is well spoken about during community or programme forum. This suggests that Rhodes Music radio is trying its best in educating the community to understand the benefits in implementing and listening to programmes around the impacts of climate change on

food security. This implies that, helping listeners in ascertaining and acquiring a proactive knowledge on this novel topic, most especially by informing them to adopt a sustainable food security would help to improve listeners involvement to ascertain how Forte FM, Mdantsane FM, and Rhodes Music community radios communicate messages on the impacts of climate change on food security to Alice, Mdantsane and Grahamstown communities. This view is also supported by agenda setting theory which underpins this present study (Pretty, 2018).

4.8.1.6 Rhodes music radio on messages around the impacts of climate change on food security

The researcher inquired how Rhodes Music Radio communicates messages around the impacts of climate change on food security. The radio programme manager said that

> "Mostly on there is usage of experts in the field and professionals within the field to an ordinary public scientist, practitioners, campaigners or advocating for a campaign. It is largely one side. I would say it is from the radio to mostly with the expert and not just any other person".

As evidenced from the findings above, the radio programme manager revealed that, the radio station communicates messages around the impacts of climate change by inviting experts in environmental sectors and professionals within the field to an ordinary public scientist. This implies that the radio station is positively impacting listeners' lives through other contents and climate change on food security programmes. Thus, lack of innovative ideas in radio station's programming hinders development and productivity. This view is supported by agenda setting theory and media dependency theory which holds that community radios must encourage and see the need for inclusiveness,

forming norms that would motivate non-listeners to use and depend on the media for impactful information.

This view is also supported by the work of Bell (2019) who established that climate change experts should broadcast actions and measures that would protect listeners against sudden weather-induced crises. However, Rhodes Music radio should disseminate messages addressing potential lifestyle along with behavioral changes that would help to secure lives and impacts livelihoods in the longer term. Hence, community radio has proven to be a valuable asset in developing early warning signs, and hazard risks information medium that is used to reduce and eradicate global warming (Fox, 2019).

4.8.1.7 Rhodes music radio on feedback from listeners

It was significant to know how often feedback are received. The radio programme manager said that

> "Very important when it comes to this matter, it would be just frequently, where there are just small groups within a community, some of them working on getting a land so they can farm. It has been impressive in terms of interaction; in terms of environmental programme is concern".

As indicated by the findings, the radio program manager revealed that feedback is frequently received despite the small groups of people within the community. Nevertheless, when a small group of people is provided with timely information, a feedback mechanism would obviously be encouraging. More so, the program manager noted that some community members are working on getting land so they can farm. This shows that in spite of the case study's geographical location, it's pleasing to know

that topics related to climate change and food security are broadcasted to the listeners to the extent of motivating them and giving them the impression of becoming peasant farmers. Hence, Rhodes Music Radio should keep motivating, educating, and informing its listeners on this novel topic of communicating the impacts of climate change on food security" so as to increase its feedback mechanism. Thus, a lack of feedback will hinder the facilitation of community communication and the promotion of local development initiatives. This view is also supported by the work of Cowley (2020), who noted that community radio's mandate is to bring developmental changes to the community with unlimited feedback. Hence, the media makes relevant information accessible to their audience; that is, it must give room for feedback. Apparently, encourage mediums for inter-personal communication, inter-group communication, interest communication, and sub-culture communication (Cowley, 2020).

4.8.1.8 Rhodes music radio on weather updates to its listeners

It was significant to ask if Rhodes Music radio broadcasts weather updates. The radio programme manager answered affirmatively that

> "Yes, the radio station has weather updates".

As indicated by the findings, the programme manager noted that the radio station always broadcasts information from its weather desk to its heterogeneous audience. This shows that the radio station broadcasts climate-related event that occurs in any one time. Hence, performing its social responsibility to inform and educate its listeners. This view is also supported by the work of Sellami (2017) who established that community radio should inform its listeners and farmers on the local impacts of some

weather extremes, such as heavy rainfall, floods, droughts, coastal flooding and hails that affect crop produce and livestock, which could cause low productivity.

4.8.1.9 Rhodes music radio on challenges in broadcasting messages around climate change on food security to its listeners/community

It was significant to know if Rhodes Music radio encounters any challenges in broadcasting messages around the impacts of climate change on food security. The radio programme manager said that

> "Yes, sometimes we would have some subject matter, but we would not have someone available to come and unpack it for us. If there's someone, a person could be link to a campaign or advocacy groups. In most cases, where rely on experts who can come and unpack issues for us. As I said earlier, we rely heavily on scientist, scholars and academics in environmental related sectors".

As evidenced from the findings, the radio programme manager revealed that, many times the radio programme is faced with unavailability of environmental scientists and scholars who will be readily available at the studio to unpack topics related to climate change on food security. This suggests that Rhodes Music radio must have a partnership with advocacy groups, scholars, institutional sector, agricultural sector, and relevant agricultural and environmental department who would be committed and obliged to unpack messages around climate change on food security to its listeners.

Thus, the call for adaptation should be encouraged and increased by community radio stations, so as to guard farmers' livelihoods in order to sustain food security (Nyiwul, 2021). Communicating the impacts of climate change on food security is challenging globally, invariably, the call for adaptation is increasing amongst Third World Nations in the likes of South Africa, Zimbabwe, Nigeria and Mozambique to mention a few where

vulnerability is presumably taking its increasing stand. This view is also supported by media dependency theory that underpins this study, which holds that community radio must frequently disseminate climate change information to its listeners, so as to enhance daily dependency of listeners on media messages that would ensure food security (Auma, 2017).

4.8.1.10 Rhodes music radio on radio listening club

The researcher probed further to confirm if Rhodes Music radio has a listening club. The radio programme manager noted that:

> "No, we only have programme forum, where we invite people to meet and deals with programmes of the station. It is part of the community, and then we have a programming meeting as per the license".

As indicated by the findings, the radio programme manager revealed that Rhodes Music radio only has a programme forum, where it invites members of the community for programming meeting. This means that Rhodes Music radio is performing one of its mandates by involving community members in its activities so to ensure productivity and resources for the radio station. Hence, participatory communication can be said to be evident in community radio such as Rhodes Music radio for providing and enhancing localized communication and development initiatives as noted by Rhodes Music radio programme manager. This view is supported by uses and dependency theory which postulates the needs of the listeners through radio broadcasters. In addition, these needs would be met in the form of organizing a workshop, conferences or organizing listening club where climate-related issues would be discussed effectively (Doelman, 2019).

4.8.1.11 Rhodes music radio on listeners perception of community radio as a tool for communicating the impacts of climate change on food security

It was significant to know how listeners perceived Rhodes Music radio as a tool for communicating the impacts of climate change on food security. The radio programme manager said that:

> "Perception differs, as for us we are a campus radio at the University, this makes Rhodes Music radio to gain some credibility as the radio station is concern. We can influence and help listeners when they are listening, they are able to get information with a positive altitude, more so, and because they would know the reputation the University has as an institution".

As evidenced from the findings, the radio programme manager revealed that individual's disposition differs as regards a campus community radio station to other media. This means that Rhodes Music radio disseminates credible and objective information to its heterogeneous audience. Hence, listeners' perceived Rhodes Music radio's programmes to entails behavioral change messages because it is informative and educative. Thus, empowering listeners through, credible information, increases Rhodes Music radio station's credibility. On the other hand, disempowering listeners would make an uninformed and vulnerable community. The work of Schilling (2020) noted that democratic and professional authority should be accessed and adopted by all citizens. In other words, media must be accessible and participatory to encourage citizens' participation in community affairs (Schilling, 2020).

4.8.1.12 Rhodes music radio on the roles of community radio in exploring behavioral changes

It was significant to know the roles of Rhodes Music community radio in exploring listeners' behavioral changes around the impacts of climate change on food security. The radio programme manager noted that

> "The mandate of radio station is just community building through information. The role I would say is to disseminate as much credible and valuable information as much as possible so that listeners out there would be able to make an informed decision, they would know what to take care of or what to do. But the biggest role that the community radio stations need to do is to disseminate valuable and accurate information to its listeners'. I think that's the biggest mandate we are to run with".

As indicated by the findings, the radio programme manager revealed that one of the mandates of community radio stations is to build an informed community. The manager further added that, disseminating valuable and accurate information must be paramount. This view is also supported by agenda setting theory that underpins this study, which holds that community radio must set the agenda for its listeners by furnishing its listeners with what to think about such as timely and community-based information on the impacts of climate change on food security. The theory further posits that groups, organizations and grassroots communities should be well informed and abreast through community radio stations, with the sole aim of creating public awareness and an informed society (Minx, 2017). Hence, addressing developmental issues that cause threats to citizens' livelihoods is necessary. In other words, listeners are meant to be involved in identifying behavioral messages based on their

geographical location by organizing a climate smart group for farmers and motivating sustainable development by communicating the impacts of climate change on food security through its radio station.

4.8.1.13 Rhodes music radio on benefits of climate change on food security messages to its listeners

The researcher asked the radio programme manager if there were success stories on the benefits of climate change on food security. The radio programme manager said that:

> "So far, there have been success stories from Rhodes Music listeners and
>
> community on the benefit of all our programmes. We have had a number of them
>
> especially, on other subjects such as matter of cleaning, matter of engaging the
>
> municipality, but we did run couple of programmes and the programme itself
>
> would be successful. I am basing my success on the aspiration of the
>
> programme as well as the aspiration been achieved."

As indicated by the findings, the radio programme manager revealed that Rhodes Music radio station has been receiving success stories regarding all its programmes generally. The manager further noted that Rhodes Music radio programming has been successful based on the types of programmes listeners desires. Thus, it would be an added advantage if Rhodes Music radio intensifies its programming awareness on other programmes such as climate change related programmes. On the other hand, lack of programme addressing the impacts of climate change on food security would increase community vulnerability. This view is also supported by agenda-setting theory and media dependency theory. These two theories hold that the long-term effect of media usage on audiences and society is vital to the benefits received and also to ensuring

effective dissemination of information. That is, the more dependent an individual is on the media for having his or her entertainment, educational, and informative needs fulfilled, the more important the media will be to that individual.

4.8.1.14 Rhodes music radio on improvement in broadcasting climate change on food security communication in rural communities

It was significant to ask what Rhodes Music Radio can do to improve its climate change on food security communication in rural communities. The radio programme manager said that
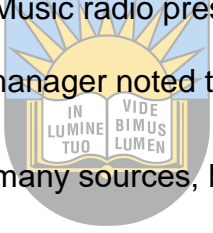
> "I think we need to foster more partnerships with various advocacy group institutions like Rhodes University, so that we can get more and more communication and helps that would increase the interest of listeners. I mean like we do talk show about how we see winter coming early or rain, so the evidence of climate change is there, and speak about them in active. Looking at what's going on around us and get to engage and interrogate. It must be active; I think if we get people who can be able to make talking about this fashionable and perhaps engaging in partnership with farming communities who will be very keen to understand and to see the role that they can play themselves. I think the more they would be able to engage and even inform and have discussions about it".

As evidenced from the findings above, the radio programme manager revealed that there would be need to foster more collaboration with various advocacy groups. This means that Rhodes Music radio needs to take a pro-active and not a reactive action to engage and interrogate more with farming communities. This would help to seek their

contributions to enhance communicating the impacts of climate change on food security effectively to the understudy communities. Thus, Rhodes Music community radio station should be more involved in climate change communication that would reduce and eradicate the potential limitations and negative effects of climate change through pro-active measures and programming, rather than a reactive planning. Hence, adopting this measure would stand climate change adaptation and a sustainable food security to its communities and the country at large. This view is supported by agenda setting theory and media dependency theory (Pretty, 2018).

4.8.1.15 Rhodes music radio on getting adequate sources for programming

It was significant to know if Rhodes Music radio presenters get adequate sources for the programme. The radio programme manager noted that:

> "I wouldn't say we get many sources, because as I said earlier that we normally use expert to unpack issues. But I am thinking that it wouldn't be hard to start training by training the presenters themselves. Perhaps it would make easier for them to start communicating and putting it more on their conservations on the radio while on air, that will get more people interested and they would be able to hear their favorite radio station presenters talking about it. So, we don't have many sources as per that is concerned. And I think that can, if we were to be capacitated and training can be offered, some concentration on the climate change and its impacts especially on the community radio presenters. That could be one

way we could be encouraged and have more people to talk about it and

then we take it up from there.

As indicated by the findings, the radio programme manager revealed that just as aforementioned that the radio station usually invites experts for climate change related programmes. Additionally, training the radio station's presenters would help Rhodes Music radio in broadcasting climate information to the listeners. This implies that the training would aid in the production of prototype broadcasts materials on climate change and climate-smart agriculture. Thus, innovative dissemination of messages would aid mapping out a work plan on broadcasting climate change, agriculture and food security in Makanda community and its environs. This view is also supported by agenda setting theory which holds that communicating messages around climate change on food security in rural South Africa would make a healthier capacitated and informed community on climate change issues through Rhodes Music radio (Bossetti, 2020).
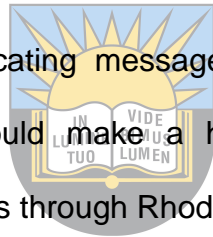
4.9 General Discussions of Findings

This study has analyzed the collected data from the field and has come up with a general discussion of findings. The discussions are generally guided by the study objectives.

4.9.1 Frequency of Communicating Climate Change and Food Security Messages

The community is expected regularly to listen to community radio stations located within their geographical areas for developmental news such as the impacts of climate change on food security news. Therefore, in this study the participants noted that the under-study selected community radio stations are their favorite and only community radio that informs and educates them daily through their local contents' programmes. In addition,

the participants attested to regularly listening to the radio stations both at home as well as at their respective places of work (Poore, 2017). Furthermore, all the participants noted that they daily listen to the radio station at different hours of the day. This implies that the listeners often listen to messages around the impacts of climate change on food security.

4.9.2 Challenges Confronting the Selected Community Radios in Communicating the Impacts of Climate Change on Food Security Messages

Community radios are grappling with various challenges that are hindering them from playing their role of educating and informing the community on the impacts of climate change on food security messages (Poore, 2017). However, the findings from the selected under-study community radio stations shows that lack of fund and partnership with resourceful environmental sectors that would support climate awareness in communicating climate change programming to the rural communities. They also mentioned the fact that the national government is not fully supporting and prioritizing climate change communication. This study has found out that lack of proper information and ignorance of climate knowledge posses another challenge in the under-study communities. Hence, there is need for more public activism around climate change communication in rural South Africa. The work of Elum (2017) noted that although community radio stations seek to provide development at grassroots level, they fail due to lack of resources. Thus, resources must be put in place by the national government to mitigate these challenges, to eradicate an uninformed society.

4.9.3 Positive Impacts of Climate Change Behavioral Change Messages

Literature shows that community radios serve a particular community, and the members of the community radios are supposed to cause great changes in the lives of their

listeners. Therefore, in this study the participants noted that listening to the selected under-study radios has greatly impacted their social, physical, and cognitive well- being to their environment. This means that they all benefitted from the climate change related messages that address human activities such as, air pollution, water pollution, soil pollution and land degradation that could increase the Green House Gas emission. The findings from the under-study community radios show that climate change programming has brought about climate behavioral changes on preservation of the coastal resources, the ecosystems. The agenda setting theory and media dependency theory hold that the media must fulfill its mandates to listeners by influencing their cognitive and behavioral responses regarding the impacts of climate change on food security (Henderson, 2017).

4.9.4 Climate Change Programming Towards a Sustainable Food Security and Climate Adaptation

According to Eshan (2020), climate change communication has established approaches and measures to mitigate climate uncertainty, skepticism and limited engagement by individuals. Hence, community radio is a platform and medium for exchanging climate change messages, experiences and dialogues. Therefore, in this study, the focus group participants revealed that Forte FM, Mdantsane FM and Rhodes Music community radios are great instrument for climate change communication in rural areas. In addition, the participants confirmed receiving daily weather updates, environmental and agricultural related news beside a host of others. As these messages inspires and motivate them towards a sustainable food security system.

Significantly, findings of this study revealed that the rural communities who are mostly affected by the impacts of climate change on food security such as water stress and land degradation had been educated through the radio stations climate change related

programmes. Most especially by programmes that addresses preservation of the natural resources and conservation of water, as these programmes is helpful to sustain the food security system. More so, the radio stations programmes increase listeners resilience to climate adaptation based on each community's experiences on manifestations of climate change which includes floods, heavy rainfall, hurricanes, heat waves, droughts among others. The agenda setting theory and media dependency theory guiding this study explains instrumental media uses and dependency towards achieving a sustainable food security system.

4.10 Chapter Summary

In a nutshell, this chapter analyzed data from focus group participant opinions on communicating the impacts of climate change on food security as gathered from the Golf Course (Alice), Mdantsane, and Grahamstown residential areas. Additionally, the opinions of the program managers were also analyzed in this chapter. Data analysis was guided by the study objectives. Notably, the data collected for this study fulfilled the research objectives outlined in Chapter 1. The focus group discussions show that Forte FM, Mdantsane FM, and Rhodes Music community radio stations awareness and messages about the impacts of climate change on food security are well established and require further improvement. Also, it portrays pro-active measures the community radio stations could take to improve their messages around the impacts of climate change on food security programming. Most of the participants established that the community radio stations often disseminate weather updates, which are synonymous with climate change. The chapter also presented a general discussion of the findings, guided by the study objectives. The next chapter would conclude the study by

presenting the problem restated, an overview of the research findings of the study, a summary of key findings of the study, a conclusion to the study, highlights of the recommendations of the study, limitations and suggestions for future works, some contributions of the study to existing knowledge, as well as the chapter conclusion.

CHAPTER FIVE: CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter contains a restatement of the problem, an overview of research findings, and answers to research questions. The chapter will conclude the study by presenting the key findings of the research and proposed recommendations to enhance climate change adaptation and mitigation in the rural Eastern Cape Province.

5.2 Problem Re-Stated

Several scholars, including Doelman et al. (2019), Odongo (2018), and Maye et al. (2020), have looked at the role of community radio as a tool for facilitating development, especially in rural areas. While most of these scholars have focused on some topical issues like HIV/AIDS awareness and other developmental issues, the role of community radio in addressing climate change and food security issues has not been fully researched. There is little research regarding communicating the adaptation context of the impacts of climate change on food security in the rural Eastern Cape Province, and this makes this study unique as it filled this gap. This study therefore contributes to knowledge by filling a research gap by looking at the role of community radio in addressing climate change on food security issues, especially in some selected rural areas of the Eastern Cape Province. Considering the fact, that community radio has been identified as an important medium or tool for community development messages and with the ability to provide platforms for engagements and debates among its listeners. The study was able to ascertain that climate change on food security messages sent by these radio stations do achieve the desired results on the listeners and the communities generally.

The aim of this study was to investigate the different types of messages communicated around the impacts of climate change in the under-study communities, which the findings of this study revealed. It was therefore necessary to find out if the selected community radio stations are involved in climate change communication that would reduce and eradicate the potential limitations and negative effects of climate change through pro-active measures and programming, rather than a reactive planning that would help climate change adaptation and a sustainable food security in the Eastern Cape Province. To a very large extent, the findings of this study revealed the positive contributions of the selected community radio stations in communicating the impacts of climate change on food security in rural South Africa.

5.3 Overview of Research Findings/Research Questions Answered

This thesis portrayed the impacts of climate change on food security in rural South Africa. This is vital given that community radio has been identified as an important tool or medium for community development. Hence, this study wants to establish that, considering the complexity of communicating climate change and its impacts to rural South Africa, most especially the rural Eastern Cape communities, and considering the relatively cheapness of radio and its universality as a powerful tool for disseminating and informing farmers, fishers, and the general public on climate change mitigation measures, and how this study's community, that is, Forte FM, Mdantsane FM, and Rhodes Music radio stations, communicate on the subject of climate change impacts on food security.

In addition, community radio facilitates the right to information by promoting the right to communication and assisting the flow of climate change on food security information to

rural communities. The study focused on communicating the impacts of climate change on food security in Forte FM, Mdantsane FM and Rhodes Music Radio community radio stations. Notably, it would be significant to indicate that the opinions of the focus group discussions for the three radio stations under study were similar in many ways as the listeners were able to confirm that these community radio stations have been a very good source of getting first-hand and timely information on environmental topics and pollution. Significantly, it was revealed from the interviews and focus group discussions that the establishment of the radio stations affords the community development programmes.

The research questions raised at the inception of this study were answered through the findings from the Golf Course (Alice), Mdantsane, and Grahamstown residential areas. Similarly, the interviews complement the findings the researcher got from Forte FM, Mdantsane FM, and Rhodes Music radio. The program manager interviews were also similar except for each radio station's timing and program outline. Also, the radio program managers' interviews furnish answers to the study's research questions, respectively. Hence, this thesis reflects the responses gathered from individuals' perceptions of the selected radio stations employed for this study regarding communicating the nexus between climate change impacts and food security. In respect to the research participants' opinions, indigenous language (*IsiXhosa)* was a key factor that should be adopted to attract and communicate the impacts of climate change on food security to the citizens, alongside other programs. This is because the three radio stations broadcast mainly in local dialects to their respective heterogeneous audiences as this would ensure effective communication to all irrespective of their demographics.

Hence, this was portrayed in their involvement in the programs of the radio stations through the radio station's program forum, the sending of musical requests, greetings, as well as the use of simple conversation.

The research participants indicated that community radios such as Forte FM, Mdantsane FM and Rhodes Music Radio have been helpful in communicating climate change on food security information to some extent. As indicated from the findings, all the participants' often listen to the trio radio stations and majority of the participants said that climate change on food security is not new to their hearing, although the radio stations could do better. While some noted that climate change and weather update are the same, similarly, some added that they are less familiar with these words, needs more pro-active measures on how to mitigate and adapt with climate change, all the same they all feel the changes in weather.

In another development, awareness about Forte FM is higher in Amatole Municipality, but more effort must be intensified in programme content related to climate change on food security in contrast to Mdantsane and Rhodes Music Radio stations due to latter's proximity to coastal areas. The study participants revealed that they could recall messages relating to food security on climate change. While a few numbers advocated for more publicity regarding climate change communication. This shows the need for community awareness in relation to climate change on food security communication. Hence, it would be beneficial to implement variety programmes relating to climate change on food security with detailed examples of how to mitigate its effect globally.

To sum it up, the research findings revealed that Forte FM, Mdantsane FM and Rhodes Music radio stations have got programmes that addresses communicating the impacts

of climate change on food security. As the subject of climate change are covered in some programmes during broadcast. For instance, it was indicated by the research participants on their involvement in the radio stations programmes such as weather updates and talk shows that address climate change on food security issues. However, majority of the participants noted that they want more awareness programmes and community activism that addresses climate change related issues. This shows that listeners are very much interested in following the radio stations online and podcast programmes. This is because it would enhance community interaction and engagement. Hence, communicating the impacts of climate change on food security would help to have an informed community that would mitigate the great challenge posed by climate change on vulnerable communities.

5.4 Summary of Key Findings of the Study

From the findings of this study and the data collected from the focus group participants and the radio program managers of Forte FM, Mdantsane FM, and Rhodes Music radio, this study has generated a few key findings through NVivo 12 software and subsequently come up with the following key findings, which are summarized below: The themes generated show the path for each focus group along with the number of references that the nodes were coded for on the generated theme.

5.4.1 Accessibility of Radio Enhances Environmental Health and Nutritional Information

Community radios are instrument for communicating topical issues such as the impacts of climate change on food security (Anderson 2016). This means that community radio has marked strategies that have contributed to mapping the subject of climate change to what is known and what is still to be discovered. In addition, the accessibility of the

selected radios bandwidth to the listeners has helped in receiving environmental health and nutritional information from the radio stations (Pradhan, 2018). The media dependency theory guiding this study mentioned that the media helps to fulfill audience needs such as entertainment, information, and education. This could only be realistic because the community radios are accessible to the listeners for receiving climate change on food security information. However, the food security conceptual framework under-study speaks volume on interdisciplinary paradigm that promotes food and nutrition security. That is, promoting a sustainable nutritional status in the under-study communities and South Africa generally. This means that environmental health and nutritional related information must be accessible for the listeners.

Significantly, this study has found out that the accessibility of the selected community radios has enhanced environmental health and nutritional information in the understudied communities. Therefore, through radio broadcasting, health-related information is spread to a wide population, and it would also be transferred to a non-radio listener. This would increase the impact of climate change on food security information as well as environmental and nutritional-related information. In addition, the selected radio stations also equally contribute to community development through effective health communication. Access and interaction between the radio stations and the community afford the study participants the opportunity to receive environmental disaster news and raise public awareness on health matters, amongst others.

Another key finding of this study is that the trio focus group participants revealed that the messages around communicating the impacts of climate change on food security has enhanced the positive impacts of environmental health and environmental pollution.

For example, the study participants indicated that the messages were always helpful during the COVID-19 Pandemic lockdown restrictions. The radio stations broadcast several timely health programmes to mitigate the spreading of the virus; implement simple health tips programmes such as daily intake of glasses of clean water, vegetables, and fruits consumption among others health tips. Hence, the messages on how to eat well and stay healthy are always helpful and necessary. Significantly, the trio of community radio stations also broadcast educational and health programs, such as those addressing HIV/AIDS, depression, and other health-related matters.

5.4.2 Community Radio as a Source of Climate Change Information and Education

Literature shows that community radio stations play a significant role in facilitating community development through the educational climate change information they broadcast to their respective communities (Poore, 2017). The affordability of radio as the cheapest device for sending, receiving, and educational purposes cannot be overemphasized (Fox, 2019). This has elevated Forte FM, Mdantsane FM, and Rhodes Music Radio above the mainstream media at Alice (the golf course), Mdantsane, and Grahamstown. The selected community radio stations are a medium for getting first-hand information about the impacts of climate change on food security. Related issues on weather forecasts and how to keep warm during the cold season are disseminated through these radio stations. This first-hand information is received at listeners' fingertips via community radio. The above claim portrayed the three community radio stations under study as a source for receiving climate change information and education.

Another valuable finding of the study is that the community radio stations thus educate the community members via their educative programmes on climate change in the environment as well as on dangers of pollution. The community radio stations also serve as a medium of getting relevant information both locally and nationally. These messages have been impactful, helpful, and enlightened community members to be well informed (Poore, 2017). Most especially, it has helped listeners to be better informed on the precautionary measures to be taken when burning bush to prevent wildfires. Thus, listeners are informed that bush burning could also affect the climate (Elum et al., 2017). Significantly, the theoretical frameworks and the conceptual frameworks guiding this study justifies the role of the selected understudy community radios as a source of eliciting adequate information around communicating the impacts of climate change on food security. This means that the volume of appropriate climate information received from the media helped the listeners in having their information and educational needs fulfilled in relation to the impacts of climate change on food security (Anderson, 2016).

5.4.3 Empowerment and Development through Agricultural and Food Related Programmes

Literature indicates that although community radio stations seek to provide development at the grassroots level, they fail due to a lack of resources (Reid & Huq 2007). Nevertheless, one of the roles of a community radio station in its serving communities is to empower and develop the disenfranchised. Empowerment can be said to be a multi-level construct that describes a social action process for people to gain mastery over their lives, their organizations, and the lives of their communities (McCarthy, 2018). In other words, the discovery of agriculturally related information about food security, food

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systems, and how to be a subsistence farmer is a form of empowerment and a contribution to the economic growth of the community and the country at large.

Another significant finding of this study is that the focus group participants revealed that most of the time, listeners get information about some harmful and poor manufactured foods. This information helps to prevent members of the community from consuming unhealthy foods. This implies that the selected community radio stations are sources of empowerment and development through their food related programmmes (Henderson, 2017). More so, community radio such as Forte FM, Mdantsane FM and Rhodes Music Radios broadcast agricultural related programmes that describes social and natural action processes such as droughts, floods, and rise in temperature in certain areas which stresses the food systems and affects food production. The agricultural related messages empower listeners to be subsistence farmers as this is also a form of empowerment in their own little space and the community at large.

Further unique finding of this study is that agricultural information is relevant to the community because some of the people who listen to the selected radio stations rely on farming for subsistence (Upadhyay & Bijalwan, 2015). This is since the radio stations are in a rural towns and broadcast to listeners in both rural areas and town. Also, it was reported that the trio community radio stations messages on agriculture have enabled listeners to grow and plant some vegetables during planting season. All these messages have benefitted and empowered the communities. Hence, the messages empower, enlightens farmers and individuals about agriculture, healthy living as well as informed the communities (Poore, 2018).

5.4.4 Community Radio as a tool for Promoting Climate Adaptivity and Positive Behavioral Changes

Community radio messages are always appealing and persuasive to listeners. Radio as a powerful tool that promote climate adaptivity and positive behavioral changes in communities cannot be over emphasized (Hasan et al. 2018). Hence, these positive changes programmes are portrayed through the radio stations jingles, public service announcement, drama, cultural songs, indigenous music, and advertisement amongst others. Radio serves as a medium where the marginalized communities from diverse multi-cultural, multi-ethnic, multi-racial and multi-lingual population receive messages and cultural contents. Thus, the messages help to strengthen and increase listeners' climate resilience and adaptivity irrespective of ages, status, and races.

A vital finding of this study is the wide gap between the cost of adapting and the necessary financial support from the ministry of the environment, the national government, and the SANCCP in mitigating the climate inconsistency. However, the interviews conducted with the trio of radio program managers under study showed that the radio stations address climate change messages that promote local climate adaptivity and behavioral changes in the communities, despite the shortcomings of the climate change regulatory body. It therefore suggests that through this climate change, behavioral change messages such as poems, songs, and the like, which have the possibility to positively influence and encourage listeners in the communities, are regarded as effective agents of positive change. The work of Fox (2019) noted that community radios are intended for the sole use of communicating, a platform for listeners to bring about climate change and development initiatives to their respective communities. Hence, the selected community radios promote climate adaptivity and

positive behavioral changes in the community. The Local Adaptive Capacity (LAC) framework support climate adaptive capacity features through communicating the impacts of climate change on food security by the under-study community radios (Jones et al. 2019).

Another vital finding from this study is that, the study participants noted that the trio community radio stations messages have generally reformed listeners in the following ways; how to mitigate with the climate inconsistency, it has helped and changed listeners behavioral attitude and misconception about the word ''weather and climate change'', agriculture, healthy habit, pollution as well as how to locally adapt to the impacts of climate change such as droughts, floods, wildfire and storms beside a host of others.

 In addition, the agenda setting theory and media dependency theory guiding this study supports the unique discovery that the media set agenda and programmes on what listeners must think about. Thus, enhance climate change adaptivity and positive behavioral changes on the meaning of climate change and its threatened manifestations to individuals' wellbeing in general and globally. Also, climate change has confirmed the study participants locally as a community, based on the timely and relevant messages which include how to use and manage inadequate natural resources like water (using water sparingly) which is also one of the effects of droughts caused by the climate. In line with the above fact, community radio is a powerful tool that enhanced the understudy listener behavioral changes. It is noteworthy to recognize that the study participants from the trio focus group discussions reported that Forte FM, Mdantsane

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FM and Rhodes Music community radio stations has been a behavioral change tool in the community.

5.4.5 Language and Community Publicity as a Consideration for Climate Change and Food Security Communication

Literature and findings from this study shows that adopting indigenous language as the main medium of disseminating climate change on food security related information by Forte FM, Mdantsane FM and Rhodes Music Radio community radios to their audience enhanced effective climate change communication. The World Bank argues that community media assist the vulnerable communities to interchange information in indigenous languages, motivate debate on developmental initiatives and encourage ordinary people to identify and get more opportunities (World Bank Group, 2004 cited in Panos, 2005:20). The 1994 Language and the Constitutional Framework of South Africa reflects the constitutional policy of official multilingualism which include nine major Africa languages that complement English and Afrikaans nationally. These languages include Ndebele, Northern Sotho, Southern Sotho, Swati, Tsonga, Tswana, Venda, Xhosa, and Zulu. However, the utilization of Xhosa language by the trio community radios under study is a consideration for establishing community publicity regarding climate change on food security communication. This serves as a basis to create and establish more community publicity in isiXhosa language that would be suitable and well understood by the community members. That is, considering the targeted audience of climate change on food security programme (grassroots communities), creating public awareness on what climate change means as well as the signs of each season of the year must be explanatory in a simple and clear language (Poore, 2007). Significantly, implementing the messages or programmes based on each community's climatic effects would be

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more effective on communicating the impacts of climate change on food security in the study communities as well as the surrounding areas receiving the radio stations bandwidth.

Furthermore, a language is marketable if it has the potential to serve as a tool and means by which its users can meet their material needs (Kohilitz, 2019). The study participants noted that the messages had helped the common citizens' voices to be heard nationally through the mayors in their indigenous language. As it is well known that the main vision of community radios is to be the voice that unifies the communities, educates and entertains its serving communities. Hence, the potency of indigenous languages helps to solve community development issues and build a strong bond among community members. This means that the community radio stations under study are vital to the listeners for disseminating information in their indigenous language, most especially in promoting local climate change content through their local artists. Considering the above, section 29(2) of South Africa's constitution states that everyone has the right to receive information in the official language or languages of their choice in public educational institutions where that education is reasonably practicable. This implies that organizing and implementing indigenous community publicity and programs on communicating the impacts of climate change on food security by Forte FM, Mdantsane FM, and Rhodes Music Radio is a consideration for the listeners to depend more on the selected community radios for climate change community publicity, as supported by the theoretical frameworks of this study.
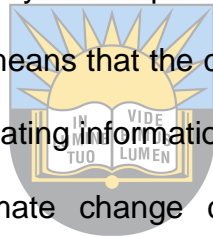
5.4.6 Listeners Perception of Community Radio as a Tool for Climate Change and Food Security Communication

The impact of climate change on food security communication is a topical issue. A few decades have seen a rise in publications addressing individual perceptions of the impacts of climate change for lay audiences, who are emphasized as particularly relevant in the context of climate change (Poore, 2018). This is characterized by the significant contributions to climate change of individuals and household emissions and by the ability of individuals to exert political influence to learn from their experiences. Significantly, the availability of Forte FM, Mdantsane FM, and Rhodes Music Radio as tools for climate change communication on food security cannot be overemphasized. However, listener perception of the three community radios under study has generated a mixed reaction from listener communities.

One of the critical findings of this study is that the selected community radios have been identified as an important medium or tools for community development and with the ability to provide platforms for engagements and debates among its listeners for climate change communication. As reported by the focus group participants and the radio programme managers who all noted that the radio stations regularly update listeners on weather reports, and addresses topics related to climate change on food security through experts. More so, some of the study participants observed that climate change awareness must be promoted by selected community radios. That is, the under-study radio stations should improve its programmes by creating community awareness and implement programmes and talk show or public spheres that address climate change messages. This is equally supported by the agenda setting theory and media dependency theory guiding this study.

Another valuable finding of this study is that listener perceptions of community radio as a tool for communicating climate change-related food security information were optimistic because the listeners all attested to receiving messages about the impacts of climate change on food security. Moreover, agenda-setting theory and its uses and the dependency theory that underpins this study posit that community radio's influence usually persists for a long period depending on the portion of the media that transmits the agenda. And this tends to shape listeners perceptions towards the media. Hence, it helps the listeners express themselves and is entitled to be served by the media according to their disposition and priority (Milan, 2009).

5.4.7 Listeners Perception on Community Radio as a Tool for Communicating Weather Updates

The affordability of radio as the most common and cheapest electronic device for communicating weather updates to Alice, Mdantsane, and Grahamstown residential areas cannot be overemphasized. A significant finding of this study is that the selected community radio stations serve as a weather desk to their listeners, where messages about changes in weather, planting and harvesting seasons, heavy rainfall, floods, and droughts are being disseminated to listeners and individuals (Poore, 2018). This informs the community so it can plan for future climate occurrences. In addition, the messages are always helpful, especially on community news, music and weather forecasts, pollution, and environmental news that informs listeners on how to keep warm and stay healthy. The study participants and the radio program managers generally noted that community radio is a powerful tool for disseminating weather updates to rural communities. Hence, the availability of community radio has given grassroots

communities a viable means of adapting to changes in weather caused by climate change (Zougmore, 2019).

Another critical finding of this study is that it uniquely broadens listeners understanding on the difference between the word "weather and climate change" because majority of the listeners felt both words could be used interchangeably. Hence, this study educates and clarifies their misconception. In addition, this study significantly examined how global warming (climate change) that adversely affect people's livelihoods, which is also detrimental to individual's health and wellbeing is well understood. Hence, messages on the impacts of climate change on food security were well received through the selected community radios. The agenda setting theory and media dependency theory justifies the need to be informed and depend on community radio for messages on communicating the impacts of climate change on food security in rural communities.

A vital finding of this study is that the trio community radio stations under study broadcast messages about the manifestations of climate change which includes floods, heavy rain, erosion storm, hurricanes and droughts when broadcasting about daily weather updates. Hence, the radio stations usually furnish early warning updates about bad weather days. Also, the focus group participants noted that the messages about changes in weather, planting and harvesting season, heavy rainfall, floods, and droughts have been so helpful to them all as a community and individual. It informs the community to make plans for future occurrences (Henderson, 2017).

5.5 Conclusion to the Study

This study investigated the role of community radio in communicating the impacts of climate change on food security in rural South Africa. The focus group discussions and

the interviews with the trio of radio program managers portrayed radio as a significant instrument used for informing, educating, monitoring, and sustaining public awareness of grassroots communities. Hence, the post-interview process showed that the opinions of the radio program managers were similar since they were all community radios. However, the literature examined also reported that community radio stations are regarded as pillars of society because radio is the voice of the communities within which they operate (Poore, 2017). Hence, it was shown in this study that weather updates from Forte FM, Mdantsane FM, and Rhodes Music community radio stations have informed listeners to have a better understanding of the effect of climate change across the globe, especially news about areas that are relatively dry like parts of Southern Africa (South Africa, Malawi, Zimbabwe, and Mozambique) that experience a decrease in the availability of water (Mditshwa, 2020).

Expressively, this study also found out as revealed in the literatures that the selected community radios communicate the economic, social, and physical impacts of climate change on food security through adaptation to their listeners. That is, informing listeners on how to locally adapt and mitigate the manifestations of climate change. Thus, community radios help to educate listeners on how to keep warm as well as how to prepare for manifestations of climate change such as floods, heavy rainfall, storms, hurricanes, high-sea level, hails, droughts, and wildfires, amongst others. What has made this study unique from other scholarly approaches to climate change and food security communication is emphasis and novelty to address the impacts of climate change on food security in the rural Eastern Cape Province through community radio in a descriptive analysis.

Another vital distinctiveness of this study focuses more on how individuals perceived the impacts of behavioral changes received in respect of climate change on food security. In all cases purposively selected for this study, abundant opinions have been noted on how listeners perceived the impacts of climate change on food security in Alice, Mdantsane and Grahamstown residential areas. In all the focus group participants discussions and interviews conducted and analyzed in this thesis, community radio has proven to be instrumental in communicating the impacts of climate change on food security to the rural communities, most especially in Alice, Mdantsane and Grahamstown communities.

The originality of this study contributes to the body of knowledge through the accessibility of environmental health and nutritional information to the study communities and globally too. This valuable addition has emerged in the discussion and analysis of the various descriptions in this thesis. The perceptions of listeners on what kind of climate change and food security messages are communicated at Forte FM, Mdantsane FM, and Rhodes Music community radio stations have been well highlighted in this study. The thesis has also revealed how the study participants perceived community radio stations in relation to the impact of climate change on food security communication. This study also revealed the extent to which the messages around climate change and food security benefit the study communities and the various challenges confronting these community radio stations in communicating the impact of climate change on food security.

This study's exceptional final analysis has portrayed community radio's potential as a handy tool for grassroots communication and development. Thus, the analysis and

findings rightly placed this thesis on the use of indigenous language and community publicity as a consideration for communicating climate change on food security in rural areas. Hence, this has emerged as a novelty contribution by this study to the existing body of knowledge with *isiXhosa* language used as a medium of communication by these radio stations.

Another valuable contribution of this study to the body of knowledge is that it has been able to come up with two suitable climate change models that reflect local actions that would ensure food security, promote adaptation, and build resilience for the Eastern Cape's inhabitants against climatic stresses, with the motive of representing the findings of this study. This has added to the scholarly views on communicating the impacts of climate change on food security. According to Niang (2014), who noted that rural areas are vulnerable to climate change not basically as a result of extreme exposure to specific changes such as rises in temperature, droughts, and rainfalls, but because a number of rural inhabitants lack basic knowledge, awareness, and capacity to cope with or adapt to the negative impacts of climate change. What is equally unique in the adoption of these suggested models is that they answer the questions the research problem poses in this study by proposing a pro-active and not a re-active approach to communicating the impacts of climate change on food security. It also contributes to the efficient use of natural resources by avoiding investment that unintentionally leads to maladaptation. Hence, they pose the potential to improve the resilience of developmental outcome in the rural communities of the study.

One of the significant contributions of this study is that the theoretical frameworks and research population chosen in this study had enlightened the locations of the study to

be familiar with climate change and food security communication through the selected community radio stations. However, the research participants noted that this present study focusing on communicating the impacts of climate change on food security will help the radio stations programming, especially on how community radio can best fulfill its mandate. On the other hand, the agenda setting theory and media dependency theory have also added value to the discussion in arguing the study's position on how helpful the messages around the impacts of climate change on food security have been to listeners as well to know if the messages have brought a sort of behavioral changes to listeners food safety and community's adaptive capacity. Hence, both theories justify how the media must set agenda for climate change information, as well as how the listeners must use and depend more on media messages to mitigate the impacts of climate change on food security for this present study. The two theories help to investigate how effective Forte FM, Mdantsane FM and Rhodes Music community radio stations communicate the different types of messages, around the impacts of climate change on food security in the selected communities in the Eastern Cape Province.

A unique finding from this study also revealed among other things that, useful health tips, agriculture tips have enhanced listeners to have backyard garden and promote farming system. This has afforded individual the privilege of planting vegetables and fruits to promote a healthy living and sustain food security in their own capacities. In light of the above significantly, media dependency theory and agenda setting theory that underpins this study which holds that community media makes relevant information accessible to their audience so as to enhance an informed society. Similarly, the two theories highlight the relevancy of communicating the impacts of climate change on

food security so as to ensure that pro-active measures are adopted by listeners and community radio stations to mitigate the impacts of climate change as well as ensuring stability of food security and utilization.

Another vital finding of this study indicates that, the radio programme managers opinion on a number of challenges that the radio stations encountered when broadcasting programmes around the impacts of climate change to their listeners are; lack of support from government and private sectors among others, lack of partnership with relevant sectors, limited experts or professional in the field who could unpack the impacts of behavioral change messages to listeners. Nevertheless, the community radio stations are utilizing the limited resources at their disposal for their listeners. Notably, the under-study community radios are still fulfilling their mandates by implementing programmes that are related to climate change for their respective listeners.

This study's novelty has found out that the qualitative method of data gathering adopted, via the focus group discussions and interviews aids the study to investigate and reveal the kind of climate change on food security messages that are communicated by Forte FM, Mdantsane FM and Rhodes Music community radios. Additionally, the radio programme managers' opinions on the need to organize an awareness campaign, seek guidance to and between communities with regards to what each community experiences due to global warming have been exceptional. Also, organizing workshops and seminars to improve presenter's skill as well as seeking more relevant partnership in the field of climate change complements the participants opinions on what Forte FM, Mdantsane FM and Rhodes Music community radios could do to improve their climate change on food security communication in the rural areas.

Another valuable finding from this study further indicates that the listeners perceived the impacts of behavioral change messages broadcasted by Forte FM, Mdantsane FM, and Rhodes Music community radio stations. The messages on environmental pollution, organic nutritional-related programs, and how to conserve natural resources efficiently have been helpful. Additionally, participants' opinions from the focus group discussions regarding encouragement to be an active radio listener also revealed that some of the radio stations programs targeting the younger children are broadcast at the wrong timing, which suggests that the targeted audience was unavailable at the time of broadcast. The participant noted that these lapses would discourage listeners and affect the radio station's productivity. Thus, listeners' weak perception of community radio stations would result in a malformed society and food insecurity. Hence, the participants advocated for pro-active program planning.

Another originality of this study shows that the opinions of the focus group discussions participants, Forte FM, Mdantsane FM and Rhodes Music community radios programmes had been helpful, beneficial, informative and educative in disseminating weather updates, promoting cultural values, delivering local contents (*isiXhosa* language), environmental and nutritional messages as well as behavioral changes messages, but emphasized that listeners expectation has to be fully met in order attract more audience to the radio station's climate change on food security programme. Hence, expectations are high on the part of the trio community radios to the listeners to establish community awareness and to print the radio station's physical identity on presenter's tee-shirt.

One of the strings finding and unique contributions of this study is that it portrayed the selected radio stations to be committed to meeting the physical needs of the members of the community. It is worthy to note that this study foregrounds the need to communicate the impacts of climate change on food security, which Forte FM, Mdantsane FM and Rhodes Music community radios are actively involved in. But more significantly, the study suggests the need to embrace an innovative measure by setting media agenda on what listeners must think about to adapt to the climate. The media must increase public awareness to address the impacts of climate change on food security through community radios.

Conclusively, the study showed that communicating the impacts of climate change on food security via community radio requires intensified effort as it is waning with time in rural South Africa; therefore, there would be a need for pro-active recommendations, which are highlighted below. In a nutshell, this study has portrayed community radio as an effective tool for both scientific and lay audiences (common citizens) and individuals in the growing climate change on food security communication.

5.6 Recommendations of the study

This section outlines the recommendations drawn from the research conclusions.

- This study recommends that Forte FM, Mdantsane FM and Rhodes Music community radios climate change awareness on food security communication should be improved through public activism that would inform the listeners' basic knowledge on how to mitigate and adapt with climate conditions.

- This study also recommends that the under-study community radios should encourage the need for inclusive, comprehensive, and just solutions within the

context of sustainable development. As this would steer climate change mitigation efforts as well as how individuals perceived the impacts of behavioral change messages.

- This study also recommends the trio radio stations to implement pro-active measures such as engaging with local partners, farmers' group, and policy makers, national government for collaboration. As this would help to select appropriate technological and institutional interventions based on global knowledge and local conditions that would enhance productivity in rural communities. Additionally, it would encourage climate change expert's availability in food security communication.

- This study recommends that, although the three radio stations broadcast more developmental programs, there is a need to improve and set an agenda for the content of those programs. Focusing more on development programs such as climate change and food security that affect livelihoods and ecosystems.

- This study recommends interactive radio programming for the under-study communities, using talk show format, promoting organic nutrition related messages via live videos with influential community members, health workers and representatives from agricultural partner networks. As this would complement the community videos and demos that Forte FM, Mdantsane FM and Rhodes Music community radios produces annually.

- This study wants to recommend that the trio community radios should form a listening club or group selected from listening community, organization, and networks to listen to radio spots and programmes. This club would take note on
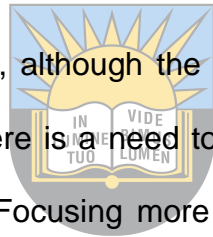
the timing, topic, presenter's skills, and sound quality production, in order to improve programming impact and perceptions of climate change on food security messages on listeners.

5.7 Contributions to the Existing Knowledge

This study has contributed to the existing body of knowledge in community radio about the impacts of climate change on food security by investigating the impacts of climate change on food security in the rural Eastern Cape Province, South Africa. The potential contribution of the findings is relevant to academia, policy, case study communities, and the broader South Africa. The impacts of climate change on food security are manifesting to threaten livelihoods, plants, and animals through droughts, heavy rainfall, hurricanes, and a rise in temperature, wildfires, floods, and a rise in sea level, among others. In addition, this study has revealed the types of climate change and food security messages that are communicated on Forte FM, Mdantsane FM, and Rhodes Music community radios.

This study concluded that the community radio stations under study are addressing climate change and food security-related topics based on the availability of experts and professionals. These experts are vast and more knowledgeable in climate change communication to justify and address climate change-related topics to enhance listeners' local adaptation and mitigation processes. Hence, addressing topics related to climate change helps to mitigate and adapt to future climate variations. Consequently, this portrays how the rural Eastern Cape Province inhabitants, who are vulnerable to the impacts of climate change, receive messages about the impacts of climate change on food security. The result was due to the relatively good information gotten regarding the

impacts of climate change on food security messages, such as a lack of adequate awareness and low capacity to adapt to climate change effects in Alice, Mdantsane, and Grahamstown communities in the Eastern Cape Province of South Africa. In light of the above and considering the valuable findings from this study, the researcher has come up with two models, which are discussed below.

5.7.1 Suggested Local Action Adaptive Communication (LAAC) Model

This study investigates communicating the impacts of climate change on food security. This study suggests two suitable modelling techniques. They are subject to the general limitations of this study, which have been extensively addressed in the literature. The Local Action Adaptive Communication (LAAC) Model is therefore necessary to be adopted by the understudied communities. The adoption of the LAAC Model would help to reduce and eradicate the potential limitations and impacts of climate change on food security. Pro-active measures and programming, rather than reactive planning, would help climate change adaptation and sustainable food security in the Alice, Mdantsane, and Grahamstown communities. Considering the way climate change and food security communication is limited in the rural Eastern Cape Province, as highlighted by the findings of this study, there is a need for local action adaptive communication (LAAC) awareness. This study suggests a local action adaptive communication (LAAC) model. This would enhance more community awareness and provide proper information on the meaning and manifestations of climate change to listeners, while also mitigating the impacts of climate change. Therefore, the Local Action Adaptive Communication (LAAC) Model indicates the need for community sensitivity and publicity, pro-active
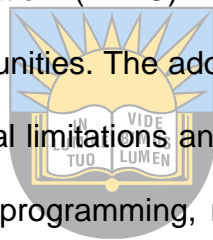
adaptation with relevant bodies in the environmental sector, as well as collaboration with non-governmental organizations (NGOs) in increasing climate awareness.

In Figure 5.1 below, the study recommends that Forte FM, Mdantsane FM and Rhodes Music Radio must implement an effective climate change radio programme. Organizing an effectual climate programme would help to achieve a sustainable development goal to mitigate the impacts of climate change on food security in the communities' under-study.
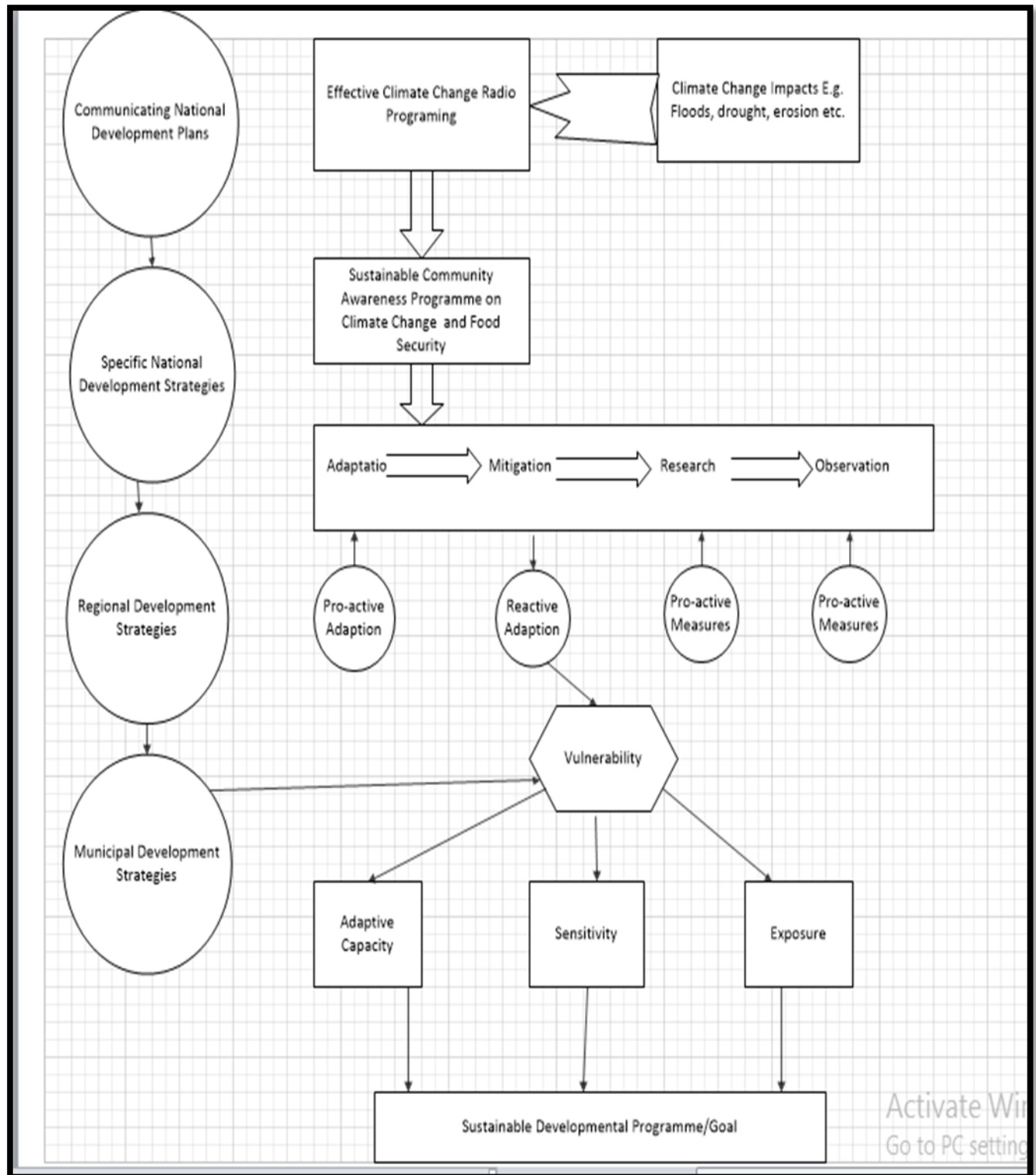
Figure 5 1: Conceptualized Local Actions Adaptive Model   Source: Author (2022)

The sustainable community awareness program on climate change and food security illustrates a climate-resilient development program that seeks to mitigate climate effects in rural communities such as Alice, Mdantsane, and Grahamstown. This developmental program would contribute to the efficient use of natural resources such as water. That is, by providing a healthy natural ecosystem to help listeners adapt to climate change. It would equally optimize the efficient use of natural resources to aid in mitigating climate change in the study communities. The understudied community radios must partner with the government and non-governmental organizations (NGOs) to build resilience for communities affected by water challenges, erosion, floods, and current droughts caused by the climate. In addition, community radio represents member stations in negotiations with the government and other relevant bodies to lobby on behalf of the communities. Hence, performing with the right organization and advertisers Facilitate the exchange of climate change news and programs on food stability and utilization to enhance food security. Also, the national, regional, and municipal development strategies illustrate a multi-level process to respond to climate change. The planning at the national level provides the overall framework within the regional level and municipal level operated.

This shows that several policies, budgets, programmes and plans are needed from the government and various relevant sectors (agriculture, water and ecosystem) at the national level to support these efforts. Unfortunately, national development plans and policies require a number of processes and protocols which make it slow to translate into an evident action to rural communities. Nevertheless, community radio stations are mandated to contribute to the well-being of their societies by acting as the voice that brings the community together. Hence, providing contents that are demand-driven such
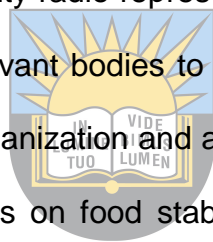
as the impact of climate change on food security and the government's short- and long-term strategies to mitigate climate change manifestations globally is vital.

Pro-active adaptation illustrates the processes and steps which includes but not limited to research and observation that the study community radios should take in advance before the impacts becomes observable. These actions include, organizing community publicity, calling for community meetings to know, understand and seek guidance to and between local communities regarding the impacts that each communities' experiences due to the global warming. This is also supported by the work of Fox (2019) who noted that community radio organizes a platform that enhances community participation. Most especially on subjects such as climate change information services, human right observation of the common groups of people, HIV/AIDS awareness campaign, and COVID-19 Pandemic preventive measures among others.
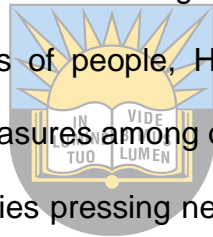
Furthermore, seeking out communities pressing needs and communicating the impacts of climate change on food security-related matters in a way that would enhance people's resilience and reduce exposure to adapt to the present climate temperature is critical. It is vital that climate hazards, vulnerabilities, and exposure are understood, and that climate resilience becomes integral to community radio programs. Hence, the Local Action Adaptive Communication (LAAC) Model suits the findings of this study because it would enhance effective and sustainable development in the communities under study.

5.7.2 Suggested Indigenous Behavioral Change Conceptual (IBCC) Model

The second suggested model is the Indigenous Behavioral Change Conceptual (IBCC) Model. This model links and aligns well to the research questions asked in the beginning of this study. The model is shown below:
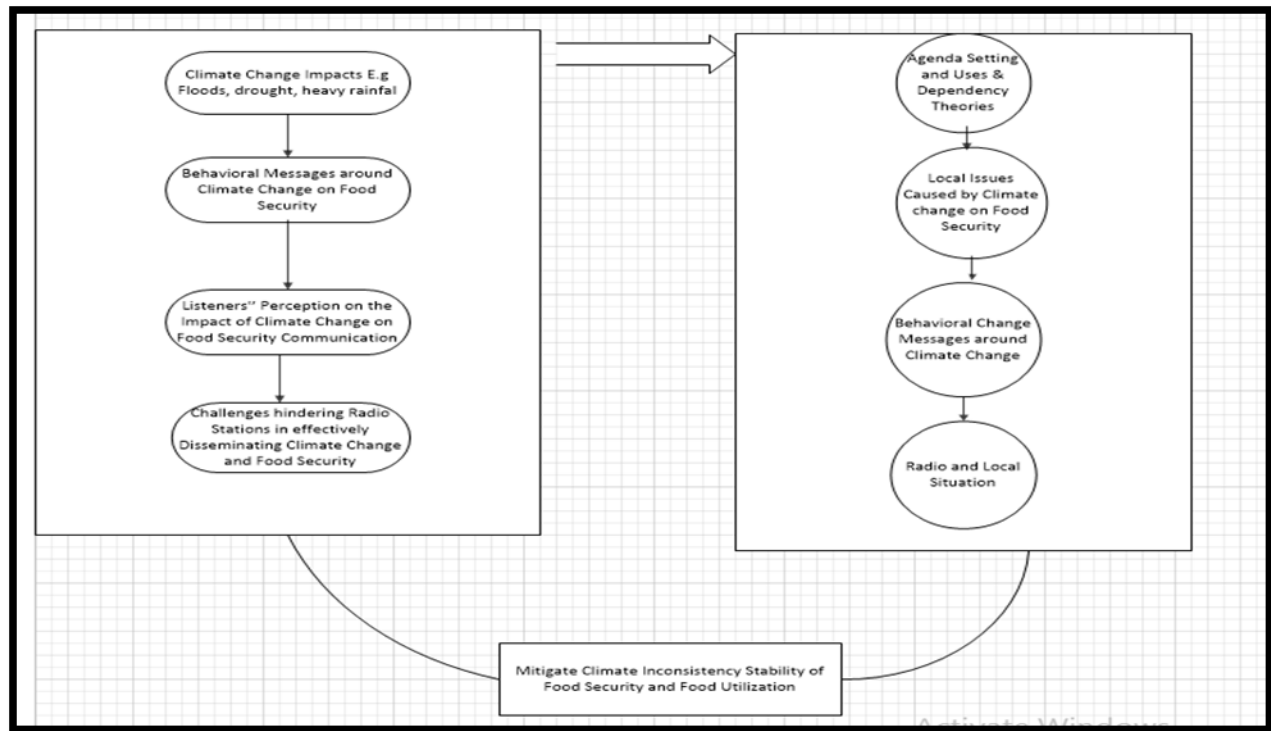
Figure 5 2: Indigenous Behavioral Change Conceptualized Model Source: Author (2022)

In the above Figure 5.2, the Indigenous Behavioral Change Conceptual Model (IBCC) is recommended to Forte FM, Mdantsane FM, Rhodes Music, and other community radio stations. This recommended model would help attract listeners' communities that have limited knowledge on climate change information. The behavioral change messages may be disseminated in South Africa's multilingual translation. That is, achieving sustainable results for this present study's communities via each province's medium of communication. This Indigenous Behavioral Change Conceptual (IBCC) model illustrates how Forte FM, Mdantsane FM, and Rhodes Music community radio stations would increase listener interest. That is, to know the facts about the imminent effects of climate change on livelihoods. This would also encourage listener involvement as well as inform the communities on how to adapt to the changes in climate.

The Indigenous Behavioral Change Conceptual (IBCC) model also illustrates local issues caused by climate on food security. This Indigenous Behavioral Change Conceptual (IBCC) model is paramount because it would help the community members to know the kind of climate change on food security messages that are communicated to Alice, Mdantsane, Grahamstown and its environs where the radio station's bandwidth covers. Hence, helps the under-study community radio stations to understand how useful and beneficial behavioral messages around climate change and food security are to the study communities. Thus, establish how Alice, Mdantsane and Grahamstown communities perceive Forte FM, Mdantsane FM and Rhodes Music community radios in relation to climate change on food security communication.

Community radio programmes are key elements of our social and behavioral change communication. Hence, community radio is used to disseminate information on topics related to nutrition, agriculture, food security, climate change, and environmental related messages. Behavioral messages, as one of the types of messages broadcast by Forte FM, Mdantsane FM, and Rhodes Music community radios, are what would change and match listeners to their diverse societies and country at large. Notably, well-designed programs on climate change would appeal to listeners social norms. In addition, a good representation of what people can do, such as encouraging community awareness on climate change adaptation and mitigation measures, creating awareness on the planting of trees, pollution, and environmental news, among others, in listeners various mother tongues (isiXhosa), would be helpful. Furthermore, climate change publicity would equally motivate listeners to understand and get involved in promoting a sustainable behavioral attitude that may contribute to support effective climate policies in the study

communities. However, adopting agenda-setting theory in convergence with the Indigenous Behavioral Change Conceptual (IBCC) Model to radio stations programming would often encourage collaborative radio programs via road shows, talk shows, vox-pop, interviews, and behavioral change podcasts. Most especially promoting local knowledge and indigenous institution in climate change communication. Hence, divergence of ICT and local situations would undoubtedly promote re-invention of programming at Forte FM, Mdantsane FM and Rhodes Music Radios programming.

Moreover, these local knowledge and indigenous institutions would encourage local farming and backyard gardening. Hence, promote diversification of programmes addressing animals and crops within farming systems such as the use fertilizers, green manure, and composting as well as integrated pest management. These behavioral change messages targeting small holder farmers and listeners communities must be timely, accessible, and appealing to enhance and promote stability of food security and utilization in Alice, Mdantsane and Grahamstown communities respectively. Nevertheless, listener perception on the impacts of climate change on food security communication would accomplish optimum result. Thus, inspire experts and professionals to collaborate with government and Non-Governmental Organizations (NGOs), to mitigate climate inconsistency through organizing a sustainable indigenous behavioral developmental programme at Forte FM, Mdantsane FM and Rhodes Music community radios in the Eastern Cape Province, South Africa.

5.8 Limitations and Suggestions for Future Works

The study investigates communicating the impacts of climate on food security in rural South Africa. That is, to know the roles of community radio in addressing climate change on food security issues, in some selected rural areas of the Eastern Cape Province. However, there are numerous gaps that could be considered from the findings which provide areas for future research. Further research is needed in a few areas such as communicating climate impacts in urban areas where there are private owned and public community radios, to investigate their similarities, disparities in disseminating development programmes. This study focused on communicating the impacts of climate change on food security in rural Eastern Cape Province, another study could be conducted addressing the impacts of climate change on urban inhabitants. This study focused on both campuses based and non-campus-based community radios. Similarly, another research could be conducted between community radio and national radio stations to seek their opinions. This therefore implies that opinions collected from this study's participants might be divergent based on individual's dispositions. Conversely, in climate change, it could be a comparative analysis of climate situations in developed and developing nations through community radio. Hence, it might be the role of community radio in showcasing agricultural campaigns to promote food security.

In another development, this study was limited due to financial constraints and accessing the geographical areas that Forte FM, Mdantsane FM, and Rhodes Music community radios could reach limited this present study to Eastern Cape Province. Thereafter, this present study encountered some limitations while the focus group discussion was on going. However, going to the field in company of the research

assistant enabled the study to generate wealthy opinions.   In addition, due to the global COVID-19 Pandemic that causes a great threat to livelihoods and all sectors most especially the media, scheduling an interview with the radio programme managers was constrained. This was because of the new trend of broadcasting online which limited face-to-face interactions. Hence, the radio station programme managers were always swamp at work. Thus, after many consultations and dialogue we kept exchanging emails. Finally, the in-depth-interviews were held exclusively.

5.9 Chapter Summary

This chapter summarized the research findings, re-stated the problem, highlighted the overview of the research findings, and presented a summary of the key findings. The chapter also highlights the study's limitations, makes suggestions for future work, and outlines proposed recommendations. However, the findings from this study portrayed community radio as an effective tool for communicating other development programs and the impacts of climate change on food security in the rural Eastern Cape Province, South Africa. On the other hand, the findings from this present study also revealed listeners perceptions about the meaning and manifestations of climate change, which include but are not limited to droughts, floods, hurricanes, a rise in sea level, and erosion. Hence, the need to improve awareness, community activism, and developmental programs that address the impacts of climate change on food security. The community radio stations always address climate change on food security-related topics to listeners. To improve this, this study proposes two relevant models that may enhance climate change awareness and provide pro-active adaptation to mitigate the impacts of climate change, as well as ensure that behavioral change messages

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targeting listeners enhance the stability of food security and utilization. The study further recommends that community radios organize interactive radio programming using talk show formats and community publicity to promote organic nutrition-related messages. These programs must be conducted via live videos with influential community members, climate change experts, government parastatals and non-governmental organizations, environmental workers, and representatives from agricultural partner networks to promote sustainable food security.

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APPENDICES

Appendice A: Ethical Clearance Certificate

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ETHICS CLEARANCE
REC-270710-028-RA Level 01

Project Number: OSU011SBAM01

Project title: **Communicating impact of climate change on food security in rural South Africa: A study of three selected community radio stations in Eastern Cape Province.**

Qualification: PhD in Communications

Principal Researcher: Foluke Bosede Bamigboye

Supervisor: Prof O.O Osunkunle

Co-supervisor: N/A

On behalf of the University of Fort Hare's Research Ethics Committee (UREC) I hereby grant ethics approval for OSU011SBAM01. This approval is valid for 12 months from the date of approval. Renewal of approval must be applied for BEFORE termination of this approval period. Renewal is subject to receipt of a satisfactory progress report. The approval covers the undertakings contained in the above-mentioned project and research instrument(s). The research may commence as from the 11/08/20, using the reference number indicated above.

- Any material changes in the conditions or undertakings mentioned in the document;
- Any material breaches of ethical undertakings or events that impact upon the ethical conduct of the research.

The Principal Researcher must report to the UREC in the prescribed format, where applicable, annually, and at the end of the project, in respect of ethical compliance.

The UREC retains the right to

- Withdraw or amend this approval if
    - Any unethical principal or practices are revealed or suspected;
    - Relevant information has been withheld or misrepresented;
    - Regulatory changes of whatsoever nature so require;
    - The conditions contained in the Certificate have not been adhered to.

- Request access to any information or data at any time during the course or after completion of the project.

Your compliance with DoH 2015 guidelines and other regulatory instruments and with UREC ethics requirements as contained in the UREC terms of reference and standard operating procedures, is implied.

The UREC wishes you well in your research.

Yours sincerely

Professor Renuka Vithal
UREC-Chairperson
18 September 2020

Appendice B: Focus Group Discussion Interviews Guide

FOCUS GROUP DISCUSSION GUIDE

➢ How often do you listen to Forte FM/Radio Grahamstown/ Mdantsane FM?

➢ Does the messages of Forte FM/Radio Grahamstown/Mdantsane FM on climate change in food security programming been impactful to you as listeners?

➢ How often Forte FM/Radio Grahamstown/Mdantsane FM does communicates climate change messages on food security to its listeners communities?

➢ Are you involved in climate change on food security programming of the radio station?

➢ How do you perceive the impact of behavioral change messages around climate change on food security broadcasted by the community radio stations?

➢ Has the messages brought any positive/negative changes to you as a community?

➢ What do you think Forte FM/Radio Grahamstown/Mdantsane FM can do to improve its broadcasting skills in climate change on food security?

➢ Are you encouraged to be an active radio-listeners through climate change on food security communication of the radio station?

➢ What is significant to you as regards the radio station?

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Appendice C: Radio Managers Interview Guide

IN-DEPTH INTERVIEW WITH THE PROGRAMME MANAGER

➢ What is your involvement with Forte FM/ Radio Grahamstown/ Mdantsane FM?

➢ What is the history of Forte FM/Radio Grahamstown/ Mdantsane FM? Who came up with the idea?

➢ How was it to be funded?

➢ How does the community radio station communicate the impacts of climate change on food security, does the radio put the interest of the listeners into consideration?

➢ What is the involvement of listeners' community in the broadcasting of climate change messages on food security?

➢ How does the radio station unpack the impact of behavioral change messages around climate change on food security to its listener's communities?

➢ Does the radio station encounters any challenges in broadcasting climate change messages on food security to its listeners?

➢ How does the listeners perceive community radio stations as a tool for communicating climate change messages on food security?

➢ What are the roles of community radio in exploring behavioral change of its listeners through climate change on food security communication?

➢ What can the radio station to improve its broadcasting skills as regards climate change on food security in rural communities?

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Appendice D: Login Interface for NVivo 12
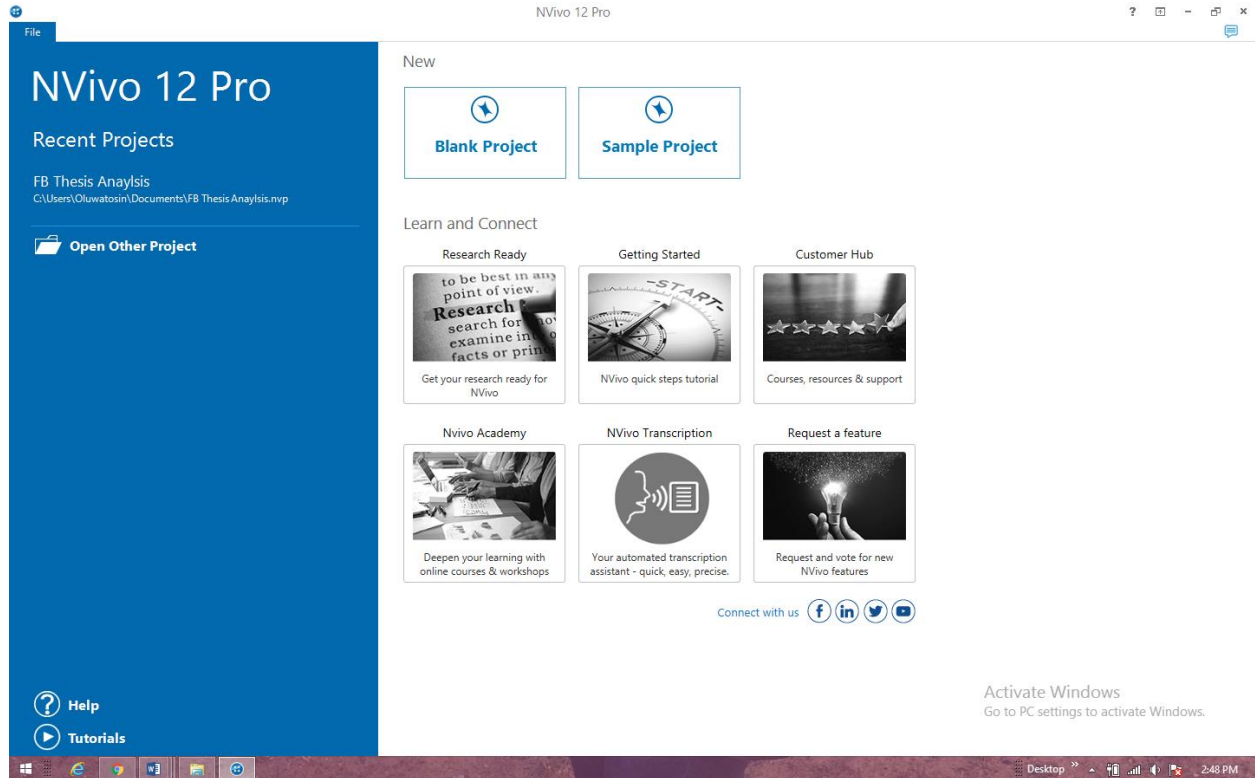
Appendice E: Importing Transcribed Files into Nvivo 12

Appendice F: Creation of Nodes on NVivo 12

Appendice G: Coding of Nodes on NVivo

Appendice F: Turnitin Report

Thesis Turnitin

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