

## Assessment of Smallholder Rice Farmers' Livelihoods, Ghana's Ketu North Municipal.



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BY

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## Dedication

I dedicate this thesis to my entire family for their love and support. I also dedicate this work to Afife-Agorvega and the Ketu North land for future development.

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DFID	Department for International Development
FBOs	Farmer-Based Organisations
FGD	Focused Group Discussion
GIAHS	Globally Important Agricultural Heritage System
IDA	Irrigation Development Authority
IDASM	Irrigation Development Authority Scheme Manager
IFPRI	International Food Policy Research Institute
IVRDP	Inland Valley Rice Development Project
KNMA	Ketu North Municipal Assembly
MCE	Municipal Chief Executive
MCD	Municipal Coordinating Director
MoFA	Ministry of Food and Agriculture
MDDA	Municipal Director of Department Agriculture
MISO	Management Information System Officer
SLF	Sustainable Livelihood Framework
TO	Technical Officer

## Abstract

Smallholder rice farming is vital in ensuring the sustainable livelihoods of farmers in the Ketu North Municipality of Ghana. However, many challenges are contributing to the deficiency in production. The objective of this study was to explore the role of rice production in the livelihood of smallholder rice farmers in KNMA as well as the perception of youth about rice farming and to recommend to the assembly measures to improve the livelihood of smallholder rice farmers in the area.

The research used a case study as a strategy to achieve the research objective. Primary and secondary data were used for the study. Qualitative primary data were collected through semi-structured interviews with 30 individual farmers using a checklist in three communities in Ketu North Municipal. Four focused group discussions (FGD), the first with youth, with two rice cooperatives and female rice farmers and six key informant interviews were conducted to validate the findings.

The results and discussion of this study show that the context of vulnerability harms smallholder rice production and it needs to be minimised. The asset portfolio positively affects smallholder rice production which needs to be maximised especially human, natural, physical, and financial assets.

Based on the findings, the study recommends that the Ketu North Municipal Assembly (KNMA) consider dredging the "aguto", restructuring the Afife valley, investing in tractors and combine harvesters and promoting awareness among the youth on the lucrative business opportunities offered by the agricultural sector. These are believed to be the best way to improve the farmers' livelihood and increase productivity in smallholder rice farming in the municipality.



## Chapter 1: Introduction

Agriculture is a major contributor to the economy of many African countries, including Ghana. In Ghana, Agriculture accounts for 56% of GDP and 40% of its export income. Similarly, 90% of Ghana's food needs come from the agriculture sector, which was a significant job creator in the country in the late 1980s. However, over the years, there has been a drop in the sector's contribution to the country's economic growth. According to SRID and MoFA (2021), the contribution from agriculture to the country's GDP has dropped from 21.43% in 2013 to 19.09% in 2020. The sector is currently the least contributor to the GDP (SRID and MoFA, 2021). Although the growth rate in 2020 was high (8.7%) compared to previous years, 1.7 and 2.2 in 2015 and 2016 respectively, the country's total import of cereals (especially rice) stood at US\$ 8 billion (MoFA, 2021). The lack of adequate crop management strategies has developed a variety of circumstances that pushed the country to be a net importer of essential staples like rice, putting pressure on the country's currency.

According to Kaur (2021), smallholder agriculture has long been the most significant source of income for people in Sub-Saharan Africa, and it will continue to be so for the near future. He further stated that most Sub-Saharan African households rely on smallholder agriculture for their livelihoods, and smallholder households are responsible for most agriculture in Africa. This is not different from Ghana and the Volta region, where most of the population are rural people whose livelihoods are on agriculture.

According to IFAD, a world without poverty and hunger in the rural world and investing in rural people is a long-term solution to many of today's problems. Hunger, poverty, young unemployment, and migration are all intensely rooted in rural areas, which could be significantly alleviated by investing in small-scale agriculture and inclusive rural development.

### 1.1 Description of Study Area

The research was conducted in Ketu North Municipal (Fig.1), one of the 18 municipals of the Volta Region of Ghana. It is one of the newest municipals created in February 2008 out of Ketu Municipal. The Municipality lies between latitudes 6° 03'N and 6° 20'N and longitudes 0° 49'E and 1° 05'E, in the south-eastern corner of Ghana with a total land area of 754 km<sup>2</sup> (METASIP, 2010). The municipal is bordered on the north-west and south-west by Akatsi North and South Municipal, the Republic of Togo on the northeast, the Ketu South on the south-east, and the Keta Municipal on the south. According to the 2021 national census, the municipal has a population of 114,846, with a rural population of 67,634 (Ghana Statistical Service, 2021). The municipal has considerable labour of 52.5% of the population, which falls between the ages of 15 and 64 (METASIP, 2010)<sup>1</sup>. The primary livelihood activity of the municipal is small-scale agriculture, which also employs 70% of the total population (MoFA, 2013). The main crops cultivated are rice, maize, cassava, sugarcane, cowpea and sweet potato (MoFA, 2019). As the hub of best-perfumed rice in Ghana, it has an irrigation system (Afife Irrigation Scheme) for rice production established by the Russians in the 1960s and taken over by the Chinese in the early 1980s<sup>2</sup>.

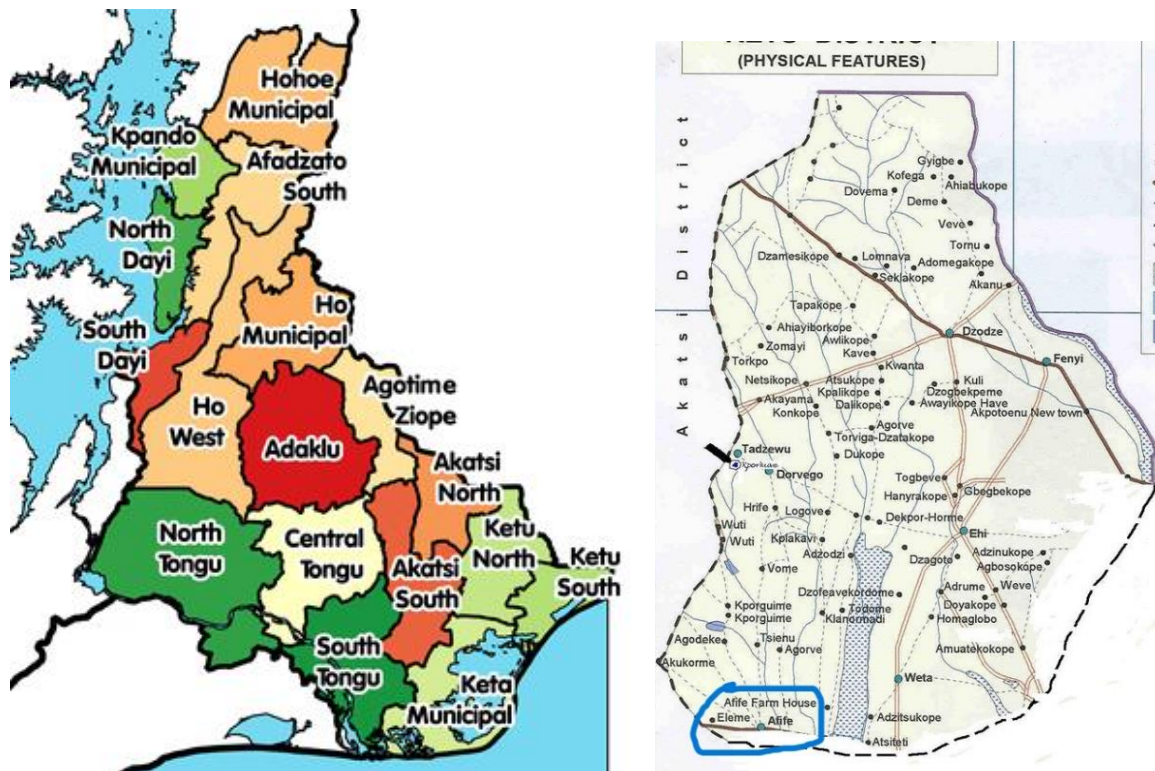
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<sup>1</sup> There is no data specifically available on the population the youth in the Ketu North Municipality

<sup>2</sup> Little is known in literature about the exact date of Russians and Chinese coming and going.



Figure 1: Map of volta region showing Ketu North Municipal.



Source: <https://docplayer.net/120445878-Ketu-north-municipal-assembly.html>

## 1.2 Background of Afife Rice Project

Afife Rice Irrigation Project was founded by the Russians in the 1960s<sup>3</sup> by constructing the dam. However, the dam was shut down entirely after the Nkrumah administration was overthrown due to negligence by succeeding governments. To save Ghana, the Chinese government intervened and started repair works at the site of the Afife Rice Irrigation project. They constructed the biggest dam, located about 20km away, connected by canals to the demarcated areas called sessions (from sessions 1 to 12) and waste land where the excess water is collected. Each session has about hundred and thirty (135) hectares making up a total of one thousand six hundred and fifty (1650) hectares serving over twenty-two surrounding villages. However, only eight hundred and eighty-eight (888) hectares were developed. The project introduced various technologies, namely special tractors, tillage machinery, and improved seeds. Irrigated plots were provided to individual farmers to work on, with Chinese experts providing technical advice and cultivation methods. After the Chinese left in the 1990s<sup>4</sup>, the farmers could not continue to use the techniques and machinery. Currently, the project is under the management of the Irrigation Development Authority (IDA), which provides irrigation and agronomic services to farmers on the scheme. But most of the sessions cannot access water on time and regularly due to blocked canals and some of the sessions are entirely out of use because of flooding. Fig. 2 shows the dam site and the demarcated land<sup>5</sup>.

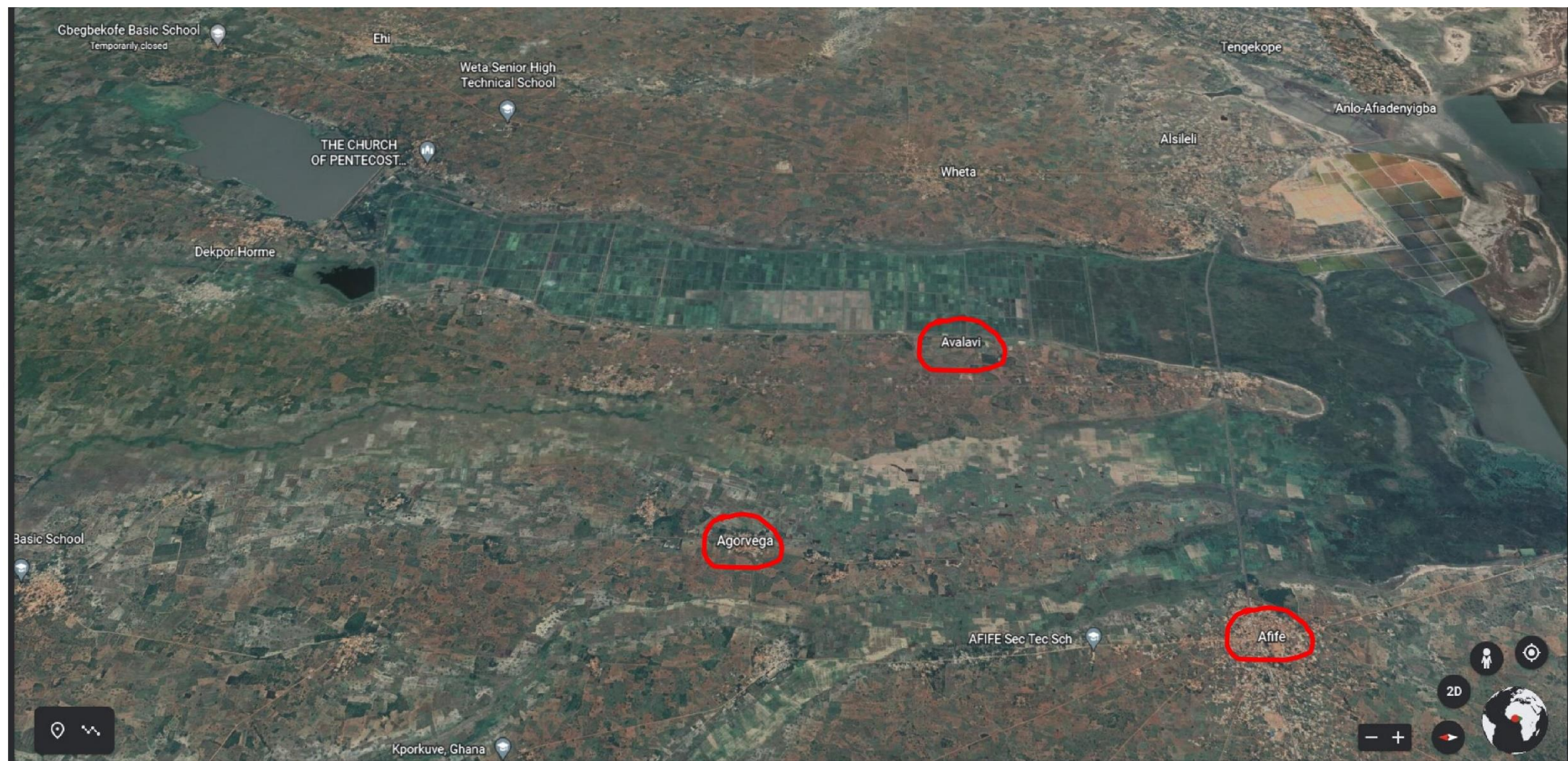
<sup>3</sup> Little is heard of the Russians who started it project because they left early. Chinese who came later did much work and left a monument at the site. Pictures in annexe.

<sup>4</sup> Exact date not known

<sup>5</sup> Most of the pictures can also be seen in annexe 3



Figure 2: Afife Rice project Site and selected Villages



Source: Google Earth

### 1.3 Research Problem and Objective

The Ketu North Municipal Assembly (KNMA) has most of its population as rural, mainly smallholder farmers whose primary livelihood is farming. The municipal's agriculture is rain-fed, and food supply is determined by production levels governed by land, climate, labour and capital. Even though agriculture employs over ¾ of the population, agriculture does not appeal to young people because of its low pay. It is perceived as "dirty work" amidst high farm input costs, poor marketing, poor mechanisation services, degrading soil fertility, pest infestation, lack of credit facilities, inadequate storage facilities, and poor post-harvest management. These factors affect the livelihoods of smallholder farmers in the area (Odoom et al., 2021).

Pathak *et al.*, (2018) stated that to meet future food needs and promote the economic development of the rural poor, there is a need for development efforts to prioritize agriculture as a business that improve the livelihood of farmers.

The smallholder rice farmers in Ketu North Municipal Assembly (KNMA) have been vital to the municipal's economy because much income is derived from rice produced by the farmers (MoFA, 2022). Despite this, little is done to improve the livelihood of the smallholder farmers. This is mainly due to the Municipality's lack of information on the needs of these smallholder rice farmers and understanding of the role of rice production on their livelihoods.

Knowing the smallholder farmers major livelihood strategies and the youth's perception of farming in Afife in Ketu North will enable the assembly to implement measures that will improve the livelihood of smallholder rice farmers in the area.

### Main and Sub-Research Questions

What is the role of rice production in the livelihood of smallholder rice farmers in KNMA, and what is the perception of youth about rice farming?

#### Sub Questions

1. What is the vulnerability context faced by the smallholder rice farmers in the KNM?
2. What are the livelihood assets available to smallholder rice farmers?
3. What livelihood strategies are available to smallholder rice farmers?
4. What are the perceptions of the youth about rice farming in KNM?



## Chapter 2: Literature Review and Conceptual Framework

This chapter examines the literature on rice farming to comprehend the factors affecting smallholder rice farmers' livelihood in the Ketu North Municipal Assembly municipal. The chapter begins with a general description of rice farming in Ghana, then discusses the context of vulnerability, livelihood assets, policies, institutions, processes, livelihood strategies, food availability, and smallholder rice farming, and concludes with the study's conceptual framework.

### 2.1 Rice Production in Ghana

Rice has become a significant crop in diets and the economy, creating employment in the country. It has become a staple food for the poor and rich, among other stable foods like Maize, yam, cassava, plantain and millet, due to the high demand for rice which the domestic production could not meet, leading to the high importation. Amfo *et al.*, (2021) observed that rice is a major food staple, but the country is food insecure since 66% of the rice consumed is imported. The total amount spent on rice imports increased from 151millions US dollars in 2007 to 1.2billions US dollars in 2015. Ghana has a significant advantage in rice production in areas such as the Northern, North-East, and Volta regions. These areas are characterised by rural people with high risks and levels of poverty (Odoo *et al.*, 2021). In all these areas, smallholder farmers form the majority of those in the production, and they play a significant role in the economic development of the region, municipal and the country since they are the primary source of livelihood for about 90% of the population (Zakaria *et al.*, 2021).

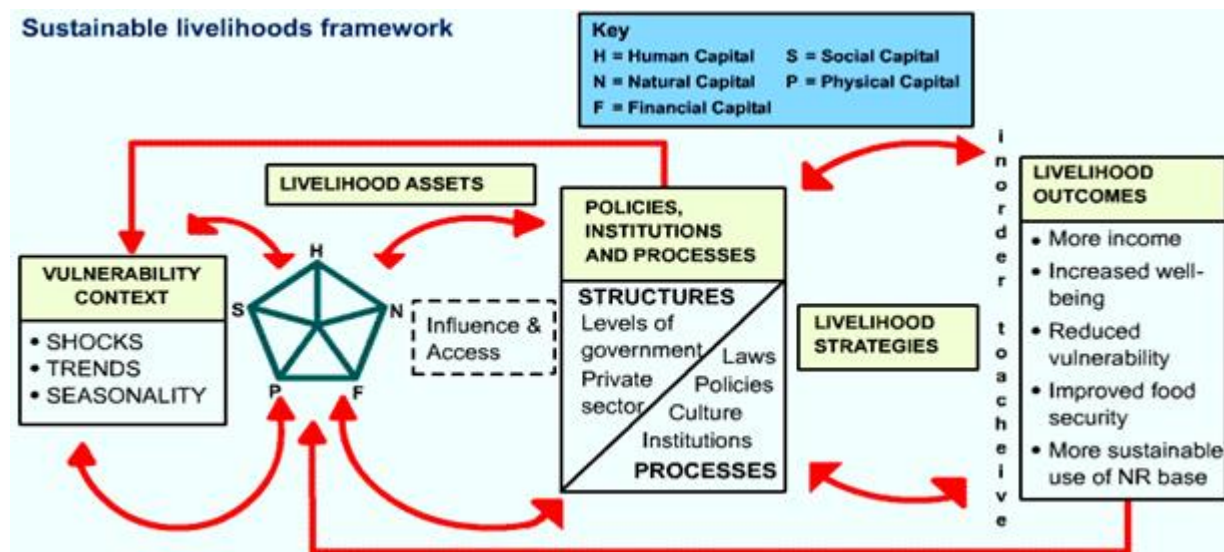
In the Volta, Ashanti, and Eastern regions, the bulk of the 239,340 acres is used for rice cultivation in paddy fields. The planting and harvesting seasons are April/May and July/August. During this period, farmers in the Northern and Upper East regions typically cultivate in July/August and harvest in October/November, respectively (MoFA, 2021). Rice farmers in the northern area of Ghana encounter various obstacles such as annual bush fires, birds, inadequate harvesting equipment and processing facilities. Rice farmers in the Builisa South Municipal of the Upper East region have unique challenges in acquiring combined harvesters to harvest their rice (Odoo *et al.*, 2021).

Rice cultivation is a vital asset for the regions. There are 2,286 hectares of land dedicated to rice cultivation, owned and managed by the Irrigation Development Authority (IDA). The government developed roughly 866.4 hectares of this land, while the remaining was farmed by independent farmers (MoFA, 2021). The government is developing 300 and 500 hectares in Tuedema and Gbedembilisi, respectively. The overall production capacity of the municipal is 4,700 hectares. These are state-owned lands used by farmers and private-owned lands. Rice production is anticipated to increase from 80,000 tonnes in 2019 to 110,000 tonnes in 2020 (MoFA, 2021). This region has tremendous potential for rice production, but it must get the necessary care. Like the farmers in Builisa South Municipal, labour constraints and limited combined harvesters, farmers continue to lose a significant percentage of their yield to bushfires and birds (MoFA, 2021).

### 2.2 Conceptual Framework of the Study

The Sustainable Livelihood Framework [SLF] (Figure 3) will be a guide to answering the study questions. The livelihoods framework is a tool to increase our understanding of livelihoods, particularly the livelihoods of the poor (DFID, 1999). It also emphasises the many ways different things that affect people's lives tend to affect each other and the most important influences and processes. The SLF shows all these parameters and how they usually go together in a way that is easy to understand. It can be used to plan new development projects and predict how well they contribute to the long-term security of livelihood. It lists essential topics and explains how they relate to each other (DFID, 1999). People and households are what the framework is all about. Its goal is to help different stakeholders talk about the many things that affect people's lives, how important they are, and how they affect each other. This should lead to finding good entry points for helping people make a living (DFID, 1999).

Figure 3: Sustainable Livelihood Framework



Source: DFID (1991)

### 2.3 Smallholder Farmers

Smallholder farmers are the backbone of food security and critical to eradicating hunger and malnutrition worldwide, but they are increasingly confronting financial challenges (Fan and Rue, 2020) and (Kaur, 2021). Smallholder farmers are defined by Khalil *et al.* (2017) as small-scale farmers, pastoralists, forest keepers, and fishers who control land that ranges from one acre to five acres and produce mainly to feed the family. This definition will be adopted yet modified as follows: smallholder farmers are small-scale crop farmers with land sizes ranging from one acre to ten acres for this study.

### 2.4 Vulnerability Context Effect on the Smallholder rice Farmers.

Vulnerability context is defined as the seasonality, trends, and shocks that affect people's livelihoods (DFID, 2000) and (Kollmair *et al.*, 2002) indicated the livelihoods threatened by droughts and floods, which may be seasonal or occur at certain times in the year. These threats affect smallholder farmers in many ways, leading to debt or harm. Climate change is anticipated to increase the frequency of natural disasters and changes in agricultural output, food security, and livelihoods (Jamshidi *et al.*, 2019). Families of smallholder farmers are susceptible to climate change due to their inability to adapt to its effects and create sustainable livelihoods (Jamshidi *et al.*, 2019, Azumah *et al.*, 2020). In light of continuous climate change and the harmful effects of climatic catastrophes on people worldwide, scientists are devoting a growing amount of attention to vulnerability assessments of livelihoods. To preserve a way of life, it must be able to withstand and recover from natural disasters or human-caused stressors and shocks while maintaining or enhancing its capabilities and assets (natural, physical, human, financial, and social capital) (Kapucu *et al.*, 2021).

Vulnerability assessment offers a framework for quantifying the sociodemographic, economic, and environmental consequences of climatic events on families' livelihoods to comprehend better the socioeconomic, environmental, and social effects of climatic events (Jamshidi *et al.*, 2019) and (Kapucu *et al.*, 2021). In various contexts, the word "vulnerability" is defined differently. Susceptibility to climate change is the degree of exposure or risk of harmful climate change outcomes and the capacity to manage such risks. Moret (2014) defines vulnerability as the incapacity to endure the negative impacts of exposure to shocks associated with environmental and social variation and the inability to adapt to these effects. As a consequence of global warming caused by climate change, the quantity of agricultural water will almost definitely increase substantially. Climate change is anticipated to improve

agricultural water demand even more and increasing agricultural water productivity remains one of the most demanding problems in food production and ensuring sustainable living (Cai *et al.*, 2015).

A study by Alauddin and Sharma (2013) in Bangladesh revealed that expanding irrigation infrastructure during the dry season might help farmers sustain their incomes throughout the lean season. Water scarcity is a severe concern in India yet very similar to Ghana and agricultural patterns must be re-aligned with state-by-state water resource endowment (Wang *et al.*, 2016). The natural environment affects the rice production of smallholders. For example, environmentally and economically vulnerable countries are becoming more worried about environmental change and its consequences (Wang *et al.*, 2016). Also, the effects of climate sensitivity on rice farming include a decline in agricultural productivity, a rise in food insecurity, and an impact on the production chain (MacDonald, 2010). According to Ebrahimian *et al.* (2019), decreasing irrigation water availability may cause production and yield variations. Weeds, insects, and diseases may become more abundant. The vulnerability of a smallholder rice-farming family determines how a particular threat might impact its livelihood and how it may adapt to its effects (Bolsen and Shapiro, 2018).

Defining vulnerability for this research is taken from Moret (2014) and Ellis (2003), and it is taken to mean the inability to withstand the detrimental effects of exposure to environmental and social shocks and the inability to adjust to these effects. Since there have been studies showing that farmers' livelihoods are negatively affected by their exposure to risk (Kuang *et al.*, 2020, Kumar *et al.*, 2020), hence understanding the risks faced by the smallholder rice farmers in the KNMA.

## 2.5 Livelihood Assets Effect on Smallholder Rice Farmers

The livelihood portfolio of smallholder rice farmers consists of several strategies to generate a particular livelihood. Still, the techniques are developed by combining and managing the capital assets people have access to (Anderzén *et al.*, 2020).

Because the other four assets cannot be used without people, the human resource of the smallholder rice farming system is perhaps the most significant asset. Human capital refers to individuals' ability to use their skills, knowledge, and experience to appreciate better their professional options (Pagnani *et al.*, 2021). According to Brown *et al.* (2018), the education and health of individuals and groups are considered human assets. In addition, the value of a company's human capital includes the attributes that people contribute to their jobs, such as life experience, competence, creativity, and enthusiasm. Robinson-Pant (2020) proposes that high-quality and profitable information may enhance agricultural systems. Ho *et al.* (2022) assert that Vietnam needs a "green revolution." They think sustainable agriculture may be accomplished by combining modern technology with ancient knowledge.

In rural locations where the population is agricultural, smallholder rice cultivation depends mainly on natural resources as part of the asset pentagon. A "natural asset" is described by Kabir *et al.* (2012) as a natural resource base (land, water, trees) used by human populations for sustenance. Degraded and useless natural resources that poor people depend on for their livelihoods have a devastating effect on their lives (Kabir *et al.*, 2012). The idea of "natural capital" also includes environmental assets (such as forests, minerals, petroleum, plant and animal species) and land (Cai *et al.*, 2015). Infrastructure and irrigation facilities are the most significant assets. According to Najmuddin *et al.* (2018), improving the lives and output of smallholder rice farmers depends greatly on increasing water productivity.

Smallholders need to own tangible assets to maintain a living through rice production. Donovan and Poole (2014) show that no asset can succeed without using physical resources. Smallholder rice farmers' most valuable physical assets, in terms of their ability to earn a living, are their farming equipment and tools. For instance, tools, equipment, and land improvements such as terraces or irrigation canals are examples of the physical assets produced by economic production processes. Access to irrigation, roads, storage and markets boost smallholder rice farmers' financial well-being and capacity to earn a livelihood from their products (Jamshidi *et al.*, 2019). According to a study conducted by Mehta *et al.* (2014), mechanisation has a substantial effect on the lives of farmers.

Financial capital is seen as a mechanism through which people might attain their life objectives. Agribusiness develops and transforms this capital from agricultural products into cash that may be used to pay for household expenses and save for difficult times and terrible seasons (Sothorn, 2020). The capacity of a farmer to use formal and non-formal resources and institutions is contingent on their training, support from extension authorities, and the availability of resources. This livelihood strategy and activity are required to ensure access to appropriate money resources (Sothorn, 2020). Farmers who are members of more vital Farmer-Based Organisations (FBOs) that incorporate a social capital component are more likely to get financial assistance from local banks and microfinance enterprises (Olowa and Olowa, 2017). According to this research, social and financial capital are stronger in FBOs with internal revenue sources and a savings culture. The most successful lending Organisations use a more significant percentage of their members' savings as a source of capital (Olowa and Olowa, 2017).

Consequently, they will be able to manage challenging circumstances more effectively and have a greater quality of life. In addition to selling their goods for cash and obtaining support from financial institutions, farmers might amass large financial capital via their labour and other sources of revenue throughout the allocated period (Teye and Quarshie, 2022). While examining these rice farmers' strategies and coping mechanisms and the possible implications of agricultural interventions and entrepreneurial leverage, it is essential to review the policy and institutional framework in which these capitals exist (Teye and Quarshie, 2022). In the case of a catastrophic disaster, authorities may be able to alleviate the damage or even provide compensation to individuals impacted. Municipal assemblies and government institutions are crucial in addressing and mitigating external threats to farmers' livelihoods (Teye and Quarshie, 2022).

According to Rivera *et al.*, (2019), special emphasis to trust, cooperation, a feeling of community, and culture and tradition is the broader concept of social capital. And all these four dimensions are critical in agricultural and rural development because they influence how people interact with one another, organise themselves, and collaborate for progress. Therefore, in this research, much focus will be on the social capital of the smallholder farmers.

## 2.6 Policies, institution and Processes on smallholder Rice Farming

Because policies, institutions, and procedures affect smallholder rice farming at all levels, from the family unit to the international arena, and in all circles, from the most private to the most public, their importance cannot be overstated. Policies, institutions, and processes all directly impact people's ability to achieve a sense of belonging and well-being. They also account for other 'unexplained' changes in 'how things are done in different societies because culture is interwoven into this domain (DFID, 2000). Institutions and practices can control resource access and influence decision-making.

## 2.7 Livelihood Strategies Adopted by the smallholder Rice Farmers

Multiple activities (farm production, off-farm businesses, migration, etc.) are used by smallholder rice farmers to diversify their family income, resulting in food or economic security (Bello *et al.*, 2021). Rural families develop an entire portfolio of activities and social support capacity in their battle for survival and to improve their quality of life (Bello *et al.*, 2021). Crop-livestock interaction provides smallholder farmers with increased livelihood possibilities, constituting a significant share of overall revenue (Williams *et al.*, 2022). It has been shown that income diversification to non-agricultural activities has become the dominant livelihood strategy for most families (about 61% of households) have diversified their livelihoods to non-agricultural activities (Williams *et al.*, 2022). Chetan, (2017) stated the importance of remittances to the smallholder rice farming households. It highlighted the positive role of remittances in the lives of smallholder livelihood diversification. Migrant families have higher incomes than non-migrant families.

In Northern Selangor, Malaysia, a paddy-growing agricultural area, Nathan and Mohamad (2014) examined the significance of non-agricultural employment. According to the findings of multinomial logistic regression, the amount of cultivated land was a crucial aspect of a person's means of



subsistence. A varied economic strategy is influenced by many factors, including the education of working members, the amount of non-farm income, and the availability of capital (Nathan and Mohamad, 2014). Anang and Yeboah (2019) have shown that smallholder rice farming households have played a crucial role in the Ghanaian economy by receiving remittances. It has been demonstrated that remittances improve an individual's capacity to make a livelihood. There is a higher economic discrepancy between immigrant and non-immigrant households. This is evident in the (Ghana Statistical Service, 2021), with a 39% increase in urban migration in 2021 compared to 10 % in 2010.

As rural China's most basic socioeconomic and decision-making units, peasant families' livelihood and survival strategies significantly affect the natural environment. Consequently, food and economic security are GIAHS site selection criteria (Li *et al.*, 2022). Due to the low level of automation, the high labour intensity, and the inadequate comparative advantages of agricultural production. The rapid expansion of tourism, industrialisation, and urbanisation has significant consequences on agriculture (Yu *et al.*, 2021). On the other hand, Peasant households are transitioning from an exclusively agricultural to a more diversified livelihood strategy that includes tourist hospitality and migrant labour jobs (Yu *et al.*, 2021).

## 2.8 Effects of Smallholder Rice Farming on Households Food Security

Food insecurity and poverty are crucial components of the United Nations Sustainable Development Goals (SDG) and are the era's foremost worldwide challenges (Arouna *et al.*, 2017). The decade-long drop in worldwide starvation has ended, and famine is again increasing, according to the most current statistics on global food security and nutrition (Strong, 2021). Smallholder rice farmers depend primarily on rice for sustenance. According to a study on rice self-sufficiency and food security conducted by Ghose (2014), domestic production is essential for establishing autonomy. The regional strategy for food security and sustainability in Asia and the Pacific, more than half the world's population relies on rice for sustenance. According to the report, around 140 million people live in rice-farming homes, while millions of rural poor are employed as contract labour on rice fields (Fan, 2010). As a fundamental aspect of food security, food accessibility is essential. The quantity of food production, stock levels, and net trade, which influence the physical availability of food, comprise the supply-side of food security. To live an active and healthy life, food security is the availability of enough, safe, and nutritious food that always meets all individuals' dietary needs and preferences (Shaw, 2007).

Urbanisation and shifting consumer preferences have increased rice consumption in Ghana, the country's second most important grain after Maize (Ragasa and Chapoto, 2017). In the medium to long term, the Millennium Development Authority (MiDA) projects that the demand for rice would surpass that for Maize. Accordingly, rice will no longer be considered a seasonal staple in Ghana but a year-round crop. Africa and Ghana, can anticipate a future where they are "food secure, better fed, and prosperous" due to the adoption of the Asia-Pacific region's vision for the rice sector: "a vibrant, innovative, and transformed rice that is more productive and efficient, and environmentally sustainable by 2030 (Asiedu, Nunoo and Iddrisu, 2017, Ministry of Food and Agriculture, 2021, Sam and Deppah, 2009). Since rice production and profits of smallholder farmers in Ghana have remained low, it is vital to enhance these variables. This results from the government's inability to meet rising food demand since domestic rice output is inadequate (Zakaria *et al.*, 2021). Improving rice production and output by introducing new rice varieties is vital to resolving this shortfall. This would promote economic development, food security, and poverty reduction in the country (Ragasa and Chapoto, 2017, Gadal *et al.*, 2019).

## Chapter 3 Research Methodology

This study chapter explores the research strategy and methodology employed in achieving the study objectives. It covers the study area's description, research area selection, study sample, data collection, data analysis and processing, and ethical considerations.

### 3.1 Research Design and Strategy

This study mainly used qualitative methodology through a case study, desk research and fieldwork to obtain a comprehensive picture of livelihood assets available to the smallholder rice farmers. Their influence on livelihood strategies and the relationship between rice production strategies and the problems they face as smallholder farmers and youth perceptions of rice farming. The case study approach was employed because it is ideal and gives a holistic way to gather an extensive and detailed data set in a real-world situation. According to van Thiel (2014), a case study is a research approach in which one or more cases of the research issue are explored in a real-life, everyday situation, nearly anything: a person, a company, a country, a city, or a neighbourhood, an event, a connection, a project, or a process even a law or a decision. Therefore, in this research, the challenges and opportunities of the smallholder rice farmers in KNM were explored to understand further their livelihood strategies and how the challenges affect their livelihood strategies. Furthermore, explore the perception of the youth towards rice farming in the area.

### 3.2 Population of the Study

The population for this study includes Small-scale rice farmers from Afife, Agorvega and Avalavi communities. The researcher initially decided to conduct the research in Afife based on the "long-standing name Afife Rice project". However, on getting to the field, it was evident that the name is under contention since the project is located at "Avalavi in Weta Traditional area" and not Afife. The researcher, therefore, thought to conduct the study on the smallholder rice farmers in the Afife area, including the Agorvega. Furthermore, checks with the Municipal Agriculture Department (MDA) showed that the rice project in the area aside, Afife – Agorvega are the major rice-producing communities. Nevertheless, the researcher added Avalavi to compare the results with the other communities.

### 3.3 Sample, Sample size and Sampling Methods

Three different samples were used for this study: - 30 individual respondents, four focus group discussions (FGD) with 60 participants and six key informants. Purposive and random sampling strategies were used to choose participants for the study. A meeting was convened for the groups of rice farmers in Afife and Agorvega for FGD. A list of farmers was then drawn up by the group leaders in Afife and Agorvega, respectively, with farmers with odd numbers circled. The list did not include information on the age, gender, or farm size of the farmers, only the name and contact information of the farmers, so there were no other selection criteria. Fifteen members were selected for the study from the odd numbers on each list in each community. However, others who were chosen not came to the researcher themselves to be interviewed because they believe their views must also be heard and support their "own" (the researcher is a native of the land - Agorvega). They were interviewed so the researcher wouldn't have problems or create conflict with the people who were also family members, as well as to prevent resentment between families and keep harmony. Nevertheless, their information was not included in the study because their interview did not provide any new information, so their views were not included to make the sample clearer and more manageable. Furthermore, the researcher used the existing rice cooperatives in Afife and Agorvega for the FGD; however, in Avalavi, an announcement was made for a meeting with rice farmers by the contact farmer; those who heard and were free that day attended. In selecting the key informants, purposive sampling techniques were employed to select the Municipal Agriculture Department Director, Municipal Chief Executive (MCE), Scheme Manager of Irrigation Development Authority (IDASM), the assembly man for Afife – Agorvega area, a sub-chief of the Afife and agro inputs distributor in the area.

### 3.4 Data Collection Tools and Techniques

The data collection consists of primary and secondary data. The primary data were obtained from interviews, discussions and observations, whilst secondary data was collected during desk study, for literature review, research alignment and comparison, and later for research discussion. With the respondents' permission, audio recordings and photos were recorded during the interviews.

#### Secondary Data

An analysis of the literature from books, academic periodicals, research journals, publications by development Organisations, previous dissertations, annual reports, and online sources was done as part of a desk study to gather secondary data. Desk research aided in reviewing theories already in existence, the opinions of many writers, information on the topic, and essential ideas such as livelihood and rice farming, vulnerability context, livelihood assets, livelihood methods, and livelihood outcomes.

#### Primary Data

In-person interviews with respondents, key informant interviews, focus group discussions (FGDs), and personal observations were used to gather data from the rice farmers' community on the above variables.

##### 3.4.1 Individual Interviews

*Figure 4: Interview with individual Farmer*



In-person (Fig. 4), semi-structured interviews were conducted with a guided list of respondents from the three rice-growing communities – Afife, Agorvega and Avalavi. In-depth information from respondents was sought through the use of these private interviews. This method was utilised to help maintain confidentiality and give the researcher the chance to ask questions that would not be appropriate for focus group discussions (FGDs). These interviews were conducted in the "EWE" language (Ewe) for easy understanding. Interviews with individual respondents were conducted on the farm with farmers and lasted between 30 and 45 minutes maximum. Audio recordings were made with the permission of the farmers. Most of the time, other people were present to scare away the birds (workers). A total of thirty recordings were made for individual interviews.

Source: Author 2022

##### 3.4.2 Key Informants Interview

Additionally, the researcher created a semi-structured interviewing guide (annexe 1) that was used to gather information from the study's key informants. To learn more about the difficulties rice farmers face and the initiatives that, in their opinion, can best help them. Among the key informant interviewed were the Municipal director of the department of Agriculture (Fig. 5), the Municipal Chief Executive (MCE) (Fig. 6), "Agbotadua" of the paramount chief of Afife (Fig.7), the Assemblyman of the Afife (Fig 8), Irrigation Development Authority Manager (IDAM) (Fig. 9) and the agro-inputs distributor in the area (Fig 10). Semi-structured interviews with chosen key informants were conducted in English to understand better the backdrop of vulnerability, asset portfolio status and livelihood strategies in rice farming.

*Figure 5: Interview with MDDA (Key Informant)*



**Source: Author 2022**

*Figure 6: Interview with MCE with him is the MCD (Key Informant)*



**Source: Author 2022**

*Figure 7: Interview with the Agbotadua" of the paramount chief of Afife*



**Source: Author 2022**



Figure 8: Interview with the assembly Man of the Afife - Agorvega Area



Source: Author 2022

Figure 9: Interview IDASM with him is TO and Water users President (Key Informant)



Source: Author 2022

Figure 10: Interview with the agro-input distributor Afife, Agorvega and Avalavi area



Source: Author 2022

### 3.4.3 Focused Group Discussions (FGDs)

Three sets of local rice farmers with a minimum of 10 and a maximum of 15 participants took part in a focus group discussion (Figures 11,12&13). Young rice farmers (less than or equal to 35 years of age are also into Motor riding – Zemindza business) participated in the first FGD to express their opinions on rice cultivation and the belief of the youth in rice farming. Farmers age 35 and older participated in the second FGD in three communities (Afife, Agorvega and Avalavi). The last group was the women rice farmers in Agorvega, who expressed their views on their challenges as female farmers. Each FGD were held in different places, such as the front of the community centre in Agorvega. Afife met in the conference room of the area council and youth, under a shade where they work from. The sessions took between 90 minutes to 120 minutes. Recordings and pictures were taken with the proper consent of the participants. The researcher played the role of a good listener; also, as a native of the area, she dressed not to show off but rather to relate to them both on the farm and in the house. Participants were taken through ranking and scoring and a transect walk. The researcher's goal in conducting discussions with three distinct focus groups was to collect opinions from various groups involved in rice growing. Young farmers are said to be more receptive to innovations and fresh ideas.

FGDs also allowed the researcher to get data from farmers that weren't represented in the individual face-to-face interviews, allowing for the inclusion of their viewpoints. The researcher also had the chance to confirm the information gathered from in-person interviews with participants through FGDs. It also encouraged the researcher to amass as much data as possible while allowing for all participants' fair and equitable participation.

*Figure 11: FGD with Rice farmers in Avalavi*



**Source: Author 2022**



Figure 12: FGD with Women rice farmers in Agorvega



Source: Author 2022

Figure 13: FGD with Melenorvishi rice farmers group in Afife



Source: Author 2022

#### 3.4.4 observation

The researcher used observation to gather data by making notes or taking pictures. These individual observations were conducted along with the in-person interviews and FGDs. The researcher kept an eye out for activities related to several aspects of rice farming. Knowing the status of the natural, physical, and financial assets were possible thanks to the village tour guide. Fortunately, the field study was done during the rainy season; therefore, the researcher could see the rice crop and the level of flooding in the fields.

### 3.5 Data Analysis and Processing

Along with data collection, data cleaning and validation were done. After sorting, data were transcribed and coded using the abbreviation AG and AF to ascribe the initials with zero-one (01) to fifteen (15) to code the individual respondents from Agorvega and Afife respectively, while AGY and AVY, the Agorvega and Avalavi Youth (List in Annexe 2). In order to examine both qualitative and quantitative data, a



narrative format was used. The results were then interpreted using qualitative design to address the study objectives. The quantitative information gathered was analysed using Microsoft Excel and the results are shown in tables and figures for further analysis and discussion. Triangulation was used to ensure the data was reliable and better understand the reality.

### 3.6 Ethical Considerations

The respondents at the study site gave verbal consent after the researcher had explained the study and all the processes. Before beginning the interviews, the researcher obtained the permission of all study participants, and all audio recordings and photographs were taken with their approval. Participation in this study was optional, and participants were free to leave at any time without any consequences. The confidentiality of the study participants was also preserved because their names were not recorded.

### 3.7 Research Challenges

This study had some challenges. These challenges included resources, transportation, network variations, being known in the area and lack of time to accommodate the increasing participation of individual smallholder farmers who wanted to be heard and other respondents that the researcher could not manage.

## Chapter Four: Results

### 4.1 General description of the smallholder rice farmers

Using the Sustainable Rural Livelihood Framework, the major findings of the field study are given in this chapter. Following the presentation of the results on the vulnerability setting, the livelihood assets and strategies of the smallholder farmers and finally, the perception of the youth on rice farming. Six key informants and four different categories of FGD were chosen purposively for the study. 30 individual respondents, comprised of 23 men (representing 76.6%) and 7 women (23.4%), were interviewed. They were between the ages of 25 and 70, with the average age of rice farmers as 46.8 years. Ten of the respondents had some form of education. Seven had tertiary education, two had a certificate "A" in teaching, and one had primary education. The oldest and youngest respondents were married.

### 4.2 Vulnerability Context of Smallholder Rice Farmer

Results for the first research sub-question, What are the vulnerability context faced by the smallholder rice farmers in the KNM are described in this section of the report. The respondents' exposure to shocks, trends, and seasonality was explored from the perspective of vulnerability. The most often mentioned vulnerabilities during the interview were climate change (frequent flooding), high input costs and its availability, drying floor, inadequate machinery (Tractors and Combined harvesters), birds attack, lack of finance and exploitation by mediators and inputs suppliers. About 76% of individual farmers mentioned flooding and lack of finance as the major concern with rice farming. These from the viewpoint of the informants is a prevalent issue in the municipality as most of the farmers are seen running to the MCE for some form of assistance to buy fertilizers. At the FGD, it was unanimously agreed in all three communities that inputs cost and flood are major problems with rice farming. As seen in assets, farmers cited a lack of funding and high input costs as vulnerabilities, yet, the study's methodology classifies these two as financial assets.

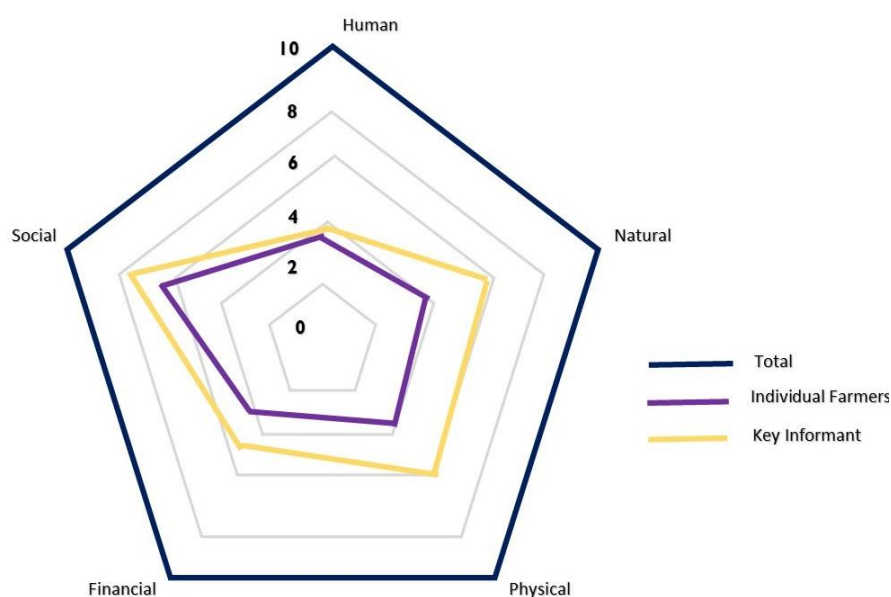
### 4.3 Livelihood Assets Available to Smallholder Rice Farmers

The researcher described the five livelihood assets identified among the study villages of smallholder farmers. The livelihood asset is divided into human, natural, physical, financial, and social assets.

In the surveyed areas, many farmers have problems with human, natural, physical and financial assets but benefit more from the social asset. Fig. 14 shows the composition of the asset in rice cultivation calculated based on the responses of a key informant and all individual farmers as well FGD. During the interview, farmers were questioned about various assets and asked to score them on a scale of 1 to 10, with 1 being the least score and ten the highest score, where the least indicates the lowest score of the asset and the highest score both individual farmers and key informants score an asset. For instance, individual farmers were asked to score each asset they mentioned. From their responses, social assets were scored 6, human, financial, natural and physical assets scored between 1.5 to 2 across the farmers in Afife and Agorvega, while the key informants scored social assets 7, and the rest between 3.5 to 4. Finally, the score of each farmer was averaged to create the pentagon. The same exercise was performed with a key informant to triangulate the result.

Based on the outcome of assessing the asset pentagon, human and financial capital are low compared to physical, social, and natural capital. Farmers and key informants had differing perspectives on financial capital. Individual farmers received lower scores than the key informant. This could be due to the key informant's aerial view, who could not fully understand the situation on the ground.

Figure 14: Assets Pentagon of Rice Farmers



Source: FGD and farmer interviews

#### 4.3.1 Natural Assets

The farmers in these areas value natural assets and their livelihood primarily depends on the land, water, vegetation and trees. Baobab, coconut and palm trees are the tree species most widely distributed among the communities. A farmer in Avalavi claims that although their lands are close to the irrigation scheme, most farmers do not rely on it for irrigation. Another said, *"we are noted for vast acreage of mushy lands perfect for swampy rice yet challenging to work on due to frequent floods"*. According to the interviews, the smallest and largest farm sizes in Afife and Agorvega are 2 and 5 acres, respectively, while 2 and 7 acres are the smallest and largest in Avalavi.

According to the interviewees, most individuals in the communities have access to land either by lease or ownership. The lease system is either by money (200 Ghana cedis, equivalent to 20 Euros) for an acre for a season or 135kg bag of paddy rice per acre. Water is a significant issue, as the observations and focus groups show. The rainy season, which runs from March to July and September to October on which the farmers rely for farming, is unpredictable and changes from year to year, causing heavy flooding throughout the farming season, as was discovered during focus group discussions and confirmed by the MDAD. As at the time of the research, the researcher observed that most farmlands had been flooded and had to walk through the farms for some interviews (Fig. 15 & 16).

*"Sister, land is no problem in this area ooo, but the "agutɔ" is sealed. It has been years since it was dredged; therefore, with little rains, the whole area becomes flooded."* **Respondent AF20, a 40-year-old man.**

*My daughter, will you believe that Afife valley is much bigger than the Avalavi irrigation scheme? But because of the "agutɔ," most people are now leasing lands in areas of less flood".* **Respondent AF17, a 70-year-old man.**

According to the MISO, the undeveloped land in the Afife valley is far bigger than the irrigation project in Weta. Still, due to many factors, farmers are limited to small portions for rice farming.

*Figure 15: Researcher walking in flooded rice farms*



Source: Author 2022

*Figure 16: Researcher with a farmer on a flooded rice farm*



Source: Author 2022

#### 4.3.2 Human Asset

The average age of farmers interviewed was 45 years or older. 30% of the respondents had completed junior high school, while 10% indicated that they had completed senior high school. All respondents



across communities were married and lived in households with an average number of unskilled people of 8 to 15. The researcher observed that women in Afife and Avalavi were more into aggregating rice than their counterparts in Agorvega, who were into the cultivation. It was also evident during the survey that women were actively engaged in planting, weeding and scaring birds on either their husbands' or their farms.

Most farmers rely on farm labour for agricultural activities such as broadcasting or transplanting, weeding, harvesting, and threshing rice. While these activities are done manually, tillage practices are done exclusively with tractors.

The older kids (Fig. 15, 16 & 17) who weren't in school were also seen scaring off birds on their parents' farms, but most were hired labourers on the field. One respondent indicated:

“At this time, it is very difficult to get the little ones to scare away the birds on the farm, and even if you do it, it is not as effective as when you and your family do it.”, **Respondent AG19, a 36-year-old Man.**

Among the communities, women are commonly engaged in small-scale commerce like processing gari, selling fish, sugarcane, and milled rice by the roadside. However, the youth, In Afife were not actively involved in farming; many were engaged in motor riding and betting. Compared to Agorvega and Avalavi, all youth respondents, who were into the motor riding business, had farms larger than 2 acres; these were based on observations and interactions made with them during the study. Furthermore, farmers in Agorvega had more young members and a woman leader of one of the rice groups compared to the Afife and Avalavi groups, who were more aged.

*Figure 17: A boy seen shouting birds away*



Source: Author 2022

*Figure 18: A woman Seen Shouting birds away*



Source: Author 2022

*Figure 19: A young boy seen shouting birds away*



Source: Author 2022

#### 4.3.3 Financial Asset

Access to formal credit from banks or financial facilities is a challenge; farmers are either denied a loan because they lack collateral or high-interest rates that they cannot afford. From the interviews, it was realised that, though they could not secure loans from the banks, they were prefinanced by market women (rice buyers), Inputs dealers or companies (Contract farming) at a 50% interest rate. At all the

FGDs, it was evident that 90% of farmers had taken loans from market women for their farming activities. In addition, they sell crops, fowls, ducks, sheep and goats to generate extra income.

*"Though the market women's and money lenders rates are high, when I am urgently in need of money, especially for something like buying fertiliser, or between life and death, I go to them. Sometimes, they take bags of rice in return. They cheat us, yet what can we do, hmmm!!!" Respondent AG10, a 44-year-old man.* Therefore, raising animals is crucial and is considered a means of accumulating wealth which attests to the findings of Williams *et al.*, (2022) that income from crops and livestock accounted for a significant portion of total revenue, as illustrated by some of the interview respondents:

*"rice is our cocoa here, so we do everything possible to have at least an acre of rice field." Said by a 44-year-old man - Respondent AG 10.*

Unlike Afife and Avalavi, the rice farmers group in Agorvega was formed to provide loans to members at a low-interest rate of 5%. The secretary of the "Enyonyoge" rice farmers group said ....

*"due to the exploitation of the farmers by the middlemen, that is why we formed this group. We meet every Tuesday and buy shares. The minimum shares a member can buy is 30 cedis (3 Euros). One is eligible to take a loan for three months of being a member and has three months to repay the loan. I will say, it has helped us since we started, preventing us from the extortions of the middlemen who take all our farm produce in the name of loan". Group Secretary.* (Fig. 17 & 18)

It is also right to note that farmers mentioned a lack of finance and high cost of inputs as a vulnerability. However, based on the study framework, these two are classified as financial assets.

Figure 20: Enyonyoge and Dehiada Rice Farmers Group



Source: Author 2022



Figure 21: Enyonyoge and Dehiada Rice Farmers Group



Source: Author 2022

#### 4.3.4 Physical Asset

Most farmers possessed small equipment such as a hoe, cutlass, knapsack sprayer, catapult, and wellington boot. Bicycles, a few motorbikes, and tricycles—commonly referred to as "motor king"—are the predominant modes of transportation, especially for Agorvega. However, it was observed that farmers utilise motor king to deliver their produce from the farm to homes and to market centres.

During the focus group sessions in all three communities, farmers complained that the lack of tractors and combined harvesters are affecting their labour, saying,

*"because the tractors are very few in the area serving many farmers, we are always late in ploughing our lands, and if the rice does not get to a certain stage, the floods get in, everything destroyed; how can you progress".* **An enthusiastic Farmer Afife FGD 1**

There have been severe lamentations of the shortage and high cost of inputs and fertilisers this year. A respondent stated: *"Last year, 2021, we bought a 50kg bag of NPK fertiliser (Fig. 19) for 106 cedis and urea for 92 cedis (12 and 10 euros respectively). But this year 2022, NPK is 160 cedis, and Urea is 420 cedis (35 and 46 euros) despite the government subsidies".* Another said, *"... even at this cost, is not even there to buy, or you have to travel a long distance to buy it which also increase the cost. Because the seller knows you can only get from them, they increase the price at will."*

Figure 22: Bags of Fertilizer



Source: Author 2022

The road network (Fig. 20) is another concern to the Agorvega community, as seen during the study. It is better now compared to years back, but it needs improvement, said by a farmer.

Comparatively, all the communities have similar physical assets; however, Afife and Avalavi have better road systems, at least the route connecting to Dzodze, the municipal capital, is a better road than Agorvega. Furthermore, though they all have phones, as was noted during the survey, the people in Agorvega were challenged with network signals. One can only make calls at specific locations by either climbing trees or walking a distance for signals; however, this does not deter them from staying in touch with the outside world. Furthermore, the researcher observed the rice project's dam site and irrigation canals. However, these canals are blocked, which leads to flooding on the farms of others who do not need water when sessions canals are opened. Fig.21 shows some blocked canals and dam (Fig. 22) as assets.

*Figure 23: Roads to Agorvega*



**Source: Author 2022**



Figure 24: Blocked canals at the rice project site.



Source: Author 2022



Figure 25: Dam site of the rice project



Source: Author 2022

#### 4.3.5 Social Assets

The farmers consider social assets as more important. The network among village members is strong in all the communities, especially among family members and farmers of the same kind working together for the good of the whole community or the benefit of a member. They rally behind members during funerals, naming ceremonies or any other mishaps. During the interview, it was evident why the associations were formed in both Afife and Agorvega ("Milénvisi", "Enyonyoge", "Dehiada", and Klenam Rice Farmers groups). The membership in these groups was open to everyone in the community; others chose not to join because of their beliefs. For Stance, in Agorvega, the groups were created as a means of financial assistance to members through the weekly purchase of 6 shares equivalent to 30 Ghana Cedis (3 Euros) by members. These monies are loaned to members who are three months old in the group for 5 Ghana Cedis interest (0.5 Euros) for every 100 Ghana Cedis loan (10 Euros). These they see as better than the 50% interest rate loan from individuals. Furthermore, membership is not only for rice farmers but for every farmer in the community. However, others chose not to join because they believed that meeting weekly was much work and they would not be able to get the 6 Ghana Cedis (0.57 Euro) to buy a share every week.

#### 4.4 Livelihood Strategies of the Smallholder Rice Farmers

The major source of livelihood of all the respondents from the three communities is mainly farming; however, production is on a smaller scale. It was also noted that the three communities adopt off-farm strategies and remittances for livelihood.

##### 4.4.1 Farming

From the researcher's observations and field interviews, it was evident that farmers in the study areas have embraced crop farming and fishing as a strategy. Thus, both male and female farmers mentioned maize, cassava, sweet potatoes, sugarcane, rice, peppers, tomatoes, and okra as alternative crops. During the FGD in Afife, a participant said:

*"My daughter, farming is our main source of living here; without it, how can we feed our families? So, no matter the difficulty we are faced with, we still do. And rice is our "cash crop" Maise, cassava, pepper, and the rest are for food in the house." Sugar cane used to be the "cash crop", but the market has gone*

down with the increasing health issues with diabetes. However, the few we do are for making "akpeteshi" (local gin)." **A passionate farmer (Afife FGD 1)**

In the village of Avalavi, a participant indicated:

*"farming is what our father left us with, so if the crops fail us, we resort to our line and hooks to catch fish to feed the family; what use can the water be to us if it floods the field and the crops die than to utilise it for fishing."* **Respondent AG01, a 35-year-old man.**

Another livelihood strategy adopted by the farmers is mixed farming, where animals like goats, sheep, fowls and ducks are raised alongside the crops. Almost all the farmers keep some kind of animal on a limited basis.

#### 4.4.2 Off Farm Activities

The interviews and observations revealed that most of the farmers were involved in off-farm activities, which confirms the finding of Bello *et al.*, (2021) that Smallholder rice farmers use a variety of activities (agricultural production, off-farm activities, migration) to diversify their income to sustain their diet or economy. They work as masons, carpenters, Operate Motor "Zamidza", Weave "Kora" mats (annexe 3), trade (buying and selling), carrying of items from the farm to town "agbatetsotsɔ", sprayers and birds control "Xevidzɔɔdzɔ". In Afife and Agorvega, "agbatetsotsɔ" and buying and selling are typical activities. In an interview, a farmer said that.... *"I cannot survive with my family only on farming, because there are many trials that come with it."* Adding that *"you see my daughter, this business (selling fried Fish, pepper, etc.) is for the income, and it supports the family when there is nothing at home."* The Women mainly do the buying and selling. At the same time, some of the men are responsible for by-day work. One farmer said.... *"I sometimes spray the farms of others for extra cash"*.

It was revealed that, when all fails, they look to families and relatives outside the town for assistance. The oldest farmer said.... *"my daughter if all fails, I call my children who remit me for living."* **Respondent AF17, a 70-year-old man, Sex Male.**

#### 4.5 Youth Perceptions on Rice Farming

All the respondents interviewed were male and 80% of them were married. Most of the respondents had at least a secondary education, with a few receiving tertiary education. All respondents stated they had lived on a farm or had grown there. It was revealed that farming is the major livelihood in the three communities; during the FGD with the youth of Agorvega and Avalavi, youth in the two communities are into rice farming and motorbike riding as well ("Zemidza"). However, it is no more appealing to them seeing their parents' challenges, creating mixed feelings about the work. One respondent indicated, ... *"Madam, you won't see anyone of my age group in this village who does not have an acre or two of his farm: We are a product of this business; that is what our parents did to see us through school. I am in the university level 200, and anytime I come home, I go to my farm and also my parents to help them."* **Agorvega Youth FGD 2**

Another added .... *"however we are faced with many problems which are making rice farming and farming, in general, becoming more expensive by the day. As a youth, it is difficult to access loans, and the cost of inputs are very high now; even with government subsidy, they are not even there to easily buy, so it looks like we are abandoning our fathers' profession. And since there are no corporate jobs here, most of us resort to motorbikes, and some even migrate to bigger towns like Akatsi, Sogakope, Accra, Kumasi etc., in search of greener pastures. We all use motorbikes during the lean season to make ends meet."* **Avalavi Youth FGD 3.** However, one stated in the negative saying, *"I have two wives and children to feed as well as to support parents if I put all I have in farming and it fails how or what happens to family and me."*

It was revealed during the focus group discussion that, to help support each other, they created a motor riders association to coordinate and support one another in terms of misfortune and advised one another against social vice. The chairman of the motor riders association said, *"If you go to next town Afife, you hear of stealing, internet fraud ("Sakawa") and other social vices on a daily basis, but you won't hear that here, because we know what the consequences those behaviours bring. Therefore, we are each other's keeper; if the farm is not well, pick your motor to the junction, and you get someone to pick for your daily bread".* **Agorvega Youth FGD 2**

This was confirmed as the researcher could not meet with the youth of the Afife because they were not interested in talks that won't put money in their pocket. At the discussion, a farmer stated, ... *Afife youth are more interested in where they can get quick cash, so you find them on their phones either scamming people or betting, and I fear them. Because it results in a lot of school dropouts and teenage pregnancies."* **A concerned farmer AF 02, a 41-year-old man.**

Figure 26: Meeting with Youth Avalavi



Source: Author 2022

Figure 27: Meeting with Youth Agorvega



Source: Author 2022



## Chapter 5: Discussion

The discussions surrounding the findings from chapter four are covered in this chapter. The chapter begins with the vulnerability context impact on smallholder rice farmers' livelihood, then moves on to the assets impact on smallholder rice farmers' livelihood, livelihood strategies of smallholder farmers and finally, the perception of the youth on rice farming.

### 5.1 Vulnerability Context of Smallholder Rice Farmer

The findings section 4.2 emphasises how the vulnerability context significantly affects the rice cultivation system. The results made it clear that smallholder rice farmers contend with several shocks, trends, and seasonality. Smallholder rice farmers experience unstable living situations in the farming community under study and are inherently sensitive to various shocks, trends, and seasonality. The shocks that caused a 10 to 30% productivity decline in rice were floods and bird attacks. These vulnerability issues align with Pathak *et al.* (2018), who highlight several biotic and abiotic challenges in the rice cropping system. In the same vein, a study by Harvey *et al.* (2014) concluded that farmers are particularly vulnerable to shocks in their agricultural system due to their high dependence on agriculture for livelihood, chronic food insecurity, physical isolation, and lack of access to formal safety nets. According to farmers, vulnerabilities are problems or factors that limit their farming activities, as indicated above in 4.4.3 and 4.2. Farmers mentioned the high cost of inputs, availability, and lack of finance as their major challenges. This contradicts SLF, which identifies these as assets.

### 5.2 Livelihood Assets Available to Smallholder Rice Farmers

During the study, the assets of the three communities were evaluated, and it was discovered that while their assets had some similarities, they also had considerable variances. In a similar vein, they pursue comparable strategies but at different levels. For example, most of them, especially the youth, are involved in the motorbike business. The three communities have extensive lands for farming, particularly rice, which is crucial for their survival as farming is their primary source of income. From the focus group discussions and interviews, all farmers have access to and control over land, and most engage in non-farming activities in addition to farming. This confirms the findings of Anang and Asante, (2020) that found households are more likely to focus on farming the more natural resources, particularly land, they own. This may be explained by the fact that the abundance and availability of land in the KNM of Ghana. Furthermore, being an area with a high population of rural people, farmers need to depend heavily on fertiliser to boost harvests.

According to observations and discussion, farmers in the three study communities are significantly deprived due to the limited access to tractors, combined harvesters and other current farming tools. Farmers are discouraged from enlarging their farm size and focusing solely on what they can manage. This confirms the findings of Anang and Asante, (2020) that the more sophisticated agricultural production equipment farmers have access to, and the better the infrastructure for agricultural production is, the more inspired they are to continue the practice. Due to limited quantities of tractors and combine harvesters, operators charge exorbitant prices and come to the farm at "odd hours (10 pm or 2 am) to work. This, most time, results to work not being well done.

The study also revealed that farmers belong to associations for the benefits of soft loans, as in the case of Milénovisi", "Enyonyoge", "Dehiada", and Klenam Farmers groups. This reflects the cohesion among farmers is more robust in the study area, which could be used to disseminate knowledge and skills among farmers. Hoang *et al.* (2006), in a study in Vietnam, showed the importance of social assets as effective delivery of extension services and development activities at the micro level. Village communities are not homogeneous entities but a mixture of complex systems of social connections.



This is further confirmed by Olowa and Olowa (2017), who stated that social and financial capital are stronger among FBOs with internal revenue sources and a saving culture.

Furthermore, the study revealed that finance is a major concern to all farmers in the study area and can be considered one of the ways to improve farmers' income and livelihood. Saleem and Jan confirm this, stating that credit plays a significant role in increasing agricultural productivity. Timely and adequate credit availability enables farmers to acquire the necessary inputs and machinery to carry out agricultural activities.

### 5.3 Livelihood Strategies of the Smallholder Rice Farmers

According to the findings in section 4.5, rice farmers mix various income-generating activities and build a portfolio of livelihood activities to improve the outcomes of their means of subsistence. The study's findings demonstrate that most households have sources of income besides rice farming. Farming provides farmers with their primary source of income, followed by non-farm wages, self-employment and remittances. It shows that agricultural and livestock farming remains the primary revenue source. The results are consistent with Kathiwada *et al.*, (2017) and 's (2011) study conducted in Nepal and Northern Ghana, revealing that income diversification to non-farm activities has evolved into the predominant livelihood strategy. This further confirms the findings of Williams *et al.* (2022) that interaction between crop production and livestock production provides smallholder farmers with expanded livelihood opportunities that account for a significant portion of total income. It has been shown that diversification of income to non-farm activities has become the predominant livelihood strategy as most families (about 61% of households) have shifted their livelihood to non-farm activities

A study by Anang and Yeboah (2019) showed that remittances played a vital role in the livelihood of smallholder rice farmers. This confirms the findings from this study that farmers also rely on migrant families to support their livelihoods.

### 5.4 Perceptions of Youth about Rice Farming

Findings in session 4.5 revealed mixed perceptions regarding agriculture among the youth, ranging from positive to negative, due to the challenges they see their parents encounter, which are not different from other parts of the world. Two of the three communities showed interest in farming, especially in rice farming; however, the many challenges are demotivating enough to push one from this business. Furthermore, family responsibilities that take much resources and time are also contributing factors. This is confirmed by the findings of Abdullah and Sulaiman (2013), which have shown that the unavailability of resources or the perception of a lack of resources can slow down the entrepreneurial spirit of individuals. In addition, they indicated that seeing their parents' poor livelihood in rice farming is demoralising enough for the youth to say we are rice farmers. As a result, the Ministry of Food and Agriculture MoFA (2022) implemented the Youth in Agriculture Program(YIAP) to encourage participation in the sector. However, the policies' effects are yet to be seen by the youth in KNM.

### 5.5 Reflection as a Researcher

My research journey started on June 26, 2022, at 3:45 pm CET boarding KLM from the Netherlands to Ghana for my data collection. Before this trip, I wrote a research proposal to collect data for approval (green light). I could not get a green light at once but had orange, which was a good sign that I was on course. I got to Accra on June 26, 2022, at 8 pm GMT. I went home (Ashaiman in the Greater Accra Region) to spend some days with the family (my Mom and Big sister), who were not well then. And the zeal to see them and know for myself how they were doing was what flooded my mind and seeing them gave me the hope and assurance that I can leave for the field.

I arrived on July 2, 2022, in Afife, one of the study communities, to pick up a motorbike to Agorvega, where I stayed all through the data collection. I spent 18 days in the field. On the first day, I settled in

by cleaning the room and the house with no occupants, which was very dirty. The next day, I first met with the focus group in Afife, where my contact farmer introduced me. Initially, I had planned my study in one community (Afife) due to the Afife rice project; however, information revealed the strive over the name hence the thought to focus on the smallholder farmers in the Afife, Agorvega and Avalavi. I later met with the Municipal Chief Executive, introduced myself to him, and had the interview. He also introduced me to the MDDA in the office and others for the study.

I must say that during the research process, there were moments of joy and frustration. The joy of interacting with the farmers was immeasurable; the friendship with these people, the audience they granted me, and the love and hospitality they showed me cannot be overstated. I was of the view because I was native hence the treatment, but realised it was the first research of this nature that had been conducted in the area. Furthermore, I had more individual farmers coming to me to be interviewed.

My supervisor's feedback was critical, and it sometimes confused me when she shared her neutral opinion, but I realised I was not thinking outside the box. When I realised this, I decided to adapt to the feedback because it helped me learn more reliably. Sometimes I was afraid if I was doing the right thing. It helped me to expand my knowledge. Her timely support enabled me to finish my report on time.

The critical limitation of this study could be explored in future research, as my study focused only on the livelihood issues of smallholder rice farmers.

Looking back on the entire process, I realised that conducting research involves complexities for which the researcher must be very well prepared. Searching for literature to support an argument can be tedious and frustrating. Most notably, I understood how fulfilling it is to realise that you have made a difference through your contribution. I am convinced my study will contribute to the development of KNM soon and I look forward to solving some of these challenges myself.

## Chapter 6 Conclusions and Recommendations

The study's conclusion and a summary of the results are included in this chapter. The study's findings are then drawn, and relevant recommendations are made to enhance agriculture in the municipality that could improve farmers' livelihoods.

### 6.1 Conclusion

Regarding food security and enhancing living standards, agriculture will always be a crucial industry for economic growth. These rural households rely heavily on agriculture for their survival; however, it is also true that this industry is fraught with several difficulties, dangers, and shocks. Numerous initiatives have been put in place to help these households deal with these difficulties, but the impacts have not been felt and farmers are becoming poorer, and perhaps development professionals and government do not comprehend how rural farmers are coping. Therefore, it is time to learn more about rural farmers' resources and capabilities and how they combine them to ensure their comfort and livelihood and promote continuous protection and food security. Therefore, to answer the main research question, "What is the role of rice production in the livelihood of smallholder rice farmers in KNMA and what is the perception of youth about rice farming?" The following findings are summarised;

The discussions from the analysis of the results revealed that rice farming in KNM is confronted with frequent flooding, birds attack and sealed up of the aguto, negatively influencing their livelihood.

Asset pentagon shows that farmers are challenged with human, natural, physical, and financial assets, but social assets remain stronger. When compared to other assets, the social asset is strong. In the study area, the bonds between farmers are stronger. This resource is useful to help farmers spread their knowledge and abilities.

As stated in section 4.4, farming was the primary source of livelihood. Still, rice farmers also used non-farm jobs and on-farm activities other than crops as methods of livelihood diversification.

#### 6.1.4 What are the perceptions of the youth about rice farming in KNM

The youth are faced with many challenges, just as the aged farmers, who are pursuing to provide for their families. Among these challenges are the high cost of inputs, flooding, and lack of resources like finance and machinery.

### 6.2 Recommendations

It is impossible to overstate the impact of agriculture and off-farm activities on the smallholder farmers' livelihoods in the study areas. The data strongly suggest that the difficulties faced by farmers in these localities are significant. Therefore, To improve the livelihood of smallholder rice farmers in the KNM, the researcher recommends the following to both private Organisations, Non-Governmental Organizations, KNM and potential investor from the area and outside;

1. The KNM, in partnership with private agencies, could consider dredging the "aguto" to reduce the annual flooding of the Agorvega-Afife valley.
2. The KNM, in partnership with Ghana Irrigation Authority, could consider investing in a restructuring of the lands just as it is with the Irrigation site at Weta. This will help reduce perennial flooding and allow farmers to cultivate their plots more than once a year.
3. The KNM, organisation and potential investors could invest in the tractor and Combine harvester services. This would support the people in the area and others in other towns and create employment for the youth who have learnt the trade.
4. The YIAP program could promote awareness among the youth in the municipality on the initiatives or lucrative business opportunities and remunerative jobs offered by the agricultural sector to attract more young people to agropreneurship.

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## Appendices

### Annexe 1: Interview Checklist

#### Semi-structured interview for Rice Farmers

**Community Name:**

**Name of Respondent:**

**Age Respondent**

**Education level of respondent:**

**A. Guiding questions on vulnerability Contexts**

1. What kinds of disasters did/do you face, especially with rice farming for the past 5 years? (Shocks, Trends and seasonality)
2. How do you control these vulnerabilities?
3. What are the implications for your way of life if you rely on rain for farming?

**B. Guiding question on Livelihood Assets?**

4. What is the status of these assets?
5. How many acres do you cultivate?
6. Is the land your own? How did you come to own the land?
7. Do you wish to increase the size of your farm?
8. What types do you have if you also raise animals in addition to crops?
9. Where do you sell your crops when harvested?
10. How many people rely on you for a living?
11. How will you feed them all?

**C. Transact walk observation guide**

1. Observing livelihood assets in the community and their use
2. Observing the daily activities of farmers

**D. Guiding Questions on Livelihood Strategies?**

1. What other activities do you pursue besides rice farming for a living?
2. Why did you make or choose these choices or strategies?
3. Which of these options are your best options?
4. Do you see farming as a business?

**E. Guiding questions For FGD**

1. What kinds of vulnerability did/do you face, especially with rice farming? (Shocks, Trends and seasonality)
2. How do you control these vulnerabilities?
3. What are the implications for your way of life if you rely on rain for farming?
4. Are you all into farming? Yes/No
5. Why?
6. How can we make farming a business?
7. What kind of resources are you using to grow rice? (Assets)
8. How does owning land affect your ability to make a living?

9. How does access to resources like weedkillers, seeds, and fertiliser affect your ability to make a living?
10. How do you fund your farming operations? How do you perform the farm activities – (Land Preparation, harvesting, weed control) By Machines / Hand?
11. What other crops do you grow besides rice, and why do you grow them?
12. What challenges do you face and how do you cope with them?
13. How do you get your product to the market?

**F. Pairwise Ranking**

Determine the most suitable strategies most common disasters

**G. Key informant interview guide for Municipal director of Agriculture and Municipal Chief Executive**

1. Which activities and initiatives are currently being implemented in the municipal?
2. What difficulties do farmers in the municipal encounter, and how may these difficulties be resolved?
3. What difficulties does your department have in carrying out its duties?



## Annexe 2: Coding of Interview List

Farmer Code	Farmer Age	Sex	Land Size	Type of Ownership
AG01	26	M	2	Rent
AG02	41	M	5	Rent
AG03	36	M	2	Rent
AG04	57	M	2	Rent
AG05	46	M	6	Rent
AG06	61	M	2	Rent
AG07	45	F	2	Rent
AG08	52	M	5	Rent
AG09	39	M	5	Rent
AG10	44	M	5	Rent
AG11	29	F	1	Rent
AG12	65	M	3	Owned
AG13	55	M	2	Rent
AG14	38	M	2	Rent
AG15	54	M	2	Rent
AF16	55	F	2	Rent
AF17	70	M	2	Rent
AF18	30	M	2	Rent
AF19	36	M	2	Rent
AF20	40	M	2	Rent
AF21	43	F	2	Rent
AF22	56	M	2	Rent
AF23	62	M	3	Owned
AF24	60	M	2	Rent
AF25	54	F	2	Rent
AF26	45	F	2	Rent
AF27	62	M	4	Rent
AF28	27	F	1	Rent
AF29	25	M	3	Rent
AF30	51	M	2	Owned

Source: Individual farmer interview list, Fieldwork 2022

Coding of Focus Group Discussion

Column1	Column2
FGD Code	Community
AG01	Agorvega
AF02	Afife
AV03	Avalavi
AGY04	Agorvega youth
AVY05	Avalavi youth

### Annexe 3: Pictures











































#### Annexe 4: Research Planning, Timetable and Budget

Key Faces	Activities	Time
<b>Desk study</b>	<ul style="list-style-type: none"> <li>• Problem Identification and definition</li> <li>• Research Objective</li> <li>• Research Question and sub-questions</li> <li>• Literature Review</li> <li>• Methodology</li> <li>• First draft of Proposal</li> <li>• Interview guidelines and checklist</li> <li>• Data collection material and preparation</li> </ul>	4 weeks 31/05/2022 – 20/06/2022
<b>Fieldwork</b>	<ul style="list-style-type: none"> <li>• Travel back home</li> <li>• Travel to the area for open meetings with farmers, DCE and opinion leaders.</li> <li>• Key informants interviews</li> <li>• Semi-structured interviews</li> <li>• Focused group discussion</li> <li>• Observations</li> <li>• Infield data validation and cleaning</li> </ul>	6 weeks (July -August) 26/06/2022 – 06/08/2022
<b>Final Report Writing</b>	<ul style="list-style-type: none"> <li>• Data analysis and writing of findings</li> <li>• Discussion and presentation of findings</li> <li>• Conclusion and Recommendations</li> </ul>	4 weeks (August/September) 01/08/2022 – 31/08/2022
<b>Report Submission</b>	<ul style="list-style-type: none"> <li>• Draft report for review by supervisor</li> <li>• Printing and binding of hard copy report and online submission of soft copy</li> </ul>	September 03/09/2022 – 10/09/2022

#### Timetable

Activity	June 2022	July 2022	August 2022	September 2022
<b>Finalise Proposal</b>				
<b>Fieldwork</b>				
<b>Do data analysis</b>				
<b>Write report</b>				

#### Research Budget

Activity	Cost (Euros)
Return Flight to Ghana	1000
Road transport to Afife	50
Living Cost in Afife	100
Motivation to the Farmers	100
Contingency	100
<b>Total Cost</b>	<b>1,350</b>