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Agriculture and Youth in Nigeria

Aspirations, Challenges, Constraints, and Resilience

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ABSTRACT

Nigeria's rural youth are facing various challenges in agriculture, with limited job opportunities outside the sector. Using qualitative focus group discussions and individual interviews with youth in four communities in two Nigerian states, the paper reflects on nuanced differences in perceptions of opportunities, coping mechanisms and overall resilience of youth in rural Nigeria, as well as differential access to information, inputs and irrigation based on age, gender and community. We apply the GCAN framework, to illustrate the factors that shape resilience pathways in the context of climate change and other shocks and stressors. Many of the constraints rural youth face are faced by other groups, including lack of finance, farm inputs and modern equipment for production and processing. Yet, youth face higher and specific hurdles related to lack of capital, experience and a strong social capital and networks that would facilitate coping with climatic and other shocks and improving their livelihoods. Young women in particular have less access to information and irrigation, and are less likely to benefit from cooperative memberships. Nevertheless, young men and women have higher resilience compared to older groups in terms of health, mobility and ability to migrate, as well as easier access to the internet as a source of information. Youth can better build resilience and a network and receive government assistance when part of a cooperative. Nevertheless, a larger enabling environment in the sector is needed, to improve roads, access to markets, information, inputs and equipment to support young farmers who cannot leave the agriculture sector. A promising factor is that many young men and women realize the importance of agriculture and aspire to become successful in the sector.

Keywords: Youth, gender, resilience, climate, Nigeria

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ACRONYMS

ADP	Agricultural Development Program
CRADP	Cross River Agricultural Development Project
FCT	Federal Capital Territory
FGD	Focus Group Discussion
FTF	Feed the Future
GCAN	Gender, Climate, and Nutrition Integration Initiative
IFPRI	International Food Policy Research Institute
KADP	Kaduna Agricultural Development Project
LGA	Local Government Areas
NCE	Nigeria Certificate in Education
SSI	Semi-Structured Interviews
ZOI	Zone of Influence

1. INTRODUCTION

Governments in Sub-Saharan Africa are feeling the pressure to create more and better jobs in response to the rapidly growing, young and more educated population in much of the region. The need to develop jobs in both rural and urban areas is growing in urgency among others, as up to now, the African region, unlike Asia during the same demographic transition, has largely failed to create a vibrant and rapidly growing manufacturing sector (Mueller and Thurlow 2019). As a result, the African region is now home to a large number of young people who live in poverty (IFAD 2019).

The share of engagement in farming has been particularly declining in the age range of 25-34 years across the region, including Nigeria. However, unlike several other African countries, the share of rural males and particularly of rural females in the off-farm agricultural sector, such as agri-food processing, is relatively high, and the share of urban employment in the agri-food sector is also considerable (Yeboah et al. 2019). Young people in Nigeria, especially in rural areas, struggle to find decent employment, partially owing to the country's economic situation, and partially because of challenges faced specifically by youth that prevent them from thriving in agriculture and other sectors.

A further challenge is climate change that affects all farmers as well as all other jobs related to the agricultural sector. Although climate change is a global phenomenon, its adverse impacts are felt more intensely in developing countries, particularly Africa (Enete and Amusa 2010). Increasing temperature, erratic rainfall, and other extreme events, such as floods and droughts, pose severe threats to the agricultural sector of Nigeria. Climate change will have significant adverse impacts on crop production and livelihoods, including crop failures, reduced yields, food insecurity and malnutrition, making the country's poor and disadvantaged people even more vulnerable. Thomas et al. (2017) run simulations from four global circulation models, which showed a 1.5-2.9°C projected increase in temperatures in Nigeria between 2000 and 2050, as well as corresponding negative effects on projected yields for major crops. Ogbuabor and Egwuchukwu (2017) also find adverse effects of climate change on the growth of

the Nigerian economy and hence unemployment. The heavy reliance on rainfed agriculture makes earning incomes in the agriculture sector more challenging and overall less profitable.

Further, climate change affects the resilience of livelihoods, especially for those employed in agriculture. Bryan et al. (2017) argue that responses and efforts to mitigate climate change effects and to make livelihoods and agricultural production more resilient requires recognizing the broad range of socio-economic and environmental factors and stressors that different types of small farmers face and that influence their resilience. Contextual conditions including the environmental, policy and institutional context as well as societal norms all affect livelihoods and resilience to climatic and other types of livelihood shocks. Climate change, including the increased incidence of extreme weather will impact rural youth strongly, especially those whose resilience capacities are weak and those who have a limited set of response options or are constrained by market and policy factors. Examples include low social capital and skills as well as limited access to resources, including finance.

Technological change, such as increased use of irrigation or tractor services, and increased availability of climate information services or market price information services in the agriculture sector can mitigate some of the adverse impacts of climate change. Younger farmers may respond more quickly to such changes, but entry points that support youth involvement will need to be found. Clearly, expanding communication modes and access to information technology is becoming an important factor for success in agriculture and a potential vehicle for youth engagement in agriculture (IFAD 2019).

The aim of this research is to effectively inform and tailor future USAID resilience programming towards youth-specific needs. It is particularly aimed to identify suitable approaches for youth inclusion and empowerment for USAID programming in the Feed the Future (FTF) zones in Nigeria. Specifically, the study sheds light on what are the constraints young women and men face with regards to participation in agricultural value chains in different regions of Nigeria, using Kaduna and Cross River states as case study areas. The paper addresses the following questions: 1) How does climate change and climate risk affect agricultural livelihoods of youth? 2) What constraints do young men and women face when pursuing their potential in and outside of agriculture? 3) What are some of the interventions that young

men and women would value and find useful to increase their resilience and help them find suitable employment?

To address these issues, we use the GCAN (Gender, Climate, and Nutrition Integration Initiative) conceptual framework, which was initially developed to strengthen and support integration of these issues in programming. In the following sections we provide an overview on unemployment in Nigeria before describing the GCAN framework. We then introduce the study methodology and explore the results.

2. BACKGROUND ON UNEMPLOYMENT IN NIGERIA

Unemployment trends and youth employment in Nigeria

Based on recent trends, the Nigerian Bureau of Statistics (NBS) projects that unemployment would reach 33.5 percent by 2020 (NBS 2018; Daily Trust 2019). After reaching a record low of 5.1 percent in the fourth quarter of 2010, unemployment in Nigeria gradually increased, reaching an all-time high of 23.1 percent in the third quarter of 2018 (NBS 2018).

Gender disaggregated statistics show that 26.6 percent of women participating in the labor force (aged 16-64) were unemployed, 6.3 percentage points above the rate of men and 3.5 percentage points higher than the national rate of 23.1 percent (NBS 2018). However, statistics also show that the number of young women in the labor force has been increasing in recent years and that more women have taken up jobs, especially as more young women have completed higher education levels and there is a need for them to financially support their spouses and families (Adesugba and Mavrotas 2016).

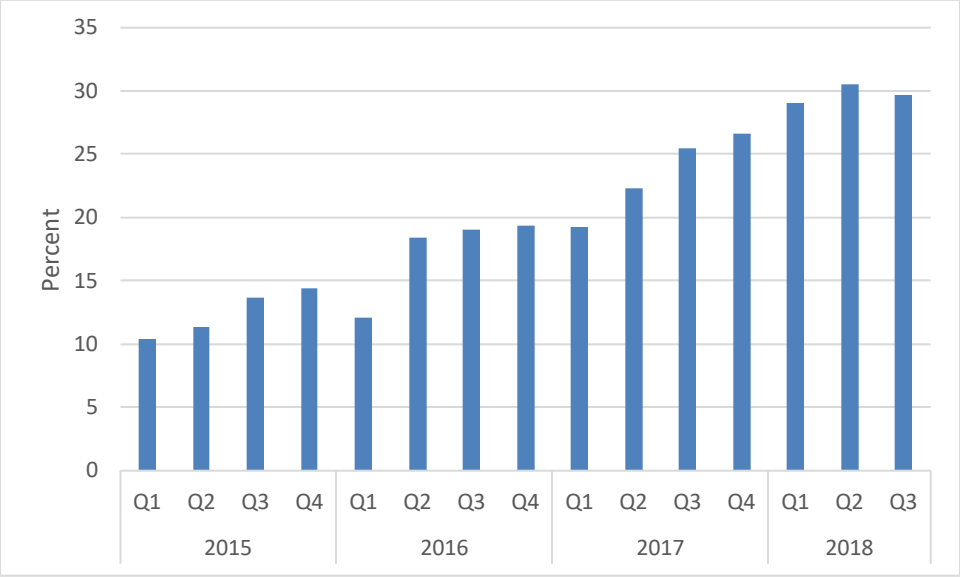
In addition to the gender gap, there is an employment gap between urban and rural regions in Nigeria. Between 2017 and 2018, rural unemployment rose from 16.4 to 23.9 percent, while urban unemployment declined from 23.4 to 21.2 percent. The unemployment rate by educational grouping was highest for those with post-secondary school certificate or graduates, at almost 30 percent in 2018 (NBS 2018).

While the agriculture sector accounts for less than a quarter of Nigeria's GDP (22 percent) it is of immense importance as it employs 70 percent of the country's labor force (Adesugba and Mavrotas 2016). However, productivity and incomes in agriculture have remained low, contributing to growing poverty levels in this sector. To make ends meet, farmers often try to supplement agricultural incomes with non-farm activities (Oseni et al. 2013). Women often engage in trade and retail activities, food processing and tailoring or the apparel sector, while men are often involved in retail, repair and other services.

Youth unemployment

Similar to other countries in Sub-Saharan Africa, youth aged 15-35 constitute the majority of the population in Nigeria (Adesugba and Mavrotas 2016). The unemployment rate for young people aged 15-24 stood at 36.5 percent, and 24.4 percent for those aged 25-34, making the total youth unemployment rate 29.7 percent for Q3, 2018, a 4.2 percent increase in youth unemployment compared to Q3, 2017 (Figure 2.1).

Figure 2.1: Youth unemployment rate in Nigeria (ages 15-34)



Source: NBS, 2018. Illustrated by authors.

Young people are more likely to face difficulties securing full time employment, be completely idle or take up part-time, leisure, voluntary, or otherwise menial work (NBS 2018). If underemployment, defined as people employed for less than 20 hours per week, is factored in, for youth in the 25-34 age bracket combined underemployment and unemployment increased from 42.4 to 45.1 between 2017 and 2018. And for youth in the age bracket of 15-34 years combined unemployment and underemployment is 55.4 percent, representing 24.5 million young men and women (13.1 million unemployed and another 11.3 million underemployed).

While around 18 percent of young men and women in Nigeria have no education at all, around half of Nigerian youth have secondary education, and 15 percent have tertiary education (Adesugba and

Mavrotas 2016). However, the 'skills-gap curse' is widening, that is, there is a mismatch between the skills required by employers and the skill levels that youth have. For example, most youth (around 80 percent) have no computer literacy, especially young women, making them less prepared for the job market. Moreover, while the government is undergoing efforts to introduce employment programs, Adesugba and Mavrotas (2016) caution against creating jobs that may not fit with youth aspirations. Thus, it is important to study these aspirations.

On the other hand, evidence suggests that youth with tertiary education are often employed in jobs for which they are overqualified, and which do not meet their aspirations, suggesting a mismatch of available vacancies in the Nigerian job market with aspirations of educated youth. Creating opportunities for rural youth through an enabling policy environment is a necessary condition, but not sufficient for youth to benefit from such opportunities without ensuring that young men and women have the necessary assets, skills and capacities to be able to seize those opportunities. This in turn is affected by social norms and the local circumstances that are gendered and also affected by ethnicity (IFAD 2019).

Rural youth in many African countries also face increasing constraints accessing finance and are in more need to access credit for venturing into self-employment, especially those who are unlikely to be absorbed into the formal employment sector.

Employment situation in Nigerian States

Unemployment and underemployment rates vary according to the nature of economic activity predominant in a state but are also affected by high rates of internal migration from economically poorer states or those with security challenges to more prosperous states. Unemployment tends to be higher in the Southern states while underemployment tends to be higher in the Northern states, where the majority of the workforce is involved in seasonal agricultural activities. Moreover, in states with a higher propensity of women who marry early or become housewives and hence leave the labor force, unemployment rates tend to be lower. However, if women are prevented from participating in the labor force because of local social norms following marriage, this would mask hidden unemployment.

Statistics for 2018 suggest that Kaduna state had the fourth highest rate of combined under- and unemployment at 57.8 percent while Cross River ranked number 13 out of 36 states on the list at around half of the working-age population either under- or unemployed. Taking a closer look at the two case study states, compared to other states in the South-South zone, Cross River ranked fourth in unemployment (30.6 percent) and third in underemployment (19.9 percent) in 2018 (NBS 2019). In 2017, unemployment in Cross Rivers was 20.79 percent. Compared to the rest of the states in the North-West zone, Kaduna has the second highest unemployment rate (26.8 percent) and ranks third for underemployment (31 percent). However, unemployment in Kaduna decreased by 1.3 percent from 2017 to 2018 (Q3).

3. THE GENDER, CLIMATE CHANGE AND NUTRITION INTEGRATION FRAMEWORK: INTEGRATING YOUTH IN THE EQUATION

Realizing that constraints, capacities, needs and challenges are gender-specific, Bryan et al. (2017) developed the GCAN framework to support analysis of the linkages between climate change, women's empowerment and food and nutrition security and to inform associated policies, programs and interventions. The framework can similarly be used to understand youth-specific challenges. The framework illustrates that people's resilience and capacities to respond to various shocks and stressors have an effect on their livelihoods, wellbeing and ability to tackle future challenges. However, levels of vulnerability and resilience vary between individuals and groups, and gender, age and socio-economic context play a role in shaping resilience and well-being outcomes for different people in a given country or society (Theis et al. 2018). Thus, in order to avoid marginalizing or unintentionally excluding vulnerable groups, it is important for interventions that aim to improve resilience to understand the needs, capacities and challenges of different groups. This allows interventions to be locally- and group-specific, in this case catered towards better understanding the needs, strengths and aspirations of Nigerian youth (both young men and women).

The generic framework can be applied and adapted to different scales, from the national/policy level to the household level. This paper takes the household level framework (Figure 3.1) as a reference to test how the resilience path for youth as a group differs. Several key elements are at play, such as experience of climate related signals or other shocks, the capacities to deal with climate and other shocks, and the response options chosen, which in turn affect well-being outcomes and people's capacity to respond to future shocks and stressors. The external context and enabling environment, including national policies or market prices, also influence people's ability to respond to challenges.

An individual's or and group's resilience levels depends on their absorptive capacity, or their ability to absorb a shock (such as extreme weather event, crop loss or food shortage) and minimize their exposure to disturbances before and during the shock, as well as their adaptive capacity, which is their ability to adapt and respond to such changes, risks and stressors (Theis et al. 2018 ; Bryan et al. 2017).

For example, a person with higher educational and skills levels can increase their capacity to find new employment opportunities for employment in difficult times. Similarly, more educated youth with greater digital literacy may have greater capacity to obtain and utilize information important for their resilience in the agricultural on-farm and off-farm sub-sectors and in mitigating shocks and stressors. On the other hand, in some contexts, women face greater constraints to responding to shocks and stressors due to discrimination, lower ability to hire labor, lower access to information or mobility constraints.

Social norms also play an important role in shaping young adults' opportunities and constraints. For example, they determine who expects to inherit land and assets, who migrates and who takes on more domestic responsibilities (Doss et al. 2019). Policies and programming targeted towards rural youth may not always take such social and gender norms into account. For example, women may be less likely to start their own business due to their domestic responsibilities, more limited access to credit markets and financial services, and less ownership of assets for collateral (Doss et al. 2019). Although both men and women are heavily involved in agricultural activities and along the entire food value chain, women's agricultural productivity is constrained due to lower access to information and extension services, fewer physical assets and agricultural inputs like fertilizers, and as a result of smaller plots of land with lower tenure security (Oseni et al. 2013).

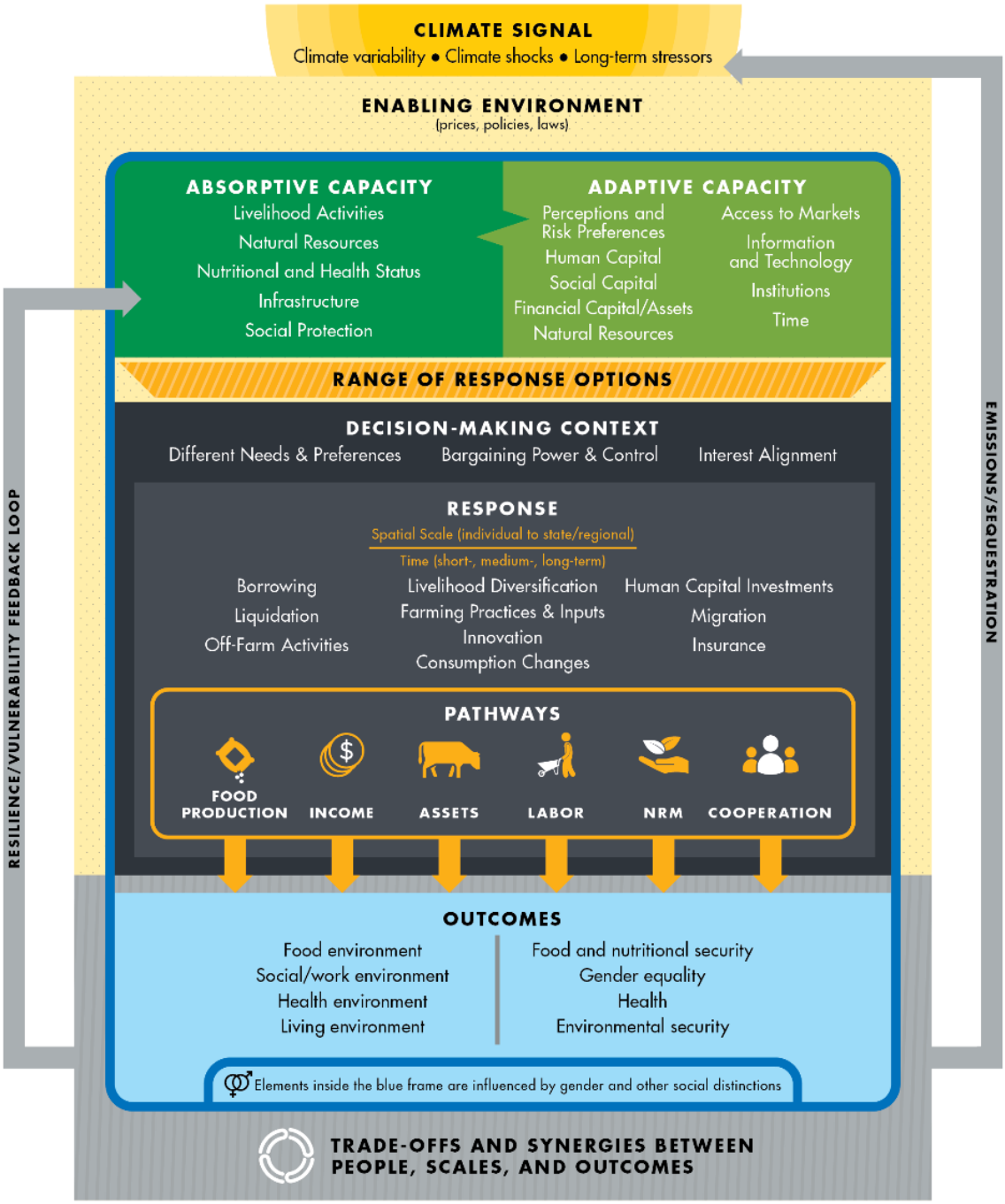
Further, studies find that men and women have different needs, preferences, abilities to make decisions and levels of adaptive capacity when responding to climate change and other shocks and insecurities (Bryan et al. 2017). Babatunde et al. (2008) compared male- and female-headed households' coping strategies and what factors determine their vulnerabilities to food insecurity. Much like in Malawi, Zambia and Zimbabwe, they find that female-headed households in Nigeria are more vulnerable to food insecurity. However, women utilized a larger set of coping strategies. Women also often lack access to information and resources that would enable them to adapt to climate change and would prefer different channels for receiving information than men in different cultural contexts (Bryan et al. 2017). Some evidence also suggests that there is clear gendered division of labor in terms of crops and agriculture-

related tasks (Thomas et al. 2017). Thus, it is important to consider how men and women's livelihoods and activities could be affected differently by climate change based on these divisions.

Owing to the country's evident diversity, there are also wide variations in social and gender roles within Nigeria, linked to the different cultural, tribal and religious contexts. For example, in northern Nigeria, women's agricultural activities are generally confined to the homestead whereas in the south women often have more prominent roles. Oseni et al. (2015) thus suggest that policies should be region-specific owing to different gender relations. Analyzing a nationally representative dataset, the authors find that women have less access to land and lower agricultural output in the north of Nigeria, while this gender gap does not exist in the south. Further, youth are not a homogenous group, with different ages, education, ethnicities, backgrounds, incomes, etc. Thus, subgroups of youth may be affected differently.

Decision-making or the ability to make choices (for example decision-making powers within the household) also affects an individual's resilience and is affected by age and gender and other dynamics like social status, education, ethnicity and wealth. This reflects that within communities and even within households, members may not have similar capacities, powers or vulnerabilities. For example, decision making on food production and consumption for the household affects nutrition and increasing women's decision-making power in this context is important as they often take decisions to secure dietary and nutrition outcomes for their households.

Figure 3.1: Integrated Framework for Gender, Climate Change and Nutrition - Household Level



Source: Bryan et al. (2017)

Well-being outcomes like health and food availability are affected by different pathways, including changes in food production and consumption, income, labor, natural resources management, human capital and assets, which also often differ by age and gender. For example, young people may find

it more difficult to acquire land, or other key agricultural assets, compared to older farmers. Similarly, male outmigration due to a cumulative series of climate shocks can increase women's workload in agriculture (Bryan et al. 2017).

While evidence suggests that individual differences matter, more research to explore how age and gender dynamics play a role in resilience to climate change is needed. Growing intrahousehold data are available to analyze gender differences in resilience to climate change. However, data on youth remain limited. This paper aims to contribute to filling this gap by exploring the context of several Nigerian communities. To better understand some of these nuances, we follow the framework and incorporate guiding questions from the GCAN checklist (Theis et al. 2018) to shape the qualitative research protocols used in the four communities under study.

Understanding the opportunities, constraints and aspirations of young rural men and women can enable governments to design effective policies to specifically benefit youth and their livelihoods while tackling the larger rural development agenda (IFAD 2019). Investments in young men and women during their childhood, including in education and nutrition can affect their resilience capacities and response options as they transition to adulthood (Doss et al. 2019). IFAD (2019) proposes to strengthen youth outcomes in agriculture through a focus on connectivity, productivity and agency. Connectivity, including access to information, markets and strong social networks is important for youth integration and also for raising productivity, incomes and resilience against climatic shocks. Productivity is central to well-being and is also founded on good education and skills, as well as access to productive assets and natural resources. Agency, including empowerment, civic participation, and the power to take their own decisions is important to gain productivity and connectivity, and is essential for youth.

4. METHODS AND CASE STUDY COMMUNITIES

Site selection

Nigeria's geography spans a wide range of agro-ecological conditions ranging from semi-arid areas in the north to tropical and humid areas in the south (UNICEF, 2014). The Nigerian population displays a high degree of ethnic diversity with more than 250 distinct ethnic groups; including the Hausa/Fulani, Yoruba and Igbo. Although the official language is English, more than 500 indigenous languages and dialects are spoken across the country. Nigeria, being a multi-cultural society, has a pronounced differentiation in sub-cultures and social norms from the North-West to the South-East and between communities in a given zone.

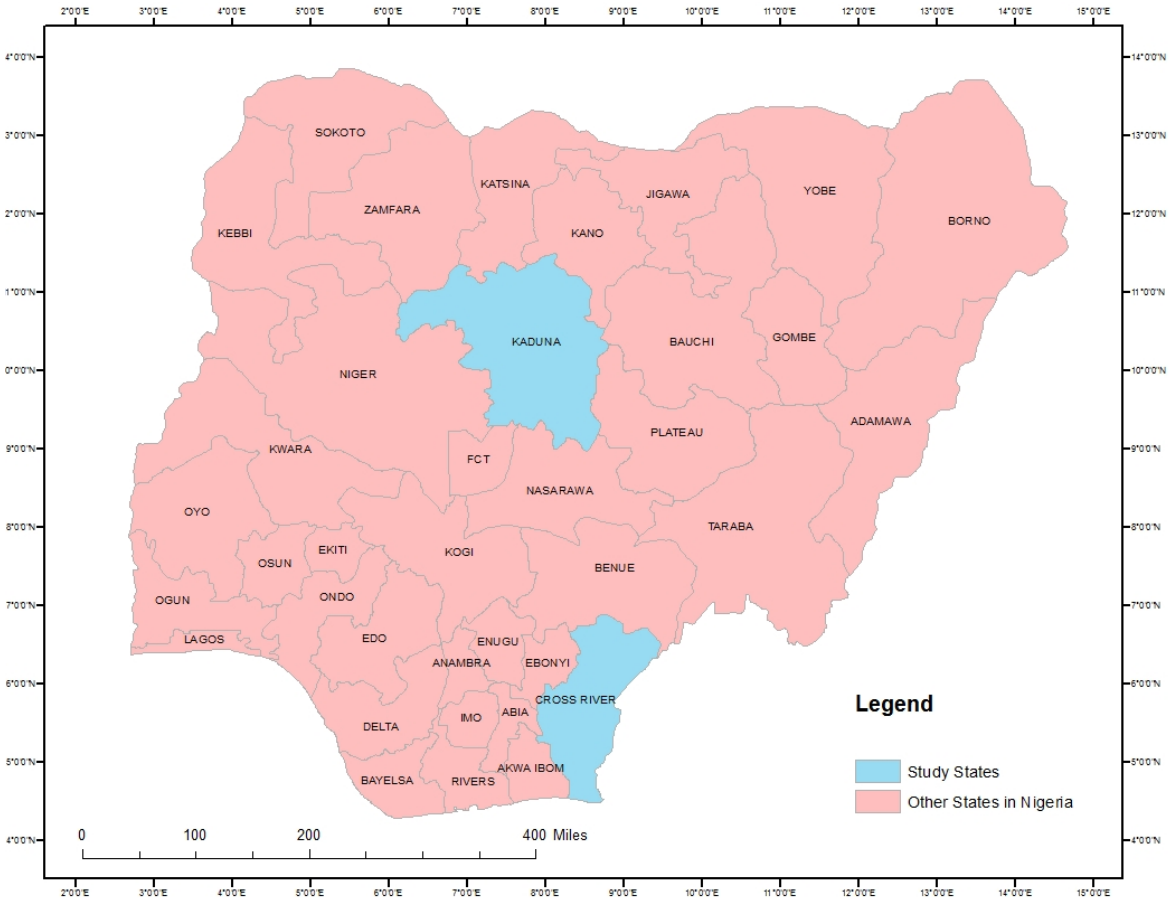
Nigeria is divided into 36 States including the Federal Capital Territory (FCT) of Abuja, with further subdivision into 774 Local Government Areas (LGAs). Out of the 36 states, 11 are included in the Feed the Future Zones of Influence (ZOI), a USAID global hunger and food security initiative. All Nigerian states are also grouped into six geopolitical zones; North West, North Central, North East, South West, South East and South-South. Based on agricultural activities, Nigeria is grouped into five agro-ecological zones; North West, North East, North Central, South West and South East Zones.

For the selection of the study sites, a combination of the agro-ecological grouping as well as USAID's FTF zones were used. At the state level, all public agricultural extension activities are coordinated through the Agricultural Development Projects (ADPs)[1]. The ADPs in the states are further sub-divided into zones with most states having three ADP zones and a few having four ADP zones. Study participants often related that some of the extension information they receive was through ADPs. Youth partly rely on the ADPs for extension service provision through nationally and internationally funded projects, in addition to services provided by private and NGO partners.

[1] ADPs are the platforms for agricultural extension delivery in Nigeria. With the introduction and promotion of the Training and Visit (T&V) extension approach by the World Bank in the late 1970s/early 1980s, all states developed ADPs and all research institutes and development agencies rely on the ADPs for the implementation of their programmes.

The North-West and South-East agro-ecological zones were selected for the study to capture variations in climate conditions, agricultural practices and socio-cultural orientation of rural communities. Kaduna state in North-West zone (North-West ZOI) and Cross River state in South-East zone (South-South ZOI) were selected (Figure 4.1).

Figure 4.1: Map of Nigeria showing selected study States



Source: Authors.

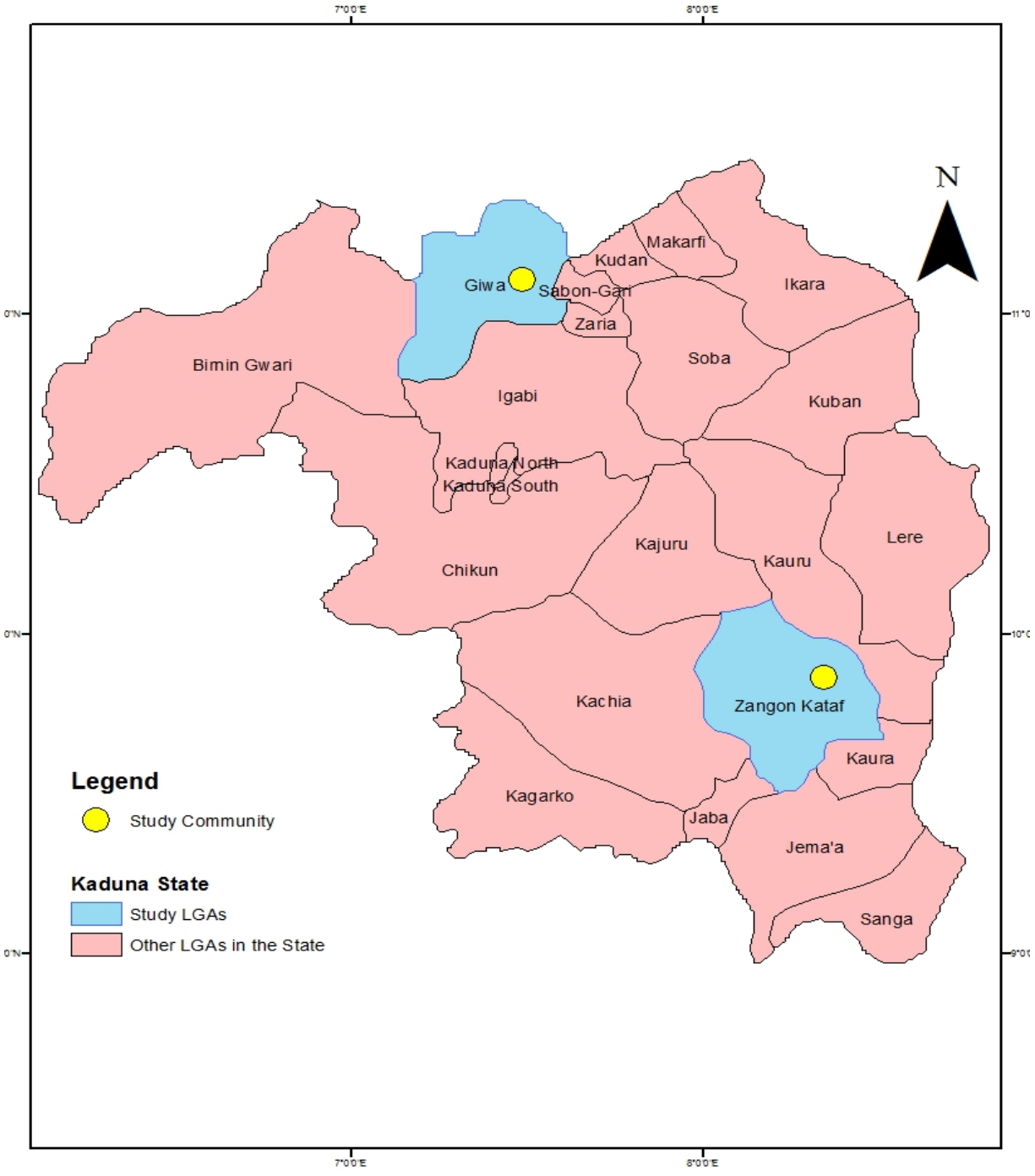
Kaduna state is located in the North-West agro-ecological zone of Nigeria where the vegetation ranges from Northern Guinea savanna in the north and Southern Guinea savanna in the south. The climate varies from the North to the Southern part of the state. The rainy season lasts about five months between late April and early October (Kaduna State Statistical Year Book, 1996) with geographical variations; the southern part of the state like Samaru Kataf gets heavier rainfall with an average of above 1524mm while the extreme northern part around Giwa has an average rainfall of about 1016mm. The soils are a mixture

of fine sand and clay, supporting the production of different crops across the state. For example, ginger is suitable in the southern areas where the soils are more ferruginous than in the northern parts. Kaduna is divided into 23 Local Government Areas which are grouped into four ADP zones. One study community from two LGAs in two zones of Kaduna Agricultural Development Project (KADP) each were purposefully selected for a focus on agricultural activities and differences in climate, social norms and culture: Ungwan Galadima community (N11^{o} 09.380' E007^{o} 32.808') from Giwa LGA in Maigana zone and Samaru community (N09^{o} 45.24' E008^{o} 22.14') from Zango Kataf LGA in Samaru Kataf zone (Figure 4.2).

There are marked cultural differences between the selected communities. The Ungwan Galadima community is influenced by traditional Hausa culture and to some extent by Islamic religion. The Samaru Kataf community, on the other hand, is influenced by traditional cultures of the Bantu/Semi-Bantu tribes and to a larger extent by Christian religion. These cultural features define the social norms in marriage, inheritance, land tenure, farming systems and agricultural tasks as executed by both male and female youth. For example, young women cannot inherit land in Samaru Kataf, while in Ungwan Galadima, all children can inherit properties (including land) from their father, though male children get a higher ratio than their female counterparts.

In Samaru Kataf, crop planting starts in late April to June due to earlier start of rain, while in Ungwan Galadima, planting starts from June to July. However, harvesting begins earlier in the latter compared to Samaru Kataf due to the short duration of the rainfall season. The seasonal variations define different opportunities for youth, as most youth who had migrated from their communities during off-farming periods usually return to engage in farming activities. Also, youth who do not migrate usually engage in non-farm income generating activities like driving/riding commercial vehicles, motor bikes and tricycles, tailoring, marketing of agricultural produce and petty trading.

Figure 4.2: Map of Kaduna State showing LGAs and study sites



Source: Authors.

Cross River is a coastal state located in the Niger Delta region in the South-East agro-ecological zone of Nigeria. It is characterized by a humid tropical climate with two distinct seasons; wet and dry. The annual rainfall ranges between 1300 – 3000mm. Vegetation varies from mangrove swamps of the

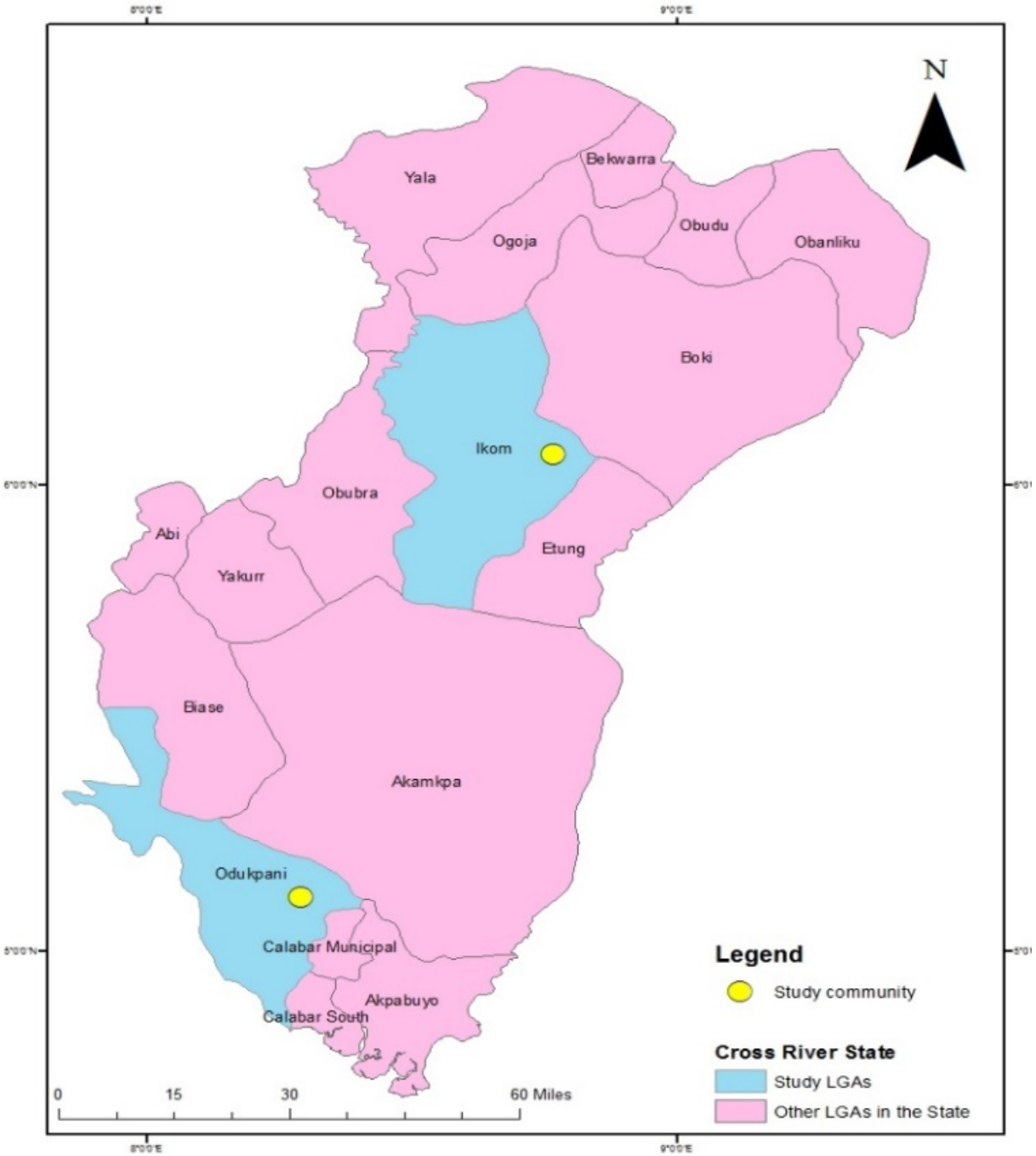
coastal region to guinea savanna in the north. The population in the state is predominantly engaged in farming, producing a variety of sustenance and cash crops.

The state is divided into 18 LGAs which are grouped into three ADP zones. One study community from two LGAs in two zones of Cross River Agricultural Development Project (CRADP) was selected: Oduyama community (N05^{o} 10.003' E008^{o} 19.540') from Odukpani LGA in Calabar Zone and Nkarasi community (N06^{o} 171.196' E008^{o} 39.029') from Ikom LGA in Ikom zone (Figure 4.3). Similar to Kaduna state, communities were selected for their focus on agricultural activities and varying social characteristics.

There are four closely linked ethnic groups in Odukpani LGA; Efik, Efut, Qua and Okoyong people. Agriculture is predominantly the mainstay of the people of Oduyama. About 70 percent of the dwellers are actively involved in farming. Ikom LGA is a commercial and agricultural area thus the majority of its occupants are businessmen and businesswomen or traders. Ikom people are said to have originated from Bantusan families. Based on tribal/ethnic differentiation, communities exhibit various cultures and social values.

Despite cultural differentiations, there are significant similarities in the livelihood styles of Oduyama and Nkarasi communities. In both communities, land tenure system is largely communal and based on kinship ties; with heads of families or clans having the final decision on the control and use of land. Since the system is male dominated, women have limited opportunities to inherit, own and control land. The traditional farming system is such that men are engaged in the production of cocoa, yam, cassava and oil palm (more cash crops), while women concentrate mostly in the production of maize, okra, pepper and residual melon. This is because these crops can be intercropped with yam or cassava, a situation which allows the women to depend on their husbands for the use of land. However, this is gradually changing with increasing commercialization of assets including land. Most youth and women can now buy, own and use land even outside their communities if they have the financial ability to do so.

Figure 4.3: Map of Cross River State showing LGAs and study sites



Source: Authors.

Sampling strategy

Male and female rural youth involved in both farm and non-farm livelihood activities were targeted for the study to capture differences in activities, aspirations and challenges faced. Semi-structured interviews (SSIs) were conducted with 24 young men and women; three young men and three young women in each

of the four communities, where they reflected on their own experiences, challenges and coping strategies. In each of the communities, two Focus Group discussions (FGDs) were conducted, one with young men and another with young women for a total of eight, where the groups collectively reflected on community challenges, youth specific constraints and the needed support. Thus, a total of eight FGDs and 24 SSIs were conducted (Table 4.1). The number of participants in the FGDs ranged between 11-17, with an average of 14 participants per FGD. In total, 138 young men and women took part in the FGDs and SSIs. The qualitative research protocols for SSIs and FGDs were developed in English and translated into local languages of Hausa (for Kaduna) and Pidgin English (for Cross River). Fieldwork took place between late May and early June of 2020. The discussions were voice recorded, transcribed and translated into English.

Table 4.1. Fieldwork sampling

Type of Interview		Kaduna State		Cross River State	
		Ugwan Galadima	**Samaru Kataf**	**Nkarasi**	**Oduyama**
Focus Group Discussions	Male FGD	1 (17 participants)	1 (15 participants)	1 (15 participants)	1 (12 participants)
	Female FGD	1 (18 participants)	1 (14 participants)	1 (11 participants)	1 (12 participants)
Semi-structured Interviews	Male SSI	3	3	3	3
	Female SSI	3	3	3	3
Total interviews per community		8	8	8	8
Total interviews in the study		**32**			
Total number of participants		**138**			

One challenge with data collection was that it took place during the agricultural production season; which made it difficult to mobilize participants for the interviews as the timings coincided with the youth's daily tasks. In addition, during the fieldwork period in the Samaru Kataf community in Kaduna state, the community was in a state of fragile peace from the aftermath of ethnic clashes, due to the kidnapping and subsequent killing of a prominent traditional ruler in the area. Thus, safety was a concern for the field team due to fear of possible eruption of clashes. In Cross River state, weather conditions were challenging, especially in Oduyama community where heavy rains during the entire time of the fieldwork made mobility and conducting interviews difficult.

The defined ages of youth and young adults vary greatly in the literature, development programming and across cultures. Some programs focus on younger groups; from 15-24, while others consider youth to extend to everyone below 30 years of age[2]. Nevertheless, those aged 0-17 are defined as 'children' under international standards, thus many programs consider youth to be 18 and above. Youth fall roughly between the ages of 18-30 as a short range, or 15-35 as a broader range. The National Youth Policy in Nigeria refers to youth as those from 18-35[3]. USAID's Youth in Development Policy further identifies "life stages" of youth as those ranging from 10 to 14 years, 15 to 19 years, 20 to 24 years and 25 to 29 years, with Feed the Future activities primarily targeting youth of working age (15 to 29 years).[4]

Taking this into consideration, the original study sample targeted young men and women aged 18-30. However, this proved to be practically difficult on the ground, as others above 30 demanded to join the discussions and considered themselves youth.[5] Thus, we adopted a broader definition of youth that encompasses Feed the Future target ages while extending the age of youth to 35 years as per the Nigerian National Youth Policy definition. The final sample of young men and women is divided as follows: Around half of the participants in the various FGDs are between the ages of 23-30, around a quarter were between 18-22, and less than a quarter were above 30. In the SSIs conducted with young men and women, around 60% of the participants were 30 and below while around 40% were above 30.

The highest proportion of young men and women interviewed are secondary school graduates, followed by those with higher education, including college degrees and diplomas. In SSIs, 14 participants had secondary education, five had higher education (college or university) and five had primary or junior (middle school) levels of education. In the FGDs, almost half of the participants graduated from or were still enrolled in secondary school, 17 were holders of the Nigeria Certificate in Education (NCE) - a post-

[2] https://www.usaid.gov/sites/default/files/documents/1870/Youth_in_Development_Policy_0.pdf
[3] https://www.youthpolicy.org/factsheets/country/nigeria/
[4] https://www.youthpower.org/sites/default/files/YouthPower/resources/BFS_Volume_1_FINALsm.pdf
[5] The study team faced difficulties in capturing only the desired age group. After initial arrangements of selecting the youth to be interviewed, other youth heard about the event and wanted to participate. Additional persons were later discovered to be above 30 and a few above 35 years. However, since the perception among these communities is that there are hidden agendas behind any intervention/activity from agents outside the communities, the study team saw it best to allow those above the targeted age group to participate in order to avoid suspicions of a deliberate attempt to exclude them from any perceived benefit during and after the interviews and FGDs.

secondary school certificate that counts as a qualification for teaching in Nigerian schools -, 11 had a college or university degree, and seven had junior, primary or no education. However, this varied by community, where in Ungwan Galadima (Kaduna), most youth attained secondary education, but only few had college degrees, while more youth had such degrees in Samaru Kataf (Kaduna).

More than half of the participants engaged in agriculture as their primary source of income. Further, most of the young men and women who had other occupations also worked in agriculture. Female participants (particularly in Samaru Kataf) tended to consider themselves 'unemployed', even if they were pursuing a series of income-earning activities, including in agriculture, while young men tended to define themselves as "farmers" or having a "business" as their source of income when pursuing the same level of economic activities. In Cross River communities, the majority of youth were not married. In Kaduna, on the other hand, more than 60 percent of young men and about 40 percent of young women in the sample were married. The latter group mostly lived in nuclear families, while unmarried youth lived with parents, with some exceptions of married youth living in extended households with their parents, and some unmarried youth living on their own.

5. RESULTS: KEY EMERGING THEMES

We discuss the results based on some of the elements of the GCAN framework (climate signal and shocks, the enabling environment and various challenges faced by youth along the agriculture value chain, resilience capacities and coping strategies, as well as decision making in agriculture), embedding differentiated effects on gender and youth within various sections. Some results demonstrate how the framework elements are interlinked and interdependent; for instance, challenges in the enabling environment affect youth resilience capacities along the agriculture value chain. Some framework elements such as long-term climate stressors were not considered in the discussion. Results also show youths' interest levels in agriculture.

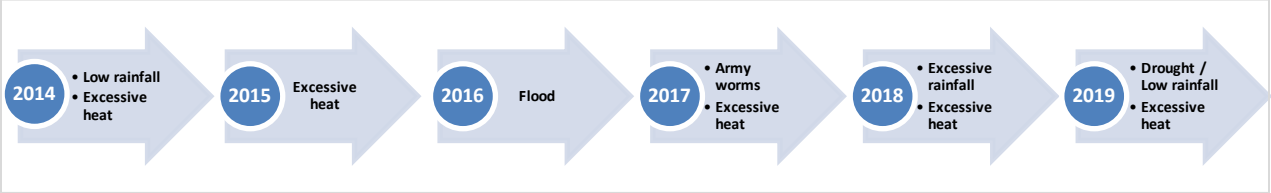
Climate signal and climate shocks

Study communities experienced a range of extreme weather events in a short period of time. Participants in the FGDs were asked to recall significant climatic events that took place in the past five years and jot them on a timeline drawn on a flipchart. In Cross River communities, FGD participants recalled extreme weather events in almost every year between 2014 and 2019 while in Kaduna, significantly fewer events were mentioned. There was also a higher variation in the types of events recalled in Cross River communities, including floods, high temperatures, low rainfall, as well as pests and diseases attacking crops, livestock and poultry. A 23-year-old female student in Nkarasi recalled that "*in 2016 there was a heavy flood that resulted in loss of lives and properties…all our properties and food like yams were destroyed and there was no money to buy yams and to feed our children."* The year before that, "*there was low rainfall, which caused low harvest and excessive heat in this community, which resulted in damaging crops like cocoa and yam*," said another young woman of 25. *Spodoptera genus*, commonly known as armyworms, have been a significant problem in many states in Nigeria, starting in 2016, and have spread to other parts of Africa[6]. A young man of 18 living with his parents in Oduyama recalls that "*in 2017, we had an attack on our crops by armyworms."* It is not surprising that in the two Cross River

[6] https://www.cgiar.org/impact/photo_stories/stopping-the-march-of-fall-armyworm-in-nigeria/

communities, most of the events recalled by participants were similar (Figure 5.1). However, there were a few differences in participant recall of climate shocks in Oduyama (Figure 5.2). One woman mentioned that in 2017 "*there was an erosion problem that made our roads un-accessible for the crops to be transported*," which shows some climatic variation even within the same state.

Figure 5.1: Nkarasi climatic events timeline



Source: Illustrated by authors from Nkarasi community FGDs.

Figure 5.2: Oduyama climatic events timeline

Source: Illustrated by authors from Oduyama community FGDs.

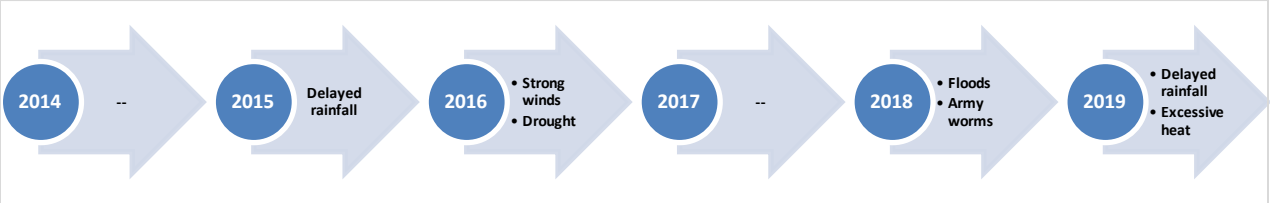
FGD participants in Kaduna communities did not recall climatic shocks in every year over the past five years (Figures 5.3, 5.4). In Samaru Kataf, participants only mentioned high temperatures and excessive rain/flooding in 2019 and 2018 but do not recall having other climatic shocks in earlier years. In Ungwan Galadima, more events were mentioned, especially by men. In all cases, effects of these relatively fewer shocks were still devastating for the communities, including loss of crops, livestock as well as pests and diseases, including malaria fever caused by exposure to mosquitos from excessive heat.

In 2019, during a combination of floods and a heat wave, young women in Samaru Kataf recall their houses and fields being flooded and their poultry dying from heat stress. This significantly affected their food security, as they had to depend on buying food from the market, which not everyone could afford.

Figure 5.3: Samaru Kataf climatic events timeline

Source: Illustrated by authors from Samaru Kataf community FGDs.

Figure 5.4: Ungwan Galadima climatic events timeline



Source: Illustrated by authors from Ungwan Galadima community FGDs.

The most distressing shocks according to participants were often those that resulted in the loss of human lives, and those with devastating effects on livestock and crops. In Cross River, these mainly related to floods and heavy rainfall. A woman in the Nkarasi FGD said the "*2016 [flood] was more catastrophic because we experienced loss of lives and properties*." In Kaduna, it varied. Heavy rainfall was mentioned as devastating, yet heat waves were also mentioned as very distressing, especially with increasing risk of diseases. In Ungwan Galadima, a young trader of 27 remembers "*massive destruction of houses caused by heavy rainfall*" in 2018, which lead to pests and flooding destroying maize and bean fields and affecting the rice crop. In the same community, a young woman said "*my household was also affected by the flood and a part of the house collapsed…it also affected a neighboring household where 3 women and children lost their lives*."

Rankings of the most devastating events differed between young men and women. In Cross River communities, men agreed that the 2016 and 2017 floods were the most devastating events due to the destruction of farms while women considered drought to be the more serious threat, as drought led to reduced household food availability due to failed crops. In Kaduna, women mentioned flooding and destruction of farms and houses as the most serious events, while men mentioned high temperatures as having more significant effects on livelihoods, especially as some of the men depended on irrigation.

Further, women's and men's recollection of climatic events and their effects sometimes differed substantially. For example, the Nkarasi armyworm attack of 2017 was only mentioned by men. This may be because it only affected crops that men cultivate. In Samaru Kataf (Kaduna) both men and women mentioned heavy rains in 2018, but only men mentioned a strong wind event. This could be due to timeline mix-up or can indicate differences in the perception of climate shocks and how livelihood activities of women and men are intertwined with climatic events. This is consistent with the literature on perceptions of climate change and climate risks (for example, Kristjanson et al. 2017).

Some respondents recalled climatic shocks in different parts of the interview when asked about difficult times they experienced in general (not related to agriculture) throughout their lives, which indicates that climatic shocks are a significant factor affecting the resilience of many young people in rural Nigeria. In Cross River, a young man enrolled in university remembers a time in 2016 when flooding reduced his crop yields. In Kaduna, a young mother of four in Samaru Kataf recalls that

> "*one of the difficulties I faced was when, after planting maize and beans, the rain stopped for a long time and as a result of that, the farm was also invaded by insects…that made us lose our farm produce that year due to a lack of adequate rain and pests.*"

Moreover, climatic factors and extreme weather events were identified as a challenge that farmers face when discussing difficulties along the agriculture value chain. A young farmer of 22 who aspires to become a large farmer in Ungwan Galadima "*face[s] the problem of flooding of farms. For instance, as of last year, we sowed beans, but the flooding made the germination very difficult.*"

The enabling environment: employment challenges

Regularity of employment and income generated from employment are key elements affecting absorptive and adaptive capacities in the GCAN framework. Lack of employment and associated low income and food securities can magnify the impacts of climatic and other shocks; and changing livelihood activities for improved employment are key adaptation strategies to climate and other shocks. Study participants

focused on agricultural activities as a key response pathway that is aligned with their skills and the (lack of) opportunities provided in the rural areas studied.

In all of the communities under study, there was consensus that agriculture (especially in the rainy season) is the main opportunity that youth can engage in as employment in the formal sector is very difficult to secure. A young man from Oduyama explains:

> *"now that it has rained, everybody has something to do…However, the dry season is where the hardship is, people are doing nothing because there's no work to do. But in the rainy season we get farms to work on... We thank God that we have farms that provide everyone with jobs."*

Non-agricultural jobs are not as easy for youth to engage in. Available opportunities include working as daily laborers for men, or in tailoring, hair salons and small trading for women, as well as some opportunities in teaching and computer repairs especially for educated youth and those with higher skills. Women in the Samaru Kataf FGD described their community's employment as follows:

> **"***The employment situation in this community is very poor, on a scale of one to 10, it is one or two. Most of the male youth are commercial motor cyclist and some have barbing salons, some ladies have salons and most of the youth are engaged in farming because that is what is actually helping most of us right now, both male and female and even if you don't want to, you have to because that is the only opportunity that we have."*

A lack of an enabling environment in rural villages play a role in disabling rural youth from finding high-paying non-agricultural jobs. As expressed by a young female in Ungwan Galadima, *"We do petty trading and agricultural production here compared to women in the cities who have access to social amenities and information on white-collar jobs and they have better opportunities."* Further, according to a young man in Nkarasi who holds a bachelor's degree, *"we have teachers, nurses and graduates but you need connections to get it."*

Youth generally indicated that getting a formal job including government and private sector employment is very difficult. Some believed that the obstacles are specific to their communities while others believed it is a problem for rural areas in general, where industry and white-collar jobs are lacking. According to a young woman of 20 in Samaru Kataf, "*I don't think it is just this community but the whole*

Kaduna state because…only the urban areas in Kaduna state are based on white-collar jobs and few [rural communities] have white-collar jobs." Her colleague who holds an NCE degree but sells shoes for a living adds that "*we don't have investors who will come to the community to create jobs for our youth and also we have few companies and production industries*." In Oduyama, young men believe their poor employment situation is due to absence of companies and industries in surrounding areas. Some young women also complained of the longer distances they need to cover on bad roads to get to job interview venues which are often far away in urban areas.

Lack of access to information on employment is another obstacle that youth face. Young men and women often referred to "godfathers" or influential individuals who can help others secure jobs and get relevant information if they are present in the community. They felt they did not have any well-connected people within their communities who could help them land such jobs. As stated by one of the respondents in Kaduna, it's the

> *"lack of godfathers who will provide us with information on when the [job] application started and the requirements for the job. We don't hear when the recruitment starts here, we only hear the appointments of people into those vacancies. Lack of someone who's working with government has made it difficult for us to get government employment or any other related employment."*

A young woman in Nkarasi also believes it's "*because we don't have wealthy individuals or employees that are working there who can fight for various vacancies for us*." Another young man in Ungwan Galadima compares equally educated youths in different communities, noting that:

> *"in other communities or towns where there are people who further their education to higher levels, they easily secure jobs compared to us because they have others from their communities who are working up there who will help them to secure the jobs."*

This was seen by youth as a type of social network that can increase resilience and access to information, especially as employment opportunities are not always publicly advertised. However, this further reflects how Nigerian youth aside from other employment challenges also often deal with widespread corruption in the public sector, part of this being a general practice of low circulation of job

openings that is limited to particular circles and groups (Adesugba and Mavrotas 2016). In the Ungwan Galadima men FGD discussion, some raised objections regarding their situation, claiming that some uneducated and under-educated people in other communities get formal employment while educated youth in their community don't, mainly because of favoritism and connections:

> *"They have godfathers who are working in the organization/institution that's recruiting. We've heard that some communities like […] have their own allocated slots whenever there's recruitment exercise in places like ABU or ABUTH[7], Shika. But we've never had the same here. Most of our friends who are from Shika haven't even finished secondary school but they were given employment. The only reason is that they have people from their communities."*

Another reason for the perceived poor employment situation is participants recognizing low levels of education among youth in their communities. Yet, many stressed that even those who are educated find it difficult to get formal employment. A woman of 35 from Nkarasi who graduated with a secondary-school degree believes that "education plays a key role, because we are not too exposed to education especially the youth," but then goes on to say "those who went to school with their degrees and masters are still going to the farm. As such, when you asked people to go to school they will say even those that went to school have not been employed." Some also perceived the current situation as a generational trap where it depends on the parents' education, level of well-being, and way they directed them when they were children. A young female farmer who graduated from secondary school believes youth do not get good employment opportunities because "our parents don't have money to send us to schools because they are suffering." Another young man thinks that "the problem is that our elders have not been to school and those that went to school didn't further their education."

The enabling environment: challenges along the agriculture value chain

Rural youth in Nigeria face numerous challenges along the agricultural value chain, many of which relate back to the overall enabling environment but can also reflect on their resilience capacities. Overall, money-related matters (finance and capital) were mentioned most often as a pressing challenge for youth

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to thrive in agriculture. A mother and small farmer in Ungwan Galadima noted that "*the major requirement for agricultural practices is capital*." In starting an agricultural business, the main constraints centered around lack of finance, land, and access to inputs and equipment, respectively. Some focus group participants also mentioned lack of labor and a conducive business environment. Only one mentioned lack of information at this stage; information was seen as a more significant barrier in later stages of the value chain. We look at each stage separately in what follows.

Production

Access to inputs (especially fertilizers) as well as access to finance or having enough capital were the most frequently mentioned constraints in the production phase. This was followed by pests and diseases attacking crops, climatic factors such as floods and droughts, and access to information or agricultural knowledge. Other issues, such as labor, were mentioned less frequently.

Challenges like lack of inputs especially fertilizers were related to lack of capital and inability to afford agro-chemicals for young men and women alike. For men in the Ungwan Galadima FGD "*the first problem is that of fertilizers because if you have fertilizers, most of the other problems are minor.*" For a young man from Oduyama who is farming while perusing his BSc, "*the biggest challenge is money with which to buy inputs like chemicals*." For a young, 25-year-old female from Nkarasi with junior education, "*lack of fertilizer and fund is the major challenge because at the end of harvest, I produce only to sustain the house but I can't sell it…another challenge we face here is lack of loan, lack of fund for labor and poor harvest.*" A 33-year-old male farmer who is also an extension agent believed it's the lack of government intervention to make subsidized fertilizer more widely available, "*the major problem is…the lack of government intervention to ensure easy access to fertilizer. Because if the government can make fertilizer available at a cheaper rate, of course we can afford it and the process will be made easier.*"

Lack of equipment and mechanization is also considered a challenge, but was mentioned less frequently than lack of capital or fertilizers. Pests and diseases are another significant problem for farmers, which they relate back to lack of inputs like pesticides and fertilizers, and inability to afford them. For a female farmer of 23 in Oduyama, the main issues are "*insects and lack of chemicals. These*

are our challenges because if we plant a large farm then you don't have chemicals or other tools to use in that farm you will not be able to meet the need of the farm...and the insects do affect the crops. So if you don't have insecticides to spray on the crops, it will damage them."

Finally, lack of technical knowledge and information related to farming practices were mentioned by young farmers. Young farmers are often unaware of agriculture best practices and how to best utilize farm inputs, coupled with lack of specification on usage of the products sold. While this relates more to youth capacities and access to resources, it is affected by the overall enabling environment.

Post-harvest

In the post-harvest stage, young farmers face storage and processing challenges as well as transportation and marketing challenges. In agricultural processing, the major obstacle is the lack of various machineries and processing facilities in the area. Two women in the Ungwan Galadima community FGD believed processing to be the major obstacle they face: "*I don't have access to processing machine or engine to extract ground nut oil*." High cost of maintaining and operating processing machines was also mentioned by some respondents. Farmers in the communities under study often need to travel long distances with their crops outside of their villages to access various processing facilities. A farmer and part-time computer technician in Oduyama explains that "*here in our community we lack a hatching factory and availability of livestock feed, we travel miles away from our community. Sometimes, in the process of buying the chicks many have died before reaching home... With these kinds of problems we mostly lose.*"

Storage techniques are simple. Crops harvested are stored at home in simple silos called *rumbu;* barrels, plastic bags and jerricans are also used. Some crops are sprayed with pesticides and chemicals before storage to prevent infestation; however not all farmers can afford the chemicals. Storage challenges mostly revolve around poor storage means and lack of storage facilities that leave harvests vulnerable to pests, diseases and rotting. In Oduyama, lack of sunlight prevented crops from properly drying, leading to loss of crops, as narrated by a young woman of 30:

"We don't have anything that we apply to preserve our crops. We just harvest the crops like yam and just go and keep it like that. Now that's raining season, if you go behind our houses you will see yam tubers rotten, we don't have anything to use to preserve them. Even cassava is rotten."

A young male farmer in Ungwan Galadima had a similar experience one year when "I stored my produce in the rumbu but termites destroyed it. We made our rumbu from mud, but if one has money he uses cement for the floor and to plaster the walls." Some young farmers who do not have any means of storing their produce try to immediately sell it after harvesting.

Major marketing challenges that were common across communities included low prices for produce on the market, lack of decent markets, and lack of adequate transport, including bad roads and accessibility. A 20-year-old male farmer with the ambition to become a large-scale farmer summarizes the marketing problem facing his community in Kaduna:

"Firstly, we face the problem of transporting our farm produce from our villages here to the relevant destination (market locations). That is to say, the problem of the lack of road is the major problem. For instance, last year, I planted rice and harvested the rice sometime in August but what remained a problem was transporting it to the market. And secondly, the price in the market is too cheap considering the expenses involved from the beginning to the end of the season."

Low and unstable produce prices, as well as challenges in finding buyers were the most mentioned marketing issues across communities in the two states. "*Lack of market demand of what we have been able to produce*" is a major challenge for a young man in Oduyama. Women in the Ungwan Galadima FGD believed the issue is that "*there is no fixed price for commodities in this community*." Another woman in Nkarasi believes the problem is oversupply of their crops in accessible markets, forcing farmers to sell at cheaper rates. This is especially problematic with mobility restrictions. A 27-year old female farmer with secondary school education who finds it difficult to sell her produce notes: "*We don't have buyers or markets for our farm produce. Sometimes you will do your farming activities, but you won't find the person who will buy the farm produce even if you carry it to the market.*"

However, this does not seem to be the case for all crops. For example, a young pineapple farmer from Oduyama who also sells farm inputs does not face any challenges in finding buyers. "A*s we*

cultivate the pineapple here, the buyers come directly from other different places to buy at large scale." Yet, middlemen represent a different challenge, as their *"activities affect our price making us incur huge losses*," according to a young woman in Kaduna. Another young farmer supports this statement by explaining that middlemen are able to take advantage of small farmers and buy their produce for low process, particularly because "*we don't have a good road to convey our goods to the market.*"

Transporting perishable produce is difficult due to lack of transport means, bad roads and lack of well-connected road networks, which also damages produce. In Nkarasi, women "*trek to the market*" which is far away, with cassava baskets over their heads to sell them at a low price. The same goes for men who "*due to poor roads, we carry the produce on our heads*." The distance to markets is long, and erosion can further worsen the condition of roads. Not all vehicles would be suitable for the current roads in these rural communities, thus in Oduyama some use motorcycles to transport the harvested crops on roads that can support a motorcycle. Many others lack transportation means. This also means that farmers "*spend a lot of money to transport our commodities to the only two nearby markets*" as mentioned by a young woman in Ungwan Galadima. Lack of proper markets near these communities also restricts growth and possibilities of increasing farmers' profits and hence their resilience capacities. An aspiring farmer from Oduyama says his community needs "*a transport system to export [the products] to where they will be a little bit more valuable than here in the rural area, such as Calabar*" (city).

Lastly, lack of market information and networks was mentioned as a challenge by some, particularly young men in Oduyama. As mentioned by a young male farmer "m*arketing of the farm produce is poor, because there is no provision for an effective communication channel that we can inform and be informed*."

Youth specific constraints

Surprisingly, when asked to identify which of the discussed value chain challenges were youth-specific, most were perceived by youth as general constraints faced by all farmers in the community. Similarly, in one-on-one SSIs, more youth perceived their constraints to be general and not specific to them being young men and women. Out of the eight FGDs, only the Samaru Kataf women's focus group initially

identified a few of the constraints as being youth-specific; namely lack of agriculture and agri-business information, as well as access to land (Table 5.1), while the rest of the FGDs largely perceived all constraints as applicable to all farmers.

Nevertheless, after some discussion, some differences in opinions surfaced. One young man of 26 in the Oduyama focus group mentioned capital as a youth-specific constraint in agricultural production. In the Ungwan Galadima FGD, four men noted that "*capital [is the most challenging constraint], and it is mostly affecting youth.*" Another young woman in the Ungwan Galadima FGD who aspires to be a large-scale farmer said that "*funds and input provision affect young people…mostly the older people are considered first in terms of any support compared to young people.*" However, while others supported her opinion at the beginning, they unanimously agreed that "*all the constraints affect everyone in the community*." A woman in the older youth group in Ungwan Galadima interviewed individually believed that *"it is the same constraints that affects both the younger and older adults since we are all in one community.*" Similarly, when interviewed alone, a young man of 30 in that same community said "*no, I cannot say I am the only person or only the youth, but whoever is engaged in such business is faced with such problems*."

Table 5.1. Constraints faced along the value chain

Category	Constraints	Ranking	Youth specific?
Starting agribusiness	Capital	1	No
	Good transportation network	5	No
	Lack information	3	**Yes**
	Lack marketing skills	4	No
	Conducive environment	1	No
Production	Lack of fertilizer	2	No
	Limited access to land	1	**Yes**
	Lack information on how to keep poultry	3	No
Marketing	Poor marketing techniques	3	No
	Lack of market information	2	No
	Poor post-harvest practices	1	No

Source: Samaru Kataf young women FGD

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. Some participants expressed that while challenges such as lack of fertilizer and funds apply to all community members, youth may be more severely affected by these challenges or less able to adapt. In Oduyama, a 23-year-old male farmer mentioned capital as a constraint affecting youth specifically: "*Yes, it affects youth seriously because of lack of money and information… because we start afresh and new but the old are already established*." *Thus, at times of need "most [adults] have reserves to address the problems, so they resort to it in such situation, the youth don't have [that]."* This perceived youth disadvantage also extended to access to inputs, farming equipment, resources, finance and information:

> *"I think there is a difference. Because when we are talking about youth and adults, there is an age preference here, for example, when I apply for a tractor and an adult also applies, the adult is taken more seriously than the youth because they believe adults are more seriously minded than youth and they are considered before the youth. It is also the same situation in terms of accessing finance, farm inputs, equipment and information."* (Woman, 23, Samaru Kataf FGD)

Gender roles in the agriculture value chain

There are strong gender norms in the selection of crops and for the division of agricultural labor along value chains. For example, most youth interviewed agreed that women grow vegetable crops, such as peppers and melons, while only men grow cash crops like cocoa and pineapple, while both men and women grow yams. Women are most often involved in sowing and weeding activities, as well as processing activities and also water collection, while men are more heavily involved in land clearing, tillage and spraying of pesticides, especially for cocoa. In Oduyama, for example, men in the FGD had strong opinions that "*women cannot work in the cocoa farm*," and "*of course in terms of the labor involved, women are not supposed to plant pineapple*." Young men tended to identify the gender differences in agriculture labor roles.

However, some of these patterns are shifting with time and are different in different communities. For example, some women in Nkarasi said that women are now also starting to plant cocoa and some men

now plant pepper, as opposed to before. A young woman of 20 in Samaru Kataf sees that in her community "*you hardly see people farming different crops or keeping different livestock.*" Moreover, some young men and women believe that there are no specific gender roles in agriculture, and that there are other activities that men and women share such as harvesting and fertilizer application. A young woman of 27 living with her parents in Samaru Kataf gives an example: "*Well in our house, my mother and father plough, ridge and plant. There is no specific task for anyone of them*." A young man in Oduyama had a similar opinion.

When asked specifically whether the constraints women faced along the agriculture value chain are because of their gender, most young women did not attribute the challenges to gender, but as challenges faced by all community members or women and men alike. Yet, a few young women did mention differences that they perceive. One woman from Samaru Kataf believed that "*men have better access to equipment, information, finance, farm inputs and land.*" This became more evident during other parts of the discussions (deliberated in the next section), where it was clear that young women faced constraints in accessing resources, particularly irrigation water.

Resilience capacities

Access to land, inputs and resources

For the majority of those who stay in agriculture in their communities, their resilience in agriculture and their wellbeing outcomes greatly depend on access to various resources, including natural resources, inputs and capital.

Land

As discussed above, land inheritance across Nigeria varies with ethnic group and by region. For example, in northern Nigeria, both male and female children inherit in the Hausa culture while in the Bantu/Semi-Bantu tribes of northern/central Nigeria, only male children can inherit the properties of a late father. Although gender-differentiated access to land is a general trend in Africa, a study of 11 communities in west-central Nigeria found that men and women have equal access to land (Oloukoi et al. 2014). This

may be because there are no formal gender restrictions to land registration and ownership in Nigeria in general, coupled with women having some ownership and inheritance rights under customary laws in those communities, unlike other parts of the country. However, informal customary restrictions in many parts of the country still influence this pattern.

Interestingly, access to land does not seem to be a significant constraint for young men and women in the rural communities studied. Most participants had access to land explaining that although it is sometimes difficult to acquire, young people often have their own lands. Among the young men and women interviewed separately, 11 owned land, five cultivated family/parents' land, and five rented land. Many of those working their own lands were somewhat older (between ages 28-35). Usually, youth combine working on their own or family lands with renting extra land or working on other people's land as laborers. A 27-year old woman from Oduyama who lives on her own said "*we young people when we are done working in our farms, we go and help our parents if they haven't finished their own work."* Others work on other people's lands, often to supplement the income generated from their own land. This was consistent in all study communities, with both men and women owning farms, working on their parents' lands, renting or working for others. However, those who do not own land but only work on other people's lands are considered less privileged.

Access to land is mostly through inheritance or purchase. Many young men and women mentioned having inherited or bought the land that they cultivate. Yet, acquiring land through inheritance was more common. A young farmer of 20 in Ungwan Galadima says that "*in most cases we own farms by inheritance, but we also buy small portions*." A young female farmer in Oduyama who is still in secondary school and living with her parents said she bought the land that she owns. However, purchasing land is expensive, making access to land a constraint for some. *"If you want to buy land, you will have to use your own money and it's not easy to get that money*," said a young woman of 23 from Nkarasi. Another young woman of 26 supported this statement, saying that "*it's not easy for youth to acquire land.*" Yet, it was not considered as significant a constraint as access to inputs and farming equipment/technologies.

Moreover, out of the 12 women interviewed in the four communities, eight owned the land they cultivate. In the FGDs, women also often mentioned being able to buy and inherit land. In the Samaru Kataf FGDs for example, all 15 women farmed on their own lands, though the strength of their tenure was not discussed and requires further research. Access to land was not identified as a gendered constraint, despite other research in Sub-Saharan Africa identifying gendered constraints to land tenure as a key challenge, including in Nigeria (Doss et al. 2019). This could be driven by higher joint ownership of the land that young women attain through marriage. A 21-year-old female living with her parents in Nkarasi believes that everyone in the community has similar access to land, as "*whether you are a young man, old man or a woman you are all paying N10,000 to get land.*"

Only one woman in Kaduna explicitly mentioned access disparities related to land, saying that *"men have better access to equipment, information, finance, farm inputs and land."* In the Ungwan Galadima one woman believed that "*it is only rich women that acquire land here [through purchase]*." The rest of the women supported her by saying that they "*can only access inherited land from our parents*," implying that women in these communities can inherit land. This was also supported in other communities. In Oduyama, for example, young women said that "*some of us get land from their father's or grandparents' farm*." One married woman from Ungwan Galadima also mentioned that "*as a woman I only farm on my husband's land but l don't go to other people's farms to farm at all*," further implying some gendered differences.

Inputs

Between access to land, labor, information and inputs, a young woman of 35 from Nkarasi who works on her fathers' land comments "*I have land but l don't have the rest*." While access to land is not a substantial issue, young men and women face significant challenges in access to other resources like farm inputs, especially fertilizer. Seeds and seedlings are not a significant challenge, as young farmers often save maize seeds and cassava sticks from their previous harvest. Farmers also purchase these seeds sometimes from the market, ADP or cooperatives. A young farmer of 20 from Ungwan Galadima explains that "*when we see good seed planted this year, we collect to grow it the following year while*

others use their previous year's harvest. There are also some farmer cooperatives that obtain seeds and other chemicals from partner organizations." In Nkarasi, another farmer says "*we buy cocoa pods and what we need from the cocoa research institute*." Interestingly, young farmers can also rely on social networks for obtaining seeds at no cost, unlike other inputs. A young farmer from Ungwan Galadima says that "if *my husband doesn't have any seeds I do go to my in-laws or brothers for such, but for fertilizers and herbicides l incur debt*." However, young farmers are more concerned about the quality of seeds and mention the need for better and enhanced seed varieties for a better yield.

Fertilizer and pesticides usually need to be purchased from the market through companies and traders. Some farmers accumulate debts to buy these inputs, and often do not have easy access to good quality or subsidized fertilizers and pesticides. A woman from Samaru Kataf relates that "*sometimes they will bring government fertilizer before we get there, some rich men will go there and buy it all...we [who only] need one or two bags we suffered a lot, then we have to buy the expensive one in the market*," pointing back to enabling environment challenges affecting their access to resources and resilience capacities. Many youth conclude that the issue is lack of capital or funds, which often disables them from buying the inputs needed in farming. The choice of crops to grow thus also depends on whether the farmer can afford fertilizer or not. As explained by a young woman in the Ungwan Galadima FGD, "*those who have much funds go for maize since they can afford fertilizer, others who don't have money grow yam, soya beans, groundnuts and rice."* This in turn affects incomes and the cycle of resilience.

Water

All the communities interviewed, and especially Cross River communities, largely depend on rainfed agriculture. Thus, access to water was not generally seen by young farmers as a constraint compared to access to agricultural inputs. When asked whether they have problems accessing water and other inputs and resources needed for farming, several young women brought up access to water as a challenge, as opposed to young men who did not mention this as a problem. For example, one woman in Nkarasi said water was difficult to get for irrigation, while a young man of similar age and educational attainment in the same community said there is an abundance of water. This could be because of a general lack of

access to irrigation for young smallholders, which constitute more of a challenge for women since they tend to cultivate vegetable crops that need more frequent irrigation (Theis et al. 2017), as well as since women often are responsible for securing household water use and as such are likely more attuned to changes in water availability.

Dry-season farming in Kaduna depends on access to irrigation water. Lack of access to irrigation water was therefore more often raised in that state. A young woman from Ungwan Galadima comments that access to (irrigation) water, equipment, and infrastructure is *"a very big challenge here, the government needs to tackle this problem by creating pipe water, good drainages, […] creating sources of water for our community*." A young woman of 30 in Samaru Kataf finds it difficult to access water, as the wells "*dry up during the dry season*." Another educated 23-year old woman explains "*we have enough rainfall, but we do not have access to streams, rivers or irrigation channels to engage in irrigation farming. We also lack equipment like irrigation pumps to assist us in irrigated farming or even information on how to access this equipment for farming.*"

Access to information

Access to climate, extension, and other relevant information can significantly impact youth resilience capacities in agriculture. For example, early warning of extreme weather events and climate information can help farmers prepare, adapt or change their agricultural practices to take precautionary measures like early planting, rainwater harvesting, etc. When young men and women were asked about the information channels they rely on for climate information or early warning signs related to extreme weather events, radio and news (via television) were mentioned most frequently. This was followed by internet and social media for those with access to mobile phones. In Nkarasi FGD, a young man noted "*we listen to radio or find out from the internet*." Extension agents, ADPs or other government sources of information were also mentioned for climate information but less frequently. A woman from Samaru Kataf explains that "*we do have access to such information from the KADP office, if you go to them, you will get such information. The challenge most people have is that their houses are quite far away from the KADP office.*" Finally,

climate information is received through word of mouth and social networks in the community. However, youth often said that the climate information they got was inadequate.

In terms of agricultural extension information, young farmers most often receive it through government extension agents, followed by networks of friends and family, agriculture associations and cooperative groups, the internet, and on a few occasions through agriculture projects. An educated 24-year-old woman from Samaru Kataf mentions using several channels of information: "*Sometimes, we get information from our neighbors, but they may not always be around to keep giving us the information when we need it. We also get information on modern farming techniques through the social media or we search for it through Google.*" This suggests that access to internet is a source of strengthened capacity and coping in agriculture.

Nevertheless government extension is of greater importance for youth in these study areas. More than half the youth participating in the study said they have access to extension services that are often government related. Men in the Ungwan Galadima community on occasion "*come in contact [with agents] through cooperatives and with this, even last year there was a set up on how to engage in some farming activities that was handled by the extension agents.*" During this training, a young man of 20 "*benefited a lot especially on how to apply the fertilizer. Before, we used to apply the fertilizer without measuring.*" However, not all communities are equally exposed to agriculture development projects and extension trainings.

Access to extension was variable across communities. For example, in Kaduna, Samaru Kataf men and women participants seemed happy with their extension services, noting that they were able to contact extension agents through ADPs as well as other government services, but distance and electricity outages added cost or time. A woman explained that although "*we have access to extension agents and they are available, but some of us are unable to reach them as a result of the distance."* However, in the same state in Ungwan Galadima site, participants seemed to lack access to extension agents, except on occasions. A young woman said:

"we don't have contact with any agricultural extension agents…We don't have access to extension workers here, but through interaction we happen to get in touch with one who used to give us adequate information…FADAMA II Project[8] *experience also assisted a lot... I have really improved on my cultivation method from local practices to modern types."*

However, there is an information gap regarding modernization of agriculture, an area that young farmers have a high demand for. Many young men and women said they would like more agricultural extension information on a wider variety of topics, especially on adoption of new technologies rather than only application of chemicals, in order to make more informed choices in agriculture. Young people in Oduyama for example "*don't have any other or different way of getting some of the agriculture-based information especially for modernizing our way of farming*," said a young woman. This is partially due to poor quality of extension services that only provide basic information, according to a young man from the same community "*the information we mostly get from the extension agents is about the agro-chemicals*." Some evidence suggests that citizen science could be helpful to disseminate information in communities with low and differential access to extension, as they already depend on asking those with more farm experience for information on agriculture and agricultural practices. A young man from Ungwan Galadima for example says "*we have no specific source of information, but we look at it from an experience angle. If someone experienced a similar situation, we make him our source on how he was able to manage the situation so that we adopt the same strategy*."

Age and gendered differences in access to information

Some respondents believed that access to information and information channels are the same for the youth and adults, while others point out that young people often rely on the internet and social media, while older generations rely more on the radio. This is also a rising *trend* with the proliferation of mobile phones, suggesting that this channel could be effectively utilized by development programs to target and benefit rural youth. As a young 24-year-old educated woman from Samaru Kataf says, "the youth have different sources of information, they get it from the social media, while the older ones get their

8 A long-term, World Bank-supported agricultural program in Nigeria.

information from the radio because they listen to the radio a lot." However, while starting to become widespread, not all youth have access to the internet. A young man from Ungwan Galadima with no access to internet commented "no, we don't have access to such adequate sources both in terms of our farming activities and for other day to day businesses. This is because the numbers of people with radio sets in this community are not many let alone the social media." Broadband prices in Nigeria are still expensive and coverage in rural areas is poor due to insufficient infrastructure. Thus, youth with access to mobile phones often utilize cheaper mobile internet plans (Ogbo et al. 2018).

Most youth interviewed believed that men and women have similar access to information channels, including extension agents, particularly when it comes to climate information. However, some comments by participants indicate some gendered variations. One young woman with a college degree from Samaru Kataf believes that women have less access to information than men. Another woman in that community's FGD said that "*women get their information through interaction with others*." A young man in that same community also believed that "*only very few of them [women] have access to get such [climate] information*." Similarly in Ungwan Galadima, a young man believed that women "*are mostly told [the information] by their husbands and some of their friends*," while a young woman's experience was that "*men get information faster than women and sometimes we get belated information*." The same applied to access to extension, where access was generally considered equal but women were more likely to note that they lacked access to extension from government agents. In Nkarasi, all women in the FGD said they do not receive any information from anyone to help them improve their agricultural practices, while men mentioned seeking advice from extension agents, friends and relatives with more experience, as well as searching the internet.

Cooperatives and youth group memberships

Youth who are part of cooperatives seem to benefit more from access to information and extension. Only 22 young men and women out of the full sample of 138 study participants (interviewed individually and in focus groups) were part of an agricultural cooperative or any kind of society or youth group. More

young men were likely to be part of such cooperatives than young women, suggesting a gendered difference in access to such groups, which can affect access to information, networks, and resources, and in turn their resilience and ability to adapt to shocks. This is also denoted as the cooperation pathway in the GCAN framework.

Further, it was more likely for those who have at least a secondary school certificate to be members of cooperatives than less educated young men and women. Youth who are members of cooperatives joined mainly for the benefits of receiving information, especially when information was not available through regular extension services. A young woman who graduated from secondary school in Oduyama joined "*because of the relevant information*" available to members. A young man of 33 in the same community who is pursuing a college degree believes being a member "*is beneficial to the youth especially in terms of getting new information about farming*."

In Nkarasi, a young man believes that such groups "*help to circulate relevant information among members…this is because the government attaches more importance to cooperatives not individuals in terms of any assistance.*" From his experience, an older farmer in Samaru Kataf echos that being part of a cooperative is necessary for smallholders' resilience, "*because nothing can be achieved without a union or cooperative today in Nigeria…value is really attached to the cooperative…no assistance can be accessed without a cooperative. So, if you are not a member, you will not benefit.*" Benefits of group membership includes assistance with receiving farm inputs, finance training, and general support. A young farmer of 20 in Ungwan Galadima relates that some years ago he was "*assisted with some farm implements such as the ridger [and] seeds after being trained on how to plant maize in a way that would be more profitable.*"

Similarly, a young woman in Nkarasi joined "*because they help members out when you are in need or difficulty.*" Further, it is possible to receive grants and loans from some cooperatives. In Samaru Kataf, according to a young man with a higher national diploma "*they normally raise money and give out loans to the interested members with little interest, and [once] a loan was given after rainfall*,"

suggesting that cooperative membership can build resilience capacities to respond to climate change and extreme weather events, especially as other coping mechanisms are lacking.

Youth decision-making capacities in agriculture

The extent to which young men and women can make their own decisions regarding their livelihoods is one measure of (youth and women's) empowerment, which affects resilience capacities. We asked young men and women about their extent of involvement in decisions particularly agriculture, for example regarding what to grow and how to spend their incomes. Many youths in the case study communities seem to make their own decisions, however, this varied by community, household composition and gender, along with other nuances that affect their decision-making capacities. For young women for example, it is more likely that they are able to decide if they are not married, or if they are the acting heads of their households due to husbands having migrated. A woman from the Samaru Kataf community whose husband works in Lagos says: "*right now me and my husband [decide], but since he is not staying with us, l am in charge l give the instructions*." According to a young woman of 30 living on her own in Oduyama, "*we that are not married, nobody decides for us but ourselves.*" Parents also have a role to play, especially for younger adults living with their parents.

Decisions and control over incomes

Regarding the income generated from agricultural activities, it is generally accepted that the person who owns the land, owns the crops, or does the actual work related to income generation in agriculture gets to take decisions on how to spend the generated income. For example, a young woman of 23 from the Nkarasi FGD who is still enrolled in school believes that "*if the man is the owner of the farm, he will decide what to do with the money. If the farm belongs to the woman then she decides what to do with the money.*" Another 21-year old married woman from Oduyama who also lives with her parents is the one who takes decisions on how to spend the income "*because it is my sweat.*" A young man from Ungwan Galadima also asserts "*of course the one who worked for it controls the income*." In Samaru Kataf a young woman in the FGD decides what to do with the income "*because I am the one doing the*

farming…so the income is mine." This is suggested to hold true for gender as well as age. In the case of a 19-year-old woman in the same community who lives with her parents, "*if it is my poultry and not my parents', I will be the one to decide on what to do with the income. But if it is owned by the family, my parents will decide what we do with the income.*" However, this seemed to be a more popular opinion in Cross River communities compared to Kaduna, and was mentioned by young women more often than by young men.

Joint decision making between men and women in the household was also mentioned. A young married man with five children in Samaru Kataf said: *"[I] sit down with my wife and make decisions. We seek each other's advice.*" A young woman in the Ungwan Galadima FGD also said that "*women have a say because they support in the family upkeep.*" However, overall more young men than young women were likely to say that they take the decision on how to spend their income on their own, or that they have the final say. Women were most likely to say that the husband or the head of the household had the final say in decision making over income. A young woman from Ungwan Galadima who was interviewed separately sees that "*even though l am his help mate, I still don't have a say except with his permission as the head of the family*," and "*because I myself am under his control*," said another young married woman from the same community.

It is noteworthy, however, that although women often make the decisions, when asked specifically who decides, they say the man does, often mentioning that men have the authority and control. This is evident from a young mother's testimony when asked how she spends her income: "*when I farm, firstly I sit to calculate how much I will spend in paying my children's fees, I will keep some for next farming season, keep some for running of the family and also use the remaining to invest more into my business or farming"*. However, she said her husband decides how the income is spent and that "*no I don't have a say because I am under the authority of my husband.*" While women are substantially involved in the decision-making process, in many instances may not perceive themselves as the decisionmakers or may give a socially acceptable answer of men having the final say. Many young men

think in similar terms and declare that they have the final say in decision-making as they consider themselves heads of their households.

Parents of young men and women interviewed also have a say in the decision making over income, especially for younger age groups, or in extended households where the parents (of young men/women interviewed) are the heads. According to a young man of 22 in Ungwan Galadima, for "*farmers in the 18-24 age bracket that are mostly dependent, it's the parent who controls the money but give a small amount to the children.*" A 20-year old yam farmer who lives with his father comments that "*my father has a lot to say about it [my income]*." In Samaru Kataf, a young woman of 19 who lives with her parents differentiated young women's involvement in decisions related to income according to their position in the household: "*If she is the mother, she has more authority and her advice will be taken but if she is a daughter, she doesn't have a say. Although, some families listen to decisions from their children.*"

Decisions on what crops to grow

Similar to decision-making over income, when it comes to deciding which crops to grow, often times decisions are taken jointly, with men or household heads getting the final say, and parents being the decisionmakers in extended households. However, there are other important factors governing decisions of what to grow and which agriculture activities to engage in that are unrelated to age or gender, including the type of soil, season, length of the harvest period, amount of labor required and affordability of planting or venturing into the selected activity.

Youth interviewed also prefer to plant crops and engage in agricultural activities that are marketable and have high demand when possible. This includes fish farming, poultry rearing and ginger production (as opposed to for example, maize). For example, a young woman in Oduyama would prefer raising poultry "*because you can easily make a sell and [poultry] is very costly in this community.*" However, much also depends on the cost. For example, a young woman in Samaru Kataf plants rice since she does not have to hire labor except during harvest time. Further, some young farmers choose crops with shorter harvesting periods, in order to grow more than one crop. All this also implies that those who

have more knowledge and more access to agriculture, market and climate information could make more informed decisions that would raise their resilience and improve their livelihoods.

Coping strategies

Recovering from climate shocks

To cope with the various climatic shocks and events recalled, youth participants mentioned a variety of responses. Some survival strategies for such conditions included moving assets and properties from destroyed houses to unaffected neighbors' and relatives' houses, sale of livestock to buy food, sale of properties to rebuild what they lost, migration and seeking support from friends and relatives. Selling some assets and property including livestock and (to a lesser extent) land was the most mentioned coping mechanism against disasters especially floods, followed by diversifying income and taking on additional non-agriculture jobs, migration to other towns, and borrowing money, supporting the various of the pathways denoted in the GCAN framework. Households already equipped with irrigation were better able to cope with high temperatures and drought.

A young man from the Oduyama FGD comments that "our overdependence on farming leads some of us to record huge losses, particularly when natural disasters with erosion wipe-out their farms. So, in such situation they will have no other alternative than to migrate to other places for survival." In times of drought, a young female student of 19 living with her parents in Oduyama carries out "some menial jobs like going trading and selling of things to get the money so that we can afford the food." The young woman from Samaru Kataf whose house was affected by the 2016 flood said that

> *"When the rains affected my cowpea, I had to sell my livestock to buy food for my family and to reconstruct the parts of my house affected by the rain. This year I will ensure that I buy grains in bulk for eating in my home and also to sell for more income."*

Other less-mentioned responses to climatic shocks included selling crops at cheaper prices or on credit, eating fewer meals, taking children out of school to reduce costs, and changing crops and planting dates or techniques. In Nkarasi a 19-year-old woman and her parents will "*normally have one meal in a*

day instead of 3 meals a day. Every day we are eating Garri." A few mentioned receiving help from their community, including neighbors and relatives, implying that access to networks is a key capacity to help cope with harmful climatic effects. As the 30-year-old mother of four in Smaru Kataf puts it, "*for us we don't have anyone in government or someone in high position or even any cooperative that can help. The only people who will run around and are always ready to help are our relatives (brothers and sisters).*" Another woman from Ungwan Galadima goes to "*neighbors or family members outside the community for assistance*" during difficult livelihood situations.

Nevertheless, resilience levels among the study communities seem low when climatic disasters hit. In many incidents, participants said no action was taken to cope with the shock. Some small farmers felt at a loss, relied on prayers and tried to call for government attention to receive assistance. A woman from Samaru Kataf who lost her produce to pests and drought explains that "*it took me two years to recover because it was all we had that was put into farming that year so that we could have enough for that year and for the next year's farming.*"

When asked about access to agricultural insurance as an adaptation mechanism, the majority (around two-thirds) of respondents noted that they had never heard of agricultural insurance, but expressed interest when the mechanism was explained. Relatively more respondents in Cross River had heard of insurance compared to those in Kaduna. Further, more men than women in the sample had heard of agricultural insurance.

None of the participants currently participated in an agricultural insurance scheme, either because it was not available in their communities, participants did not know whom to reach out to for insurance products, or do not believe they can meet conditions attached to insurance. "*Because of the conditions attached to it, it is very difficult for us to get access and benefit from it*," said a young man from Oduyama. Another young man from Samaru Kataf with a diploma in agriculture extension had heard of insurance "*because something happened some time ago when the farmers' coco was affected and a list was compiled for government intervention, although nothing was done at the end of the process*."

Perceptions of age and gender differentials

Neither young men nor young women perceived climatic shocks to affect different household members (women, men, young and old) differently, but that "*they are affected the same and cope the same.*" A young man from Oduyama believes that "*the problem is not about gender, this is because the way it affects the men, it equally affects the women.*" Further, most participants did not perceive women and men to cope differently in the face of climate change when asked specifically. According to women in the Ungwan Galadima FGD, "*men and women do the same, because they all live in the same community or neighborhood*." Only a few women in one FGD believed that women were more affected by climatic shocks. A 20-year-old female student from Samaru Kataf living with her parents said "*I think it affects more of the women. Using my family as an example, women are more involved in farming than the men so whatever affects the farm will affect them more.*"

Nevertheless, there are some gendered differences in coping mechanisms and resilience pathways that can be traced from participants' answers on how they themselves cope or would cope when faced with such shocks. For example, more women mentioned borrowing money or credit and selling assets like livestock to cope in difficult times. Also, only women mentioned reducing meals and types of food during times of disaster and unavailability of food. On the other hand, more men than women mentioned migration to find other work. Further, while resorting to irrigating land was not mentioned frequently as a coping mechanism during times of high temperatures and low rainfall (likely because not many household have access to irrigation), more men mentioned irrigation compared to very few women.

Similarly, most participants did not see a difference between youth and other (older) age groups in terms of effects related to climatic shocks and coping mechanisms. A few participants mentioned that older groups could cope better than youth since they have more experience or (monetary / asset) reserves. A young woman in Samaru Kataf said that "*the way older people react to situations differs a lot from the way young people react. The older ones are more experienced and it gives them an edge over the younger ones*," suggesting differences in resilience. Another respondent mentioned that youth can recover more easily than older groups, owing to better medical and physical health to cope with and survive such

shocks. A few respondents did differentiate climate effects based on geography, where those closer to rivers and waterbodies were perceived to be more highly affected by flooding for example.

Migration for employment

Against the employment challenges faced, migration is one of the resilience strategies adopted by many youths in rural Nigeria. Job opportunities for female migrants to Lagos, Abuja and Kano are mostly domestic duties (cleaning/washing, baby-sitting, restaurants services, etc.) and apprenticeship (in hair dressing, tailoring, etc.). For young men, the opportunities include working as security guards, commercial motor cycling, shoe cobbling and water vendors, as well as in small provision shops and petty trading in places like Abuja and Lagos. Men also migrate as farm laborers in Delta, Edo, Oyo and Kwara which have large farm plantations for cocoa, cassava, yam, palm, plantains and banana.

Many young men and women migrate from their communities to bigger cities in search of employment opportunities, most often non-farm work. Most youth travel to urban areas where there are industries, factories or companies that are not available in rural areas. Acquiring knowledge and skills (from industries) is another reason that Nigerian youth migrate out of rural areas. An unemployed and educated 24-year-old woman from Samaru Kataf says that youth "*migrate because of lack of employment. You find out that someone that has graduated for 6 years or more will be looking for a job and wouldn't find it and also looking for food to eat.*" Her colleagues agree, explaining that:

> *"After the youth have graduated, there is no job for them to do and the level of poverty in this community is high. As a result of this, the youth always migrate to Abuja, Lagos or Kaduna and even when they go, they work as laborers in construction companies. You don't find such constructions here."*

More young men than young women migrate, especially in Kaduna communities where women seldom migrate; a cultural norm that may be changing. A young woman from Samaru Kataf explains that "*the youth are the ones who migrate more, and that is because most of them have graduated and have no job to do and both male and female youth migrate.*" Generally, youth do not stay permanently in places they migrate to, they mostly return to their communities during the farming season and so still largely

depend on rural livelihoods. However, some migrate and settle in the places they migrate to if they are able to generate enough income there.

Youth aspirations and attitudes towards agriculture

Interest in agriculture and motivations

Despite the climate challenges and the various constraints that youth face, many still express interest in agriculture, either as a profession or as a means of feeding themselves and their families. Among them are those engaged in both agriculture and non-agriculture jobs. Some love farming in general, like a young woman from Nkarasi who works as a hairdresser but also farms "*because the small land l cultivated is very fascinating to me*," and another young woman from Ungwan Galadima, who feels "*excited and motivated whenever I experienced an excellent yield during the crop harvest*."

Many young men and women see agriculture as a way to earn an income and provide for their families' expenses like their children's education, and some consider agriculture to be profitable as well. Agriculture provides a source of employment for youth and makes them self-reliant, which is seen as important given the employment situation in most rural communities in Nigeria, and the perceived lack of government assistance in providing job opportunities for youth. A young man aged 33 in Oduyama who is pursuing a BSc at the University of Lagos commented on why he still chose agriculture as a profession: "*my major motivational factor to pick interest in agriculture is lack of jobs, because I think for now it is my only way out.*" Another likes agricultures because "*it serves as a source of income to me, my family and to our community in general. It also serves as a means of job availability to the unemployed youth*."

But most importantly farming was seen as a source of food and nutrition security for rural residents, as most farmers use at least some of their harvest for their own consumption. A young woman from Nkarasi engages in agriculture "*so that I can produce food for myself instead of buying*." Similarly, a young man from Samaru Kataf who graduated high school has a motivation to farm "*since I feed my family from it and even help others instead of begging others, so it makes me self-reliant*." Agriculture

and household nutrition security linkages as illustrated in the GCAN framework are evident here, where farming is seen by youth to be a pathway for household resilience and improved wellbeing.

Some also preferred agriculture as a profession, see it as a business and aspire to become mechanized farmers and farm on larger scales. A young 19-year-old man from Nkarasi who lives with his parents "*wish[es] to have larger farming operations.*" Another's ambition is "*to be a large-scale farmer…to produce the food items that will be able to feed the whole Kaduna State or Nigeria in general.*" Even for some of the educated youth, agriculture is seen as a wise choice. As an educated young woman of 32 from Samaru Kataf and member of a cooperative expresses,

> *"I studied computer science but if you look at this present generation if you depend on what you studied, it will amount to nothing. I want to go into ginger exporting. I went into partnership with a guy who is into ginger marketing and he introduced me to this ginger business...so my dream is to go higher not only within Kaduna or Nigeria but to export it out of the country."*

As a young man from Samaru Kataf put it, "some of us do farming with interest, because they know what they can get out of it, while others do it as steppingstone."

Youth aspirations vary slightly by gender. More young men in the sample hope to be successful as large-scale or mechanized farmers while more young women interviewed aspired to further their education, and be successful in non-agricultural activities, such as accounting, nursing, radiography and fashion design. Nevertheless, results show many examples of both.

Disinterest in agriculture and reasons

A few young people expressed outright disinterest in agriculture. The main reasons for disliking agriculture and lack of interest in the sector for youth were linked to traditional methods of farming and lack of access to technology, mechanization and inputs, to make farming worthwhile both in terms of physical effort and financial return. Youth participants often referred to agriculture as "stressful." For example, a 30-year-old woman in Oduyama finds farming difficult because

> *"We spend a lot of time clearing the farm,…pruning,…We don't have equipment to help us in doing our farming work. Even during tilling, we use a hoe to till our farm.*

So this makes farming very difficult for us. At the end we will cultivate without having high yield because at times even the soil isn't fertilized."

A 26-year-old young woman from Nkarasi who earned a diploma and lives with her parents says that farming "gets us stressed. We see other people doing other works like working in the hospital, school etc., so we are not happy to be doing farming activities. We are just doing it for necessity." Another 23-year-old man from Oduyama dislikes agriculture "because one ages without money and it's stressful, so I am still searching for another job."

Even among those who express interest in agriculture, in general, they referred to it being stressful or in need of improvements and interventions. For example, a young woman of 19 from Oduyama says that "*if you're talking about agriculture, it provides a lot like daily source of income, provision of shelter, employment and even the development of the country. It has done a lot*." But she goes on to say "*what I don't like about agriculture is the lack of proper equipment, which would help me make it to the next level in agriculture*." In Ungwan Galadima, a young college-educated teacher of 26 grew up seeing his parents practicing faming; "*I then realized that farming is making them suffer*."

Youth clearly saw the importance of agriculture and agricultural work, but cite lack of support, incentives and proper enabling environment as discouraging any agricultural appeal. "*Farming is the live wire of a nation but because we don't have any incentive or support, some don't like it,*" said a young man of 19 participating in the Nkarasi FGD. This extends to the issue of lack of access to markets, particularly low prices for farmers' produce. At the same time, farmers face increasing input prices particularly for fertilizer, which makes farming less profitable and not worth their investment in terms of time and effort. According to a blacksmith from Ungwan Galadima who also engages in farming on the side,

"One of the things that makes people dislike farming is that a farming season might come, then you realize that the farm produce are very cheap while fertilizer is so expensive…this necessitates farmers to reduce quantity as well as the size of the farm in the next farming season."

A few do not consider agriculture because they have other ambitions. A 23-year-old man from Oduyama who works in farming and tailoring is not interested in agriculture, "*because it is not my*

dream." Most of those who dislike agriculture or find it stressful expressed that although they do not like working in agriculture, they still engage in it due to lack of livelihood and employment options. This is especially the case when it comes to youth who are educated and have tertiary degrees including diplomas, college and university degrees. As a woman participating in the Samaru Kataf FGD in Kaduna puts it, "*for the youth who have graduate from school, it does not appeal to them because it is not their desire, but they do not have any option for now because they are unemployed and that is why they engage in farming*." Her 20-year-old colleague in the FGD who has an NCE certificate expressed that agriculture "*does not appeal to me because I'm a student and agriculture is not in line with what I'm studying... I engaged in agriculture because it is a necessity to daily living in this community but not because it appeals to me*." Another 21-year-old mother in Oduyama is more "*interested in teaching…because I love children and I want them to always learn…by doing so, I can contribute my share to the entire community*."

This reflects that while many youth in rural areas are still interested in agriculture, many others are interested in specific non-agriculture work. Working non-agricultural jobs is seen by many youth as a way to raise the standard of living. Finally, many youth wish to work outside the agricultural sector in order to supplement their income from agriculture, especially due to the seasonality and unpredictability of agricultural work and incomes. An educated young woman who farms and works in tailoring on the side says her reason is because "*agriculture is seasonal, so when the season has come and gone, you'll look for something that you'll do that will give you money on time."*

It is also seen as a response option to increase resilience capacities as shown in the GCAN framework. *"I'm doing business so that I won't rely on the money I will get from farming alone. Even if farming didn't bring money, I will get something to take care of myself*," says a young man from Ungwan Galadima. Another young farmer in Oduyama who also sells agro-chemicals says *"we need to diversify so that we multiply our sources of income*."

Revisiting the enabling environment: supporting capacities

Given the challenges youth in rural Nigeria face along the agricultural value chain, with climate change and limited access to resources, young Nigerian farmers are in need of a general enabling environment and support on several levels to boost their resilience capacities in agriculture and in rural areas generally. Reflective of their needs, the support that young men and women most often asked for was related to access to modern farming equipment, finance, farm inputs and information. A young farmer in Oduyama believes that the government can support youth in agriculture "*by supporting us with loans, the provision of farming implements, storage facilities and providing us with a channel in soliciting information regarding our market so that we learn about new agricultural innovation and cost of farm produce*." In Ungwan Galadima, a young woman mentioned many areas where youth are in need of support: *"Funds to cultivate the farmland with ease, input provision of fertilizer, seeds, herbicides, and information technology processing, marketing and packaging in order to make it a lucrative business."*

Modernization of farming

When asked what would make agriculture more appealing for youth, the most frequent responses were modernization of agricultural activities, particularly access to technology, equipment and machinery. This constitutes mechanized farming equipment including tractors, irrigation pumps, harvesters, threshers, etc., as well as facilities for storage and machines for processing of farm produce like cassava mills, rice processing machines, etc. For example, a 21-year-old young man who works in farming and computer repairs suggested that "*if the packaging processes are introduced, it will attract many people into agriculture.*" Another participant in the same FGD believes that "*the availability of storage facility will really make it appealing to [youth*]." A young woman from Samaru Kataf similarly notes that;

> *"more efforts to introduce modern technology for agriculture should be encouraged. Things that will reduce the stress of farming with all your energy, like tractors, sprayers, and irrigation pumps should be introduced. Also more funds should be put into agriculture."*

Young farmers stress the importance of improving and modernizing agriculture through mechanization particularly as it is their main livelihoods, and due to lack of alternatives. A young farmer in Oduyama says *"as our major occupation is farming, we need assistance in our community here so as to enable us to practice mechanized farming as we don't have any other business apart from it*."

Improved access to resources and capital

The second most mentioned factor that would increase resilience capacities in agricultural value chains and youth interest in agriculture is sufficient access to inputs like fertilizers, insecticides and seeds. "*Assist the farmers by giving them more farm implements*," says a young man of 29. For poultry and livestock owners, resources also include access to vaccinations which are currently lacking. Access to funding (including soft loans and grants) for youth was also mentioned many times, as opposed to high interest loans. Youth "*need access to loans and credit facilities*," according to women in the Samaru Kataf FGD. Similarly, for a young man in Samaru Kataf, "*the biggest problem is insufficient funds*."

Training, information and skill development

Skills, training and information were also high on young farmers' lists for needed support. "*We need capacity building on marketing skills,*" said a young woman of 23 in Samaru Kataf. Moreover, with mechanization there is a need for youth to get trained on handling this changing process. One young man from Oduyama says that "*in terms of mechanized farming, we need the skill on how to repair these machines used for farming activities because even if they are available if we don't have the skill on how to repair them, it's useless*." Getting access to information about agriculture and knowledge/ skills on farming practices was mentioned by five participants as a way to increase interest in agriculture for them. A young woman in Oduyama living with her parents says

> *"I like doing farming activities, but my problem is that we don't have adequate knowledge or idea about farming that will help us get enough income... Among all types of work in the world I know that farming is the best but we are stressing ourselves because we lack adequate knowledge of farming business."*

Another young man in Oduyama added that an information channel with information on agricultural innovations, markets and commodity prices would be helpful.

Other enabling factors

Other than provision of technologies, finance, inputs and information, young men and women also see a need for government support related to the larger enabling policies and environment to guarantee a living income and to make agriculture more attractive to young rural residents. This includes market price adjustments and regulations for a good market environment and improved access to roads and transportation and processing facilities. According to a young man of 18 who is farming due to a lack of alternatives, "*boosting the price of the farm produce will attract more people to agriculture."* For this most youth are looking for the government to intervene with price regulations. "*I think it is for the government to raise the price of cocoa so that the farming will be more attractive and beneficial. And the chemicals are also too expensive for farmers to afford. Therefore, there is the need to reduce the price*," said a young cocoa farmer from Nkarasi. Moreover, youth called for more employment opportunities in general, in agriculture and outside the sector. "*Since there are no employment opportunities in this community, I think we need the government to come to our assistance by introducing a programme that will get many youth out of poverty*," said a young man of 29 in Oduyama.

Many youth are looking for the government to provide this needed support. This is especially the case with regards to the enabling environment, financial assistance and mechanization of agriculture. Non-government and international organizations and programs were also frequently mentioned for wider areas of support including finance, mechanization, improvement of skills and provision of inputs. Some of the young men and women who mention international organizations spell out particular ones like the Gates Foundation, The World Bank and FADAMA. A 21-year-old young man from Oduyama who works in farming and with computer operations believes that "*the World Bank, international community and federal government*" can play an important role to support youth in the community by establishing a training institute to train youth to thrive in different careers, including agriculture. Another educated man

of 33 in Oduyama thinks that "*if the government, the NGOs or even the World Bank can intervene by providing machinery, it will really improve the process*." A few youth also mentioned "godfathers" or influential connections, as well as private companies that can be leveraged for financial assistance.

6. DISCUSSION AND RECOMMENDATIONS FOR PROGRAMMING

Unemployment and underemployment have increased considerably in Nigeria over the last several years and directly affect the livelihood opportunities of rural youth. Unemployment is higher in rural areas and higher among women; at the same time, female labor force participation has increased. Unemployment and underemployment are particularly high among youth, and was estimated at 55.4 percent or 24.5 million young men and women in 2018. Nigeria has so far failed to develop increased job opportunities in the non-agricultural sector that could absorb today's more educated rural youth.

The qualitative study showed a strong dependence of rural youth on agriculture as a livelihood—largely due to a lack of other employment opportunities, even for youth who have advanced degrees, though interestingly, a considerable number of youth have an interest and aspire to thrive in agriculture and become big farmers. Yet, agriculture is still perceived by many as an activity without prospect of high incomes, unless a niche activity, such as pineapple farming can be pursued, particularly due to lack of modernization in the sector. While more young men see a future in agriculture, young women prefer non-agricultural futures, for example, as educators.

The agriculture sector is subject to climatic stresses, including droughts and flooding, and associated pest and disease outbreaks. Climatic changes are perceived differently by young female and male farmers and coping strategies similarly differ and both are aligned with women's and men's main differing livelihood activities in the agriculture sector.

Young farmers are challenged by these biotic and abiotic stresses and in addition to a lack of access to capital note lack of access to knowledge and information on climate, pest management, "modern farming techniques" and post-harvest challenges including storage, transportation, marketing and processing. They also note the high cost of agro-chemicals and unequal access to government-distributed fertilizers. While many of these challenges affect all farmers, young farmers face more hurdles in accessing finance and generally lack capital more than older farmers, have lower social capital and group

memberships that would support information exchange and have fewer assets that can be mobilized in case of climatic and other shocks.

While young women farmers generally do not stress gendered constraints, social norms do dictate that they are generally not involved in cash crop production (such as cocoa or pineapple production), face reduced access to information on agricultural methods and on climate, have more limited access to agricultural inputs, to finance and once married are generally subjecting their decisions to those of their husbands. Unexpectedly, access to land was not identified as a key or gendered constraint for young men and women in the study areas, likely owing to changing customary laws and norms in these areas. This also shows the importance of context on the local level, where in other part of Nigeria access to land especially for young women may not be the same.

The study participants identified a series of interventions that could support their livelihoods in agriculture under growing climatic stresses. Key enabling conditions that can support farming opportunities include 1) improved rural infrastructure, such as roads, that do not wash out under climate extreme events, such as floods; 2) improved extension services that focus on modernization of farming and go beyond information on agricultural chemicals; 3) improved climate information and market information services that allow farmers to plan for the longer term; 4) better access to financial services for young farmers; 5) better access to mechanized agricultural services, such as tractor and irrigation pumps; and 6) support to the development of agro-enterprises in the post-harvest sector.

While all farmers face constraints in these areas, the constraints faced by young farmers are more pronounced as evidenced in their larger levels of under- and unemployment. Moreover, it is important to develop climate information strategies as well as overall information and skill development strategies that directly support women as participants noted that female farmers are generally more likely to be excluded from access to climate and agricultural information.

Such programs, as well as interventions to increase access to start-up capital and financing agricultural inputs can be supplied via mobile phones as young farmers are more likely to obtain information on agriculture over the internet, largely transmitted through mobile phones. Doss et al. (2019)

suggest that micro-credit programs that provide cash grants and micro finance to young rural entrepreneurs can significantly reduce credit constraints for young rural Nigerians and improve their path to self-employment. However, microfinance programs that are coupled with business training proved more effective for increasing profitability, particularly for young women. Nevertheless, some evidence suggests that these effects may dissipate for young women after the second year of the intervention if programs do not consider both productive and reproductive roles for women. Thus, these programs need to be catered towards the local context, norms and specific needs of young women and men.

At the community and ADP levels, encouragement of cooperatives and improving youth integration in effective groups is important, since they provide a pathway for youth to benefit from, by improving their access to networks, information, finance and opportunities.

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