The Impact of Climate Change On Female Farmers In Ghana and Nigeria

Centre for Journalism Innovation and Development (CJID) & SAIS Women Lead

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Published in Nigeria in 2022 by
Centre for Journalism Innovation and Development – CJID (formerly PTCIJ)
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About CJID
The Centre for Journalism Innovation and Development (CJID) is a media innovation and development think- (and do) tank founded in 2014, to strengthen the West African media to promote democratic accountability, in the service of inclusive and sustainable development. The Centre uses the tools of civic technology, investigative journalism, and research to deepen the discourse on sustainable development and tackle misinformation and disinformation in the media, and society.
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African Women and the Urgency of Climate Justice

Almost a quarter of households in Africa are women led. These households tend to be poorer because the women household heads, relative to their male counterparts, are deprived of access to and control of productive resources; the ability to find decent work; control over their time, lives, and bodies; while having voice, agency, and participating meaningfully in economic decision-making at all levels.

The vast majority of these women work in agriculture, which is mostly subsistent and pastoralist in nature. Women account for 75% of the farming population in Nigeria and 41.2% in Ghana. Yet, women ownership of the means of production is low, despite their high participation in agricultural activities.

In addition to their involvement in agriculture, rural women are responsible for household chores, particularly the fetching of water and energy sources, including charcoal and firewood, for cooking and heating. Since 37% of the population in sub-Saharan Africa is 30 minutes or more away from a source of safe drinking water, according to the United Nations Department of Economic and Social Affairs (DESA), these women spend upwards of 20 hours weekly fetching water alone. Most African women also take care of their children, the elderly and those in ill health. These responsibilities can take as much as five hours a day. Climate change is exacerbating each of these tasks for women, perpetuating their penury.

Africa is one of the continents facing the most severe impacts of climate change, with nine out of the 10 most vulnerable countries in sub-Saharan Africa. The visible impacts of climate change in Africa — deforestation, flooding, drought,
soil erosion, coastal storms and changing weather patterns — have directly impacted African women in their agricultural livelihoods and also burdens their domestic lives with significant consequences for wellbeing. But conversations about climate action, adaptation or loss and damage in the capital cities and at annual UN COP conferences rarely focus on how to get resources to these women who need to manage the effects of severe climate change.

This is why we at the Centre for Journalism Innovation and Development (CJID) are immensely proud of our work with the SAIS Women Lead at the Johns Hopkins University School of Advanced International Studies (SAIS) to understand the challenges that women in Nigeria and Ghana face in managing the effects of climate change on their agricultural productivity and personal lives.

My heartfelt gratitude goes to Dr Chiedo Nwankwor, who led the study, and to Busola Ajibola, who led the Nigeria field team and Caroline Anipah who led the Ghana field team.

We hope that readers of this study will come away feeling the same urgency that we feel to ensure that financial assistance, climate smart agricultural techniques and technology, coupled with infrastructural investments in water, electricity, proper drainage, and coastal management get to these women in time. Climate justice demands that the loss and damage costs they suffer should be borne by those who reaped the benefits of our carbon intensive lifestyles.

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Building upon a decade of experience in policy, human rights, and law, Uzra Azizi advocates for a better, more sustainable world in the face of climate change. She grew up in Afghanistan and worked in both public and private sectors on capacity building and gender empowerment. This has instilled in her leadership skills and knowledge to further advance her passion to empower emerging nations through climate and energy policy. In 2022, Uzra will complete her Master of Arts at Johns Hopkins University’s SAIS in Energy, Resources, & Environment (ERE) and International Economics. Her research lies at the intersection of geopolitics, energy transition and rural development, impacting and improving the lives of millions in the developing world. Uzra also holds a degree in international affairs from the College of Holy Cross in Massachusetts and has lived in Italy, Pakistan, the U.S., and U.A.E.

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Acknowledgements

This report would not be possible without the valuable contributions and insight of several individuals. First, the SAIS Women Lead team would like to thank the staff of the Centre for Journalism Innovation and Development (CJID) for their support throughout this project, including Abdulkareem Mojeeb, Ntiedo Ekott, Oge Udegbunam, Rose Adjakie Djangmason, Obed Adjei, and Tay Charlotte, who conducted the data collection in Ghana and Nigeria. In addition, we would like to thank Dr. Chiedo Nwankwor, faculty advisor and director of the SAIS Women Lead program. We appreciate their support for this project. We would also like to thank Busola Ajibola and Caroline Anipah for their contributions to the research through their reviews of the research design, coordination of research activities, for serving as our primary points of contact in Ghana and Nigeria respectively, and for organising interviews and focus group discussions on our behalf in the two countries. Our research was further supported by Ntiedo Ekott and the Agricultural Desk of CJID in Nigeria, alongside Roselena Ahiable and Maxine Danso in Ghana, who conducted both data collection and assisted in providing contacts for the research. Finally, we would like to thank all those who took the time to speak to us about the sensitive but critical issues documented here. This report would not have been possible without their candor.
CBO  Community-Based Organisation
CJID  Centre for Journalism Innovation & Development
CPIA  Country Policy and Institutional Assessment (World Bank)
CSA  Climate Smart Agriculture
CSO  Civil Society Organisation
DII  Direct Informant Interview
FAO  Food and Agriculture Organisation
FGD  Focus Group Discussion
GDP  Gross Domestic Product
JHU  Johns Hopkins University
KII  Key Informant Interview
NGO  Non-government Organisation
SAIS  School of Advanced International Studies
UN  United Nations
UNSDG  United Nations Sustainable Development Goal

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Women in Ghana and Nigeria face unprecedented barriers in the agriculture sector, due to social inequalities, patriarchal norms, and the disproportionate effect of climate change on female farmers. In Ghana, climate change causes increasingly unpredictable rain patterns, rise in mean temperature and food scarcity.

Similarly, in Nigeria, signs of the changing climate are evident in rising temperatures, more frequent floods, droughts and desertification, and land degradation. As women account for 75 per cent of the farming population in Nigeria and 41.2 per cent in Ghana, understanding their situations is crucial to building climate resilience in the two countries. Therefore, this study seeks to identify the adverse effects that climate change pose on female farmers in both countries and the social-economic constraints they face within the context of gender inequality. The Centre for Journalism Innovation and Development in Nigeria (CJID) partnered with the SAIS Women Lead at the Johns Hopkins University School of Advanced International Studies (SAIS) for this study, which proffers potential recommendations to improving the existing conditions.

This study uses a mixed-methods approach that employs primary and secondary data to analyse the gendered impact of climate change on female farmers in Ghana and Nigeria. Based on preliminary research of the country backgrounds and literature review of existing research, the research team compiled data drawn from semi-structured direct informant interviews, key informant interviews, and focus group discussions for both quantitative and qualitative analyses, to identify the key issues, and strengthen the findings through the investigation of surveys, academic resources, and national governmental frameworks. Unlike other studies on the subject, this research specifically focuses on presenting potential programmes and policy avenues that could uplift female farmers socially, economically, and politically, to increase their access to climate change adaptation resources, techniques, technologies, and education.

As a result, this report divides its findings into issues of financing and business, agriculture and climate, governmental policies, and gender inequality. Challenged by increasing weather volatility and adverse farming conditions brought by climate change, the lack of access to agricultural resources stands out as a primary issue for female farmers, typically the lack of comparable and adequate access to productive materials and tools, climate-smart technologies, and agricultural education and training. Furthermore, unequal access to financial services and land ownership puts female farmers in unfavourable situations in which they are constrained from credit provisions. Their resilience is further compromised by gender inequality, as they have to manage
the double burden of time, as well as sexual and gendered violence. Meanwhile, governmental policy frameworks and programmes that seek to serve farmers do not give specific considerations to female farmers under climate change, and a huge enforcement gap exists for policy implementation on the local level. Women are also underrepresented in the government at national, state and local levels, limiting their ability to advocate for themselves on a wide scale.

Based on the analysis of the existing policies and programmes of the two countries of focus, this study further proposes customised measures for key stakeholders to incorporate gender-specific support in policy designs, the strengthening of service delivery that promotes female farmers’ access to financing, resources, and training, while reducing their burden of time and exposure to violence. The study also proposes measures to improve micro-finance and credit provisions to female farmers, along with investment in climate resilient agriculture programmes. Finally, the study makes suggestions for future research geared towards the gendered impact of climate change on female farmers.
Introduction

Across the African continent, the effects of climate change have challenged agricultural production, threatening food and economic security. West Africa has become a hot spot for rising temperatures, causing prolonged periods of drought and rainfall, and disrupting planting and harvesting seasons. In addition to the sporadic weather, flooding and erosion caused by rising sea levels threaten coastal communities and fisheries. The erratic changes in the climate combined with population growth threaten food security globally and hinder the achievement of various United Nations Sustainable Development Goals (UNSDGs) targets. As such, the impact of climate change on agriculture has been among the most devastating.

Additionally, rising temperatures have reduced crop yields, while simultaneously exposing crops to pest infestation and proliferation. These changes affect people differently. In West African countries, where agriculture accounts for 65 per cent of employment and 35 per cent of gross domestic product (GDP), women rely on agriculture as their primary source of income.1 With most agricultural land in rural areas, it is predicted that climate change will further exacerbate the already poverty-ridden regions where most of the populations depend on agriculture for survival.

Climate change in West Africa also exacerbates preexisting gender inequalities. Notably, there is a significant gender gap in social roles and job opportunities that disproportionately affects women. Wage discrimination and general economic disadvantages overly expose women in the agricultural sector to the dangers of climate change, mainly because they lack adequate resources to help reduce their vulnerability.2 With limited access to land, capital, and new technologies, it is increasingly difficult for female farmers to adapt to climate change, particularly with the extreme poverty levels that women experience.

Although men lead the wholesale trade, women dominate the small-scale production, transformation, and trade in the informal food markets.3 According to the World Bank and the Food and Agriculture Organisation (FAO), in sub-Saharan Africa, women produce approximately 80 per cent of foodstuffs for household consumption and engage in sales in small-scale production, indicating their further vulnerability to the negative impact of climate change on this sector. This project is a multi-case study that will not only investigate the barriers that women face in Ghana and Nigeria in the agricultural value chains due to the impact of climate change, but will also provide evidence-based solutions that CJID may use in its climate change policy advocacy with relevant national and regional actors.

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The Issue in Context

Country Backgrounds and Literature Review Summation

While the literature on climate change and its resultant crisis is expansive and continues to grow, given its cross-sectoral effects, this study limits its scope to the impact of climate change on women in the agricultural value chain. The literature provides critical insights into the relationships among climate change and gender, climate change and agriculture, conservation, and ‘smart’ farming, and previous avenues of research in Ghana and Nigeria within these categories. These sources provide evidence of the extreme effects that climate change has on agricultural value chains and how the agricultural value chains in Ghana and Nigeria are heavily dependent on women. Research on climate change adaptation policies, such as sustainable or smart farming, highlights the need for female farmers to have access to training, technology, credit, and financial services.

Currently, there is a lack of research on potential programmes and policy avenues that could uplift women socially, economically, and politically to increase access to climate change adaptation techniques and education in the agricultural sector. In Ghana and Nigeria, farmers lack access to information regarding climate change adaptation. However, due to existing social inequalities and patriarchal norms, female smallholders have less access than their male counterparts. There is also a failure to incorporate gender mainstreaming into policy and practice designs to mitigate the harsh effects of climate change on women in the agricultural sectors in Ghana and Nigeria.

This study aims to fill this research gap by analysing the integrated relationship between climate change, gender, and agricultural production. This study will examine potential policy avenues for access to financial services, credit and land, education and professional development, and incorporating gender mainstreaming into policy to uplift female voices.

Ghana

Ghana’s land is divided into six agro-ecological zones (Figure 1). The zones are rainforest, semi-deciduous forest, coastal savanna, forest-savanna transition, Guinea savanna, and Sudan savanna. The rain decreases from the southwest to the northeast. Ghana’s mean annual precipitation ranges from 900 mm to 1500 mm in the south. In the tropical rainforest zone, annual precipitation reaches 1800 mm. Over the past five decades, Ghana has experienced a series of natural disasters involving droughts and floods (Appendix A). The events during this period are estimated to have affected over sixteen million people.

and caused 444 deaths. After epidemics, flooding is rated the second-highest natural disaster in Ghana.

The annual temperature has increased by 1°C over the past 30 years. Existing data suggests that Ghana’s rainfall will decrease, while temperatures continue to rise. Unfortunately, the increase in erratic weather conditions in Ghana, particularly in the Northern region, has affected agriculture value chains.

In 2020, agriculture, forestry, and fishing contributed 19 per cent to Ghana’s GDP. In response to the crisis in these sectors, especially agriculture, Ghana has taken certain measures to mitigate the effects of climate change, including the appropriate use of chemical and organic fertilisers, improved crop varieties that allocate biomass underground, and enhanced water management systems for irrigated crops. However, there is no meaningful policy change for women who make up 44 per cent of the agricultural labor force in Ghana. Therefore, women trade agricultural commodities in Ghana, and at the same time, they are at the forefront of experiencing the negative impact of climate change.

In terms of gender inequality, Ghana’s World Bank’s Country Policy and Institutional Assessment (CPIA) rating stands at 4.0 out of 6.0 – making it among the best performing countries in gender equality. However, while

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7 Ibid
12 “CPIA Gender Equality Rating (1=Low to 6=High) - Ghana,” The World Bank Data, accessed January 15, 2022
Ghana represents an example of more robust gender equality and livelihood
conditions for women in the region, yet they face numerous challenges due to
low rates of literacy, low participation in higher education, and low participation
in professional occupations. For women farmers in particular, these challenges
exacerbate the impact of climate change on them, since they usually have limited
access to land, livestock, and agricultural services, and many do not have access
to capital, financial services, property, and training.

Figure 1. Six Agro-ecological Zones of Ghana

Source: Rhebergen et al. (2016)¹³

¹³ Rhebergen et al, “Climate, Soil and land-use based land suitability evaluation for oil palm production in Ghana,”
(2016)
Nigeria

Nigeria has one of the largest economies on the African continent, with its GDP standing at $514.05 billion in 2021. The agricultural sector comprises 24.14 per cent of Nigeria’s GDP, with women smallholder farmers constituting 70 per cent of the agricultural labor force.14 Nigeria’s landmass spreads over 910,770 km2, of which 73.8 per cent is agricultural land, and 37.3 per cent is arable.15 Women make up 23.5 per cent of the total work force within the agricultural sector, in comparison to 44.4 per cent of men.16 With a lack of access to transportation, limited freedom of movement, low access to storage facilities and networks, and little access to infrastructure, women are kept from benefiting and participating in agricultural value chains.17

The effects of climate change in Nigeria have been severe and varied. In the southern region, farmers face severe flooding due to increased rainfall.18 The surge in water volumes destroys arable land and washes away soil, decreasing crop yield and negatively impacting income and food insecurity. In the northern regions of Nigeria, farmers experience severe drought, causing infertile soil, land degradation, and the failure of crop production for whole seasons. Additionally, forests are disappearing at an alarming rate due to desertification, fueled by poor land use, unsustainable grazing practices, and the consumption pressures associated with a booming population.

In terms of gender inequality, Nigeria has achieved some progress on women’s rights. However, the rights of women and girls are still severely violated and devalued. Women have unequal access to education, economic resources, political participation, and they experience unprecedented gendered and sexual violence. According to recent data from the United Nations Entity for Gender Equality and the Empowerment of Women, 43.4 per cent of women are married or in a union before the age of 18.19 As of February 2021, women held only 3.6 per cent of seats in the Nigerian parliament.20 Nearly 6.34 million of the country’s 10.19 million out-of-school children are girls, and only 10 per cent of women are landowners.21 The World Bank’s CPIA gender equality rating for Nigeria is 3.0 out of a possible 6.0.22

The dual burden of time is the twofold responsibility borne by working mothers who must take care of children, the elderly and keep the house in order, in addition to

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20 Ibid
22 “CPIA Gender Equality Rating (1=Low to 6=High) - Nigeria,” The World Bank Data, accessed January 15, 2022
their work as farmers. In Nigeria, women are essential in ensuring the health and nutritional needs of their children and families. This is deeply rooted in patriarchal roles and expectations, and without access to daycare or additional assistance, this causes undue stress for female farmers.

The reality of the shifting climate in Nigeria has enormous implications for food security. The Food and Agricultural Organisation (FAO) indicated that Nigeria has three main factors that aggravate food insecurity: climate change, a national economy, and conflict. The FAO also noted that Nigeria’s food insecurity has significantly increased since 2019 (see Figure 2).23

**Figure 2: FAO Data on Global Food Insecurity in 2020**

Food insecurity in 2020 compared with 2019 (or last available year) in countries facing food insecurity crises

Source: FAO.

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Methodology and Results

This study employed a mixed-methods approach that combines qualitative and quantitative analyses to conduct a dual study of the impact of climate change on women in the agricultural value chains in Ghana and Nigeria. Using the snowball sampling technique, the authors conducted 24 key informant interviews (KIIs) with vital stakeholders; academics specialising in agriculture, climate change, and gender; government officials; and representatives of local NGOs and the private sector. In addition, local research assistants conducted 117 direct informant interviews (DIIs) with female farmers and held 15 focus group discussions (FGDs) with female and male farmers in the Ashanti, Central, and Volta regions of Ghana, alongside the Anambra, Lagos, and Federal Capital Territory regions of Nigeria (see Appendix B for the complete surveys deployed). With the CJID’s guidance, these regions were selected for their varied climates, variety of crop cultivation, and accessibility for field research. The mixed-method allows for comparing the qualitative data from the KIIs, DIIs, and focus group discussions with the literature review.

The key informants were strategically selected to capture the views and expert opinions of all stakeholders involved in Ghana and Nigeria’s agricultural sectors, particularly those who are able to speak to the experiences and challenges of female farmers. The study conducted 15 key informant interviews (KIIs) in Nigeria with nine academics, three private sector representatives, two NGOs, and one government official. In Ghana, nine KIIs were conducted with three academics, two government officials, two NGOs, and two private sector representatives. The findings from the KIIs were grouped into five central themes and challenges: climate, business and finance, agricultural, gender norms, and another category for other challenges that did not fit into the delineated groupings.

The DIIs were conducted in person by data collectors hired domestically by the CJID, while the KIIs were conducted remotely and online. The interview data were coded and organised into ten categories and sub-categories accordingly (see Descriptive Coding Categories in Appendix C).

Limitations

Due to the timing of the research, which fell within the outset of the COVID-19 pandemic, the study had to contend with certain limitations. Travel restrictions and guidelines surrounding the pandemic hindered travel for the SAIS Women Lead researchers to both Ghana and Nigeria for in-person data collection. As such, the CJID and researchers decided that deploying local fixers and data collectors would be the best course of action at that point. Although the local fixers carried out the data collection thoroughly, the in-person observations of Johns Hopkins researchers are missing from the report.

Another key limitation of research is the absence of input from government officials from both countries. Despite repeated efforts to contact government officials in Ghana and Nigeria for the KIIs, they were unavailable to provide the required insight on findings or to share information about the governments’ actions and issues in addressing the challenges facing female farmers across agricultural value chains.
Key Findings and Analysis

Demographic Survey Data – Ghana
The Direct Informant Interviews (DIIs) in Ghana were conducted with an all-female group of 50 farmers. Over half of the participants belong to the Ewe ethnic group, 46 per cent are Ashantis, and two per cent comprise members of the Mole-Dabgonian ethnic group. In terms of geographic distribution, 40 per cent of the participants are from the Ashanti region, 30 per cent from the Volta region, and the remaining 30 per cent from the Central region. 80 per cent of the respondents indicated that droughts are now more apparent in the country, whereas 20 per cent pointed out their experiences of more flooding. It is crucial to note that historically, floods occur more frequently in Ghana (Appendix A). Twenty-six participants indicated having three or more children, whereas eleven revealed that they have three children, and eight respondents pointed to having two children each (Figure 3). The family size was important to the survey since female farmers have many roles, including caring for the elderly and their children, making them suffer from a double burden of demand of time.

The focus group discussions in Ghana were conducted in the Ashanti, Central, and Volta regions. In total, there were six FGDs involving 42 participants, 62 per cent of who are female farmers and 38 per cent, male farmers. The predominant age range of these 42 participants was 45-64, followed by 35-44, 25-34, and above 65. There was only one participant who was between the ages of 18 and 24 years. The predominant crop produced in the regions is maize, followed by cassava, plantain, and cocoa.

Demographic Survey Data – Nigeria
A total of 67 individuals were interviewed for the DIIs in Nigeria, with 25.4 per cent belonging to the Igbo ethnic group; 20.9 per cent are Yoruba; 13.4 per cent, Tiv; 11.9 per cent, Ibibio; 4.5 per cent, Gbagyi; and the remaining 23.9 per cent are of other ethnicities. The respondents comprised 92.5 per cent females and 7.5 per cent males. In terms of geographic distribution, 48 per cent of the participants came from the Federal Capital Territory, 15 per cent from Ogun State, 10 per cent from Rivers State, 10 per cent from Akwa Ibom State, and the remaining 17 per cent were from various locations and regions throughout Nigeria, including Enugu, Plateau, and Anambra States.

The focus group discussions (FGDs) in Nigeria were conducted in Enugu, Rivers, Akwa Ibom, Anambra, and Ogun States. In total, there were nine FGDs in Nigeria, involving 81 participants. The predominant age range of the 81 participants was 35-44, followed by 25-34 and 45-64, then 18-24. No one who participated in the discussions fell within the 65 and over age range. Women accounted for 87 per cent of the FGD participants, and men accounted for 13 per cent. The predominant crop produced by the participants is maize, followed by cassava, and assorted vegetables.
Key Findings and Analysis

This section discusses the key findings of the research through a consideration of the KIIIs, DIIIs, and FGDs. The section first captures a brief summary of key findings for each country, followed by an in-depth look at findings, coupled with evidence from the KIIIs, DIIIs, and FGDs.

Summary: Ghana Key Findings

Our KIIIs, DIIIs, FGDs, and literature review point to an increase in floods and droughts as two significant changes impacting agriculture in Ghana. An additional factor further exacerbating the challenges that female farmers face is irregular rain patterns, which make it nearly impossible for farmers to plan ahead, grow their crops and produce. Subsequently, the rise in the sea level and desertification, both sizable and region-specific, further compound the negative impacts of climate change on agriculture in the country. Under the umbrella of business and finance challenges, the lack of women’s access to capital, land ownership, and disproportionate distribution of wages were key findings. Under agriculture-related challenges, women reported crop loss, soil quality degradation, lack of technical know-how, a shortage of storage for crops and produce, and underdeveloped irrigation systems as significant barriers. Lastly, challenges of gender norms discovered include the issue of the double burden of time and lack of access to information, training, and workshops to advance the farming skills of women.
Summary: Nigeria Key Findings

This study’s findings reflect the results of the KIIs, DII, FGDs, literature review, and desk research carried out on women farmers in Nigeria. The primary discussion areas are divided into business and finance, governance and policy, agriculture, and climate. This study finds that in terms of climate change and agriculture, female farmers are experiencing severe land degradation, no access to climate-smart technologies, output reduction stemming from infertile soil, lower food quality, drought in the northern states, and flooding in the southern states. Women are equally excluded from higher places of learning due to patriarchal norms and societal inequities. Thus, female farmers lack training and technical skills and do not have access to the necessary extension services or educational resources. Regarding governance and policy, the policies implemented at the federal level are not enforced at the state or local level, particularly policies involving gender equality. Finally, as women face unprecedented gendered and sexual violence, there is little to no prosecution of perpetrators and weak protection of victims.
Among the 50 female farmers interviewed in Ghana, 64 per cent noticed a notable change in climate in the three regions. Thirty-one per cent believe the weather has changed drastically over the past five to ten years. In addition, one-third of the key informant interviewees mentioned irregular rain patterns as the significant climate challenge in Ghana. Other major challenges include floods, droughts, and desertification. During the interview with Birgitta Oppong-Mensah, who works at CABI, an NGO, she noted that, “since most farmers depend on rainfall, the variance (in) pattern of rainfall makes it hard to decide when to produce.” Therefore, the DIs and KIs confirm significant climate change in Ghana, especially irregular rainfall patterns.

Floods and droughts are two significant features of irregular rain patterns. About 82 per cent of female farmer respondents noted that droughts are now more apparent, while the remaining respondents indicated that floods negatively impact them. Professor Asiedu Berchie, head of the Department of Fisheries and Water Resources at the University of Energy and Natural Resources in Ghana, who is also an expert in fisheries and agriculture with over ten years of experience, noted that a instance of flooding could destroy the fishponds and crops of farmers.

Based on these insights, one could conclude that both floods and droughts have had a significant negative impact on the agricultural sector in Ghana.

Except for intermittent rain pattern-related issues, the rise of the sea level
and desertification are also sizable but region-specific. Mrs Oppong-Mensah stated that, “in the southern region of Ghana, especially the Volta region, which is a coastal area, some farmlands are no longer available due to the rise of sea level.” Overall, Ghana is suffering from two extremely opposite climate challenges simultaneously. These contrasting challenges require targeted solutions to address their negative impacts on farmers, particularly female farmers.

- **Business and Finance Challenges**

Based on the KII findings, access to capital, land ownership, and disproportionate distribution of wages are three repeatedly mentioned challenges facing female farmers in Ghana. Seven key informants said that the lack of access to capital and credit is a key barrier for female farmers to perform better. Professor Sarpong observed that the “basic challenge is access to land, followed by the ability to purchase inputs and participate in the market.” He noted that women could not afford the cost of technology necessary to increase productivity and yield due to the lack of access to capital. One respondent from an NGO mentioned that financial services are still underdeveloped in Ghana mainly because of the bank crisis between 2017 and 2020.24 During an interview with Kwame Louiji of Complete Farmer, which is a technological agricultural services company pointed out the following:

Three informants mentioned that there are increased costs associated with agriculture. Professor Berchie stated that, “farmers’ operational costs are increasing, resulting in unemployment.” Meanwhile, while operational expenses, such as irrigation, increase, farmers struggle to sell their yields for higher prices to cover their costs. Rosemond Afful of Complete Farmer attested that, “when the buyers come to buy the food grown using irrigation, they do not care about how it was grown. They refuse to pay higher prices simply because it costs the farmer more to grow. He (the buyer) will skip the farmer and buy from someone else.” She further added that this negatively impacts the farmers in a two-fold way. First, they must input additional resources to irrigate, and later in the market, they lose customers. Hence, the government must allocate funding to support and provide access to capital for female farmers, address the land ownership issue, and propose policies and strategies to tackle the disproportionate distribution of wages.

Other challenges include the lack of existing government projects on access to credit and financial assistance. According to the DIIs, thirty-five per cent of female farmers believe that financial assistance will help mitigate the effects of climate change on them (see Figure 7). These are also the same results from FGDs. In five out of six FGDs, participants thought financial assistance should be the highest priority for the government to address, in order to reduce the burden on women farmers. In the Ashanti Region, the agricultural officer indicated

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that only individual financial organisations had carried out financial assistance projects. The Central Region’s agricultural officer explained that because agriculture is considered a risky business with a low return on investment, the Ghanaian government or the agriculture development bank does not give out loans to most farmers, especially female farmers, putting them at a further disadvantage. The lack of government attention to the agricultural sector hinders women farmers’ access to credit and adaptation to climate change.

**Figure 6: What Will Help You? (Ghana)**

<table>
<thead>
<tr>
<th>What will help you?</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education/Literacy</td>
<td>6%</td>
</tr>
<tr>
<td>Agricultural inputs</td>
<td>16%</td>
</tr>
<tr>
<td>Financial Assistance</td>
<td>35%</td>
</tr>
<tr>
<td>Technology</td>
<td>20%</td>
</tr>
<tr>
<td>New Varieties of Climate Resistant Crops</td>
<td>23%</td>
</tr>
</tbody>
</table>

- **Agriculture Challenges**

During the KIIs, respondents noted that crop loss, soil quality degradation, lack of technical ability, and underdeveloped irrigation systems are significant challenges affecting female farmers in Ghana. Professor Daniel Sarpong of the University of Ghana observed that rice yields decreased in the country over the years due to less irrigation. He further noted that cultivation seasons are narrowing due to climate change, which is an additional contributing factor to crop loss. Numerous key informants also indicated that women grow a particular set of crops that are now identified as ‘women’s crop’, while Professor Sarpong clarified that women’s crops sell easily in the market and
provide food for households. However, this creates a challenge in the market for female farmers because most ‘women crops’ have short shelf lives and come with smaller profit margins. Because most female farmers grow crops for daily consumption, there is more competition and supply, making their produces sell at low prices, and thereby leaving the farmers with small profits.

Respondents from all sectors noted that the soil quality is degrading, contributing to a decrease in yield and lower nutritional values in the crop. According to Professor Berchie, illegal mining activities contribute to soil infertility in the Central Region. In the Ashanti Region, the desert moves in from the north, reducing arable land and forcing farmers to switch from cocoa and oil palm production to cashews. A similar challenge exists in the Volta Region, where farmers replace cashews with cocoa and increasingly plant shallots and onions to increase yield and profits. However, floods pose a severe threat to shallot and onion farming. During the interview with Dorothy Asare-Addo of Holland Greentech, she shared her concern that “heavy rainfalls wash away the nutrients in the top layer of the soil, which is crucial for crop production, and this is a major challenge for most farmers.” She further added that intensive and increasing heat levels diminish crops, further compounding the negative impact on the crops.

When asked whether climate change has challenged their traditional method of farming, thirty-one (31) out of 50 DII respondents confirmed this. The question was followed by whether the farmers adopt any alternative farming system. Nine of them stated that they now intercrop to increase yields and profit, while seven claimed to have switched industries and found employment elsewhere. Five respondents deployed the use of chemical fertilisers in their fields (Figure 7), and three mentioned they try different approaches in the form of “trial and error;” and the remaining seven noted that they irrigate and mulch. The responses of the farmers to this question are crucial in understanding the severity of climate change and how it has forced them to adopt different approaches that require additional capital, higher risk, and reduced profits.

Subsequently, underdeveloped irrigation systems on female farms and the farmers’ lack of technical knowledge further exacerbate the negative impact of climate change on female farmers. According to Ken Kinney of The Department Institute, mostly male farmers can afford to install proper irrigation systems on their farms, whereas in contrast most female farmers lack suitable irrigation systems in their fields. The preceding constraint couples with the lack of technical knowledge to further disadvantage women in the agricultural value chain.

During the KIIs, the key informants also noted that female farmers struggle with a shortage of storage for their crops and as a result, women are increasingly
growing fresh vegetables, such as okra, tomato, onions, shallots, spinach, herbs, beans, and sweet potato. One informant shared that:

Among the 50 female farmers interviewed in Ghana, 42 grow cassava, 24 plant maize, and 23 cultivate pepper, followed by 20 farmers who grow okra (see Figure 6). This study discovered that although Ghana is among the top cocoa producers globally, climate change threatens this ranking, indicating that farmers who traditionally grow cocoa risk losing their farms and livelihood as the climate crisis worsens. Among the crops listed by respondents, cocoa is the sixth top crop, which is grown by 15 female farmers only. The preliminary research and existing data did not include okra, tomato, and garden eggs as major crops that women grow. Therefore, when respondents noted these crops in the survey, they further confirmed the reason for diversifying their crops to increase yields and profits.

Approximately 94 per cent of the respondents testified that they engage in polyculture, compared to six per cent who adopt monoculture. This finding is vital to understanding how more farmers diversify their crops and increasingly adopt polyculture to secure gains.

- Gender Norm Challenges

All the nine key informants noted that land ownership is another major barrier for female farmers. In response to this challenge, Mr. Ken Kinney of the Department Institute, a local NGO, revealed that there are two distinct inheritance systems for land ownership in Ghana: the matrilineal and the patrilineal. Possession of land is matrilineal in the Central and Ashanti
Regions, whereas land ownership is patrilineal in the Volta Region. He also added that most land in Ghana is held under customary tenure regimes, the fallout of which, however, is that the private sector does not accept it as collateral for credits and financial assistance. Consequently, it is challenging for the government to intervene in and grant women ownership of ancestral land.

Four out of nine key informants noted that women also suffer from the double burden of time. Women do not only work in the fields and farms, but they also bear responsibility for their children, the elderly, and moreover cook, clean, and fetch drinking water. According to data from the DII, about 58 per cent of respondents have more than three children, and the others have either two or three children. This data equally confirms that women have a considerable time burden in caring for their children. In addition, Dorothy Asare-Addo of Holland Greentech stated that women are inefficient in the fields because they juggle multiple roles and responsibilities, including being homemakers, home managers, care providers, and farmers. Furthermore, Professor Berchie observed that the impacts of climate change are both specific and shared. He pointed out that climate change forces men to
migrate for work, which "multiplies the burden on women to play all major social roles without an income or additional support." In short, men are more flexible than women when adapting to climate change because of the fact that women need to multi-task.

An additional challenge is women's lack of access to information, training, and workshops to advance their farming skills. The DII data shows that 27 per cent of female farmer respondents still do not receive regular information about expected rainfall and temperature. As Mr. Kinney confirmed, female farmers are usually in rural areas with poorly developed transportation infrastructure. Professor Asem added that women must seek information, and due to the additional responsibilities around the home, most female farmers do not get the chance to ask the male household members to share their knowledge. Mr. Kinney also indicated that technology extension service providers are primarily men, which makes it challenging for female farmers to access extension services. Thus, both external and gender norm factors limit the participation of women farmers in agricultural workshops.

Nigeria

- Climate Challenges

While smallholder farmers face many barriers attributed to climate change in Nigeria, female farmers are particularly vulnerable. Among the 67 female farmers interviewed in the country, 68.8 per cent were facing output reduction, 61.2 per cent mentioned lower food quality, 44.8 per cent cited flooding as a challenge, whereas 41.8 per cent pointed to erosion, and 19.4 per cent to droughts as concerns to them (Figure 9). Additionally, 67.2 per cent of study participants identified that weather patterns had severely changed for the worst in the past five to ten years. While men have access to education, training, finances, and technologies to potentially overcome these barriers, women, due to widespread gender inequality throughout Nigeria, are severely limited in the preventative actions they can take. Additionally, policymakers who focus on climate change adaptation rarely consider incorporating a gender framework into this.

As Nigeria is a patriarchal society, women are charged with ensuring the health and food security of children and elderly family members. When there is not enough food produced from farming, 40 per cent of the study participants noted that they had to improvise or source for food through alternative means, and 60 per cent said they would buy from the markets, if financially feasible. When crops are ruined due to severe weather, it has significant implications on a family's finances and food stock until the next planting season. Measures need to be taken to mitigate these risks through climate-smart technologies and agriculture to ensure the well-being of rural families.

A key barrier identified in preventing female farmers from adapting to climate change, as referred to above, is the
lack of access to climate-smart technologies. These would improve farm productivity and profitability through soil carbon sequestration or reductions in greenhouse gas emissions. However, the technologies are widely inaccessible and unaffordable to female farmers. One study participant stated that:

Additionally, while there seems to be some awareness of these climate-smart technologies, there is little to no government investment in developing them for widespread use.

- **Agriculture Challenges**

Smallholder female farmers have felt the direct impact of climate change on their agricultural production, ranging from droughts that stunt the growth of crops, to erosion and soil displacement from flooding. This study identified that 91 per cent of female farmers noticed a significant reduction in crop yields due to severe weather caused by climate change (Figure 10). This study interviewed several agricultural experts, focusing on climate change adaptation and the potential barriers facing female farmers.

Seven out of the (15) key informants mentioned land access and ownership as primary challenges that female farmers face, while six mentioned the soil quality as a problem.
A key barrier to female farmers is access to resources such as education and training in the agricultural field. More than half of the key informant interviewees cited the lack of education and training as a key barrier to climate change adaptation for smallholder farmers. A representative from the private sector who participated in the study emphasised a significant skills gap among female farmers, which presents a prominent issue in any attempt to mitigate the effects of climate change.

However, education is not easily accessible to women in rural communities. A participant in the study noted that: “the private sectors and government should train some selected people from a group, then the trained ones can bring the knowledge back to others in the community. Specifically, we can train the farmers on greenhouse farming and irrigation techniques.”

While women account for 70 per cent of the agricultural labour force in Nigeria\(^{26}\), only 10 per cent of them are landowners\(^{27}\). This is primarily due to the enforcement of gender inequality through customary laws on land and property ownership. Additionally, land acquisition is primarily through inheritance, which excludes female family members. An agricultural scholar described the issue stating that, “the main challenge is that women do not even have their farmlands except land that their husbands give them, or their fathers give them. Such farmlands do not belong to them, which


means at any point in time that land can be allocated to somebody else, and they can be displaced from that land.” This could be a significant challenge, as some women may be able to inherit land from their husbands if legally married; however, they risks losing this right if they do not have children.

Current policy in Nigeria does not address the disproportionate effects of climate change on female farmers. Ninety-eight per cent of the respondents in all the three focus group discussions agreed that the current policy does not address this issue. There needs to be significant capacity-building programmes to help achieve equity among male and female farmers in rural areas. There is also the necessity of revitalising extension services to address public needs and educating female farmers on business operations and modern agricultural science and technologies. Many of the skills and technologies required to be successful can be taught to rural farmers by extension agents.

- Business and Financial Challenges

Access to financing, loans, and credit is a resource very few female farmers in rural areas have. Whether that results from the lack of proximity to banks or that banks are not willing to offer financial services to women, male farmers have a significant advantage in comparison to their female counterparts. Over half of the key informants in this study mentioned access to credit and finance as a critical barrier to female farmers (Figure 11). In general, smallholder farmers do not have assistance from the government; however, this is worse among female farmers. The lack of collateral is an additional financial barrier that women face, as cited by six of the 15 participants in the KIlIs. Collateral is often necessary to receive business loans and other forms of financial assistance. However, most female farmers do not have the required collateral to receive any financial service from banks. Men have the opportunity to ask banks to advance them credit if they do not have collateral, however this is not an option for female farmers, and it is extremely unlikely as one scholar noted.

As the lack of financial assistance/services was a primary challenge identified by study participants (Figure 11), there needs to be a significant effort to restructure policy through a gendered lens to increase access for women. Additionally, when the government releases grants or loans to farmers, intermediaries often do not allow these releases to get to farmers properly; with women predominantly making up those denied access to such public support. This study identified a significant problem of linkage between policy made at the federal level and how it is applied at local levels and in private businesses. A bottom-up approach that highlights the needs of community members through grassroots operations could help bridge this issue.
Figure 11: Which Area Should Be the Highest Priority for the Government to Address and Reduce the Burden on Female Farmers?

What area should be the highest priority for government to address/reduce the burden on female farmers?

- **Gender Inequality Challenges**

  Two of the NGO representatives interviewed mentioned gendered and sexual violence as a significant barrier to female farmers. This is notable in the northern region of Nigeria. Women in Nigeria experience gendered and sexual violence at an increasingly high rate, exacerbated by the COVID-19 pandemic. One of the NGO representatives equally observed that, “… the herder crisis is also impacting the female farmers in the Niger Delta region. They are killed in the bush by those herdsmen that carry weapons. They are also attacked in the bush by cultists and violent youths. They also face the crisis of being kidnapped.”
Recommendations for Key Stakeholders

On the basis of the findings of this report, the research team recommends the following actions be taken, as the Ghanaian and Nigerian governments, and relevant stakeholders, look for ways of improving the adaptation of female farmers to climate change.

Ghana

Figure 12: Summary of Recommendations Ghana

Governance and Policy
- There is need for a bottom-up approach in designing development policies to address the lack of access of female farmers to information and resources. The Ghanaian government must collaborate with all stakeholders – including NGOs, the private sector, and CBOs, and CSOs – in designing relevant future policies. The policy design must include monitoring and evaluation to ensure that the policies designed are effective, efficient, and revisited, on the basis of feedback provided by women farmers.

- In collaboration with NGOs and the private sector, the Ghanaian government must provide funding for agricultural machinery and access to the market.
Access to agricultural machinery will help increase the efficiency of women farmers, while the access to markets will increase the profit margins from selling their produce.

- Because women farmers are also overwhelmingly responsible for housework and caregiving responsibilities, while working long hours in their farming fields, the government must design welfare policies that protect women and help them address the double burden of time. In the short term, there is need for subsidised daycares in rural areas to help free up time for female farmers to be more efficient in accessing training, workshops, and markets to sell their produce. In the long term, the government must consider a gendered lens for future policy-making and reform, to avoid alienating women further. The Government of Ghana has a great opportunity to collaborate with NGOs and raise awareness about how the double burden of time not only impacts the income of households, but also the overall wellbeing of families. Although deeply rooted, it is crucial for communities to be informed about the need for men to share in household responsibilities beyond bringing an income, to lessen the burden of double time on women.

**Business and Finance**

- Because the agriculture sector is considered a risk for financial investments, banks have reduced credit loans to farmers. Already impacted by the lack of access to information, agricultural machinery, and market access, female farmers are impacted further by the lack of access to credit loans. The Ghanaian government must provide financial assistance to farmers, particularly female farmers, in terms of access to loans. For example, this can be achieved by implementing the AFI-Denarau Action Plan, with a bottom-up approach to close the gender gap in the access to financial services.

- There is a critical need for windbreaks and flood barriers. Aggressive winds and increases in floods destroy crops and wash away nutrients from the soil. Therefore, in collaboration with the International Monetary Fund (IMF), African Development Bank (AfDB), and the private sector, the Government of Ghana must invest in windbreaks and flood barriers to mitigate the impact of high winds and floods on crops and agricultural lands.

**Climate and Agriculture**

- To ensure that the country’s agriculture sector is climate resilient, the Ghanaian government must prioritise the provision of funding to support local technology companies engaged in climate resilient agriculture, such as programmes for increasing yield, improving soil fertility, and repurposing rainwater to help with irrigation.

- The Government of Ghana must collaborate with academic and research institutions, both in Ghana and abroad, to research and invest in women’s crops that can be more climate resistant, while...
guaranteeing higher yields. Collaboration with both domestic and academic institutions with expertise in this area can be key for the necessary research.

- Due to the lack of paved roads and transportation, women farmers are unable to access educational sessions outside their communities. Therefore, the relevant NGOs and CBOs must work with the government and provide training, workshops, and demonstrations on sustainable agricultural practices, to female farmers in their communities. Collaboration between the key stakeholders will benefit every sector, especially the government’s efforts in reaching distant communities through NGOs and CBOs active in rural areas.

**Nigeria**

**Figure 13: Summary of Recommendations: Nigeria**

**Governance and Policy**

- Although policies exist that address the impacts of climate change on farmers, these policies fail to address the gendered issues faced by female farmers. At the federal, state, and community levels, policies regarding environmental and agricultural resources and management should be gender responsive. Thus, the government should establish a National Gender Framework that targets responsiveness and access to financial services, education, political participation, and technical training in the public and private spheres.
• Women are historically excluded from policy planning and implementation at all levels. As women dominate the agriculture sector in Nigeria, they should be heavily included in agricultural policy planning and implementation at all levels. Particularly, as rural communities operate at the local policy level, more women should be appointed to local government positions for increased implementation of gender responsive policies within the agricultural sector.

Business and Finance
• There needs to be a monitoring and evaluation plan to ensure the implementation of the Denarau Action Plan, which is part of the Alliance for Financial Inclusion, in Nigeria at all levels, through substantive engagement with stakeholders in the private sector. There needs to be an adjustment of goals to be both feasible and trackable, so that implementation bodies can keep track of the progress of women’s financial inclusion, particularly in rural areas.

• There is need to improve microcredit intermediation between banks and recipients to make financing accessible to female farmers in rural communities, including small credits, bank deposits, advances, and cash exchanges. The National Cooperative Financing Agency of Nigeria should expand its services to rural regions through partnerships with local governments and communities, with an emphasis on gender equality and inclusion.

• The government should update the National Collateral Registry to enable female farmers have increased access to financial assistance and loans. In addition, local governments should create programmes that enable female farmers and waive or reduce collateral requirements in banking and credit appraisal for loans. Local and state governments should promote community collaterals to meet the collateral requirements in loan appraisal, through which farmers in small communities can collectively share collateral for loans.

Climate and Agriculture
• The national government should increase investment in the National Agricultural Extension and Research Liaison Service to restore extension services in rural areas to support female farmers’ access to fertilisers, diversified seedlings, training and education, technology, recommended spacing, and planting methods. Education and training should include soil amendment techniques to help areas affected by drought, and assist female farmers to expand and develop small-scale irrigation systems, in addition to accessing education on how to use climate smart technology.

• The National Agriculture Framework should be updated to increase protections for female smallholder farmers, in terms of land rights for women through equitable land allocation. Land should be registered in the name of families for both men and women and have both names on the land certificate. This can
prevent husbands from selling such lands without the consent of their wives, and it should be enforced at every policy level.

- The national government should increase investments in climate smart technologies through Nigeria’s National Biotechnology Development Agency, to not only ensure the success of the agricultural sector as climate change worsens, but to improve accessibility in rural areas. For improved use of these technologies, extension services and NGOs should aid with the education of technical skills and farming techniques.

**Suggestions for Further Research**

*Double Burden of Time:* During our KIIIs with academics, NGOs, and the private sector, many respondents noted that women suffer from a double burden of time. Not only are they providers for their families, but they also take care of children, cook, attend to the elderly, and work in the fields. This reduces their productivity exponentially. Currently, this is only mentioned by academics, NGOs, and some private sector figures. However, the challenge of a double burden of time did not come up during the DIIs with the female farmers. Whether this is due to existing cultural norms that normalise the fact that women work both full time outside the home and as caretakers at home, or it is a result of the government’s act of ignoring the development and design of gender-sensitive policies and programmes, needs to be explored further.

*Analyse Existing Policy from a Gendered Lens:* The research results show a severe linkage problem between policies enacted at the national level and their implementation at the community level. Additional research is necessary to analyse the existing policy tools and government programmes to determine whether policymakers consider gender when designing tools and programmes.
to address the compounding impacts of climate change on agriculture and people’s livelihoods. Offering training, workshops, and seminars are necessary but ensuring that women can attend them must be a key requirement to consider as well. Further research should focus on bottom-up approaches to policy making in both countries to ensure rural communities benefit from progressive policies equally.

Impact of Climate Change on Women’s Health: Subsequently, most of the literature focuses on the effects of climate change on income, with little to no focus on how this global challenge affects women’s health. Currently, women work long hours in the field, prepare food using traditional methods and fossil fuels, take care of children and the elderly, and walk long hours to bring clean drinking water home. Therefore, further research on the strain these responsibilities put on women’s health would be a necessary next step in understanding the full-scale impact of climate change on women, particularly female farmers.

Focus on Remaining Regions for Research: Further research should also focus on the remaining regions. The climate varies in each region in Ghana, with the southwest experiencing the most precipitation and the northeast experiencing droughts. For our focused regions, the Ashanti and Volta regions are forested, and the Central region is coastal. However, based on the literature review and KII s, climate change is more severe in the northern part of Ghana due to its proximity to the desert. Therefore, further research on the two regions would be crucial to understanding the impact of climate change on females in all agro-ecological zones in Ghana. Likewise, in Nigeria, female farmers in the Federal Capital Territory are experiencing increasing levels of flooding, whereas those in Ogun and Lagos States are experiencing heavy drought. Therefore, there could be further research on the disaggregate effects of climate change on Northern and Southern Nigeria and how solutions may vary on the basis of regions.

Investigate Sexual and Gendered Violence as a Barrier to Female Farmers: Finally, due to security concerns in northern Nigeria, the research team could not send data collectors to understand the challenges facing female farmers in the North-East, North-Central, and North-West regions of Nigeria. During the KII s, many NGOs and academics cited sexual and gender violence as a key barrier in the northern regions. Therefore, there is a need for further research regarding the security concerns facing women in the North. It affects their ability to successfully farm and their day-to-day livelihoods, including access to education, markets, and communication with other community members.
Conclusion

Due to the impact of climate change, female farmers are facing numerous barriers in the agricultural value chain in Ghana and Nigeria. According to the literature review, climate knowledge surveys, KIIIs, DIIIs, and FGDs conducted in both countries, these barriers can be categorised into four main areas, including climate challenges, business and finance challenges, agricultural challenges, and gender norm challenges. Among these challenges, lack of access to credit and land ownership, double burden of time, land degradation, and lack of technology and training, are identified as some of the biggest challenges to female farmers in both countries. In addition, sexual violence is a particular challenge for women farmers in Nigeria.

In response to the highlighted challenges, this report offers actionable recommendations to CJID for its advocacy efforts to advance the rights of women farmers in Ghana and Nigeria. These recommendations focus on three key areas: governance and policy, business and finance, and climate and agriculture. Some highlighted recommendations include that the Ghanaian and Nigerian governments should implement the AFI-Denarau Action Plan with a bottom-up approach; the Ghanaian government should provide funding for daycare centres in rural areas; and the Nigerian government needs to increase investments in the National Agricultural Extension Services and biotechnology sector; and a third party organisation should be responsible for monitoring the implementation of plans and policies. The implementation of the recommendations requires collaboration among different stakeholders that aim to empower women, including the government, NGOs, and the private sector.

Bibliography


“Agriculture, Forestry, and Fishing, Value Added (% of GDP) - Ghana.” The


## Appendix A

### Flood and Drought Events that Have Occurred in Ghana Since 1983

<table>
<thead>
<tr>
<th>Year</th>
<th>Disaster description</th>
<th>Regions affected</th>
<th>Total deaths</th>
<th>Total people affected</th>
<th>Total damage (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1983</td>
<td>Drought</td>
<td>Countrywide</td>
<td>--</td>
<td>12,500,000</td>
<td>--</td>
</tr>
<tr>
<td>1991</td>
<td>Flood</td>
<td>Greater Accra</td>
<td>5</td>
<td>2,000,000</td>
<td>--</td>
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<tr>
<td>1995</td>
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<tr>
<td>1999</td>
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<tr>
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<td>56</td>
<td>332,600</td>
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</tr>
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<td>--</td>
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<td>--</td>
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<tr>
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<td>16</td>
<td>19,755</td>
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<tr>
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<td>Flood</td>
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<td>139,790</td>
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<tr>
<td>2010</td>
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<td>7,500</td>
<td>--</td>
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<tr>
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<td>Greater Accra, Ashanti</td>
<td>14</td>
<td>34,076</td>
<td>168,289</td>
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</tbody>
</table>

## Survey 1: Ghana

**Have you heard of the term “Climate Change”?**
- [ ] Yes
- [ ] No

**On a scale from 1-5 how would you say the weather has changed in your area within the past 5-10 years?**
- [ ] No change (1)
- [ ] Little change (2)
- [ ] Neutral (3)
- [ ] Notable Change (4)
- [ ] Huge change (5)

**In what way has the weather changed in regard to farming?**
- [ ] Better
- [ ] Worse
- [ ] Neutral

**What are the major climate change effects you’re currently facing? (Select all that apply)**
- [ ] Drought
- [ ] Flood
- [ ] Erosion
- [ ] Lower food quality
- [ ] Output reduction
- [ ] Others, please specify: ________

**Have you adopted an alternative system of farming?**
- [ ] Yes
- [ ] No

**If you answered “Yes” to the previous question, which of these methods did you use previously? (Select all that apply)**
- [ ] Use chemical and organic fertilisers
- [ ] Allocate biomass underground
- [ ] Intercropping
The Impact of Climate Change on Female Farmers in Ghana and Nigeria

- Cover cropping
- Crop rotation
- No-till agriculture
- Others, please specify: ________

*If you answered “Yes” to question 5, what are your alternatives? (Select all that apply)*

- Use chemical and organic fertilisers
- Allocate biomass underground
- Intercropping
- Cover cropping
- Crop rotation
- No-till agriculture
- Finding another job
- Others, please specify: ________

*Do you have any children or dependents?*

- Yes, I have children/dependents
- No, I do not have children/dependents

*If you answered “Yes” to the previous question, how many children do you have?*

- 1
- 2
- 3
- More than 3, please specify: ________

*The original state/region you are from: ________*

*The current state/region you live in: ________*

*What types of crops do you grow? (Select all that apply)*

- Cocoa
- Maize
- Rice
- Millet
- Cassava
□ Yam
□ Plantain
□ Other, please specify __________

Which tribe do you belong to?
□ The Ashantis
□ The Fantes
□ The Ewes
□ The Mole-Dagbonians
□ The Guang
□ Other, please specify __________

Which local government area/region are you in?
□ Ashanti
□ Central
□ Volta
□ Other, please specify __________

Survey 2: Nigeria

Have you heard of the term “Climate Change”?
□ Yes
□ No

On a scale from 1-5 how would you say the weather has changed in your area within the past 5-10 years?
□ No change (1)
□ Little change (2)
□ Neutral (3)
□ Notable Change (4)
□ Huge change (5)

In what way has the weather changed in regard to farming?
□ Better
□ Worse
□ Neutral
What are the major climate change effects you’re currently facing? (Select all that apply)

☐ Drought
☐ Flood
☐ Erosion
☐ Lower food quality
☐ Output reduction
☐ Others, please specify: __________

Have you adopted an alternative system of farming?

☐ Yes
☐ No

If you answered “Yes” to the previous question, which of these methods did you use previously? (Select all that apply)

☐ Use chemical and organic fertilisers
☐ Allocate biomass underground
☐ Intercropping
☐ Cover cropping
☐ Crop rotation
☐ No-till agriculture
☐ Others, please specify: __________

If you answered “Yes” to question 5, what are your alternatives? (Select all that apply)

☐ Use chemical and organic fertilisers
☐ Allocate biomass underground
☐ Intercropping
☐ Cover cropping
☐ Crop rotation
☐ No-till agriculture
☐ Finding another job
☐ Others, please specify: __________

Do you have any children or dependents?

☐ Yes, I have children/dependents
☐ No, I do not have children/dependents
If you answered “Yes” to the previous question, how many children do you have?

☐ 1
☐ 2
☐ 3
☐ More than 3, please specify: __________

The original state/region you are from: __________

The current state/region you live in: __________

If you grow crops, what types of crops do you grow? (Select all that apply)

☐ Cassava
☐ Maize
☐ Rice
☐ Millet
☐ Guinea Corn
☐ Yam beans
☐ Plantain
☐ Other, please specify __________

Which tribe do you belong to?

☐ The Hausa
☐ The Yoruba
☐ The Igbo
☐ The Ijaw
☐ The Kanuri
☐ The Fulani
☐ The Ibibio
☐ The Gbagyi
☐ Other, please specify __________

Which local government area/region are you in?

☐ Federal Capital Territory
☐ Lagos
☐ Anambra
☐ Other, please specify __________
## Appendix C

### Descriptive Coding Categories

<table>
<thead>
<tr>
<th>No.</th>
<th>Code Category</th>
<th>Sub-category</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agriculture Challenge</td>
<td>Mature Seedlings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Crop Loss</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Soil Quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Storage Need</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Increased Irrigation Costs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of Technical Know-how</td>
</tr>
<tr>
<td>2</td>
<td>Climate Change/Environmental Challenge</td>
<td>Land Erosion</td>
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<tr>
<td></td>
<td></td>
<td>Flooding</td>
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<tr>
<td></td>
<td></td>
<td>Drought</td>
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<tr>
<td></td>
<td></td>
<td>Irregular Rain Pattern</td>
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<td></td>
<td></td>
<td>Illegal Mining Impacting Soil</td>
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<tr>
<td></td>
<td></td>
<td>Excessive Fossil Fuel Use</td>
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<tr>
<td>3</td>
<td>Gender Norm Challenge</td>
<td>Land Ownership</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Gendered Violence</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Double Burden of Time</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Men Migrating for Labor</td>
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<tr>
<td></td>
<td></td>
<td>Traditional Gender Values</td>
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<tr>
<td></td>
<td></td>
<td>Lack of Access to Information</td>
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<tr>
<td>4</td>
<td>Business &amp; Finance Challenge</td>
<td>Access to Credit/Capital</td>
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<tr>
<td></td>
<td></td>
<td>Disproportionate Distribution of Wages</td>
</tr>
<tr>
<td>49</td>
<td>Access to Inputs</td>
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<tr>
<td>----</td>
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</tr>
<tr>
<td></td>
<td>Increasing Costs/Losses (grains, equipment)</td>
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<tr>
<td></td>
<td>Lack of Government Funding</td>
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<tr>
<td>5</td>
<td>Governance &amp; Policy Challenge</td>
<td>Corruption</td>
</tr>
<tr>
<td></td>
<td>Access to Resources</td>
<td></td>
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<tr>
<td></td>
<td>Advocacy</td>
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<tr>
<td></td>
<td>Lack of Gender-Sensitive Policies (Double Burden of Time)</td>
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<tr>
<td></td>
<td>Lack of Programme Implementation</td>
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<tr>
<td></td>
<td>Poor Infrastructure (transportation, roads, access to water)</td>
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</tr>
<tr>
<td>6</td>
<td>Suggested Solutions: Agriculture</td>
<td>Climate Smart Agriculture (CSA)</td>
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<tr>
<td></td>
<td>Improve Soil Fertility</td>
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<td>7</td>
<td>Suggested Solutions: Climate Change</td>
<td>Climate Smart Technology</td>
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<td>Repurpose rainwater</td>
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<td>8</td>
<td>Suggested Solution: Gender Norms</td>
<td>Education/Literacy for Women</td>
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<td>Community daycare</td>
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<td>9</td>
<td>Suggested Solution: Business &amp; Finance</td>
<td>Marketing Support</td>
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<td>Financial Assistance</td>
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<td>Invest in Windbreaks</td>
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<tr>
<td>10</td>
<td>Suggested Solution: Governance &amp; Policy</td>
<td>Bottom-up Approach</td>
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<td></td>
<td>Education/Training</td>
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<tr>
<td></td>
<td>Improve Access to Information</td>
<td></td>
</tr>
<tr>
<td></td>
<td>M&amp;E Post Training/Workshops</td>
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</table>
## Participant Regions for the DII and FGDs

<table>
<thead>
<tr>
<th>Nigeria</th>
<th>Ghana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Capital Territory 48 per cent</td>
<td>Ashanti Region - 40 per cent</td>
</tr>
<tr>
<td>Ogun State – 15 per cent</td>
<td>Central Region - 30 per cent</td>
</tr>
<tr>
<td>Akwa Ibom State – 10 per cent</td>
<td>Volta Region - 30 per cent</td>
</tr>
<tr>
<td>Other Regions – 27 per cent</td>
<td></td>
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</tbody>
</table>