



GESI Gaps and Climate Information Delivery and Utilization in Nigeria

Editors:
Sulaimon Arigbabu
Tunde Akanni Ph.D



AUGUST 2024



OXFAM

GESI GAPS AND CLIMATE INFORMATION DELIVERY AND UTILIZATION IN NIGERIA





S

<i>Dedication</i>	
<i>Acknowledgement</i>	
<i>Introduction</i>	4

T

THE REALITY OF CLIMATE CHANGE IN NIGERIA AND MATTERS ARISING	6
--	---

N

- Impact of Climate Change on Nigeria 7
- Climate Change Awareness 8
- Importance of Access to Climate Change Information 8
- Challenges to Widespread Awareness 8
- Assessing Gender and Social Inclusion in the Access to Climate Information and Awareness at the Local Level 9
- Climate Information Awareness 13
- Assessing Inclusion in Climate Change 25
- Assessing Knowledge And use of Climate Information Services 30

E

T

N

O

C

ISSUES AND CHALLENGES OF ACCESS TO CLIMATE INFORMATION SERVICES AMONG VULNERABLE	35
• Introduction	36
• Climate Change and Agricultural Production: Issues and Challenges	38

- Accessing Climate Change Information among the Vulnerable Groups 39
- Participation of Women and Youths in Agriculture 40
- Constraints in accessing climate change information 40
- Recommendations 42
- Conclusion 43
- References 44

S

THE ROLE OF YOUTH IN BRIDGING THE CLIMATE INFORMATION GAP 47

T

- Introduction 48
- Climate information services and the Youth 48
- Strategies for Overcoming Obstacles to Information Access 51

N

- Recommendations 53
- References 54

E

T

N

O

C

DEDICATION



*“We dedicate this report, *GESI Gaps and Climate Information Delivery and Utilization in Nigeria*, to Engineer Nabeel Adeyemi (Ph.D), a true champion of sustainable development and an inspiration to us all.*

Nabeel’s exceptional leadership and dedication to this project were instrumental in bringing this publication to life. His tireless efforts in leading the fieldwork, coupled with his expertise and passion for climate resilience, have made a lasting impact on the lives of many Nigerians.

A true patriot, Nabeel’s selflessness and commitment to promoting sustainable development in Nigeria are a testament to his outstanding character. His training in Nigeria and Malaysia equipped him with a unique perspective, which he leveraged to drive positive change.

This report, which sheds light on the critical GESI gaps in climate information delivery and utilization in Nigeria, is a fitting tribute to Nabeel’s legacy. May his dedication, expertise, and passion continue to inspire us to strive for a more sustainable and equitable future for all Nigerians.”

ACKNOWLEDGEMENT

We express our sincere gratitude to the numerous individuals and organizations that contributed to this publication, part of the Power of Voices Project - Africa Activists for Climate Justice.

We thank Oxfam in Nigeria and the Netherlands Ministry of Foreign Affairs for their generous support through a 5-year grant, now in its 4th year.

Arigbabu Sulaimon and the late Dr. Nabeel Adeyemi designed the concept and survey instrument, laying the foundation for this work. The team of Sulaimon Arigbabu, Dr. Nabeel Adeyemi (late), Abdulazeez Salawu, Barakah Danmole, Ismail Tijani, and Salako Nurudeen conducted the fieldwork with dedication. Abdulkareem Mojeed, a journalist, provided valuable support.

Our partners in various states facilitated access to frontline communities, and Dataphyte Foundation analyzed the fieldwork report. We appreciate the Director General of NIHSA for writing the foreword to the Report.

Additional desktop clean-up work was done by

Mayowa Shobo and Ismail Tijani. We thank the following persons for their scholarly inputs; Professor James Olumuyiwa Jayeoba and Professor (Mrs) Jamilat Yaqub.

This publication was edited by Arigbabu Sulaimon and Dr. Akintunde Akanni.

This publication is a testament to collective effort and collaboration. We acknowledge and appreciate the contributions of all individuals and organizations involved.



Introduction

Climate change in its ceaseless revelation around the world is leaving no one in doubt about its impact. It does not matter whether humanity is well prepared for it or not. Across different phases of the planet, the effects are registering boldly with unmistakable signals too that the severity may continue to deepen if appropriate measures are not taken.

To come up with any effort for mitigation or solutionist focus on the ensuing impact will require a clear understanding of the phenomenon as it continues to bare its multidimensional impact across sectors.

In this report, the Human and Environmental Development Agenda, HEDA, has boldly undertaken to expertly share fundamental information about the disturbing phenomenon even as it seeks to inspire popular participation of

Nigerians who inevitably have to brace up to the emerging era of climate change.

The nation, blessed with diverse ecosystems and a rich cultural heritage, is now facing unprecedented challenges that threaten its environment, economy, and the well-being of its people. One of Nigeria's most noticeable manifestations of climate change is the steady rise in temperatures. Over the past few decades, the country has experienced more frequent and intense heat waves. The consequences are dire, especially for the agricultural sector, as rising temperatures contribute to droughts and altered precipitation patterns, with farmers facing the daunting task of adapting their age-old practices to an unpredictable climate, impacting food security and livelihoods.

But the farmers are not alone in this forced

transition. Nigeria's extensive coastline, particularly in the Niger Delta region, faces the imminent threat of rising sea levels. Coastal erosion and salinity intrusion have become pressing issues, directly impacting communities that depend on fishing and agriculture. The loss of land to the encroaching sea disrupts livelihoods and forces communities to migrate inland, leading to conflicts over resources and strained infrastructure.

Not a few benefits therefore may accrue to Nigerians from conscious popular dissemination of relevant information. HEDA, in its independent study, established that authorities, communities and individuals stand to reap such advantages as informed decision-making, Risk Reduction and Adaptation, Public Engagement and Advocacy as well as Behavioural change and sustainable practices.

Desirable as access to the relevant information on the phenomenon in question is, the second part of this publication focuses on the inhibitions that some vulnerable groups in the society may likely encounter even as they are not any less affected by climate change. Women reportedly constitute majority in population of smallholder farmers producing about 60% of local food consumption but are often excluded from several interventions with noted gender imbalance in various interventions for increased agricultural productivity and earnings. This puts women in a more vulnerable position to agricultural risks, among which are adverse climate conditions.

No less striking is the fact that the availability of climate information to farmers especially in rural areas where a larger percentage of what Nigerians eat comes from is very low and those who even have access to such information hardly understand the 'forecast' from the metrological centres. This is despite the very critical work being undertaken by the Nigeria Meteorological Agency (NiMet) in that space. The relief, is that the information is available and updated too courtesy of NiMet, however, the last-mile dissemination remain a huge challenge as other stakeholders, especially other governmental agencies (including Federal, States and Local Governments) are yet to adequately rise to the

challenge.

It is noteworthy, that digital technology and a sizeable youth population could be the game changer desperately needed to combat climate change through information and knowledge. Whereas government owned agencies like NiMet mainly does the production of the relevant climate information, the place of the youth in information dissemination is most expedient. This is the easiest entry point and largest area of influence of young persons in the climate information services value chain. As identified in the preceding chapter, there is a huge climate information gap between the primary producers and the end users. Youth could leverage on their innovative acumen to develop new tools and products that they can sell to farmers either as a stand-alone service or as a bundled service.

This publication offers interesting insights and even more as hinted in this introduction. This publication presents the findings of survey conducted by HEDA in 17 states and 32 communities across the country. Some of the key questions we sought to answer are; what is the level of access to climate information services to communities in Nigeria; what are the challenges to accessing climate information services; and to what degrees do gender, age and other factors impact or impair access to climate change for communities in Nigeria. Though prepared in English language, each respondent was given the opportunity to communicate in the language of their comfort with the help of interpreters. The outcomes of that exercise was analysed by DataPhyte. In addition, and to enhance the context of this report, 2 well-resourced papers and an editorial opinion were sourced to look at Issues And Challenges Of Access To Climate Information Services Among Vulnerable Groups In Nigeria And Opportunities In Crises - The Role Of Youth In Bridging The Climate Information Gap.

Editors.

Part 1

THE REALITY OF CLIMATE CHANGE IN NIGERIA AND MATTERS ARISING



Flooded Rice Field in Dasin Hausa Community Fufore Local Government

THE REALITY OF CLIMATE CHANGE IN NIGERIA AND MATTERS ARISING

Climate change is a complex and pressing global challenge that poses significant threats to our environment, economies, and societies, characterized mainly by long-term changes in temperature, precipitation patterns, and other climatic parameters, primarily driven by human activities. Access to accurate and timely climate change information is fundamental to fostering awareness, empowering communities, and catalyzing sustainable practices.

Nigeria, a vibrant and populous country in West Africa, is grappling with climate change's profound and far-reaching impacts. The nation, blessed with diverse ecosystems and a rich cultural heritage, is now facing unprecedented challenges that threaten its environment, economy, and the well-being of its people. One of Nigeria's most noticeable manifestations of climate change is the steady rise in temperatures. Over the past few decades, the country has experienced more frequent and intense heatwaves. The consequences are dire, especially for the agricultural sector, as rising temperatures contribute to droughts and altered precipitation patterns, with farmers facing the

daunting task of adapting their age-old practices to an unpredictable climate, impacting food security and livelihoods.

Impact of Climate change on Nigeria

1. Impact on Agriculture and Food Security:

Nigeria's economy is intricately tied to agriculture, with millions relying on it for sustenance. Climate change-induced shifts in rainfall patterns and prolonged droughts have reduced crop yields and increased vulnerability. Smallholder farmers, who form the backbone of the agricultural sector, find themselves grappling with unpredictable growing seasons and the onslaught of new pests and diseases. The implications reverberate through the entire food supply chain, affecting prices and accessibility for both rural and urban populations.

2. Rising Sea Levels and Coastal Vulnerability:

Nigeria's extensive coastline, particularly in the Niger Delta region, faces the imminent threat of rising sea levels. Coastal erosion and salinity intrusion have become pressing issues, directly



Another Flooded Rice Field in Dasin Hausa Community Fufore Local Government



impacting communities that depend on fishing and agriculture. The loss of land to the encroaching sea disrupts livelihoods and forces communities to migrate inland, leading to conflicts over resources and strained infrastructure.

3. **Extreme Weather Events and Human Security:**

The frequency and intensity of extreme weather events, such as floods and storms, have escalated in recent years. These events pose a direct threat to human security, causing displacement, property damage, and loss of life. Vulnerable communities, often located in low-lying areas and informal settlements, bear the brunt of these disasters, amplifying existing socio-economic disparities.

In the quest for sustainable solutions, institutions like the Nigerian Meteorological Agency (NiMet) in collaboration with NGO's have played a pivotal role in raising climate awareness and fostering education to empower individuals and communities. The collaborative initiatives not only provide a scientific understanding of climate patterns but also empower communities and individuals to navigate the complexities of a changing climate. However, there has been a rise in the need to improve inclusion of underrepresented population such as women, youths, elderly and people with disability in decision making on climate change as well as understand climate change awareness and knowledge in the hard-to-reach communities in Nigeria.

CLIMATE CHANGE AWARENESS

Access to accurate and timely climate change information is fundamental to fostering awareness, empowering communities, and catalyzing sustainable practices.

Importance of Access to Climate Change Information

Informed Decision-Making: Access to reliable climate information empowers individuals and communities to make informed decisions. From farmers planning crop cycles to urban planners designing resilient infrastructure, informed decision-making is a cornerstone of effective climate action.

Risk Reduction and Adaptation: Climate change information provides insights into evolving climate patterns, helping communities anticipate and adapt to changing conditions. Early warnings about extreme weather events, for instance, enable proactive measures to reduce risks and enhance resilience.

Public Engagement and Advocacy: Accessible climate information fosters public engagement and advocacy. Informed citizens are more likely to participate in discussions, advocate for policy changes, and actively support initiatives aimed at mitigating climate change impacts.

Behavioural Change and Sustainable Practices: Individuals armed with knowledge about the consequences of their actions on the environment are more inclined to adopt sustainable practices. Access to climate information can drive behavioural change, encouraging eco-friendly choices in daily activities.

Challenges to Widespread Awareness

Limited Access to Information: In many regions, access to climate information is constrained by factors such as limited internet connectivity, lack of educational resources, and language barriers. These limitations hinder the dissemination of crucial information to vulnerable populations.



Labinjo (Mushin, Lagos State) Community Demands Climate Justice Now

Misinformation and Lack of Awareness

Campaigns: Misinformation can cloud public understanding of climate change. Additionally, inadequate awareness campaigns contribute to a lack of understanding about the urgency and severity of climate-related issues.

Economic Disparities: Economic disparities exacerbate the challenge of accessing climate information. Communities with limited resources may struggle to invest in technologies that provide real-time data or lack the means to participate in climate education programs.

Cultural and Linguistic Diversity: Cultural and linguistic diversity poses a challenge in creating universally accessible climate information. Tailoring information to diverse cultural contexts and translating it into local languages are essential for inclusive awareness campaigns.

Assessing Gender and social inclusion in the access to climate information and awareness at the local level

As part of efforts to improve the delivery of climate information services to communities by NiMET, the PVP_AACI project from HEDA Resource Centre team carried out a survey across select states largely affected by climate change in the federation.

548 respondents from 32 communities across 17 states of the federation were surveyed for their perspectives on climate change awareness and access to information. Fig 1. The gender distribution of the respondents provides in-depth knowledge into the disparity in access to information especially in underserved regions. With 58% of male respondents and 42% female respondents, this reflects the survey participants' demographic composition in the context of climate change awareness.



Fig 1: Map of Surveyed States Vs States not surveyed

Inclusive messaging is key to breaking down barriers and encouraging diverse gender groups to actively engage in climate conversations. Recognizing that gender roles and preferences may influence engagement, there is a need for varied approaches to inclusion. Tailoring communication strategies to resonate with both males and females can contribute to a more inclusive and effective awareness campaign. This could involve using diverse communication channels, considering different learning styles, and addressing specific concerns or interests of both genders.

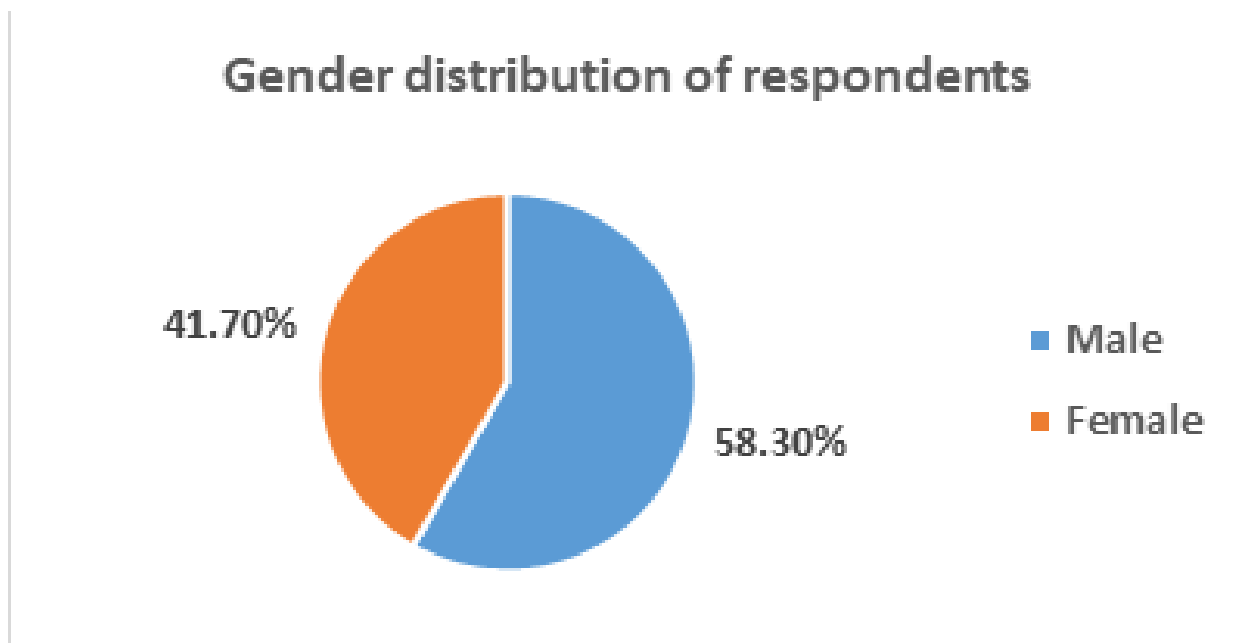


Fig 2: Gender distribution of respondents

The data on age distribution in climate awareness, with 38% falling in the 36 to 55 age group, 35% in the 18 to 35 age group, 23% above 55, and 3% below 18, offers valuable insights into the demographic inclusivity of climate awareness initiatives. Fig 3 The highest percentage of participants falling in the 36 to 55 age group suggests that climate awareness initiatives have resonated more strongly with individuals in the middle age bracket. This could be attributed to factors such as greater awareness, engagement capacity, or interest in sustainability. The significant representation of individuals in the 18 to 35 age group indicates a commendable level of engagement with younger demographics. This is encouraging as it reflects an awareness and interest in climate issues among the younger generation, who often play pivotal roles in driving change. While the percentage is lower, the acknowledgement of participants above 55 demonstrates some level of engagement with the elderly demographic. Ensuring that climate initiatives are accessible and relevant to individuals above 55 is crucial for a comprehensive and inclusive approach.

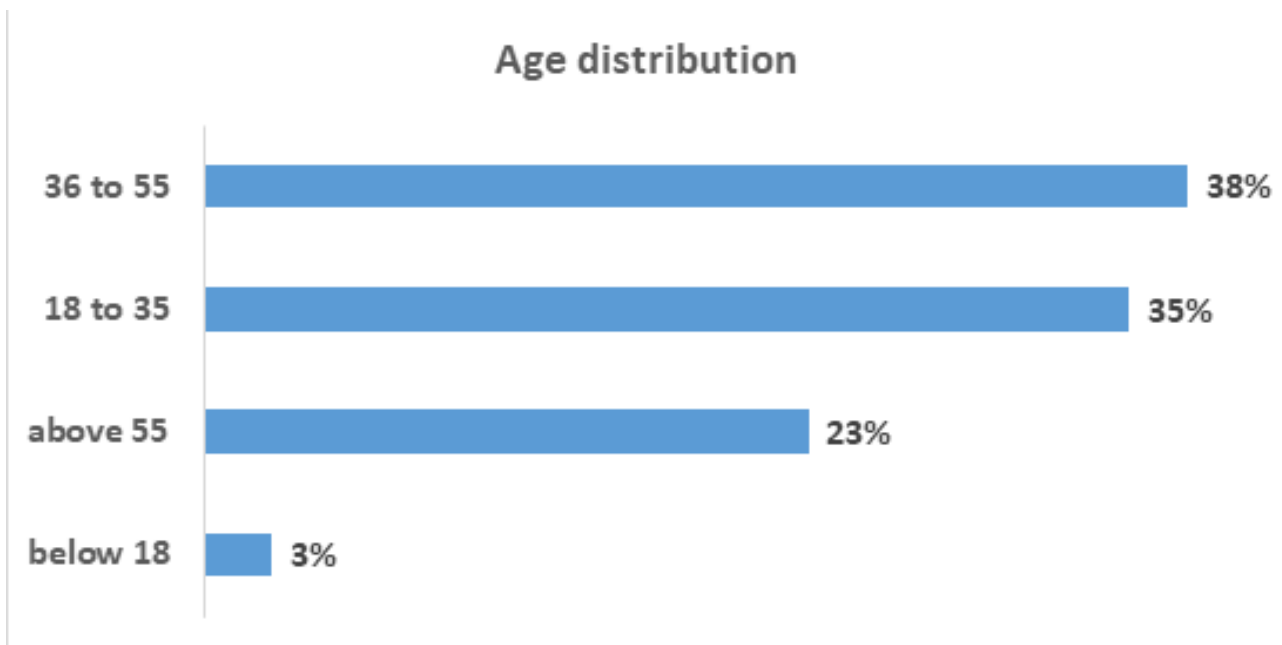


Fig 3: Age distribution of survey participants

There is a diverse representation across various education levels, including Secondary, Higher Education, Primary, No Formal Education, and Other. This diversity underscores the importance of tailoring climate awareness initiatives to accommodate individuals with varying educational backgrounds. Fig 4.

The data on education levels and gender provides intriguing insights into the potential relationship between education and climate awareness. Notably, individuals with higher education levels exhibit a higher percentage of awareness, as evidenced by the fact that 15.93% of males and 10.27% of females with higher education are included in the dataset. On the other hand, those with primary education levels, particularly females at 9.38%, seem to have a comparatively lower representation in climate awareness.

This pattern suggests a correlation between higher education and heightened climate awareness, emphasizing the importance of education in fostering environmental consciousness. The disparity between genders within the same education level hints at the need for targeted efforts to enhance climate education, especially among those with lower educational backgrounds. Addressing these gaps could contribute to building a more informed and environmentally conscious society.

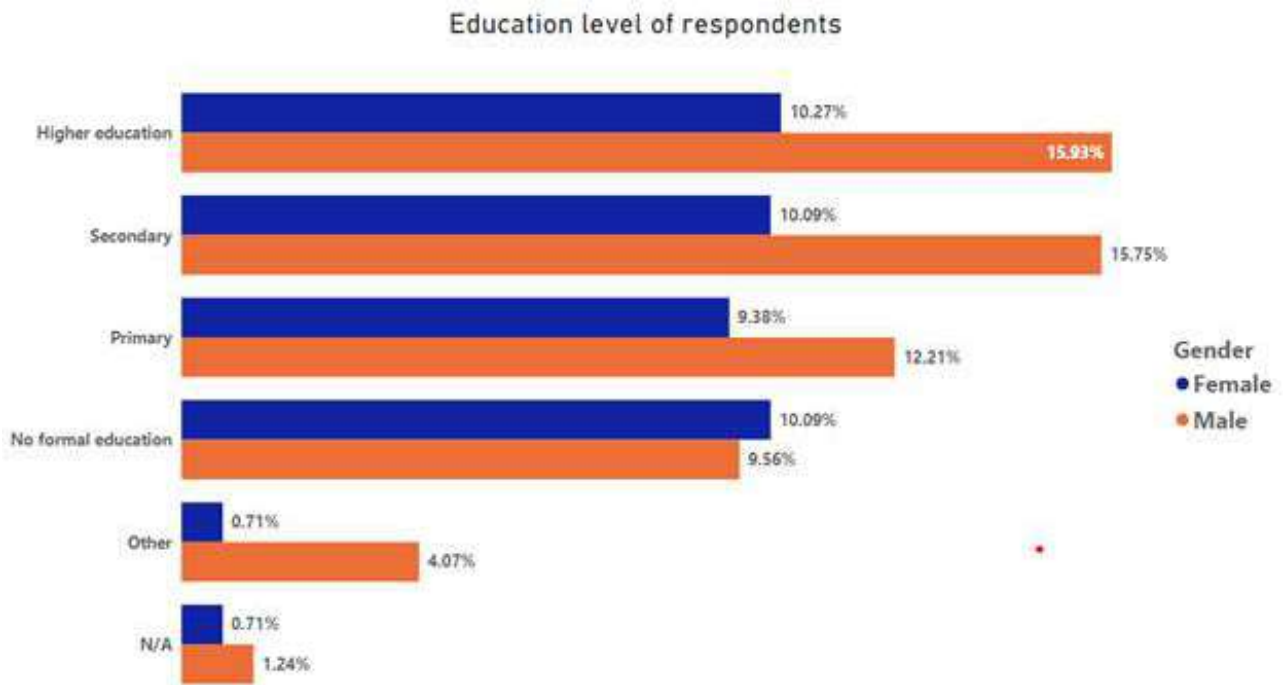


Fig 4: Educational level distribution

Individuals engaged in farming, primarily males (44.24%) and females (19.75%), show a significantly high level of representation in the dataset. This suggests that individuals in farming occupations, especially males, may possess a strong awareness of climate issues, possibly due to the direct impact of climate change on agriculture. Fig 5

Conversely, certain occupations, such as trading and housewifery, exhibit lower percentages of climate awareness, particularly among males. This variation highlights potential disparities in environmental awareness across different professions and genders. Efforts to enhance climate education and awareness may benefit from targeted interventions within specific occupational groups, such as traders and housewives, to promote a more comprehensive understanding of climate issues.

Additionally, the presence of students in both genders among the dataset suggests a growing interest in climate awareness among the younger generation. Encouraging and fostering environmental education within academic settings can contribute to building a more informed and environmentally conscious society.

Given the prominence of farming and related occupations, there is an opportunity to develop initiatives specifically focused on sustainable agricultural practices, climate-resilient farming techniques, and the impact of climate change on agriculture.

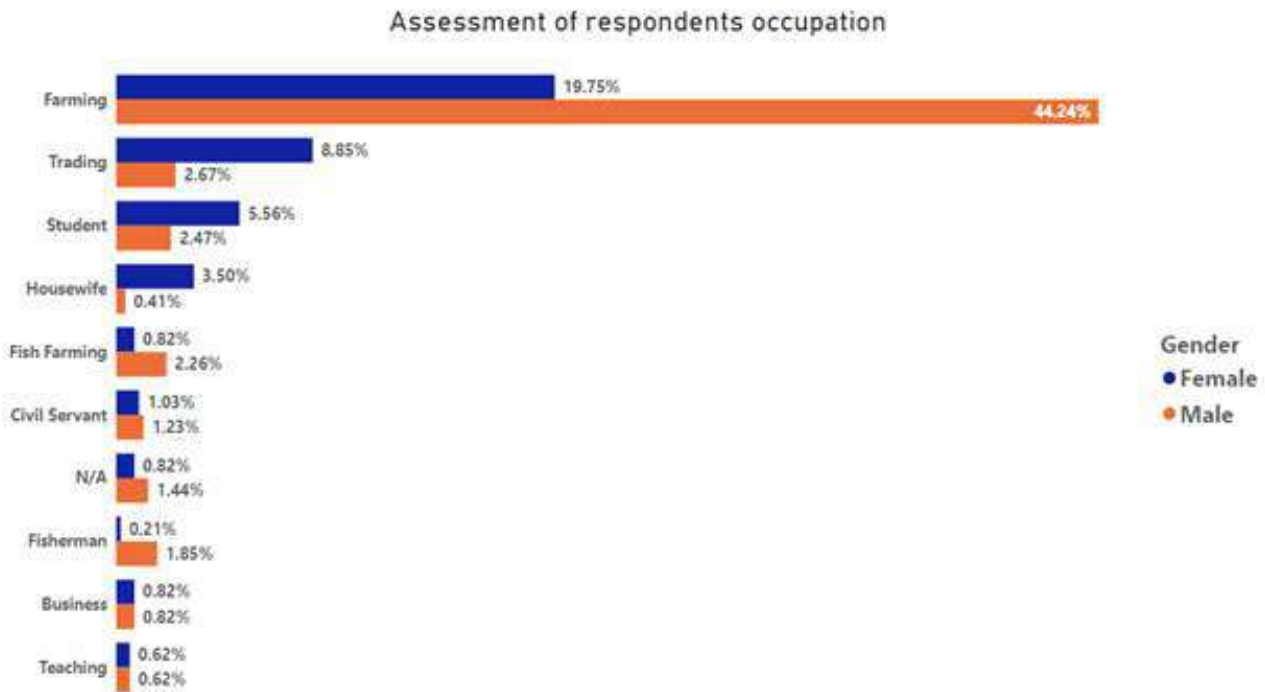


Fig 5: Assessment of respondent's main occupation

Climate Information Awareness

To fully understand the level of awareness of the term 'climate change', the data suggests a notable gender disparity in awareness of the term "climate change." Males exhibit a higher percentage of awareness at 40.37%, while females lag behind with 27.33%. This difference highlights the importance of targeted initiatives to enhance climate change education, particularly among females, to create a more balanced and informed understanding across genders. Fig 6a

The presence of "Not specified" responses in both genders, with males at 3.52% and females at 1.66%, indicates potential challenges in obtaining accurate data on climate change awareness. Strategies to improve data collection methods or encourage more respondents to provide explicit responses could contribute to a more precise understanding of awareness levels within each gender.

Considering the higher percentage of males with awareness compared to females, there is an opportunity for targeted awareness campaigns specifically designed to reach and engage females. These campaigns could be tailored to address specific concerns or barriers that may contribute to lower awareness levels among females.

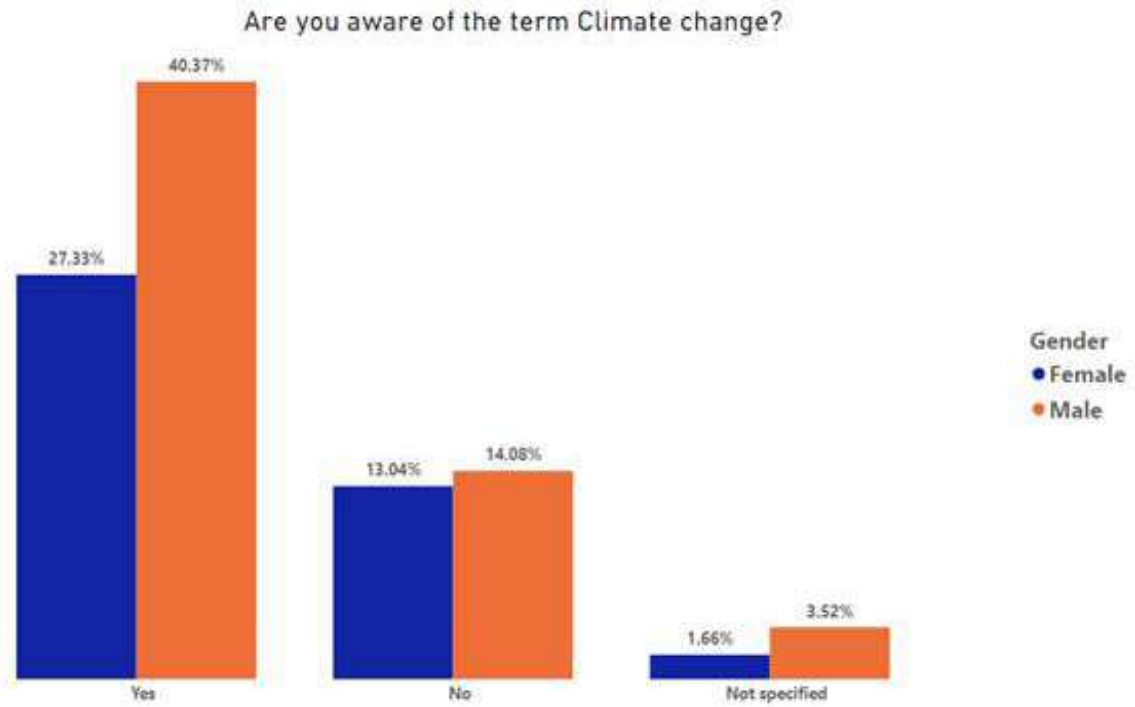


Fig 6a: Climate change awareness

Assessing the distribution of climate change awareness across different age brackets showed individuals in the 36 to 55 age group exhibit the highest awareness, with 28.36% responding affirmatively to being aware of the term. This suggests that the middle-aged population may have a more comprehensive understanding of climate change compared to other age groups. Fig 6b

Conversely, the younger age group (18 to 35) shows a higher percentage of "No" responses at 11.18%, indicating a potential gap in awareness among this demographic. However, it's encouraging to note that a significant portion of this age group, 21.74%, is aware of the term "climate change." This indicates a diverse range of awareness levels within the younger population.

Interestingly, the above 55 age group, while exhibiting a lower overall awareness percentage, still demonstrates a noteworthy level of understanding at 15.94%. This challenges stereotypes about older generations being less informed about contemporary environmental issues.

The presence of respondents below 18 years of age expressing awareness (1.66%) is a positive indicator of environmental education reaching even the youngest demographic. However, the percentage of "Not specified" responses in this age group is also notable, suggesting potential challenges in obtaining accurate data from younger individuals.

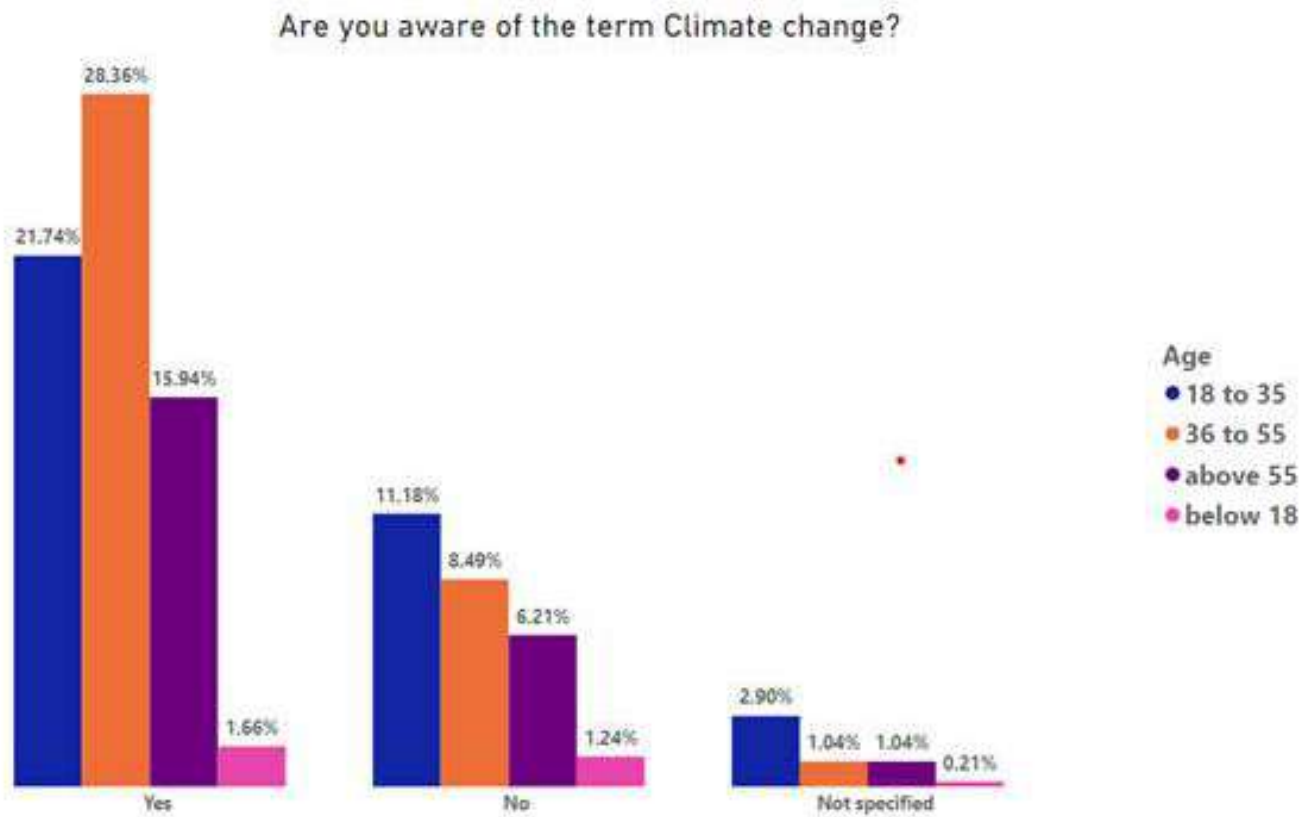


Fig 6b: Assessment of climate change awareness across different age groups

Breaking this down further, there is a notable gender disparity in climate change awareness. This gendered perception could be influenced by various factors, including educational background, access to information, and societal norms. gender variations in self-reported levels of climate awareness. Males tend to rate their awareness slightly higher, with 20.71% reporting a "Moderate" understanding, and 10.97% indicating a "Very High" level. In contrast, females have lower percentages for these categories at 12.57% and 4.96%, respectively. Fig 7a

There are some concerns about low awareness, with both genders reporting percentages for "None at all," with females at 8.67% and males at 7.61%. This indicates a concerning portion of the population that perceives their understanding of climate change as inadequate. Addressing these low awareness levels is crucial for fostering informed communities capable of addressing environmental challenges. Positive indicators include a notable percentage of males (8.14%) and females (4.25%) rating their awareness as "High." Additionally, males and females both report percentages for "Very High" awareness (10.97% and 4.96%, respectively), suggesting a considerable portion of the population with a strong understanding of climate change. The presence of "Not specified" responses in both genders (3.19% for males and 0.88% for females) emphasizes the importance of clear communication and survey methodologies. Efforts should be made to encourage respondents to provide explicit responses, ensuring a more accurate representation of the population's awareness levels.

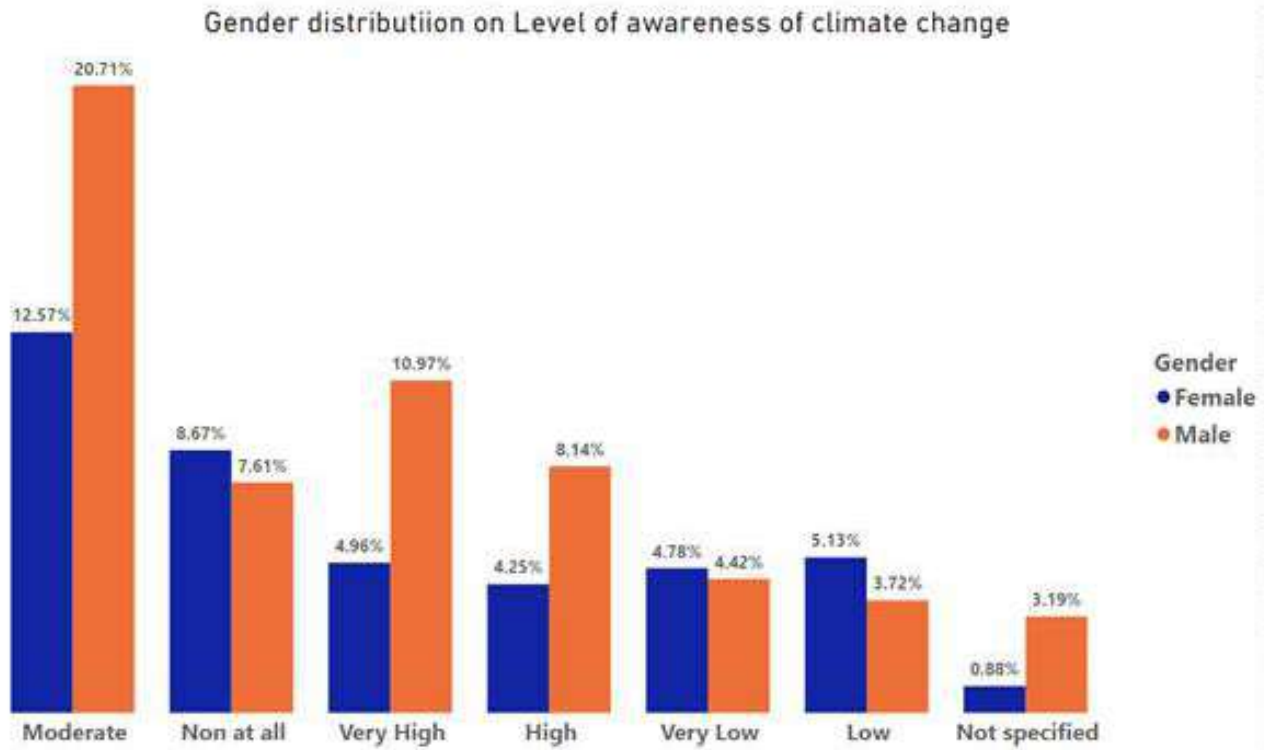


Fig 7a: Gender distribution on climate change awareness

To get a full grasp on the level of awareness by age, respondents in the age group of 36 to 55 report the highest percentage of "Moderate" awareness at 13.27%, suggesting a moderate understanding of climate change is more prevalent in this demographic. Fig 7b

Younger adults (18 to 35) show relatively higher percentages for both "Moderate" (11.50%) and "Very High" (5.49%) awareness, indicating a diverse range of awareness levels within this age group. The above 55 age group exhibits a lower overall awareness, with the highest reported category being "Moderate" at 8.14%. While there are instances of "High" and "Very High" awareness across all age groups, the percentages are generally lower, indicating a need for targeted efforts to elevate awareness levels, particularly in the older age group. Tailored educational initiatives should consider the diverse awareness levels across age groups. Addressing specific age-related concerns and preferences in climate change education can contribute to a more balanced and informed community.

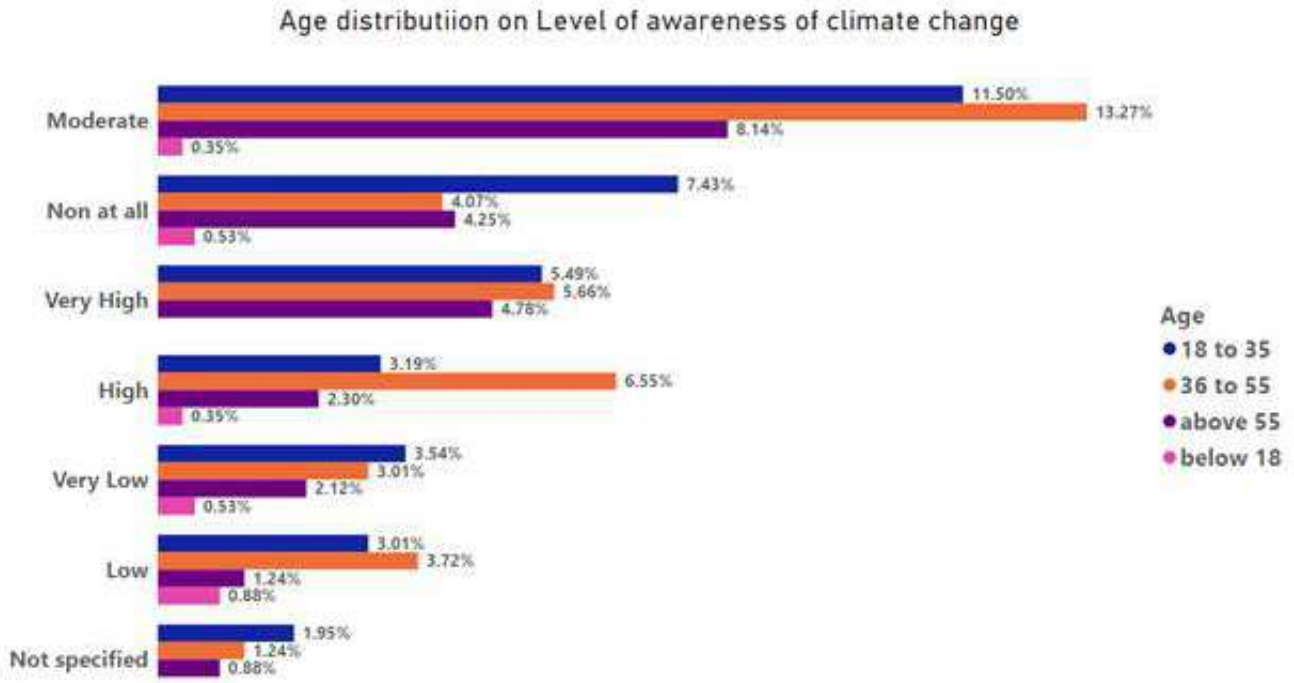


Fig 7b: Age distribution on level of awareness of climate change

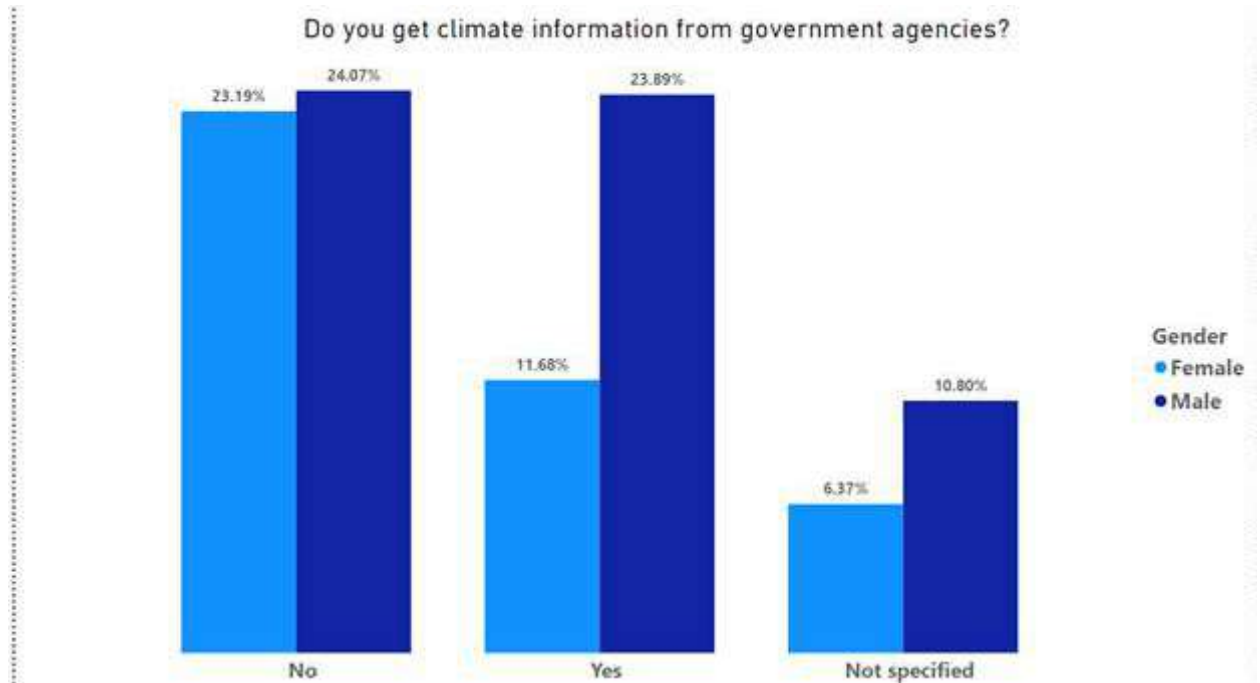


Fig 8: Assessing government agencies involvement in dissemination of climate change information

Assessing the level of awareness of community members on climate change, the source of access to information was queried. Males show a nearly equal distribution in accessing climate change information from government agencies, with 24.07% responding "No" and 23.89% responding "Yes." Females, however, exhibit a larger gap, with 23.19% responding "No" compared to 11.68% responding "Yes." This suggests that more females may not be obtaining climate change information from government agencies. Fig 8

This could indicate that individuals seek information from alternative sources or that government communication on climate change may not reach the intended audience effectively. Recognizing that a sizable number do not rely on government sources, there is an opportunity for government agencies to enhance their outreach efforts. Improving communication strategies and making information more accessible can help bridge the gap. A deep dive into the other sources of climate change information showed a diversity of sources suggesting that individuals have varied avenues for accessing climate information. NGOs, farmers' groups, and cooperatives emerge as substantial sources of climate information, underscoring the importance of community networks and local organizations in disseminating relevant information to residents. Fig 9

Official institutions, such as schools and religious body, constitute a smaller percentage of the information source. While these sources may not be the primary channels, they still play important roles in reaching specific demographics, such as students and the public. The data highlights the need for strategies to address the "Not specified" responses, and it underscores the diverse range of sources contributing to climate awareness. Strengthening partnerships with NGOs, community-based organizations, and educational institutions, while exploring opportunities to engage climate information companies, can enhance overall climate literacy within the community.

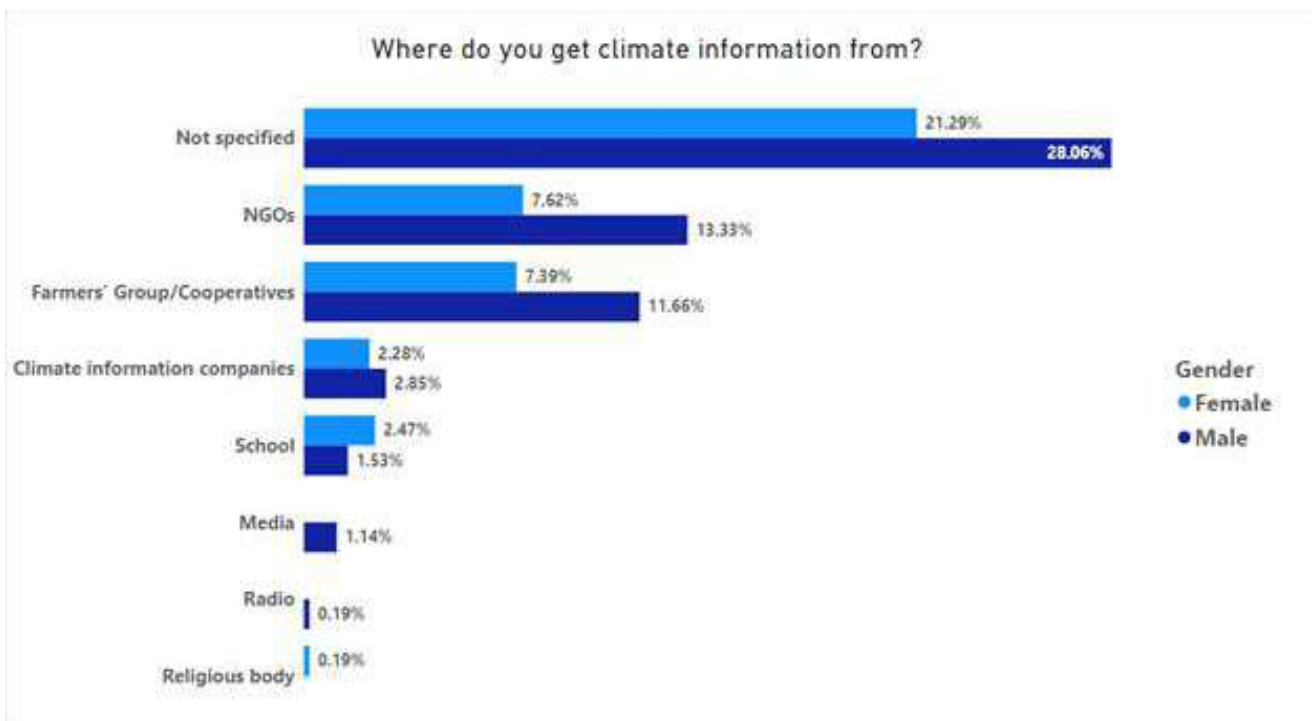


Fig 9: Assessing other sources of climate change information

Further analysis reveals radio as a dominant source of climate change information for both genders, with 32.67% of males and 24.72% of females relying on this traditional medium. Fig 10a This highlights the continued importance of radio in reaching diverse audiences with climate-related content. A notable percentage of respondents, both males (12.78%) and females (8.81%), did not specify their information sources. This indicates challenges in accurately capturing the diversity of channels through which individuals receive climate change information. Efforts to encourage explicit responses may be beneficial.

Social media is a growing but relatively modest source of climate change information, with 5.40% of males and 1.70% of females indicating its influence. There is an opportunity to leverage the reach and impact of social media for broader dissemination of climate-related content. However, a significant percentage of males (4.26%) and females (2.84%) receive climate change information through a combination of radio and community meetings. This suggests the effectiveness of integrating

traditional and community-based approaches for information dissemination. Word of mouth is a notable but relatively low percentage source for both genders, with females at 3.98% and males at 2.84%. While informal communication plays a role, its impact may benefit from additional amplification through diverse channels.

The overwhelming preference for radio suggests that broadcasting plays a central role in disseminating information on climate change within the community. While the percentage is relatively low, there is a potential impact of word of mouth as a means of climate change awareness. Thus, educational materials that are informative, visually appealing, and accessible to those who prefer or rely on word of mouth/printed materials for information should be developed.

How do you receive information about climate change?

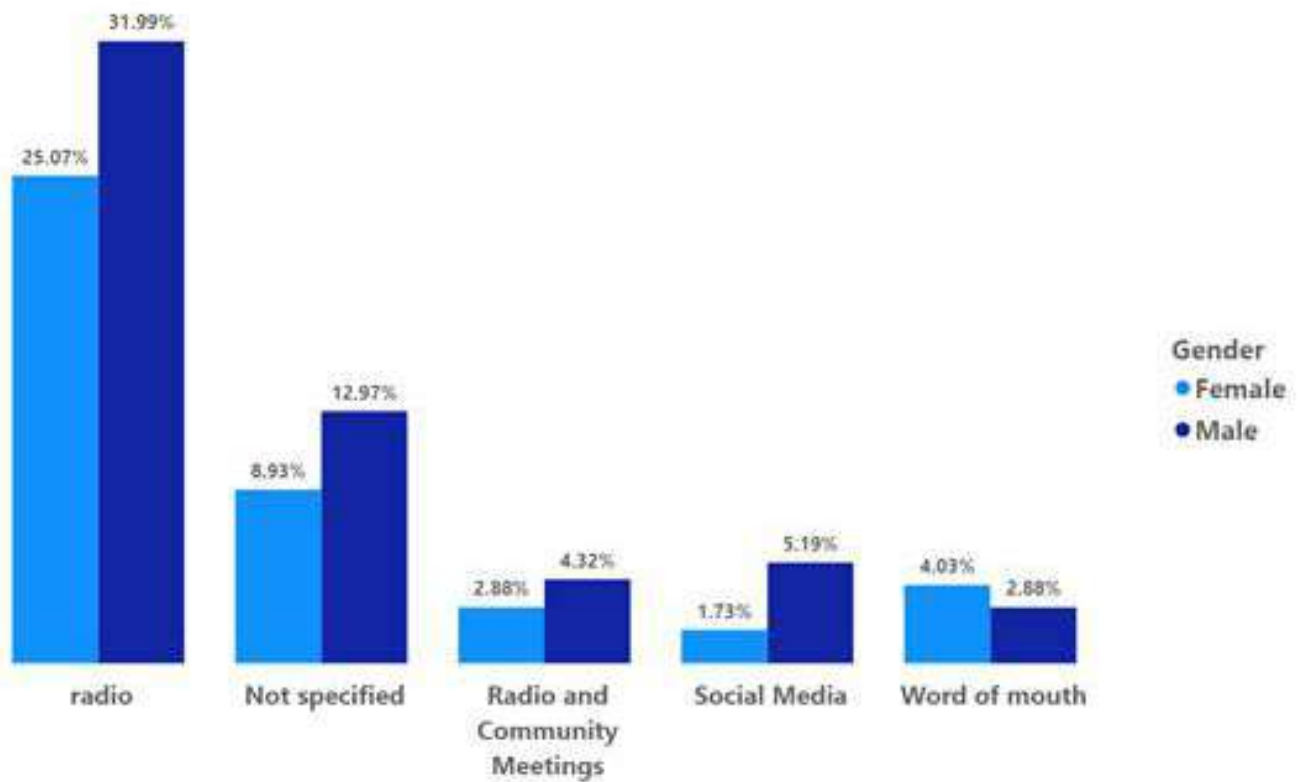


Fig 10a: Gender distribution on access to information on climate change

Fig 10b reveals more information into how different age groups receive information about climate change. The data reveals age-specific patterns in how individuals receive information about climate change. While radio remains a prominent source across ages, there are opportunities to address challenges in specifying information sources and to leverage social media and community-based approaches for more effective climate communication.

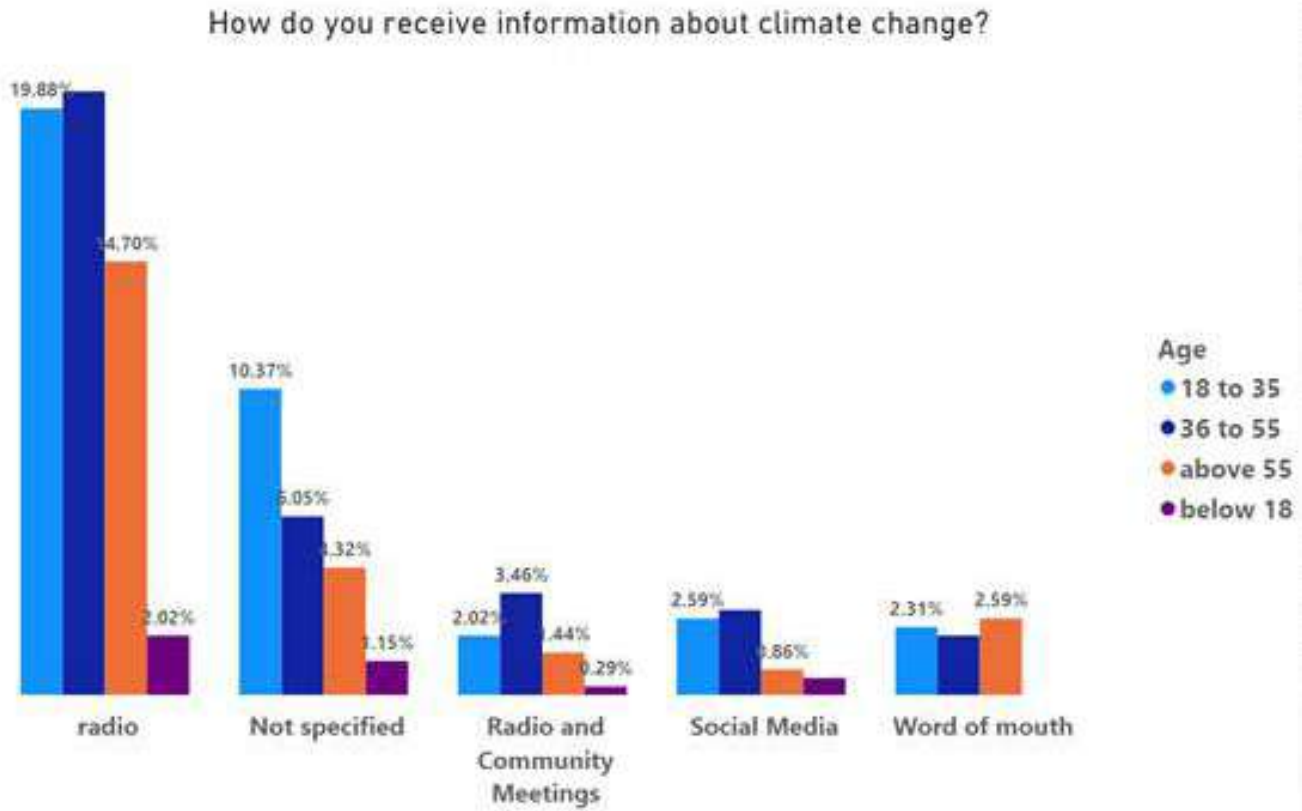


Fig 10b: Communication means for access to information on climate change

With an understanding of the different means by which climate information is communicated, it is important to understand the effects of language barriers in accessing climate change information. Fig 11 suggests the importance of addressing potential language-related barriers to ensure equitable access to climate-related materials. Efforts to make information available in various languages, along with improved communication strategies, can contribute to fostering broader awareness and understanding of climate-related issues across diverse populations. A higher percentage of males (28.24%) compared to females (23.05%) report that climate-related materials and information are accessible in their spoken language. This indicates that language barriers may be a challenge for a significant portion of the surveyed population, and it presents an opportunity for organizations and initiatives to enhance language accessibility. Addressing language barriers is essential for ensuring that climate-related information reaches a broader audience and is comprehensible to diverse linguistic groups. Some strategies that could be employed includes encouraging the development and adoption of inclusive language policies within climate change initiatives promotes accessibility. This includes considering linguistic diversity in program planning, resource development, and outreach and utilizing technology for the creation of multilingual content, such as translated documents, audio resources, and multimedia presentations, which can enhance accessibility and cater to diverse language preferences.

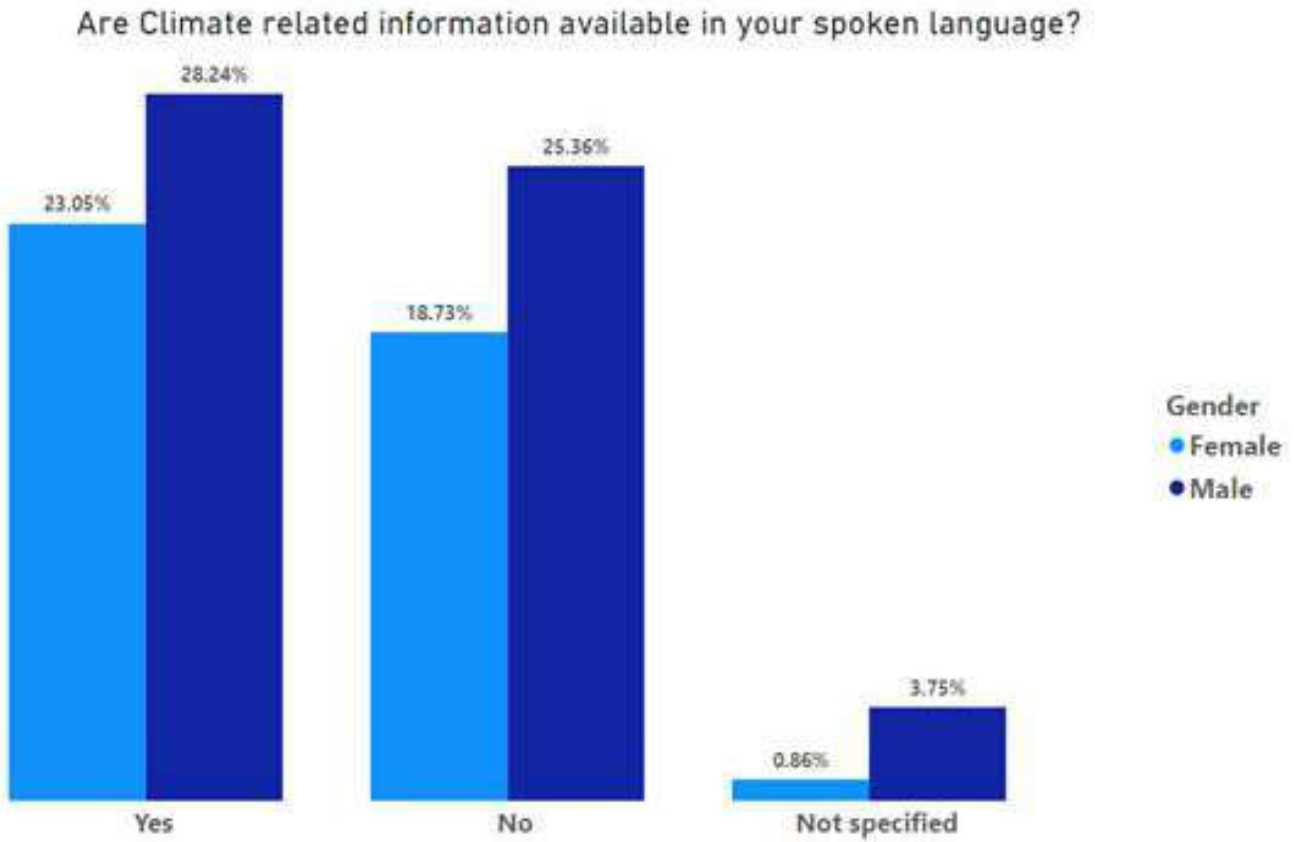


Fig 11: Assessing the impact of language barrier on climate change awareness.

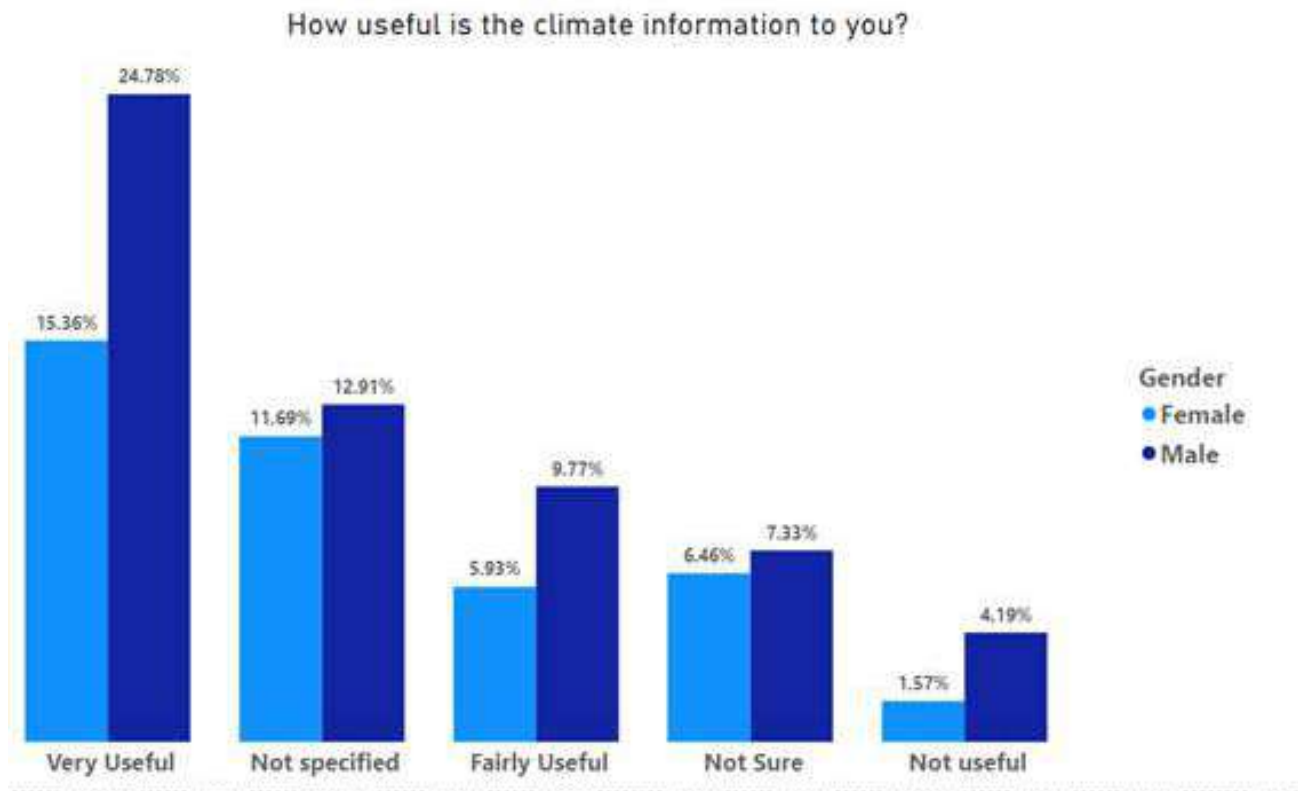


Fig 12a: Usefulness of climate change information

A higher percentage of males (24.78%) than females (15.36%) find climate information "Very Useful." This suggests a potential gender difference in the perceived utility of climate-related information. Fig 12 A notable percentage of both genders provides "Not specified" responses, with males at 12.91% and females at 11.69%. This indicates a significant portion of the population that either has not formed a clear opinion about the usefulness of climate information or has not specified their level of usefulness. Strategies to encourage explicit responses may enhance data accuracy. There were varied responses in the Middle Utility Categories, with responses in the "Fairly Useful" and "Not Sure" categories showing varied percentages across genders. Males have 9.77% responding "Fairly Useful" and 7.33% responding "Not Sure," while females have 5.93% responding "Fairly Useful" and 6.46% responding "Not Sure." This indicates diverse perceptions of the utility of climate information within each gender. A relatively low percentage of both males (4.19%) and females (1.57%) consider climate information "Not Useful." This suggests a general perception of the value of climate-related information, with a higher proportion finding it at least somewhat useful.

Fig 12b further explains how different age groups perceive the usefulness of the climate change information. The data reveals variations in the perceived usefulness of climate information across different age groups. The highest percentage of respondents finding the information "Very Useful" is in the 36 to 55 age group (16.46%), followed by 18 to 35 (12.04%) and above 55 (11.15%). The data for the below 18 age group is limited, but it shows a relatively low percentage finding the information "Very Useful" (0.71%). Efforts to understand and address the information needs of this age group can contribute to building a more informed and engaged younger generation.

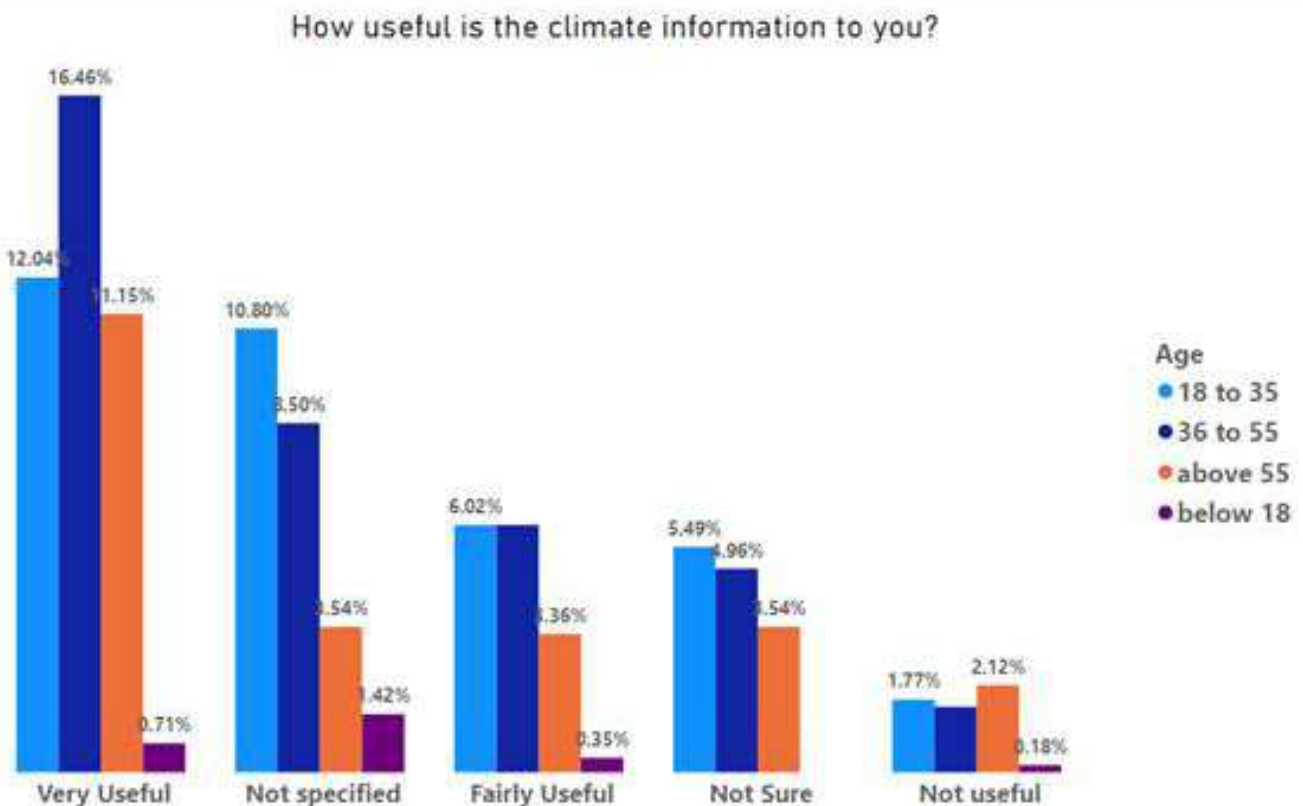


Fig 12b: Assessing the usefulness of climate information across various age groups.

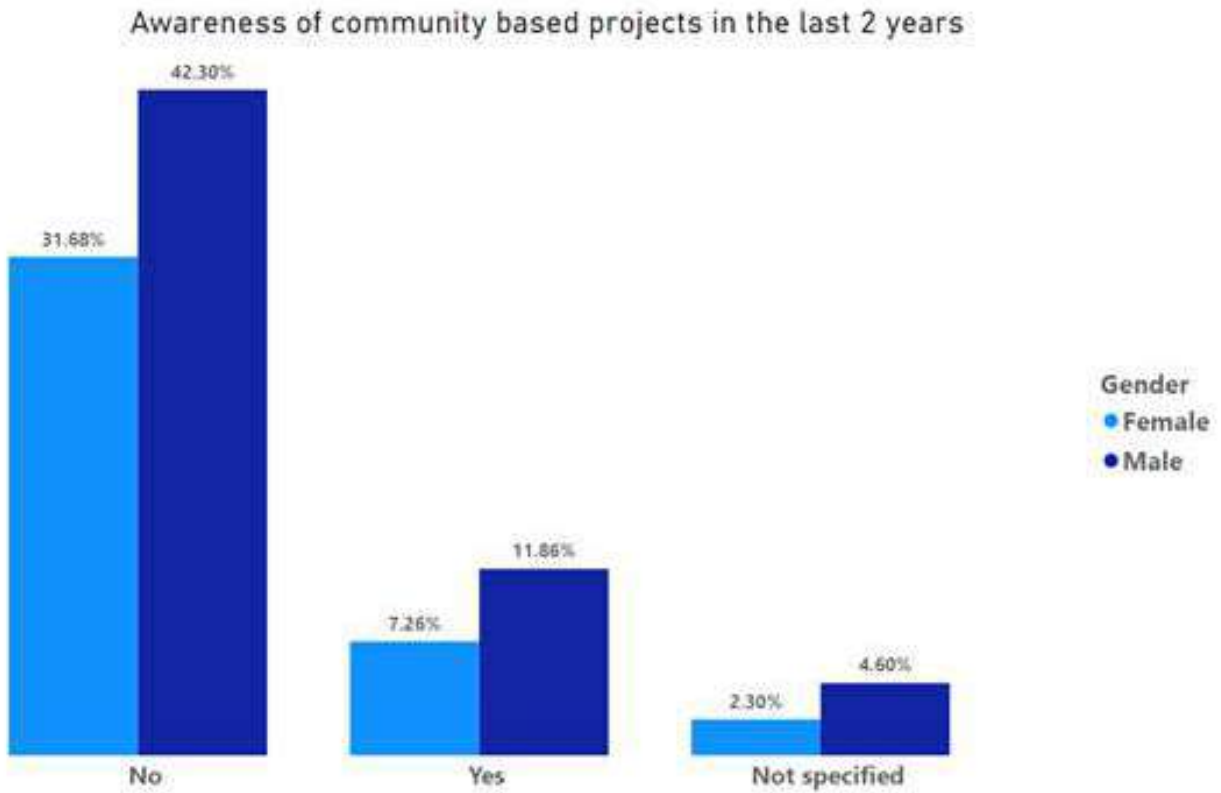


Fig 13a: Assessing gender knowledge on community based projects

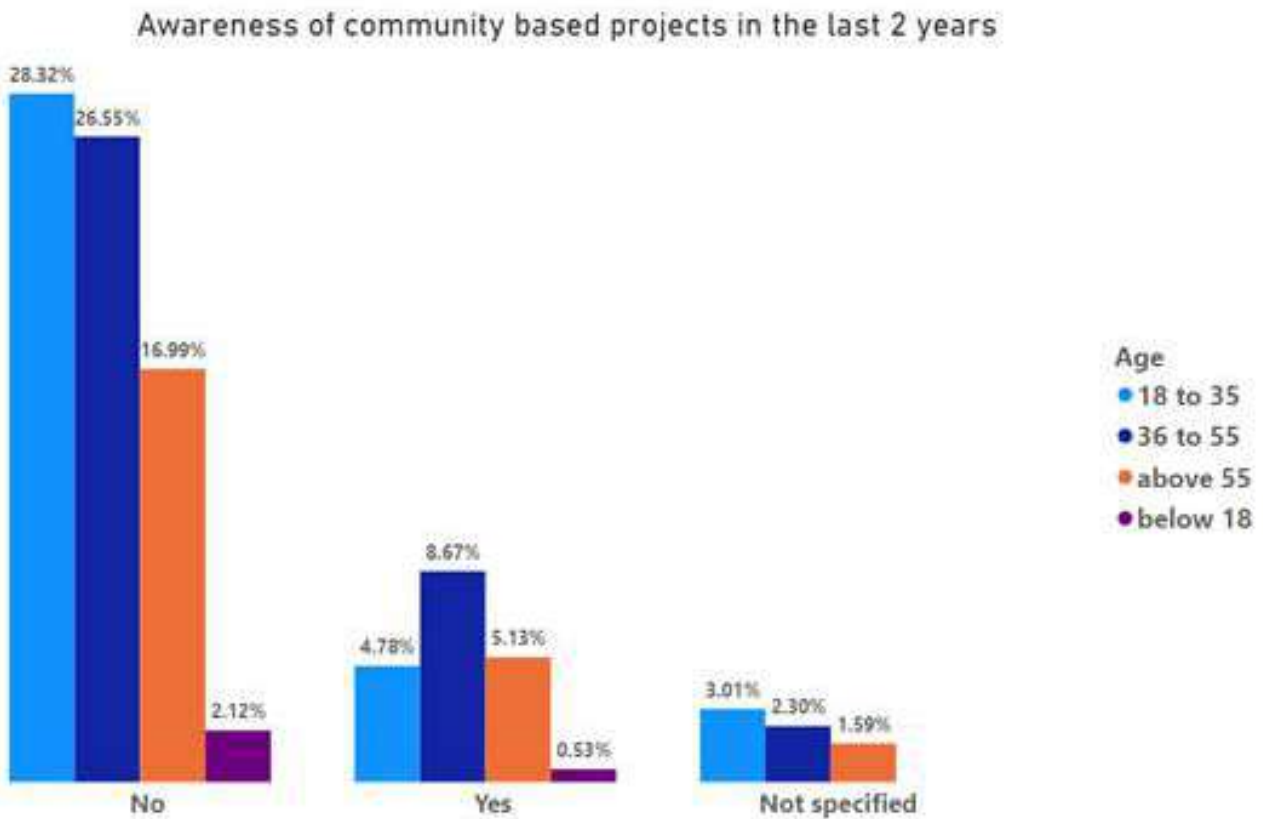


Fig 13b: Assessing awareness of community-based projects on climate change awareness amongst age groups

To further understand the community members' awareness of local initiatives on climate change, the data generated sheds light on the extent to which individuals are aware of grassroots efforts aimed at disseminating climate-related information.

Most respondents indicated that they are not aware of any local or community-based initiatives providing climate information in the last two years. Fig 13a This suggests a significant gap in awareness of grassroots efforts within the surveyed population. Exploring the reasons behind the lack of understanding can uncover barriers that must be addressed. These may include issues related to communication channels, outreach strategies, or cultural considerations that influence information dissemination.

A higher percentage of males (42.30%) report no awareness of local or community-based climate initiatives in the last two years compared to females (31.68%). This suggests a potential gender disparity in the knowledge of such initiatives. Despite the higher percentage of males reporting no awareness, a significant portion of both genders is aware of local or community-based climate initiatives. Notably, 11.86% of males and 7.26% of females indicate awareness. This positive response indicates that a portion of the population, regardless of gender, is informed about these initiatives.

Many respondents across age groups indicate a lack of awareness of local or community-based climate initiatives in the last two years. This is particularly notable in the 18 to 35 age group (28.32%) and the 36 to 55 age group (26.55%), suggesting a need for increased visibility and communication of such initiatives to these demographics. Fig 13b.

Positive indicators include respondents who are aware of local or community-based climate initiatives. Notably, 8.67% of the 36 to 55 age group, 5.13% of the above 55 age group, and 4.78% of the 18 to 35 age group report awareness. This suggests that community initiatives have reached a portion of the population, but there is room for improvement in increasing awareness levels.

The above 55 age group reports a lower percentage of respondents indicating no awareness (16.99%) compared to the younger age groups. This suggests that older individuals may have a relatively higher awareness of local climate initiatives, possibly due to increased engagement or more targeted outreach.

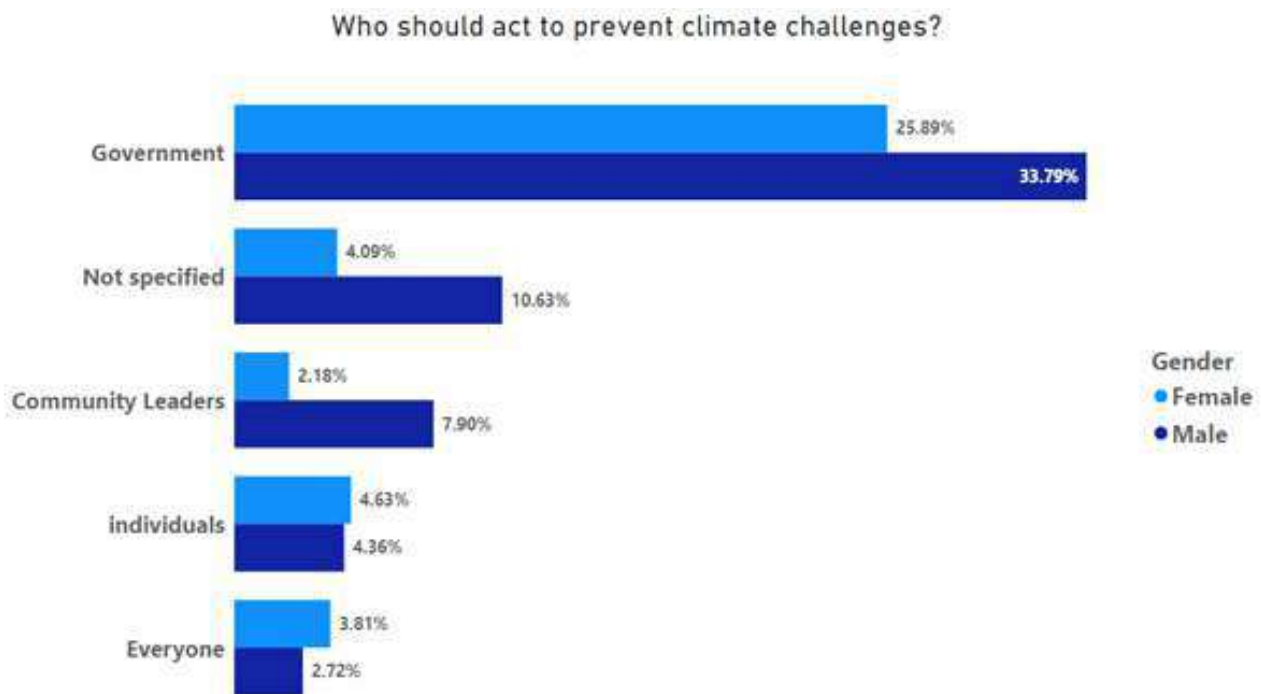


Fig 14: Assessing key actors responsible for climate change education

When asked about their perception on the contributors responsible for taking actions in the fight against the negative effect of climate change, the data highlights a shared perception that the government holds a primary responsibility for preventing climate-related incidents. Additionally, there is recognition of the roles of community leaders and individuals, emphasizing the need for collaborative efforts involving various stakeholders to address climate challenges effectively. The presence of not specified responses indicates the potential for enhanced communication and education about the roles and responsibilities of different entities in the context of climate action.

ASSESSING INCLUSION IN CLIMATE CHANGE

Respondents were asked about inclusion in climate-related decision-making processes in their community, A higher percentage of males (32.46%) believe that their voice and opinions are taken into consideration in climate-related decision-making processes compared to females (18.67%). Fig 15a This suggests potential gender disparities in the perception of influence in community-level climate decisions.

However, 18.15% of males and 17.80% of females feel that their voice and opinions are not taken into consideration in climate-related decision-making processes. This suggests a substantial proportion of the community that perceives a lack of influence, highlighting a potential gap in community engagement or representation in climate decision-making. There is an opportunity to enhance inclusive decision-making processes by addressing perceptions of underrepresentation or lack of influence. Efforts to actively involve diverse voices and ensure community representation in climate-related discussions may contribute to fostering a sense of inclusivity and shared responsibility.

Do you think that your voice and opinions are taken into consideration in climate-related decision-making processes in your community?

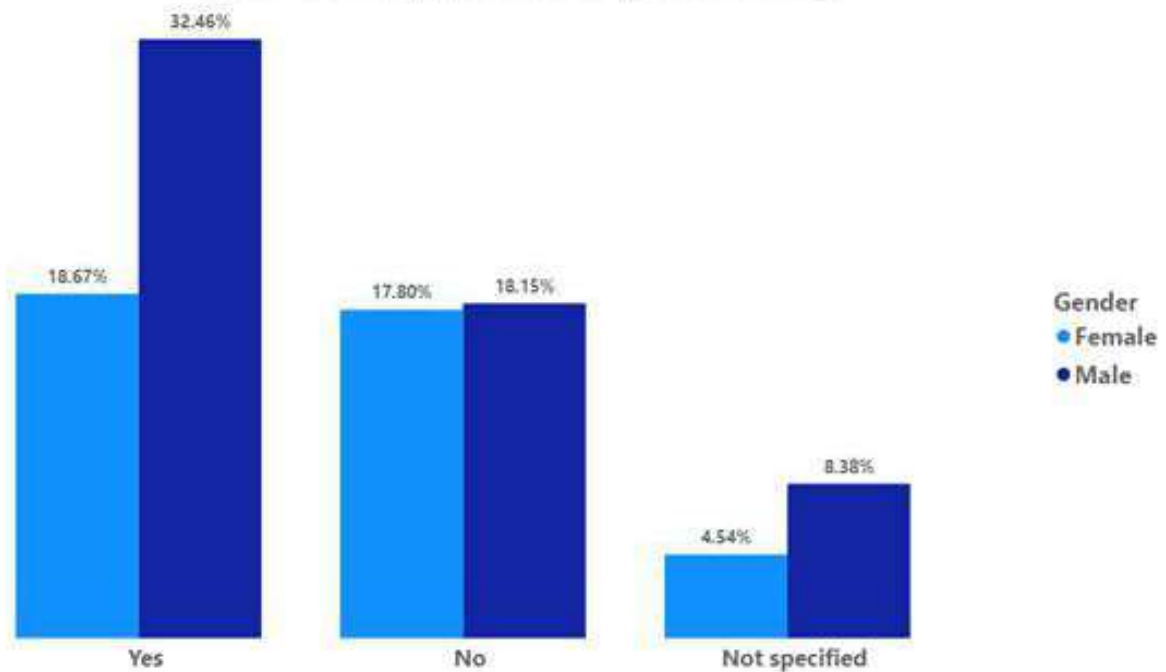


Fig 15a: Assessing respondents' perception of self-inclusion.

Fig 15b reveals age-related variations in perceptions of influence in climate-related decision-making, with the 36 to 55 age group expressing the highest percentage of feeling considered. Addressing uncertainties in responses and promoting inclusivity across age groups can contribute to building a more engaged and empowered community in climate-related decision-making. Responses in the below 18 age group is limited, but it shows a relatively low percentage feeling unheard (1.59%), with a small percentage feeling heard (0.88%). Strategies to engage and empower younger individuals in climate-related decision-making processes may contribute to fostering a sense of participation, while the highest percentage of respondents feeling that their voice and opinions are considered is in the 36 to 55 age group (21.06%), followed by the 18 to 35 age group (16.99%), and the above 55 age group (12.74%).

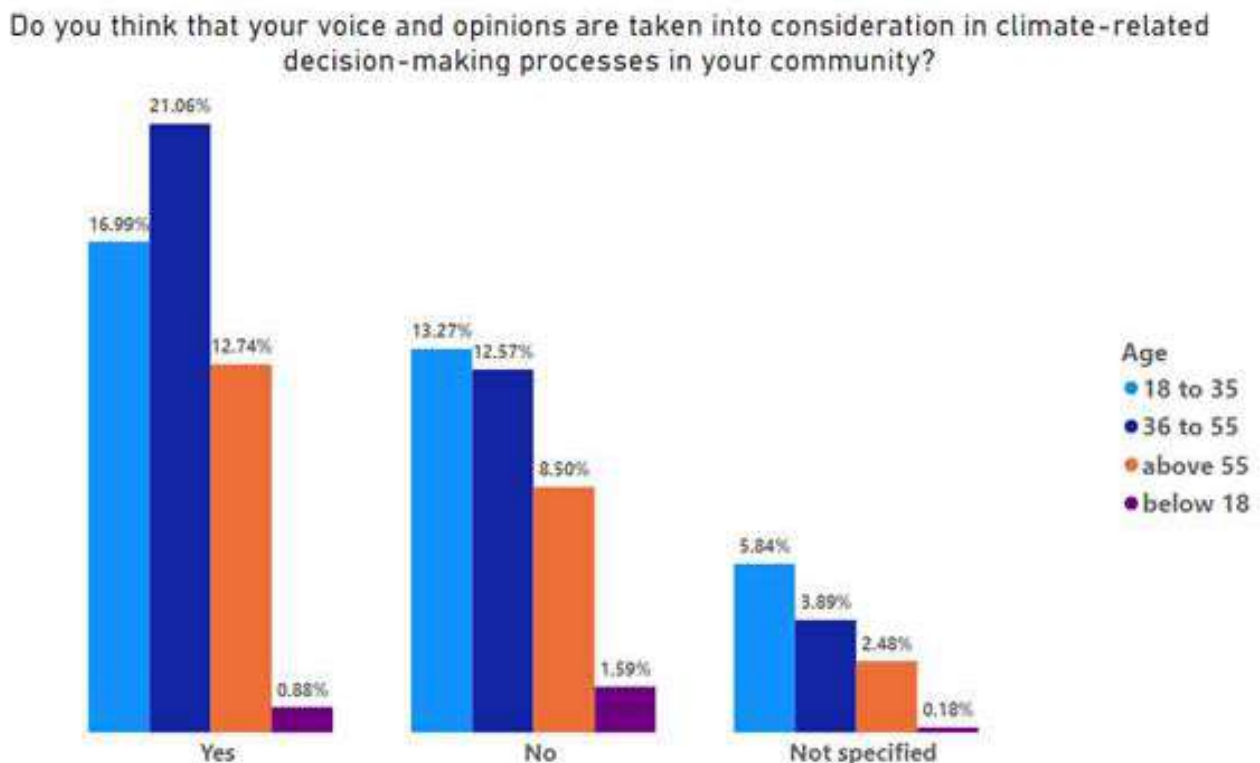


Fig 15b: Assessing age groups perception of self-inclusion.

When asked about the key decision-makers in their community, data gathered indicates a diverse distribution of perceived decision-making roles within the community. Fig 16 This diversity encompasses both traditional and formal positions, highlighting the multifaceted nature of community governance.

Community Leaders and Traditional Rulers emerge as the most prominently perceived decision-makers, collectively representing a significant portion (62%) of respondents' perceptions. This underscores the influence of both traditional and community-led structures in decision-making

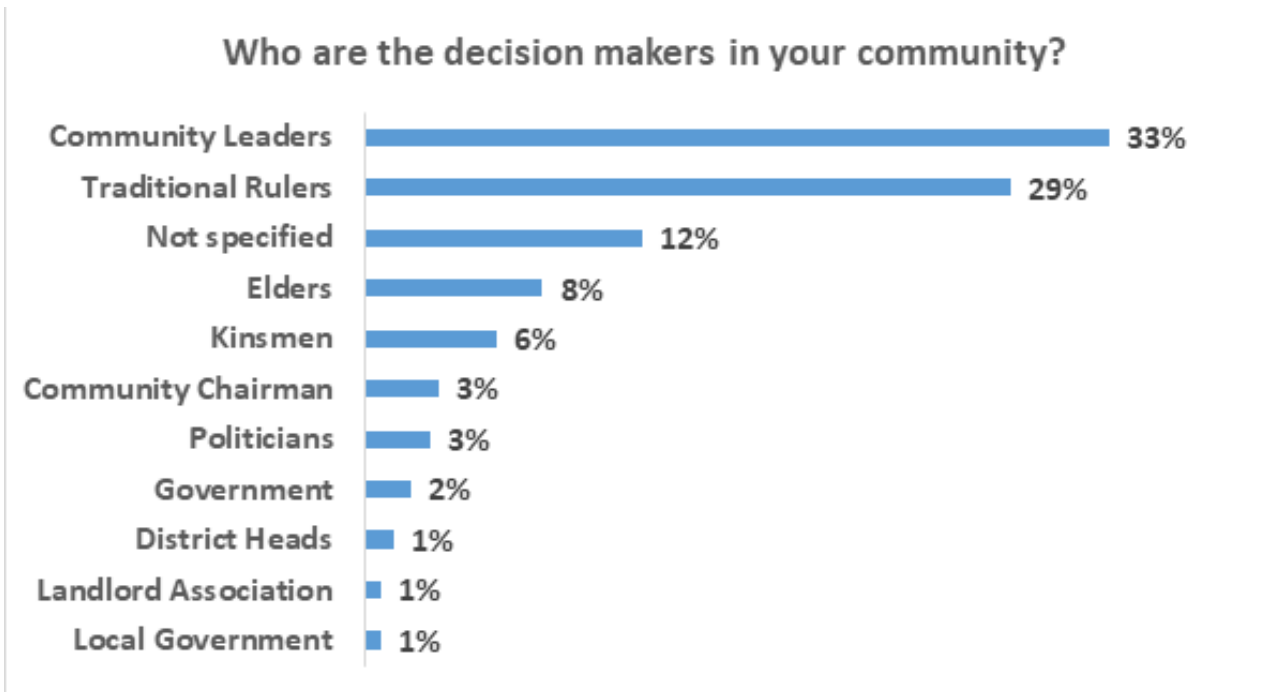


Fig 16: Assessing respondents' perception on key decision makers in their community.

To further assess the level of inclusion of certain groups such as women, youths, the elderly and people with disability in decision-making, data reveals gender-related differences in perceptions of the inclusion of the elderly in decision-making in the community. A higher percentage of males (41.59%) believe that the elderly are included in decision-making in the community compared to females (26.19%). A noticeable percentage of females (9.20%) feel that the elderly are not included in decision-making in the community. This suggests a portion of the female population perceiving a lack of involvement or representation of elderly individuals in community-level decisions. Efforts to address uncertainties in responses and promote inclusive decision-making processes that involve all community members, including the elderly, can contribute to building a more participatory and representative community. Fig 17

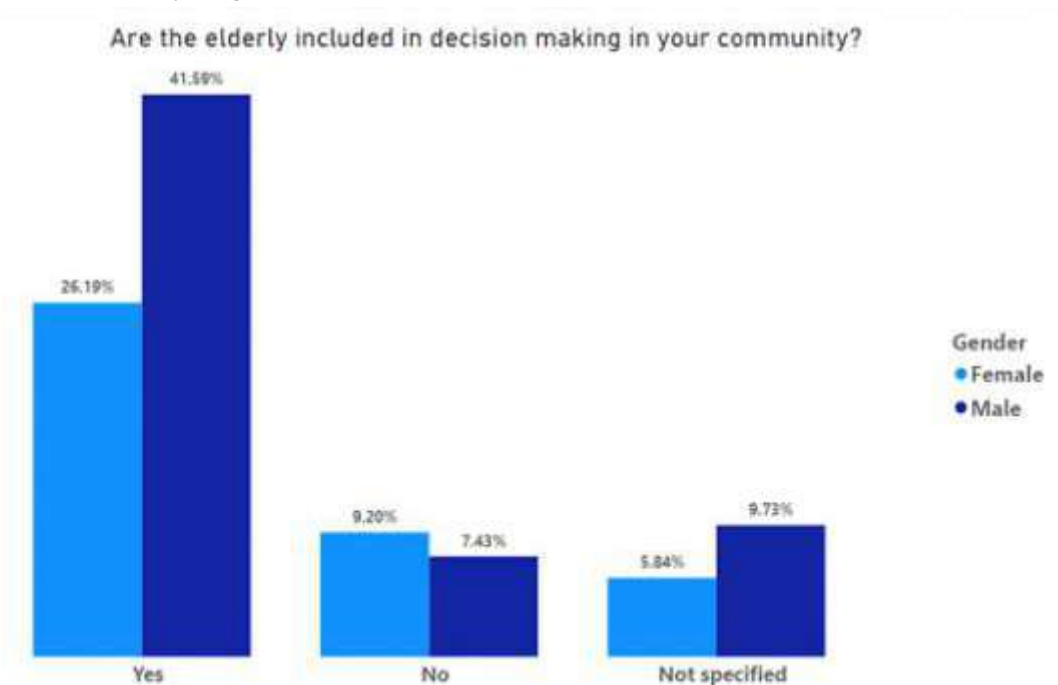


Fig 17: Assessing inclusion of the elderly in decision making processes

In terms of inclusion of women in decision making, there were mixed views within the community regarding the extent to which women are included in decision-making processes. The data indicates that a higher percentage of males (25.49%) believe that women are included in decision-making in the community compared to females (18.94%). This suggests potential gender disparities in perceptions of the inclusion of women in decision-making processes. Fig 18

Conversely, a higher percentage of females (16.11%) feel that women are not included in decision-making compared to males (19.47%). This indicates a portion of the female population perceiving a lack of involvement or representation of women in community-level decisions.

The presence of respondents who perceive that women are not included raises concerns about potential exclusion or limited participation of women in decision-making processes. Understanding the reasons behind this perception is essential for addressing barriers.

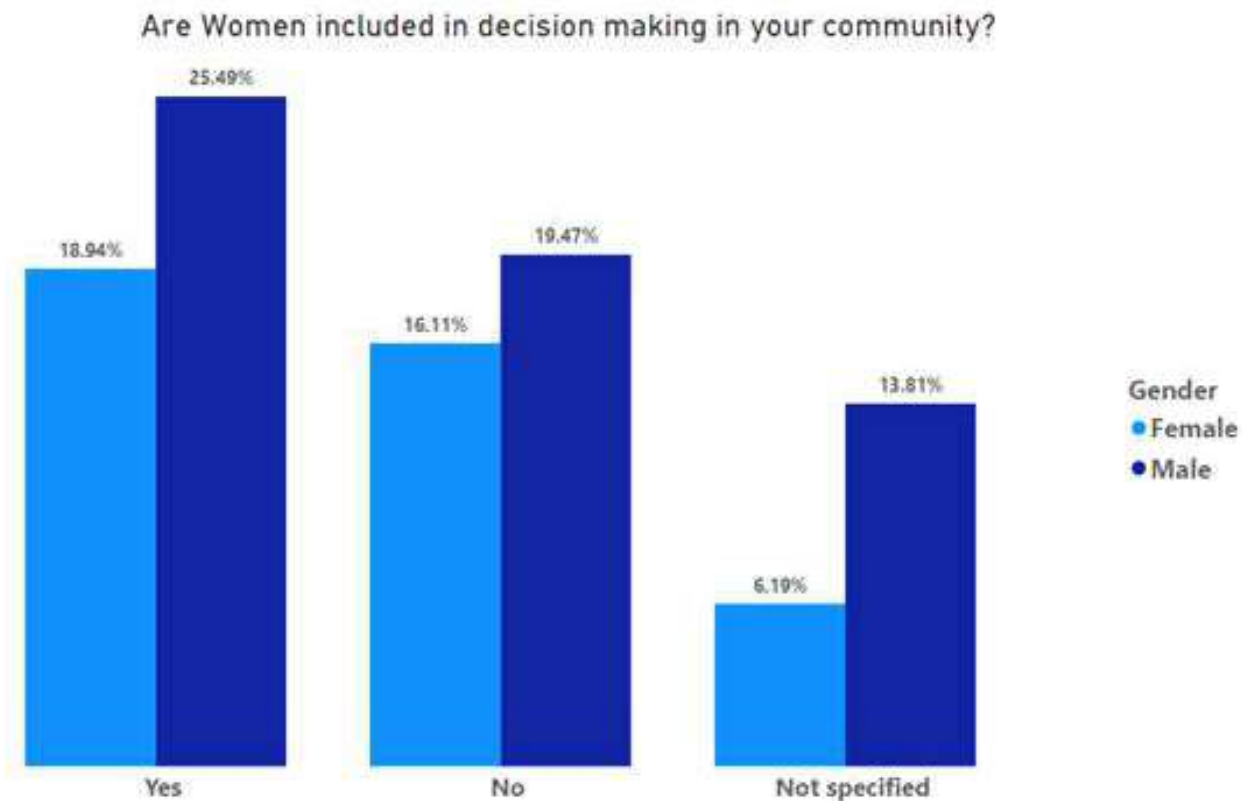


Fig 18: Assessing inclusion of women in decision making

There is a moderate perception within the communities regarding the involvement of youths in decision-making across different age groups. The highest percentage of respondents feeling that youths are included is in the 18 to 35 age group (22.83%), followed closely by the 36 to 55 age group (22.65%), and a lower percentage in the above 55 age group (15.93%). Fig 19

Not specified responses are present across all age groups, with the highest percentage in the 36 to 55 age group (8.14%) and a significant portion in the 18 to 35 age group (7.26%). This indicates a degree of uncertainty or varied perspectives within these age groups regarding the involvement of youths in decision-making processes.

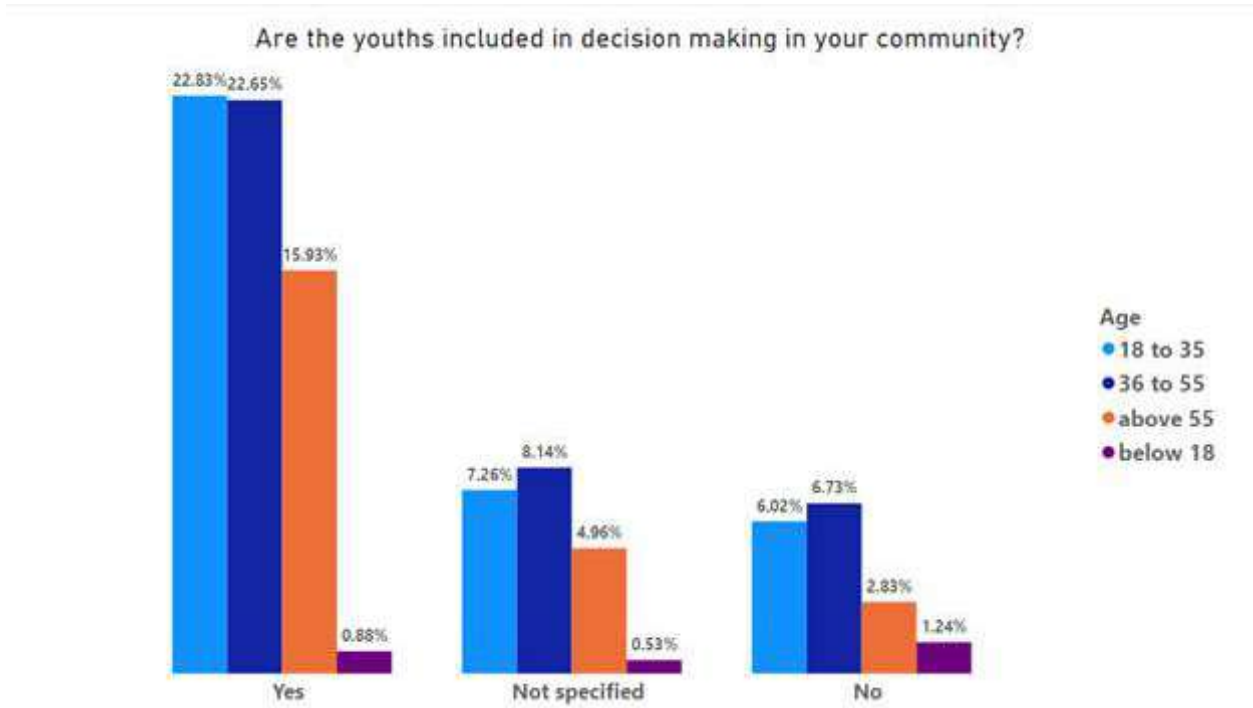


Fig 19: Assessing youths' involvement in decision making

While other groups have had significant inclusion in decision making in the communities, there are challenges in achieving full inclusion of people with disabilities in community decision-making.

A higher percentage of males (17.70%) believe that people with disabilities are included in decision-making in the community compared to females (11.33%). Conversely, a higher percentage of females (18.94%) feel that people with disabilities are not included in decision-making compared to males (23.72%). Fig 20

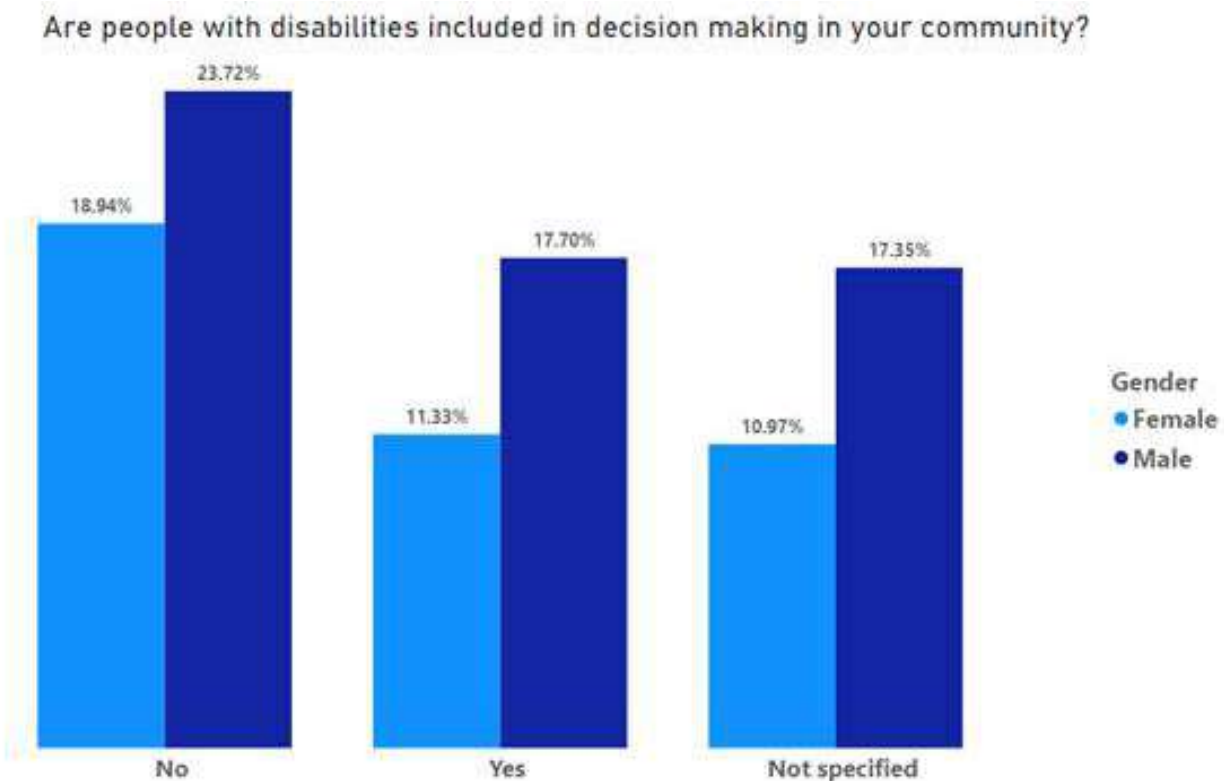


Fig 20: Assessing inclusion of people with disabilities in decision making

ASSESSING KNOWLEDGE AND USE OF CLIMATE INFORMATION SERVICES

Respondents were asked about their knowledge of climate information services and their interactions with these services. The high number of respondents across all age groups indicating no knowledge of climate predictions from NiMet raises concerns about the effectiveness of information dissemination channels or the accessibility of climate-related information within the community.

The percentage of respondents with knowledge of NiMet's climate predictions represent an opportunity for improved communication strategies. This suggests that there is a segment of the community that is informed, and efforts can be directed toward expanding this knowledge base. Fig 21

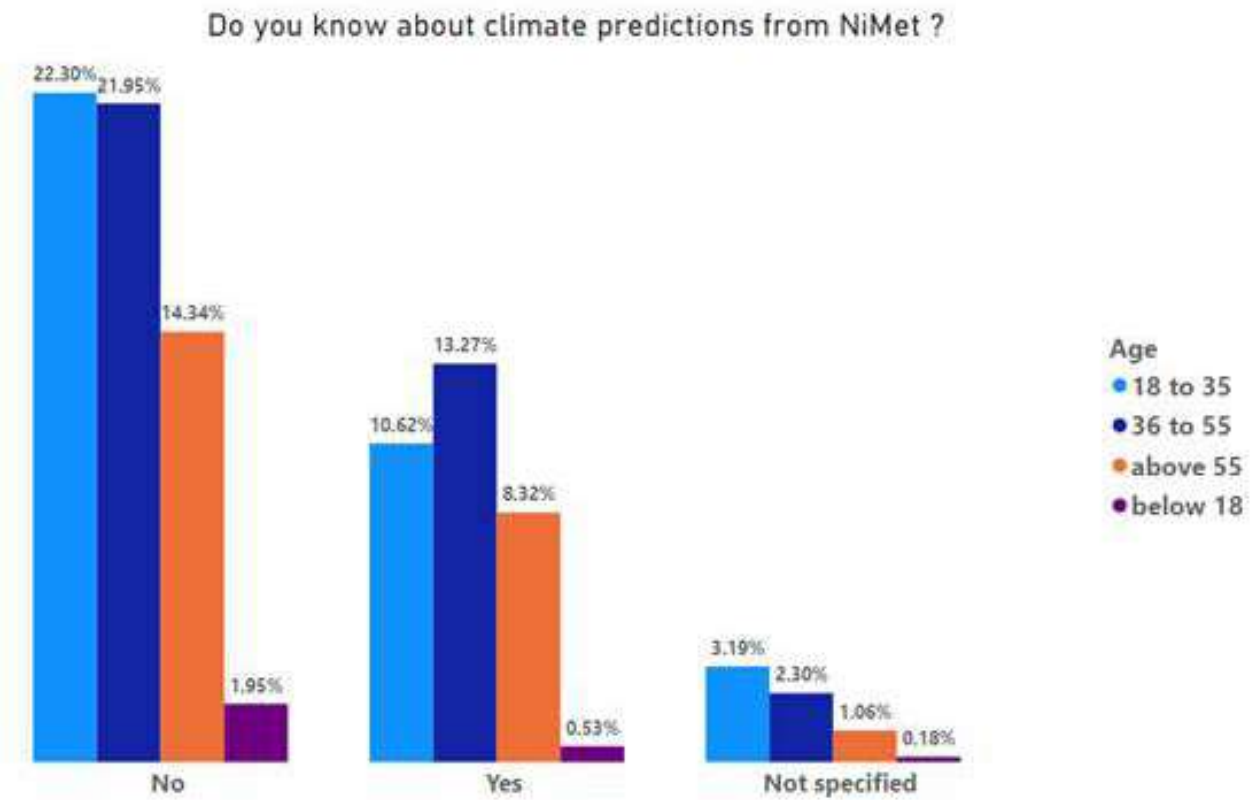


Fig 21: Assessing respondents' knowledge about climate information services

When asked if these predictions were utilized in their daily activities, the data revealed a moderate level of integration of climate predictions into daily activities and occupation within the community.

There is limited utilization of climate predictions in occupation or other activities across all age groups. The highest percentage of respondents who make use of climate predictions is in the 36 to 55 age group (15.22%), followed by the above 55 age group (10.80%), and the 18 to 35 age group (10.62%). Fig 22

The presence of not specified responses suggests an opportunity to enhance communication and education regarding the practical applications of climate predictions. Workshops, training sessions, and targeted information dissemination can contribute to increasing awareness and utilization across age groups.

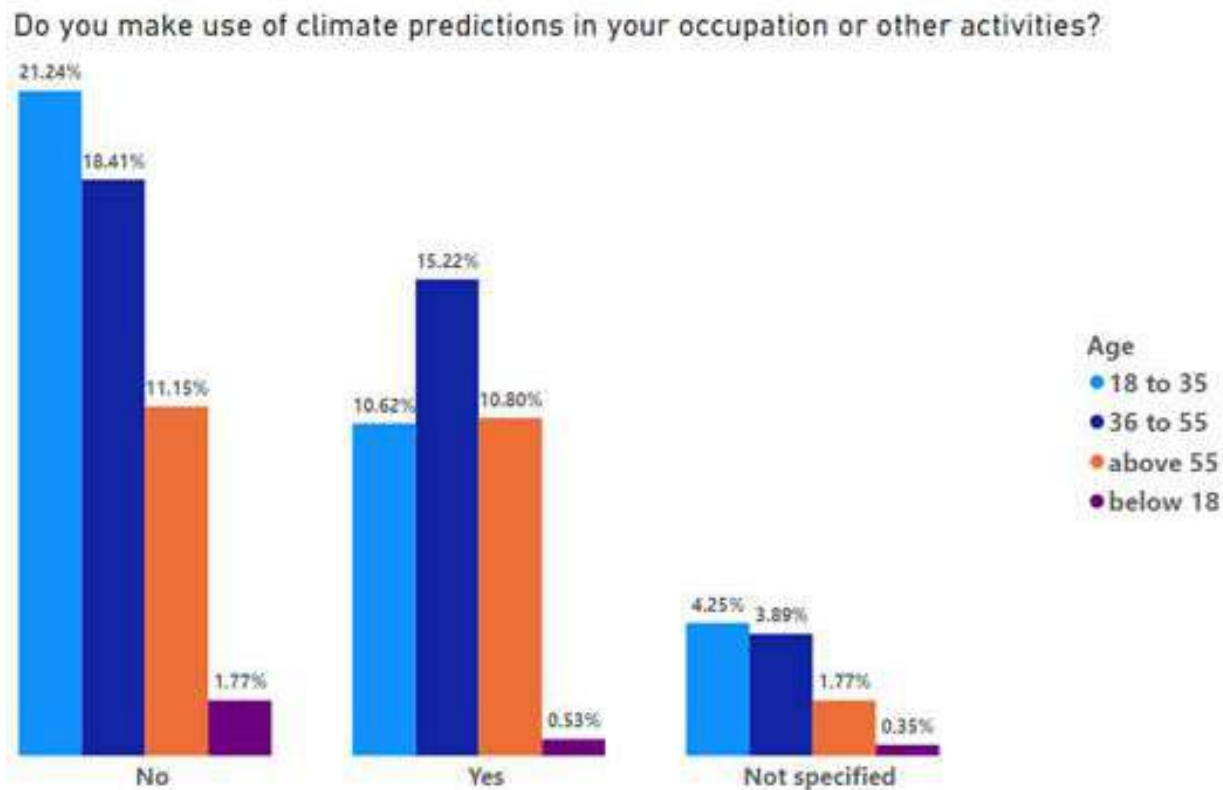


Fig 22: Assessing respondents' interaction with climate predictions in their activities

Due to the high volume of respondents who have neither heard about climate predictions from NiMet nor utilized it in their daily activities, respondents were further questioned to understand the reasons leading to this lack of information or preventing the use of the information and how this can be mitigated. The data indicated a predominant reliance on awareness campaigns for disseminating climate information, with room for improvement in training initiatives related to the use of the NiMet app.

The significant preference (70%) for awareness campaigns indicates that the community relies heavily on broad promotional efforts. This highlights the effectiveness of outreach but also raises questions about the depth of understanding and application. The relatively low percentage (3%) indicating adequate training on the use of the NiMet app suggests an opportunity for more targeted and comprehensive training programs. This could enhance the community's ability to utilize technology for accessing climate information. Fig 23

To further improve understanding, training methods should be diversified to accommodate different learning styles. Incorporate hands-on workshops, tutorials, and user-friendly guides to make the training process engaging and accessible to a broader audience.

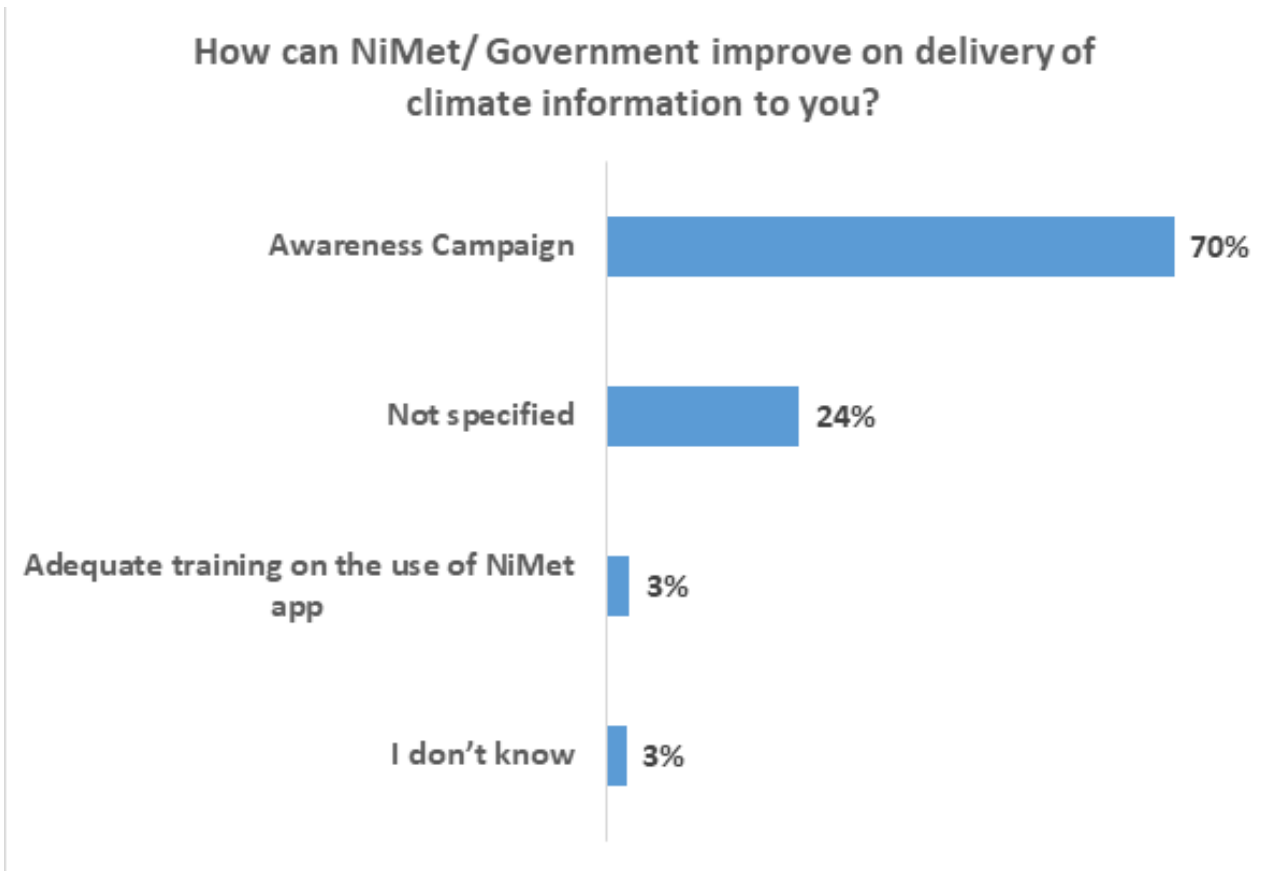


Fig 23: Assessing respondents' perception on ways of improving climate awareness information

Mitigation and Adaptation Efforts:

While the impacts of climate change in Nigeria are severe, there are efforts to mitigate and adapt to the changing climate. The government, in an effort to align with international agreements like the Paris Agreement, has identified investment in renewable energy projects to reduce dependency on fossil fuels as one of the critical interventions it must embark upon. Reforestation initiatives aim to restore degraded ecosystems and enhance carbon sequestration. Additionally, there is a growing awareness of the need for sustainable agricultural practices and water management strategies to enhance resilience. At the heart of all these efforts is enhancing and increasing access to climate information services, especially for groups that are disadvantaged in this regard.

Recommendations:

Community-Centric Approaches:

Implementing community-centric approaches involves engaging with local leaders, understanding cultural contexts, and customizing information dissemination strategies to meet the specific needs of diverse communities.

Technological Innovation:

Leveraging technology, including mobile apps, SMS services, and interactive websites, can bridge the gap in information access. These tools provide real-time updates, weather forecasts, and educational content to a broader audience.



Education and Capacity Building:

Investing in climate education programs and capacity building initiatives is crucial. Educated individuals are more likely to comprehend and act upon climate information, driving sustainable practices and fostering a culture of environmental stewardship.

Public Awareness Campaigns:

Comprehensive public awareness campaigns, utilizing various media channels, can dispel misinformation and raise awareness about the interconnectedness of human activities and climate change. Emphasizing the collective responsibility for environmental stewardship reinforces a sense of urgency.

Inclusive Language Policies:

Developing inclusive language policies ensures that climate information is accessible to diverse linguistic communities. Providing information in multiple languages enhances the inclusivity of awareness campaigns and educational materials. The NiMet is already pushing the boundaries on this as they have, in the last few years, produced Yoruba, Hausa, Igbo and Pidgin English versions of their annual Seasonal Climate Prediction publication.

Collaborative Partnerships:

Building collaborative partnerships between governments, non-governmental organizations, private enterprises, and educational institutions enhances the reach and impact of climate information initiatives. Shared resources and expertise contribute to a comprehensive approach. Over the years, NiMet has cultivated important partnerships over the years to improve the dissemination of climate information to stakeholders. Such partnerships include international organisations, research institutions, state and federal agencies, non-Governmental Organisations, private sector companies, as

well as communities.

In the last 14 years, HEDA Resource Centre has collaborated with NiMet to improve the dissemination of the seasonal climate predictions (SCP) by organising step down of the SCP for states and communicating in local languages for proper comprehension. This collaboration has involved working with the tools of media (especially radio, social media and WhatsApp) to improve dissemination to the last mile in selected communities.

A recent example of such collaboration with other stakeholders is the initiative by NIMET, UNDP, the Accelerating Lab and Benue Mission Project collaborated to address economic drivers of insecurity and conflict. After several engagements with smallholder farming communities in several parts of the state, the lack of climate adaptation was identified amongst these communities as a key trigger for conflict with all the actors and also an aggravator of economic deprivation.

A baseline study was conducted in 2 selected communities of the state, Mbaya in Buruku Local Government and Jato Aka in Kwande Local Government areas to know their agricultural practices, the climate risks they faced and the type of climate information they would require. NiMET then developed a tailored climate information product for the 2 communities. The intervention also included training and sensitisation to enable the communities access and utilise the climate information from NiMet. The feedback from the farmers was positive. After that intervention, a farmer reported that his rice did much better than previously. His rice yield increased to over 60 bags, a significant improvement from the usual 20 to 30 bags harvested from the same size of land.

Based on that collaboration between NiMET, the UNDP Accelerator Lab and CEFTER, NiMET and her partners now provide daily forecasts for not just those 2 communities, and have scaled up for all the local governments in Benue State. The objective is to build climate resilience in the smallholder farming communities and increase food production. This is done through capacity building in climate smart agriculture (CSA), provision of timely weather data, training on utilisation of weather data for agriculture as well as provision of crop weather calendar for key cash crops farming communities in Benue State.

This initiative is an example of what opportunities there are for collaboration and resource sharing between government, private sector and non-state NGOs stakeholders, for dealing with climate risks in communities. It is also a proof of the competences and resources that are already available in Agencies like NiMet that are yet to be adequately tapped into. It simply requires efforts to bridge the gap between farmers/communities and access to climate information services. A lot of capacity exists between Federal agencies, relevant state authorities, NGOs and communities themselves, but there is not enough effort to bring all of these together to help in planning for climate mitigation and adaptation, especially for farming communities across Nigeria



ISSUES AND CHALLENGES OF ACCESS TO CLIMATE INFORMATION SERVICES AMONG VULNERABLE GROUPS IN NIGERIA

Raheemat Adeniran, Ph.D. & Oluwatoyin Shakirat Salam, Ph.D



Late Rice Harvesting in Buruku Community Benue

The proportion of the world population facing chronic hunger in 2022 was about 9.2 percent, compared with 7.9 percent in 2019. After increasing sharply in 2020 in the midst of the global pandemic, and rising more slowly in 2021 to 9.3 percent, the prevalence of undernourishment ceased to increase from 2021 to 2022. It is estimated that hunger affected between 691 million and 783 million people in the world in 2022 (FAO, IFAD, UNICEF, WFP, and WHO, 2023, p.18).

Over the past years, there has been a continuous increase in the level of food crises across the world. The developing nations of the world like Nigeria are the most hit with many facing acute food shortage in the nearest future. The Food Security and Information Network and Global Network Against Food Crises in their 2023 Global Report on Food Crises identified Nigeria as one of the 10 countries with the highest number of people with food crisis challenge (FSIN and GNAFC, 2023). According to the report, “the number of people facing high levels of acute food insecurity in 2023 increased for a fifth consecutive year, reaching about 44.1 million in 15 countries by mid-2023” (FSIN and GNAFC, 2023, p. 28).

This poses a challenge to the realization of Goal 2 of the Sustainable Development Goals 2030 to 'End hunger, achieve food security, improve nutrition and promote sustainable agriculture'. The 2023 report on *The State of Food Security and Nutrition in the World 2023* jointly produced by the Food and Agricultural Organisation, International Fund for Agricultural Development, United Nations Children Fund, World Food Programme, and World Health

One key challenge is bringing tailored and actionable climate information to the 'last mile' – the small-scale agricultural producers and actors in the food value chain. Scaling up efforts to build effective climate services that reach those most vulnerable is essential to safeguard millions of livelihoods and global food security (FAO, 2021, p.10).

Organisation (FAO, IFAD, UNICEF, WFP & WHO 2023) further confirmed that achieving the SDG Goal 2 is seriously challenged as almost 600 million people will be chronically undernourished in 2030. In addition, by the year 2050, the demand for food is expected to increase globally to feed a projected population of 9.7 billion people (World Bank, 2024).

Nigeria, like several other developing nations of the world, faces its share of the global food crisis. Agriculture, which was the mainstay of the Nigerian economy contributing about 60% of the country's GDP and 65% of its export earnings before the oil boom of the 1960s suffered massive neglect afterwards (PwC Nigeria, n.d). By 1981, it only contributed about 12 percent of Nigeria's GDP (TheGlobalEconomy.com, 2024). There were renewed efforts among stakeholders over the past decades to revive the sector due to its potential to diversify the nation's economic base, and also feed its ever growing population. The efforts are gradually paying off with the sector currently contributing about 24 percent to the country's GDP as of 2022, having peaked at almost 37 percent in 2002

(TheGlobalEconomy.com, 2024) soon after the country's return to democracy after protracted military regimes. Unfortunately, sustained growth and sustainability of the sector is continuously being threatened by varied challenges, among which is climate change. Extreme weather events have been identified as one of the major drivers of food insecurity across the globe (FAO, IFAD, UNICEF, WFP, and WHO, 2023; FAO, 2021; Hansen, 2023).

No doubt there are devastating consequences of

the growing food insecurities across the globe. Nigeria and other developing nations of the world where agriculture remains the major source of food supply need to urgently address rising food insecurity. Unfortunately, smallholder farmers remain the backbone of Nigeria's food security, constituting over 80% of the nation's food producers (Rasmposikin, 2015). Their positions and status however make them most vulnerable to the effects of climate change. Their production capacity is often threatened by extreme floods, drought, pest and disease challenges as well as high temperatures, often leading to massive loss of farm produce. Climate change poses an increased risk to agricultural productivity in Nigeria largely "due to its rain-fed nature and reliance on smallholder farmers, who are often ill-equipped to adapt" (Ayanlade, et al., 2023, p.1).

Women reportedly constitute 70 percent of smallholder farmers producing about 60% of local food consumption (International Budget Partnership, 2021), but are often excluded from several interventions with noted gender imbalance in various interventions for increased agricultural productivity and earnings (Ayanlade, et al., 2023; International Budget Partnership, 2021; World Bank Group & Nigeria Gender Innovation Lab, 2023). This puts women in a more vulnerable position to agricultural risks, among which are adverse climate conditions.

According to FAO (2021), climate change poses a great risk at each step of the agricultural production value chain, from farm to market, hence the need to develop an effective system to

manage the adverse effects of climate events. Providing necessary information to key actors in the sector, especially the most vulnerable groups, such as women and youth, remains sacrosanct in mitigating climate change's effect on the Agricultural sector. FAO (2021) emphasized this point noting that;

Most of these farmers however lack access to basic information to enable them take informed actions that can help reduce risks, sustain and improve food production. The effective utilization of weather forecasts for instance can reduce climate risks in farming communities and provide them with necessary guides to reduce and mitigate its effects (FAO, 2019). But, beyond the talks, how readily do women and other vulnerable groups in our societies have access to climate information services? In the following section, we examine issues and challenges confronting this group in accessing climate information services as well as the essence of such information to their livelihoods.

Climate Change and Agricultural Production: Issues and Challenges

Agriculture remains an important sector in many developing nations of the world like Nigeria. Besides providing food security for the nation and its people, the sector also has the potentials of providing solutions to most of its developmental challenges. This, it has done in the past, when Nigeria and its people relied on proceeds from agriculture to drive many of its development programmes and policies. However, the neglect of this important sector brought various challenges upon the nation. Efforts are on to reposition the agricultural sector and make it a vibrant one to not only feed the populace but also bring about positive change in other sectors of the economy (Asaley, et al., 2023).

Agriculture is the source of livelihood for many nations of the world. It is also the source of food supply, hence its importance in the global scheme of things. Its survival however depends largely on climate. According to Hansen (2023), agriculture is one of the most climate-sensitive socio-economy sector;

Climate variability is a major challenge for agricultural development and a driver of food insecurity. Smallholder farmers and pastoralists are among those most vulnerable to the impacts of the variable climate. And climate change threatens to impede and reverse development gains by increasing the frequency and severity of extreme events; shifting suitability zones for crops and diseases; and increasing the uncertainty that complicates agricultural decision making (Hansen, 2023. p.4).

The impact of climate change and its effects on food production across the continent of Africa is huge. With the eminent food crises looming above the African continent, stakeholders continue to advocate for decisive actions to combat the effects of extreme weather on global food production. The various crises accompanying climate change thus pose a big challenge to food systems, with dire consequences for vulnerable groups in the agricultural value chain.

According to the World Food Programme (2023), the weather shocks in the year 2022 were very devastating, with various cases of record-breaking temperatures, droughts, floods, and extreme storms to mention a few, which left many regions of the world in bad states. Unfortunately, such extreme climate conditions are predicted to become 'more frequent and severe' (World Metrological Organisation, 2022). Many of these climate crises are

predictable and preventable, but only with early warnings and actions. These measures can save lives and enhance community resilience, mitigating the severe consequences of such weather events.

Accessing Climate Change Information among the Vulnerable Groups

It is very important to establish the link between the end users of climate change information and scientists, to maximise usage of scientific knowledge (Neumann & Coudrain, 2018). As reiterated by FAO (2021);

Climate information for enhanced decision-making, or climate services, can increase farmers' capacity to make strategic agricultural decisions, which strengthens their adaptive capacity and builds their resilience to weather shocks. Building resilience requires awareness of climate and environmental risks and the effective and timely management of these risks (FAO, 2021, p.2).

Studies have shown that the availability of climate information to farmers especially in rural areas where a larger percentage of what Nigerians eat comes from, is very low and those who even have access to such information hardly understand the 'forecast' from the metrological centres (Irish Aid, 2018). Coulter (2018) observed that the understanding, communication, and assessment of climate-affected futures play a pivotal role in decision-making aimed at managing the impacts and consequences of climate change. This was corroborated by Hansen (2023);

In order to manage them, risks must be understood and anticipated. Climate information has the potential to inform a range of short- and long-term decisions, building the resilience of governments, organizations, and individual farmers and pastoralists to current climate variability while also preparing for an uncertain future that may look very different from today (Hansen, 2023, p.4).

Early warnings thus play an important role in mitigating the effect of climate change on food production. Secades and Solorzano (2022) stressed the importance of providing farmers with essential information and taking proactive measures to mitigate the impact of climate change-induced shocks. This proactive approach is crucial for anticipating and preparing for extreme weather conditions and their effects, making anticipatory actions indispensable. They explained anticipatory actions as, “pre-defined interventions in the form of assistance to households or communities, taken ahead of a forecasted extreme weather event to reduce its impact on vulnerable populations, save lives and protect livelihoods”, noting that, such “assistance should reach recipients before the impact of the hazard (Secades & Solorzano, 2022, p.7). Hence, combining anticipatory actions with social protection can assist in

tackling the challenges of climate risks affecting the most vulnerable populations in “a timely, sustainable, and cost-effective manner” (Secades & Solorzano, 2023, p.6).

Participation of Women and Youths in Agriculture

In Nigeria, smallholder farmers produce the bulk of food the population depends on, and these small scale farmers not only cultivate small plots of land but depend largely on rainfall than the irrigation system (Rapsomanikis, 2015; Toda, 2015). Hence, these farmers are mostly affected by extreme weather conditions and need climate information for improved planning and decision making on their farms.

More than half the farming population in Nigeria are women and youth, who contribute largely to every stage of the agricultural value chain, from production, and processing to marketing (Aliyu, Olawepo & Muhammad, 2019). Many women engaged in agriculture contribute to the economy of their various communities and play major roles in agriculture and the food system. However, their roles are rarely recognized in the agricultural programs (FAO & ECOWAS Commission, 2018). There exists a large gender gap in agricultural productivity. This is largely due to women's low social economic status in the many societies necessitating them to often “use fewer inputs and have limited participation in extension services, farm less-valuable crops, and hire less productive labor”, while being elusive from the sector's “value chains receiving the largest budget allocations” and appropriate interventions (World Bank Group & Nigeria Gender Innovation Lab, 2023). They are thus less likely to benefit from relevant climate change communication for informed agricultural practices for enhanced productivity.

The agricultural sector provides enormous economic opportunities for Nigeria's ever growing youth population. Their participation in the sector has however been minimal with reports indicating an aging agricultural industry (Obisesan, 2019). There are government policies and initiatives to drive youth participation in the

sector, but implementation and impact can be problematic making it difficult for such interventions to reach the intended youth population (Babu, et al., 2021). Badu and his team thus identify the seeming lack of “an entrepreneurship ecosystem to support youth in agriculture and in agribusinesses” as a major impediment limiting youth participation in Agriculture in Nigeria (Babu, et al., 2021, p.12). Hence, the availability of necessary interventions such as appropriate extension services, credit facilities, and economic potentials of agricultural outputs are expected to drive youth participation (Obisesan, 2019). It is thus necessary to ensure youth in agriculture have access to required climate information services for informed decisions and actions for improved agricultural output.

Constraints in accessing climate change information

Stakeholders in the sectors have identified varied constraints inhibiting access of smallholder farmers, particularly women and youths, to climate change and other relevant information for improved agricultural output. Majority of women farmers reportedly lack access to necessary resources that can help them take decisive actions for positive impact on their farming business (Carrillo, et al., 2023). Top on the list of such resources is information. There is a huge gap in accessing and adopting Climate Change information among vulnerable groups like women and youth farmers (Kato, et al., 2023). Reaching women farmers and their support groups at the local level with information on climate smart options remains a great challenge thus limiting their access to climate service (CSI) information.

A 2018 study by Irish Aid in Ethiopia revealed that little consideration was always given to women when it comes to dissemination, access, and use of climate and weather information, thus constituting a great challenge to women accessing required information. According to the report,

... most of the dissemination channels limit women's participation, including ownership of radios, attending meetings, using phones among others. There is a need to identify user friendly channels where women can access information but also intentionally targeting them for training (Irish Aid, 2018, p.13).

FAO and ECOWAS Commission (2018) attributed the persistence of gender inequalities to various factors such as; cultural and societal values, low level of education and sensitization, religious beliefs, high poverty among women, poor implementation of gender police, land ownership policies, feeling of marginalization among several others. Besides the inability to access information, Kato, et al. (2023) identified lack of funds and lack of access to training, as leading barriers to the adoption of climate-smart agricultural (CSA) practices for both women and men farmers.

Aliyu, Olawepo, and Muhammad (2019) also discovered that majority of the women farmers do not have access to adequate climate information as most prefer to get their information from local sources rather than official sources. The researcher attributed this to unavailability of formal source of climate information in the women's areas, while the small number of information officers available prefer to deal with men than women.

Other studies Kyle, Ragasa and Carrillo (2023) also identified women's limited ability to take decisions on issues that matter to them, their lack of access to, and control over resources, social norms that discriminate against women, as well as the non-inclusion of women in government policies and programmes as some the issues that need to be addressed in order to overcome gender disparities in access to relevant agricultural and climate information services.

Another major factor preventing women from accessing climate information is the level of ownership of lands. Majority of women farmers lack access to necessary empowerment that can enable them take decisive but necessary farming decisions to mitigate adverse effect of climate change. Youths are also not exempted from the problem, with Eididi, Bidoli, and Ringler (2020) noting that:

A key difference between younger and older farmers was seen in the fact that older groups accumulated more experience, are more 'established' in farming, and have larger networks than youth groups, and thus are able to overcome some of the challenges (Eididi, Bidoli, and Ringler, 2020, p.34).

Trinh, Simelton, and Le (2018) also noted challenges confronting women from accessing climate change information to include, having less time to read and capture messages due to attention given to other demanding chores; low willingness to pay for climate messages, possibly due to the challenges of low income, smaller farm sizes, among others. The trio thus noted

establishing a training course on climate change to motivate farmers to make use of climate change services.

Recommendations

The 2023 report from Stakeholder Workshop on Women's Empowerment in Agrifood Systems Governance (WEAGov) Technical Workshop: Nigeria Pilot Study identified three major areas to address this issue. According to the report, women's needs and priorities should be considered in policies making; women should be included to participate in agrifood policy making and implementation process; and women should be allowed to hold leadership roles in organisations involved in agrifood (Kyle, Ragasa & Carrillo, 2023). This paper further makes the following recommendations to ensure women farmers and other vulnerable members of the agricultural value chain have access to climate information service;

1. Adoption of specific communication strategies, while strengthening and improving on existing ones to ensure women and other vulnerable members of the farming populace are reached with relevant climate information at the right time. For example, the idea of radio community listening group and participatory video can be promoted among women farmers as this will give them opportunity to interact and compare notes. Good knowledge of early warnings will help in mitigating the effect of weather events.
2. Provision of an enabling environment from the national, to the state and down to the local government level, for women to own resources like farmlands and have access to finance and other farm inputs supports will further empower women farmers.
3. Since many of these farmers possess some levels of local weather experience, which they have garnered over the years, the integration of new climate information with the existing local experience of farmers will go a long way in encouraging and motivating the farmers to use such information effectively as they can easily take ownership of such information with a sense of belonging.
4. Also, participatory communication approach can be adopted by bringing the farmers together in groups, and educating and training them, while ensuring their full and collective participation as a learning system.
5. Since most of the weather information can be complex in nature, the information should be broken down for better understanding. Here the use of indigenous knowledge of the local farmers in passing across such information comes handy. Opinion leaders within farming communities (such as community leaders, executive members of farmers associations or groups, among others) however need to be involved in designing and dissemination of such messages.
6. Since studies (e.g. Ayinde, et al., 2018; Babaleye, 2022; Babaleye, Asekun-Olarinmoye, & Akinwande, 2010) have shown that majority of farmers prefer face-to-face communication with Extension Agents (EAs), this can be built upon by strengthening the extension service system of the various Agricultural Development Programme offices across the 36 states and the Federal Capital Territory (FCT) of Nigeria. This can be achieved by looking into the issues of staffing, training and welfare of the EAs.
7. Furthermore, the adoption of digital

media devices such as mobile phones can facilitate dissemination of information to the women farmers since majority of them now have small feature phones. Text messages containing climate change information can be disseminated from time to time to the farmers. Feedback mechanism can also be created where the women will have access to call in to report happenings or ask for clarifications. Relevant agencies can enlighten farmers with internet-enabled smart phones on adoption and utilisation of internet related messages and relevant climate information applications, formation of social media groups where voice messages can be encouraged as a means of information exchange, to bridge the education barrier and information imbalance among farmers. Relevant agencies should however continue to support development of local technological solutions that increases access and dissemination of relevant climate change information even to farmers with only feature phones.



Conclusion

The importance of climate change on food security cannot be overemphasized. Nations like Nigeria stand the risk of huge loss if necessary attention is not paid to the issue of effective dissemination of climate change information to farmers and ensuring that farmers not only access such information but also understand them as well as take necessary actions to be able to absolve the shocks of extreme weather events. Women, who constitute a significant number of rural farmers producing over 80% of the food the populace eats, needs such information to be able to reduce the loss that accompany such weather events. Hence the need to create an enabling environment for vulnerable groups like the youth and women to enable them access to right climate services information (Eididi, Bidoli, & Ringler 2020).

Finally, stakeholders such as the Nigeria Metrological Agency should collaborate with other concerned agencies such as Agricultural Development Programmes (ADP) offices to increase their efforts in climate change information dissemination to farmers towards ensuring that all segments of the farming communities are reached with timely and reliable climate information.





References

- FAO, IFAD, UNICEF, WFP and WHO. 2023. In Brief to The State of Food Security and Nutrition in the World 2023. Urbanization, agrifood systems transformation and healthy diets across the rural–urban continuum. Rome, FAO. <https://doi.org/10.4060/cc6550en>
- FAO. (2021). *Global Outlook on Climate Services In Agriculture – Investment Opportunities to Reach the Last Mile*. Rome. <https://doi.org/10.4060/cb6941en>
- FSIN & Global Network Against Food Crises (2023). *2023 Global Report on Food Crises: Joint Analysis for Better Decisions: Mid-Year Update*. Rome. <https://www.fsinpllaorm.org/sites/default/files/resources/files/GREC2023-MYU.pdf>
- Hansen, J. W. (2023). *AICCRA Report: Introduction to Climate Information Services for Agriculture Reference Guide: Accelerating Impact of CGIAR Climate Research for Africa* (AICCRA). <https://cgspace.cgiar.org/server/api/core/bitstreams/de1f3c50-6a9f-443a-b227->
- International Budget Partnership (2021, October 27). Women smallholder farmers in Nigeria secure investments in agriculture. [https://internaaonalbudget.org/women-smallholder-farmers-in-nigeria-secure-](https://internaaonalbudget.org/women-smallholder-farmers-in-nigeria-secure-investments-in-agriculture/)
- [investments-in-agriculture/](https://www.iied.org/sites/default/files/pdfs/2023-11/22101g.pdf)
- Irish Aid (2018). *Food Security and Global Framework for Climate Services: Lessons Learned Report: Improvement of Agro-Meteorological and Climate Information to Enhance Agricultural Productivity and Food Security in Tigray Southern Nations, Nationalities and People's Region (SNNPR) of Ethiopia*. <https://www.iied.org/sites/default/files/pdfs/2023-11/22101g.pdf>
- Kato, E., Rwamigisa, P. B., Kamusiime, H., Sufian, F., & Ringler, C. (2023). *Do Information Video Impact Awareness, Knowledge, and Adoption of Climate-Smart Agricultural Practices? Insights from Rural Uganda. Reaching Women Farmers with CSA Policy Note 10*. Washington, DC: International Food Policy Research Institute (IFPRI). <https://doi.org/10.2499/p15738coll2.137054>
- Kyle, J., Ragasa, C., & Carrillo, L. (2023). *Women's Empowerment in Agrifood Systems Governance (WEAGov) Technical Workshop: Nigeria Pilot Study*. Gender Equality Report July 2023. Washington, DC: International Food Policy Research Institute (IFPRI). <https://doi.org/10.2499/p15738coll2.136826>
- Neumann, S. S. & Coulter, C., L. (2018). *Communicating Climate Change Information for Decision Making*. Springer: Switzerland,
- Obisesan, A. A. (2019). What drives youth participation and labour demand in agriculture? Evidence from rural Nigeria. Being paper presented at the 6th African Conference of Agricultural Economists, September 23-26, 2019, Abuja, Nigeria. <https://ageconsearch.umn.edu/record/295766/files/202.%20Youth%20parccipipon%20in%20Nigeria.pdf>
- PwC Nigeria (n.d). Transforming Nigeria's

- Agricultural Value Chain: A case study of the Cocoa and Dairy industries.
[https:// www.pwc.com/ng/en/assets/pdf/transforming-nigeria-s-agric-value-chain.pdf](https://www.pwc.com/ng/en/assets/pdf/transforming-nigeria-s-agric-value-chain.pdf)
- Rapsomanikis, G. (2015). *The Economic Lives of Smallholder Farmers: An Analysis Based on Household Data from Nine Countries*. Rome, Italy: FAO.
- Secades, U., & Solorzano, A. (2023). *Integrating Anticipatory Action and Social Protection*. W F P.
[https://www .wfp.org/publicaations/](https://www.wfp.org/publicaations/)
- TheGlobalEconomy.com (2024). Nigeria: GDP share of agriculture .
https://www.theglobaleconomy.com/Nigeria/share_of_agriculture/
- Toda, A. (2015). *Nigeria; Scaling Up Note*. Rome, Italy: International Fund for Agricultural Development.
<https://www.ifad.org/documents/38714170/402>
- Trinh, T.Q., Simelton, E., & Le, T.T. (2018). Farmer Demand for Climate Services: Survey Results from Ha Tinh Province, Vietnam. A Research Programme on Climate Change, Agriculture and Food Security.
- World Bank (2024). Climate Smart Agriculture. W o r l d B a n k .
<https://www.worldbank.org/en/topic/climate-smart-agriculture>
- World Bank Group & Nigeria Gender Innovation Lab (2023). Gender Gaps in Agriculture Productivity and Public Spending in N i g e r i a .
<https://documents1.worldbank.org/curated/en/099091823113036874/pdf/P175095086510b001080e30d147463456d6.pdf>
- World Food Programme (2023). *Scaling Up Anticipatory Actions for Food Security: Anticipatory Action Year in Focus 2022*. W F P .
https://www.wfp.org/publiicaons/scaling-anticip_tory-
- World Metrological Organisation (2020). *2019 State of Climate Services: Agriculture and Food Security*. WMO.
<https://www.wfp.org/publicaaoons/2019-state-climate-services-agriculture-and-food-security>

THE ROLE OF YOUTH IN BRIDGING THE CLIMATE INFORMATION GAP

By Ayobami Kareemah Oladipo
Business Development Lead, Nigeria Ignitia



Engaging with Information Access and Usage

1. Introduction

Among the environmentally aware corner of the society, climate change is an existential crisis that needs to be halted immediately. However, those critically impacted by this rapid change, smallholder farmers, are mostly unaware of the nomenclature of this phenomenon, nor of the efforts being put in place to mitigate it and adapt to it. About 70%¹ of the Nigerian population are engaged in agriculture, albeit at a subsistence level where they are dependent on natural weather patterns such as rainfall; unfortunately, the food security and livelihoods of over half of the population is being threatened by climate change. Despite not knowing what it is called, the farmers can feel and see it in the floods, heat waves, droughts, pest and diseases patterns and changes in the seasonal patterns.

Various research and studies have been conducted on how to adapt to climate change^{2,3,4}; at the center of adaptation solutions is “Climate Information Services” (CIS)^{3,4}. WISER⁵ defines CIS as “the activities that deal with the generation and provision of climate information to a range of users to support climate-resilient development and inform climate-related decision-making and climate-smart policy and planning.” Therefore, in agriculture, timely access to accurate weather information tailored to the needs of the farmers is the backbone for resilience to climate change, variability, and increased productivity. CIS guides on land selection and preparation, time for sowing, applying fertilizer, spraying, and harvesting; in livestock production, it guides on heat stress and breeding management.⁶ It also guides against losses from extreme weather events such as flooding and dry spells. CIS consists of three major components which include the production, processing and dissemination of weather and climate data and information⁵.

About 70% of the Nigerian population are youth with over 35% of them between the age of 18-35 years within the employable age category.⁷ This large population serves as an opportunity for them to play a pivotal role in addressing the climate information gap by bringing their unique perspectives, innovative approaches, and their inherent ability to drive change. This paper seeks to explore how the youth can serve as a catalyst for bridging the climate information gap among smallholder farmers in Nigeria.

2. Climate information services and the Youth

2.1.1 Role of Youth in the different components of CIS

Youth are the productive engine of any nation; they are the energetic and innovative workforce that contribute to the socio-economic development of the society. In the agriculture sector, recent transformation within the space such as increased access of farmers to financial support and inputs have been largely engineered by youth led Agtech and Fintech founders who have devised efficient and sustainable ways of reaching the last mile farmers. In the following, we examine how they can play pivotal roles in the different components of CIS.

2.1.2 Climate information production:

In Nigeria and Africa at large, climate information has primarily been produced by national meteorological and hydrological institutions, which mostly depend on ground station weather data. Unfortunately, there is a large deficit in the needed stations for accurate weather prediction in Africa; currently, the continent has just one-eight of the minimum density of weather stations recommended by [WMO](#)⁸. Youth can actively participate in data collection efforts related to climate and environmental monitoring. Affluent young persons such as [Ezra Olubi](#), Co-Founder of Paystack and [Sanusi Ismaila](#), CEO at CoLab, each purchased a private weather station (Figure 1) whose data feed into open source weather services could serve as influencers to make owning a weather station a trend which would eventually improve the weather data for Africa.



Figure 1: A photo showing a type of the mini weather station installed by Ezra and Sanusi

On the other hand, private sector players such as Ignitia has, through the advent of real-time satellite data, machine learning (ML) and artificial intelligence (AI), been able to accurately predict the weather without necessarily relying on [ground](#) station data.⁹ As more private weather organisations emerge, there would be an increased need for data scientists skilled in the areas of ML and AI to help build solutions for the future.

2.1.2. Climate information processing:

While the role of youth in the production of climate information may be limited, they play a more significant role in the processing of the information for the end users. When climate/ weather information is produced, it is often displayed in technical formats. For instance, Figure 2 below shows the format in which the weather forecasts in made available to the public.

	KADUNA	IKEJA	ONITSHA	IBADAN
LATEST	2/27/2024 1300Z	4/2/2024 1100Z	3/23/2024 1700Z	4/2/2024 1200Z
WIND	32005KT	23007KT	VRB02KT	12011KT
VISIBILITY	10KM	10KM	8KM	10KM
WEATHER	NIL	NIL	NIL	NIL

Figure 2: A snapshot of the weather dashboard as presented on NiMet's webpage



As presented, such information would not have a good value for smallholder farmers, there is a need to contextualise to the need of the farmers. For instance, for a maize farmer, would the high temperature lead to more vegetative growth instead of kernel production? Or can they spray their crops based on the wind speed. Therefore, young agronomists and field extension agents are required and best placed to process this information for the farmers.

2.1.2. Climate information dissemination:

This is the easiest entry point and largest area of influence of young persons in the climate information services value chain. As identified in the preceding chapter, there is a huge climate information gap between the primary producers and the end users. Youth could leverage on their innovative acumen to develop new tools and products which they can sell to farmers either as a stand-alone service or as a bundled service. For example, Eweko Concepts, a youth-led farm support start-up, bundled Ignitia's location-specific weather services with other product offerings for their farmers in Epe, Lagos. Also, Esoko's Services in Ghana connect farmers to weather forecasts and agronomic advice, through SMS, voice SMS and a call centre. Their team is comprised of mostly youth who provide remote support to the farmers.

For farmers who use only feature phones, youth

agricultural extension agents could serve as a sales agent for the delivery of weather information through SMS and radio. A youth led organization to watch in this space is Extension Africa, who host well trained agents who can deliver such sensitive information to farmers quickly via SMS and other established communication route. Furthermore, through radio programming and the support of development partners, organisations like Farm Radio International disseminate weather information to farmers.

In communities whereby there is limited or no network coverage, the youth can still play some role. By working with the farming community leaders, they can organize weekly educational lessons for farmers and can update them on expected weather events for their communities. By fostering climate literacy, youth empower communities to engage in informed decision-making and advocate for climate-resilient solutions.

1.1 Other roles of youth in the democratization of climate information.

2.2.1. Policy Influence and Participation:

Youth must actively participate in climate policy discussions and decision-making processes at local, national, and international levels. They should also advocate for equity and inclusion in

climate information dissemination, ensuring that the needs and perspectives of marginalized groups are represented and prioritized. They advocate for targeted outreach strategies, culturally sensitive communication approaches, and language accessibility to overcome barriers to access and promote inclusive participation in climate information processes. For example, a youth, female led organisation, [Surge Africa](#) is leading the discussion on climate resilience in Nigeria. They also advocate for youth representation in policymaking bodies, advisory committees, and negotiation forums, ensuring that their voices are heard and considered in shaping climate policies and strategies.

2.2.2. Youth-led Monitoring and Reporting:

Youth should also engage in monitoring and reporting activities to hold governments and institutions accountable for the gap in the climate information delivery. They should conduct independent assessments, citizen science projects, and community-based monitoring initiatives that provide real-time data and feedback on climate impacts, policies, and interventions, contributing to greater transparency and accountability in climate governance.

2. Strategies for Overcoming Obstacles to Information Access

3.1.1 Technological Challenges:

a. Limited Connectivity:

The most efficient way to deliver climate information to farmers elsewhere in the world is via mobile phones; unfortunately, in Nigeria, the hinterlands where most of the farmers operate are often out of network coverage and the electricity grid. This incapacitates the youth's innovative prowess to help bridge the gap. Therefore, efforts should be intensified by both the communications and power ministries to ensure off-grid zones are quickly provided with these essential amenities.

b. Lack of access to the weather information:

The open access information is often archived at the Nigerian Meteorological Agency (NiMet). NiMet has put some effort to make the weather information accessible via its website, however, more granular information is required for the different communities within the states. This would allow the youth to provide tailored information to their catchment farmers. To solve this issue, NiMet could install an open desk in their office whereby youths can easily communicate with them to obtain more information as required.

3.1.2. Sociological challenges

a. Traditional beliefs and perception:

The farming population are mostly aged men and women who are more resistant to change. They are also rooted in their traditional / religious beliefs which makes it difficult for them to accept such weather information. For instance, during a survey by Ignitia to determine the perception of some farmers to weather forecasts being sent to their phone, some responded that they were not interested in the service because “you are not God.” Furthermore, farmers see weather and extension service as a public good which should be paid for by the government. These makes it difficult for youth to provide climate information to such farmers. Frequent sensitization and awareness campaigns need to be conducted to improve farmers perception of such information and digital services in general.

b. Reaching women farmers:

There is a gender gap in the dissemination of weather information due to their limited access to mobile phones. This makes it very difficult for the youth to target and effectively provide climate information to women. Furthermore, in some communities, women farmers are allowed to only converse with female agents. This makes it difficult for them to be accessed as most extension agents are male. More women youth agripreneurs are encouraged to participate in climate information dissemination to reach the women farmers.

“Convert to 2 columns”

Box 1: **Ignitia's** Experience with recruiting youth as agripreneurs for disseminating climate information.

In 2023, Ignitia conducted a pilot to test the use of youths as agripreneurs to deliver CIS to farmers in Nigeria. The role of the agripreneur was to empower other smallholder farmers in targeted villages to purchase climate smart services to better manage their farms. They sensitised the farmers within their zones about the value proposition of the product and services. Furthermore, they served as liaison between Ignitia staff and the farmers in the field. The selection criteria for the youth included their tech readiness, understanding of the agribusiness ecosystem and their farmer touch points/ ongoing relationship with farmers.

Challenges:

- Recruiting agripreneurs that fit the selection criteria was tough. They were either tech-savvy with low -farmer touchpoints or they worked closely with farmers but were limited in technology know-how.
- Low cost of the service led to low commission per farmer for the agripreneur, this discouraged some of them, making them leave the programme. A delicate balancing act between affordability for the farmers and profitability by both the company and agents is required for success.
- Cost of transportation from their place of residents to the farms to obtain their GPS location for tailored services was very high, eroding their profits.

3.1.3 Economic challenges

The cost of entry into digitalizing climate information services and agricultural extension in general may be high for most youths.

Economic instability may force young people to prioritize immediate financial needs over longer-term engagement in climate-related initiatives. Youth-led initiatives in climate information dissemination often struggle to secure funding and financial support from donors, government grants, or private sector sponsors. Limited access to funding opportunities and competitive grant processes can restrict the scalability and sustainability of youth-led projects.

Furthermore, demand for CIS is seasonal, the demand is usually during the rainy season which spans about 6 months. Therefore, agripreneurs will lose revenue during off-season, making the business unsustainable for them. To curb this, agripreneurs are advised to bundle the dissemination of CIS with other relevant offerings for farmers.

1. Recommendations

[Science](#) has revealed that climate change and climate variability is [worsening](#), leading to severe weather extremities and loss of lives and livelihoods. In a country where the food system is heavily reliant on rain-fed irrigation, urgent actions must be taken to increase farmers resilience and quickly adapt to the changing climate. The agility and innovativeness of the many youths seeking employment poses an opportunity to harness it in bridging the CIS delivery gap. The recommendations for creating an enabling environment for youths to participate in CIS delivery are as follows:

1.1 Proactiveness by the Met Agency:

The national meteorological agency should develop a clear pathway to fully integrate youth

as vendors for the weather data. This can be easily facilitated by establishing a dissemination vendor desk within their commercial unit in all the state offices to improve the access to the weather data and enable them to easily forge partnerships with them.

1.2 Infrastructure development:

It is important to ensure the necessary infrastructures required for accurate forecasting are deployed by the Met Agency to enable them to deliver high-quality, high-resolution information in a timely manner. This would ensure that farmers do not develop an apathy for weather information as incorrect information may dissuade them from future trials. Furthermore, mobile network infrastructure must be rapidly developed in farming communities as it presents the quickest way to reach smallholder farmers.

1.3 Gendered development is required:

Women must be strongly considered whilst developing interventions to increase youth participation in CIS delivery. This would enable more women farmers to have access to climate information thereby reducing household vulnerabilities.

1.4 Capacity Building

There is a need to train youths in necessary data science skills to support them in the emerging field of weather forecasting through machine learning and artificial intelligence. Students of agronomy and other agricultural sciences should also be trained on how to translate weather information into meaningful materials for smallholder farmers. Finally, youths within farming communities need to be educated on several digital tools to aid the dissemination of such services to the farmers.

References

1. FAO. (n.d.). *Fao.org*. Nigeria at a glance | FAO in Nigeria | Food and Agriculture Organization of the United Nations. <https://www.fao.org/nigeria/fao-in-nigeria/nigeria-at-a-glance/en/>
2. Okoroh, J. P., Olaolu, Michael. O., & Igbokwe, Edwin. M. (2016). Climate change mitigation and adaptation strategies used by farmers in Imo State, Nigeria. *Journal of Agricultural Extension*, 20(2), 130. <https://doi.org/10.4314/jae.v20i2.10>
3. Savari, M., Zhoolideh, M., & Limuie, M. (2024). Factors affecting the use of climate information services for agriculture: Evidence from Iran. *Climate Services*, 33, 100438. <https://doi.org/10.1016/j.cliser.2023.100438>
4. Antwi-Agyei, P., Dougill, A. J., Doku-Marfo, J., & Abaidoo, R. C. (2021). Understanding Climate Services for Enhancing Resilient Agricultural Systems in Anglophone West Africa: The case of Ghana. *Climate Services*, 22, 100218. <https://doi.org/10.1016/j.cliser.2021.100218>
5. United Nations. Economic Commission for Africa; United Nations. Economic Commission for Africa (2021). Private sector engagement in climate information services in Africa. Addis Ababa : . © U N . E C A , . <https://hdl.handle.net/10855/43942>
6. Agyekum, T. P., Antwi-Agyei, P., & Dougill, A. J. (2022). The contribution of weather forecast information to agriculture, water, and energy sectors in East and West Africa: A systematic review. *Frontiers in Environmental Science*, 10. <https://doi.org/10.3389/fenvs.2022.935696>
7. Akinyemi, A. I. (2023). *Nigeria's growing population can be an advantage, with better data and a policy focus on young people*. The Conversation. <https://theconversation.com/nigerias-growing-population-can-be-an-advantage-with-better-data-and-a-policy-focus-on-young-people-209530>
8. Chason, R., & Ombuor, R. (2021). *Climate change in Africa: Lack of weather data hinders climate research, early-warning systems - the Washington Post*. Washington Post. <https://www.washingtonpost.com/world/2021/09/24/africa-climate-weather-data/>
9. Tyler, A., McDonald, M., Rydge, J., Kobel, Y., & Chan, W.-S. (2024, February 20). AI: Weather forecasting A new asset in an era of extreme weather. London; HSBC Bank Plc.

In a recent editorial piece on Engaging youth in Agrometeorology for Sustainable Development published in Journal of Agrometeorology 23 (4) : 365-366 (December 2021), James Adamu Ijampy a Chief Agrometeorologist Nigerian Met Agency (NiMet), and Surender Singh Managing Editor, Journal of Agrometeorology expressed the following opinion:

Global population is projected to reach 9 billion by 2050 and the number of young people (aged 15 to 24) is also expected to increase to 1.3 billion, accounting for almost 14 percent of the projected global population. Most born in the developing countries of Africa and Asia, where more than half the population still live in rural areas. Over the past few years, youth have been shying away from agriculture and globally there is an increasing interest in finding ways of engaging youth in agriculture and associated domains.

Globally, several challenges contribute to the low ambitions of youth building a carrier in agricultural meteorology. Some of them are real, including tangible constraints in access to information and training that prevent youth from pursuing careers in agrometeorology. Others are perceived challenges, having more to do with the way young people think about careers in agrometeorology. Young people's perceptions of agrometeorology are also influenced by the views and opinions of adults around them, including parents, relatives, and community members. Some of the most pervasive challenges hindering youth involvement in agricultural meteorology includes Family and community pressures, perceived social class, access to training, education, and information on agricultural meteorology.

Current concerns with the sustainability of agroecosystems in different parts of the world have heightened the awareness for careful use of the natural resource base on which agriculture depends. For proper and efficient use of soils and plant/animal genetic material, knowledge of the role of climate is an essential precondition. The youths have an important role to play as agents of change, and their engagement guarantees sustainable development in the challenging field of agrometeorology. Nestled in the heart of most youths is the desire to be a problem solver. Coincidentally, this comes in handy in

providing accurate weather forecasts to save lives and provide professional support to emergency response amidst meteorological disasters. Additionally, the youths have the potential to look at the challenges of meteorology from a new perspective and therefore the need to invest more in their potential.

WMO launched in 2014 a new web-based Youth Corner (www.wmo.int/youth/). In February, it issued a new edition of Careers in Meteorology aimed at young people who are deciding what to study or what kind of work to pursue. In March, over 100 students were invited to WMO headquarters in Geneva to celebrate World Meteorology Day with the theme 'Weather and Climate: Engaging Youth.' While weather and climate issues affect the lives of young people today, they will have increasingly dramatic impacts in the future.

Youthful populations offer a great opportunity for many countries as the entrepreneurial and innovative energy of young people can help revitalize and enhance local economies. This is particularly true in the agricultural sector, where new technologies and innovative farming practices have the potential to enhance the sector's productivity and effectiveness. However, young people do not automatically gravitate to farming. We have expose youth to agriculture meteorology early, engage youth in solving climate related problems in agriculture, create students visit program, encourage Weather Club to include agrometeorology, mentorship within institutions, bringing the youngest members into the society and student membership, organize student conference on Agrometeorology targeting high schools, create special scholarships and fellowships in agrometeorology, use of social media for agrometeorology, etc.

Youth can significantly contribute to climate action but they urgently need adequate capacity building and support to make informed decisions that are aligned with achievement of global goals. With about 1.8 billion young people worldwide in the age group of 10–24 years, it is important to have an active engagement with youth in decision-making processes to enable intergenerational collaborations and inclusive partnerships that collectively seek solutions for resilient and sustainable development.



📍 15A, Yinusa Adeniji Street, Off Muslim Avenue, by Toyin Roundabout, Ikeja, Lagos, Nigeria.

✉️ Info@hedang.org 🌐 www.ejsdprogram.org, www.hedang.org

📷 @Hedagenda 🌐 HEDA Resource Centre

Toll-Free Line: 08004332277

