

**Rural Women Participation in Lowland Rice Production: A case study in Todee District
Montserrado County, Republic of Liberia.**



**MASTER OF MANAGEMENT OF DEVELOPMENT- SPECIALIZATION- FOOD AND NUTRITION
SECURITY 2020/2021**

THESIS RESEARCH

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September 18, 2021

Rural Women Participation in Lowland Rice Production: A case study in Todee District, Montserrado County, Republic of Liberia.

**Declared to the Faculty of the Van Hall Larenstein University of Applied Sciences.
in partial fulfilment of a Graduate Degree in Management of Development with specialization in Food
and Nutrition Security.**

Aria G. Marshall

DEDICATION

This Thesis is dedicated to my dearest parents: Mr. Aaron G. Marshall and Madam Olive W. Clarke. Their combine love has produced fruitfulness, of whom I am a product.

ACKNOWLEDGEMENT

I am extremely grateful to the almighty God for his enormous favour and blessings upon my life, which is manifested in the knowledge that I have acquired during my study here at Van Hall Larenstein University of Applied Sciences. Let me extend my most profound appreciation to my supervisor, Dr. Pleun Van Arensbergen for her continuous support and supervision at every stage of this Thesis. Her guidance has helped me improve in many ways; including her continuous critical feedback and supervision meetings. Her comments were helpful during this thesis writing process as it helps me identify stages that needed improvement and how to go about it. Additionally, the supervision meetings with her were very knowledgeable and kept me open minded. Let me also express my sincere gratitude to my mentor, Dr. Suzanne Nederlof for her numerous supports during my study, she has always believed in my ability to make the best of myself. As such, I remain forever grateful and thoughtful of her sacrifices.

My heartfelt appreciation is being conveyed to the Netherlands' Government (Orange Knowledge Program scholarship) for such a steadfast initiative to contribute to the human resource capacity of young Liberians and all other developing countries listed as beneficiaries. I am optimistic that this gesture will have a sustainable positive impact. I acknowledge the administrators, instructional staff, and colleagues; they have been compassionate friends along this journey to achieve this goal. The VHL family has expanded my professionals' network, globally they will always remain in my heart and mind. The milestone achieved wouldn't have been possible without their academic instructions, criticism, and corrections. To the citizens of Todee district, Montserrado County, your willingness and cooperation, which immensely contributed to my thesis, is highly remarkable, especially the women household heads. I like to also acknowledge the chairman of the Board of Directors for Women Empowered for Sustainable Agriculture (Dr. Robert Myers) and the entire Board for the opportunity to grant me a yearlong leave of absence in pursuit of my academic sojourn.

Let me recognize the following people for their tremendous support during my study in the Netherlands: Siatta P. Morgan, John B. Khardi, Albert S. Kidlay, Joseph Cooper, Red Smith Marshall, and Wuo T. Korto.

ABSTRACT

Historically, rice production in Liberia can be traced far after the decline of the Mali Empire in 1375 and Songhay in 1591 respectively (UNHCR, 2018). During such period, the Dey, Bassa, Kru and West Atlantic Gola and Kissi; in search of a favourable and arable land in comparison to their homelands brought them to the area, now called Liberia. Evidence for this comes from early European merchants, such as Pedro de Centra, who arrived in 1461, UNHCR, (2018). Currently, rice is the first staple food crop in Liberia for livelihood and income generation for rice farming communities (MOA, 2018). Due to population growth and urbanization, the annual per capita consumption of rice is approximately 133 kg per year in the country is amongst the highest in Africa (Africa Rice, 2021). in Liberia, the demand for rice consumption keeps growing (UNHCR, 2018). The high demand and fast-increasing population have caused high importation and high cost on rice commodity in the country (MOA, 2020). Due to limit local rice production, the inflation rate on imported rice commodity, have caused a high level of food shortage for rural household (UNDP, 2014). According to Africa rice, (2021), hunger and food insecurity persist a challenge in Liberia. To improve rice production and enhance food security for each household in Liberia, it is relevant that the constraints of rural Women participation in lowland rice production be address. It is based on this that the research assessed rural women participation in lowland rice production in Todee District, Liberia

To evaluate the participation of rural women, the research employed different approaches such as focused group discussions, observation, semi-structured interviews, and key informants' interviews. Random sampling strategy was used to selected 32 participants (16 male and 16 female who were or are rice farmer of coal producers) for semi-structured interviews in the Todee district. The different strategies enable the researcher to gather detail information on the participation of women in lowland rice production in the research district.

From the finding, it was clear that women were more interested in the financial benefit from charcoal production which in another way the income can be used to acquire food rather than cultivating lowland rice that they don't have access to credit or loan as it is for charcoal production. Despite the role of women in food preparation, many women choose charcoal production as their major livelihood activity because they have access to receiving some financial assistant from charcoal brokers for production which they don't see such opportunity in rice production. In addition, charcoal production is supported by broker and is profitable wherein the producers can afford food and other materials for households using the income from charcoal. The capacities of women were limited especially their access to financial support for farming, limited number of house workforce and limited access to land ownership reduce their participation in lowland rice production. Married women were identified to be involved in rice production because they have the backing of their husband who could fell the farm trees that women are not allow as the result of the community tradition norms restriction. In general, rural women participation in lowland rice production is influence by their access to financial and material supports, their traditional community norms related to gender roles, No help from man to women in carryout the reproductive role, and their limited access to farming land ownership. This show that women participation in low land rice production can be improved if strategies are employed to provide sustainable income source in a form of rural women' loan association to serve as source of credit for specific lowland rice production. With the creation of program to give women access to credit or loan, the issue of land for rice production mainly by single women can be address since the community land is given to women who are able to make use of the land with rice production.

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ACRONYM

COVID	:	Corona Virus Disease
DAD	:	District Agriculture Department
FAO	:	Food and Agriculture Program
FGD	:	Focus Group Discussion
FW	:	Family Workforce
FFWG	:	Farmer to Farmer Working Group
HAF	:	Harvard Analytical Framework
MOA	:	Ministry of Agriculture
RWPLRP	:	Rural Women Participation in Rice Production
UNHCR	:	United Nation Commissioner for Refugee
UNDP	:	United Nation Development Program
WESA	:	Women Empowered for Sustainable Agriculture
SLF	:	Sustainable Livelihood Frame

Chapter 1: Introduction

This chapter provides the overall view of rural women participation in lowland rice production (RWPLRP) worldwide and constricts down to Liberia. It also discloses information on women in agriculture and their participation in lowland rice production in Liberia. The chapter outline the research problem, the research objectives and the main question tailed by the sub-questions.

1.1. Background

One of the most important sectors is rice production, which is one of the primary foods for an estimated 3.5 billion people of the world population (Muthayya, et al., 2014). However, rice has been insufficiently produced mainly in Africa and Asia due to the constraint of women's participation (Rasheed, et al., 2020). According to FAO (2016), estimated that 870 million of the world population suffer starvation, a huge number of people living in developing countries, rice is their staple food for food security which Liberia is not exempted. Historically, rice production in Liberia can be traced far after the decline of the Mali Empire in 1375 and Songhay in 1591 respectively (UNHCR, 2018). During such period, the Dey, Bassa, Kru and West Atlantic Gola and Kissi; in search of a favourable and arable land in comparison to their homelands brought them to the area, now called Liberia. Evidence for this comes from early European merchants, such as Pedro de Centra, who arrived in 1461, UNHCR, (2018). Currently, rice is the first staple food crop in Liberia for livelihood and income generation for rice farming communities (MOA, 2018). Due to population growth and urbanization, the annual per capita consumption of rice is approximately 133 kg per year in the country is amongst the highest in Africa (Africa Rice, 2021). in Liberia, the demand for rice consumption keeps growing (UNHCR, 2018). The high demand and fast-increasing population have caused high importation and high cost on rice commodity in the country (MOA, 2020). Due to limit local rice production, the inflation rate on imported rice commodity, have caused a high level of food shortage for rural household (UNDP, 2014).

According to Africa rice, (2021), hunger and food insecurity persist a challenge in Liberia. The significance of rice as a strategic product for Liberian continues to grow with its rising population and the need to respond to nutrition is a challenge. Due to food and nutritional security, Africa rice have launched the Africa Rice De-SIRA project in one of the counties called Bong, in Liberia. The project aims to reduces hunger and food insecurity, but hunger, food and nutritional insecurity remain a challenge due to the low involvement of women in rice production. According to Africa Rice, (2021), to achieve SDGs 5 to enhance food and nutritional security, the participation of women in rice production is pertinent. According to the Liberia Nutritional profile (FAO, 2016), reports, Food and nutritional insecurity persist as serious issues in Liberia. The prevalence of stunting and acute malnutrition wasting or low weight-for-height both declined between 2017 and 2019. Malnutrition remains a serious public health concern in Liberia due to limited unavailability of food (UNHCR, 2018). Rice is very significant to Liberian homes such that some household cannot go along without rice in a day. According to FAO, (2016), report, a topmost food in Liberia, rice accounts for over 80 per cent as food consumption of the country's population but compare to the feeding on rice within the past years to present, the rate of rice cultivation in Liberia has not been met with the population consumption rate. The gap between the demand and local production of rice is continually met through importation from countries such as Asia and the USA. Liberia spent US\$200 million to import rice annually, the large importation of rice adds pressure on the country's trade balance and the foreign exchange (FAO 2016). According to MOA (2020), about 296,090t rice (before milling) were produced from

251,230 hectares of land with an average yield of 1.18 tons per hectare of land from both lowland and upland. This seems to be less compared to Asia where 3.0 tons per hectare of land from upland and lowland rice were produced (Zahoor, et al., 2013).

Liberia agricultural production is depending on rural women because they rely on agriculture for livelihood (MOA 2018). According to MOA, (2018), one of the main constraints to agricultural production in Liberia is the low participation of rural women in agriculture activities mainly, staple foods, rice cultivation. In Liberia, Todee District Montserrado county, the majority of the inhabitants' livelihoods involve, charcoal productions which women are heavily involved and the most staples food eaten, rice is purchased (UNHCR, 2018). If women would be fully participating in rice production, the demand for rice could be met by higher production. However, currently, women participation is constrained.

In 1989, before the civil crises in Liberia, the production of charcoal was partly done as a coping strategy for individuals to generate additional income (Save the Children, 2014). After the civil crises till now, it has become very vital for livelihood strategy for household due to unemployment (Alfaro & Jones, 2018). Charcoal production in Liberia has rapidly increased by approximately 337,000 metric tons was producing in 2018 by rural household (world Bank, 2019). According to World Bank (2019), the charcoal industry is thought to have employed 28,000 people full-time. People residing in the regions or near charcoal producing areas including Todee District make their livelihood from both charcoal and mini agriculture activities (World Bank, 2019). They depend on charcoal to trade to get food and other needs. The rural people sell their charcoal by transporting it to Monrovia, either selling it at a lesser cost to a middleman. The production of charcoal is a risky job, it is not necessary for people to do if they have a choice over their livelihood (World Bank, 2019).

According to Save the Children (2014), women and children get a burn from maintaining and emptying the oven. Falling tree branches and trunk for charcoal, man get injury with cutlass and axe. However more women are involved in charcoal production in Liberia, especially the Todee District, where 60 per cent of women are involved with charcoal production (World Bank 2019). According to Save the Children (2014), higher number of women are involved in charcoal production instead of rice because their participation in rice production is constrained which have caused then low capacity in rice farming. According to World Bank (2019) report, 50 percent of women were victimized, their husbands and grown-up children were killed during the 14 years civil war unrest. These women don't have no different livelihood options instead to burn charcoal to provide for their family. This way of livelihood strategy is unsustainable economically and environmentally because Forest trees are cut down without replacement. Rural households are under constraints because the income they get from charcoal can't meet their need for food security (World Bank, 2019).

Therefore, to improve lowland rice production and enhance food security for each household in Liberia, it is relevant that the constraints of rural Women participation in lowland rice production be address. It is based on this that the research assessed rural women participation in lowland rice production in Todee District, Liberia.

Research Problem Statement

Agriculture is very significant in human existence as it is considered the backbone for economic growth and a vital tool used to reduce poverty in developing countries (Zahoor, et al., 2013). Liberia relies on rice production, being a principal staple food to the population (FAO,2016). However, it has been insufficiently produced that cannot meet the demand of the population due to the low level of citizens participation especially women (MOA, 2018). Therefore, The Women Empowered for Sustainable Agriculture (WESA) is a legitimate non-governmental initiative duly accredited to operate agricultural functions within the territorial limit of Liberia. It aims to promote and develop programs, initiatives that reflect the significance and positivity at the local and national level of Liberia's agricultural sector. In response to a national outcry for the government to do something to improve the production of the country staple food(rice) and provide employment opportunities for young Liberian women, considering the foreign direct investment in agriculture, it aims at building the capacity of rural farmers especially women in rice production by allowing them to realize their full potential and provide them optimal access to credit and inputs.

WESA as a commissioner, lack knowledge on rural women participation in lowland rice production in Liberia. So, the research seeks to assess the participation of rural women in lowland rice production in Todee District, to propose recommendation to WESA for strategies that can robust rural women participation in lowland rice production for sustainability.

1.2. Research Objective

The objective of this research is to assess rural women participation in lowland rice production, to propose recommendation to WESA for formulating strategies that can improve rural women participation in lowland rice production in Todee District.

1.3. Main Question

What are the factors contributing to the limited participation of rural women in lowland rice production in the Todee district?

1.4 Sub-Questions

1. Why are more women involved in charcoal burning than rice production in Todee's district?
2. What capacity rural women have for their participation in lowland rice production?
3. What supports are provided to rural women and by who for their participation in lowland rice production?
4. How do rural women acquire land for rice production?
5. What culture or traditional norms influences rural women's participation in lowland rice production?

Chapter 2: Literature Review

The chapter provides significant literature on the constraints of rural women participation in Lowland rice production. It furthermore explores the key concepts in this study: women participation, women capacity, support for women in rice, land ownership, and cultural and traditional norm influencing women participation. Furthermore, this chapter gives a description of the sustainable livelihood framework which forms the basis for the conceptual framework that is leading in this study and supports the answering of the research questions.

2.1 Rice production and consumption in Liberia

Food security remains a major issue in Liberia as well as many other developing countries, and the recent increase in food prices is likely to have a strong negative impact on the poor (FAO, 2018). As noted in the Comprehensive Assessment of the Agriculture Sector prepared by Liberia's Ministry of Agriculture, improving rural incomes through the production of local rice and other food, promoting social safety nets and nutrition remains a key priority for the country (GOL, 2007). In part because local rice production has fallen substantially during the period of conflict, a large majority of the population today is a net buyer of imported food, with much of food consumption coming from rice imports. This is because citizens involvement in the production of the country local rice is limited. Despite the low involvement of citizens in local rice production, the price of locally produced rice is low compared to the price of imported rice from Asia or other part of Europe or America (FAO, 2018). Almost half of the country population that live in the rural part of the country dependent on the locally produced rice. Liberians eat rice as a staple food, and the new local rice variety has a three-month growing period, plus the prospect of increased yields from 2 tons/hectare to about 4–5 tons/hectare in the lowlands, which many farmers consider a new era for local rice production in Liberia (International Monetary Fund, 2008). This show that the Liberia local rice can enhance food security and improved the livelihood of the rural poor and improved the food security status of the country at large. In most part of Liberia during the rainy season, the population especially the rural dwellers are challenge with transportation to travel to the city to buy imported rice, as the result of bad road condition. During this period, the only easy option for most rural community's rice consumption is the locally produced rice. This means that the availability of locally produce rice is of great importance to achieving food security and improving the country economy.

The climate of Liberia is tropical, very hot and humid throughout the year. Liberia has two main seasons, dry and rainy seasons (GOL, 2007). The rainy season began from May to October, due to the region (African) monsoon and frequent rains in other months, except for the short dry season that runs from the mouth of December to February, which is more observed in the north of the country. This also means that in six-month period, there is a substantial rainfall with an average of 2,372mm per annum (MOA, 2018). Nevertheless, it is heavier along the coastal belt compared to the inland belt where it is gradually reduces. With the average still being high, the advantage of this rainfall is that the staple food crop (rice) can be cultivated two or three times in a year under irrigated condition (lowland) using short duration varieties. Most farmers grow rice under rainy conditions (upland), which provides one production per year. The rainfall supports the production of rice, tuber crops, fruits, other cereals crops, legumes, and tree crops like rubber coffee, cocoa, and oil palm. The dry season lasts for about six (6) months and allows crops to ripen in this period for harvest and processing and storing. The rice is not widely grown during this season except under an irrigation system using lowland. The crops that are harvested cultivated during this season

are mainly coffee, cocoa, oil palm and citrus. Other crops such as vegetables and fruits are also grown in small proportion under an irrigated condition.

2.2 Rural Women in Rice Production

Rice cultivation is a key source of food and income for most rural farmers in Liberia and other African countries like Sierra Leone and Nigeria, as well as a source of employment for large population of rural women in those countries (Mar, et al., 2010). According to Rahman (2016), Women have a significant part to play in rice production and they rely heavily on their family labor to expend their farm, and dependent on the revenue it generates to address some of the household problem. Failure to recognize this role has frequently resulted in development failing to address women's well-being as well as project and development goals. Even when those technologies are created expressly to aid women, female farmers have been less likely supported in using productivity for enhancing rice technologies such as enhanced seeds, fertilizer, insecticides, or small machinery and provision of credit or loan for effective women participation in rice production (OECD-FAO,2015). According to Gurung et al (2013), Women's engagement in rice growing in most West African countries is steadily expanding. For basic family income in rural areas, a huge proportion of families are becoming reliant on female wage labor. Male members, on the other hand, perform most of the field level production job including the clearing of farm and felling of farm trees, while female members, on the other hand, are responsible for every stage of rice farming, including seedling, nursing, harvesting, rice storage, seed preservation, straw drying, weeding, thinning, cleaning, grain boiling, threshing, drying, husking, and so on, where technology is scarce (Gurung et al., 2013). Individual women's responsibility for completing these responsibilities is mostly determined by their status of marriage (Rahman,2016). Even though some of those West African country like Liberia and Sierra Leone are largely a male-dominated society, there are many divorced or widowed women. To meet their income needs, women in this region would seek labor on the farm of rich farmers in rice processing, domestic household tasks and find other income generating activities to address their household needs (Rahman,2016). Women's activities in rice farming, particularly post-harvest processing, are typically the most time-consuming and exhausting. This puts a pressure on women who are – because of their gender roles - also in charge of most childcare and domestic chores, especially for a labor-intensive crop like rice. In rice cultivation and weeding, women frequently complain back discomfort and pelvic difficulties due to their too much reproductive roles like household food preparation, caring for children and cleaning of home before leaving for farm activities (Gurung et al., 2013). Gender roles are the roles, activities, and responsibilities related to be a male or female in a specific culture. There are three types of gender roles that influence the division of labor (Cuberes & Teignier, 2016). They comprise of, productive, reproductive and community roles that men and women can perform. According to (Cuberes and& Teignier, (2016) community gender role is the activities perform by women in link with their productive role that benefit the community. This benefit contains provision of agriculture extension service, health care and education (Kolawole, et al., 2011). In all works that are performed by women or men, differences can be made between productive and reproductive work (Mar, et al., 2010). production of goods and services to earn money or survive. Individuals and societies primarily recognize and value this work as work, and it is mostly included in national economic statistics. Women and men both do productive work, but not all of it is valued or rewarded equally. Reproductive entails the care and maintenance of the household as well as the reproduction of children (Kolawole, et al., 2011).

In this research, gender role is defined as tasks and responsibilities given by men and women to be performed for a developmental purpose (Kolawole, et al., 2011). These gender roles must be accepted by

all stakeholders including, national government, local and international NGOs, if rice production is to be improved, particularly among smallholder farmers (Cuberes & Teignier, 2016). Gender inclusion is relevant in policymaking, planning, research, and extension advisory service in rice production for sustainable food security (MOA, 2018). Women are constraint due to their limited involvement in agricultural activities mainly, provision services like extension advisory services, training, credit, and then men, (Addison, et al., 2016). According to Kolawole, et al., (2011), rural women are dependent on rice farming especially lowland rice farming due to their responsibilities of taking care of the household to provide food security. Therefore, if their participation in rice production is constrained, mean neglecting their roles in sustainable rice production as well. Many researchers have acknowledged the determinants of women exclusion have triggered negative effects on development and rice production. Women participations encourage commitment in development work and improve development efficiency and any development work without gender inclusion is meant to fail or unsustainable (Eneji, 2015). Therefore, this research aims to identify the factor triggering the constraint on women participation in rice production in Todee District.

2.3 Conceptualization of Participation in Development

Based on the context, the definition of participation has been written by numerous authors in different ways (Piškur, et al., 2014), considered participation as a way people support broader society by their involvement in decision making and sharing their knowledge on a problem for applicable solution for their communities. Participation in the incorporation of people who faced developmental challenges and they are allowed by stakeholders or whosoever to express their opinions on how to solve their developmental challenges (André, et al., 2006). André, et al., (2006) also highlighted the definition of participation as a procedure in which communities dweller regulate policy formulation, choices of investment, management decisions, distribution of power over development initiatives and, create the necessary sense of ownership among themselves.

Therefore, this research defines women participation in rice production as collective involvement and empowerment of women to holds great potential to enhance rice production, which is dependable with the aim of zero hunger SDG2 (NORAD, 2013). Participation in development is based on the inclusion of women because of its focal point on boosting economic growth and development (Cuberes & Teignier, 2016) According to NORAD (2013), tackling the constraints on women participation in rice production and building their capacity, will enable them to initiate and take responsibility of their livelihood sustainably for food security (Setiajiati & Hendrayanto, 2017), this is what the research purposes to achieve. However, these benefits have not been generally known and have not been fully translated into women full economic participation including the agriculture sector (Cuberes & Teignier, 2016). In developing countries, project and programs that are implemented to strengthen and provide support for women agriculture activities usually provide limited resources that can't meet up with women' production needs in the agriculture sector (NORAD, 2013). The roles play by women in the agriculture sector are essential mainly in rice production for economic growth and poverty reduction (UNHCR, 2018). Rice is cultivated on a small scale in Liberia due to low involvement of women, which have caused food insecurity for rural household. The demand for rice is bigger than the production therefore, Liberia is importing rice against high costs. If women would be fully participating in rice production, the demand for rice could be met by higher production. However, currently, women participation is constrained (MOA, 2018). Most women are constrained in farming activities due to their limited ownership to farmland, most especially in some developing country where traditional norms limit their ownership to family land (Mar, et al., 2010).

2.4 Rural women Capacity and support in rice production

Women comprise more than half of the labour force in agriculture and almost two-thirds of the trade and commerce labour force in Liberia (Arndt C., et al., 2009). Women are reported to produce over half of the output in food crops especially rice. The access of women to cash crops, however, is quite limited. There is also a positive degree of gender concentration in agricultural field activities, with male controlling outwardly all responsibilities in the major cash crops. In food crops like rice, regardless of women's dominance for most of the crop season, that is, planting, weeding, and harvesting, men superintend brushing, felling, clearing, and fencing. Policies and different intervention programs designed to revitalize the rural economy, as well as its agricultural production activities, processing produce, and marketing functions, should take into consideration the role of women and women's groups in agricultural productivities and trading (GOL, 2007). Given the substantial work burden that women face because of responsibilities in economic and domestic tasks, investments to increase farm-level productivity can help increase women's economic contribution overall and maximize household welfare. Women contribute meaningfully to the growing of rice, processing, and marketing, but they have inadequate access to methodological expertise and technologies that could help them decrease work and labour bottlenecks whereas providing more revenue (FAO, 2018). Women are mostly in charge of reproductive duties, their equal access to productive resources and other opportunities are key to boosting the faltering global agricultural sector and feeding hungry people. Looking at the distribution of labour input provision in productive activities, it is discovered that, apart from rice parboiling, which is predominantly done by women in some nations, men are more involved in rice cultivation. The amount of work required is determined by several factors, including the size of the farm, the amount of time spent on non-agricultural activities, and the availability of production equipment (USAID/ARD, 2009).

To promote the sustainable participation of women in livelihood activities in one of Liberia labouring country(Sierra Leone), especially in the area of rice production, several joint programme combined safety nets promoted social cohesion and sustainable agricultural production wherein the rural population especially women are now active contributors to household (UNDP, 2017). For example, over 3,000 population of rural women in rice production in Sierra Leone are now contributing to the payment of their children school fees, and some are even constructing new homes in the community as the result of the loan program provided for their farming activities. In addition, local authorities and community leaders are now fully aware about women's right to access, own and co-own agricultural land and equipment (FAO, 2018). As a strategy to increase women participation in the cultivation of rice, there has been increased access to rural credit for rural women in targeted communities in the north eastern part of Sierra Leone very close to Liberia. Over 1,873 rural women rice farmers are economically empowered as the result of the provision of conditional cash transfer and those women are actively involved in agricultural production to fight hunger and improve food security and nutrition at the community and household levels (UNDP, 2017). This is because most of the rural women in rice production have access to land and are supported through the provision of training and loans for their effective involvement in rice production and other livelihood activities that enable them to become independent.

In this research the concept of capacity is studied in terms of livelihood assets, which will be further explained in paragraph 2.7 as element of the sustainable livelihood framework (see figure 1). Support for women is studied as transforming structures. Land ownership is one of the livelihood assets which is studied to get a better understanding of women capacity (see figure 2). However, considering the importance of landownership, the next paragraph will investigate this asset in more detail.

2.5 Land ownership by Women in rice production

Land remains an important asset of excessive importance to African economies, as a source of income, food security, employment and the earnings exports. The exclusive feature of land is its fixed nature, and this has produced a lot of policies administration in the use of rights and transfer of ownership (Akinola and Adeyemo, 2013). Effective control over land is critical to its sustainable use, the hypothesis is that farmer will invest in land and land cultivating technologies if their rights to the ownership of such land are secured (Idowu, 2006). The level of investment in land and rice production are affected by the pattern of land acquisition among women; meaning, women rice farmers are not efficient and their access to land is a major factor influence their level of efficiency (Adeyemo Remi et al., 2015). Rice farming is a very profitable investment among women farmers, however, improvement in any of these inefficiency factors particularly the level of access to farmland would lead to significant improvement in the level of efficiency among women rice farmers.

In West Africa for example: Liberia, Nigeria, and other part of Africa, the customary and formal tenure systems have marginalized women rights (like daughters, sisters, wives and mothers) who tend to have lesser roles in relation to land. Female farmers are forced to limit and derive their livelihood while operating in the customary tenancy systems which are biased against their right (Fenske, 2010). In other part of Nigeria and Liberia, women farmers cultivate upland rice and are as effective as their male counterpart, but the level of their total productivity is far from optimal and record about 66% less yield annually as the result of insecure land right and poor control of productive resources (Ogunleye et.al, 2015). This often resulted to gross inefficiency in the use of productive land and other productive assets. The issue of women access to productive land for agricultural purposes is of great importance if they are to become a benefactors from the technologies like irrigation, processing techniques, subsidized farm supply, loans and extension services that are designed to increase national output of rice (Adeyemo Remi et al., 2015).

Almost 70% of Liberia's 4.5 million people live in the rural parts of Liberia and own their land collectively under customary norms. Individual woman ownership of land is not recognized in most part of Liberia; instead, the state acknowledges certain community land rights but not others (FAO, 2018). As a result, people have land usage rights but not ownership rights. The chief oversees land, as he holds a collective deed to tribal territory and oversees its distribution. The size of the land farmed by a home is determined by the number of people in the family and the amount of labour required. Americo-Liberian settlers and indigenous Liberians who are bound by statute law can buy communal lands, but they must first seek permission from the chief and pay a symbol of good faith (World Bank, 2016). The chief then signs a certificate, which the buyer then presents to the District Commissioner, who is also the area's Land Commissioner. A certificate can be obtained if the land is not part of the tribal reserve, and it is not owned or occupied by another individual. Tenancies are a significantly insecure form of customary holding, and even minor infractions can result in eviction. Tenants' relative insecurity limits them to annual crops only, with cash crops and other forms of permanent improvements explicitly prohibited. When rented land is available, it is usually only for one cropping season to ensure that permanent claims are not pursued, and conflicts are common (FAO, 2018). Land is typically rented or leased only between neighbours and relatives who know each other well and can operationalize. Overall, renting/leasing land is uncommon in rural Liberia, with communities reporting a variety of situations. Rental/leasing is 'possible but does not occur frequently,' to 'it never occurs,' to arrangements being 'broken frequently, and conflicts erupting over

rental and leasing engagements. The leasing issue has a significant impact on most rural women ability to re-integrate into farming (Ibnouf, 2009).

As mentioned before, in this research land ownership is considered a specific livelihood asset, one of the elements of women capacity (see figure 2).

2.6 Cultural and traditional norms influencing women in rice production

Considering the influences of traditional norms on women involvement in livelihood activities, it is significant to consider the intra-household dynamics in the decision-making process regarding the ownership of resources (Babu, Gajanan & Hallman, 2017). How household's resources are allocated or owned among the individuals within a household will determine whether the resources are used by woman or man and will also determine the status of the household's members (Ibnouf, 2009). Decision making on the use of household or community resources varies depending on the nature of the society or cultural consideration and its organization, which differs from region to region. In some settings, women have control over resources like income within households and make key decisions; while in others, men dominate the household's decision making process over finances and all others household assets; and in some other contexts, the decision is made jointly by both man and woman through discussion, negotiation and bargaining (Babu, Gajanan & Hallman, 2017). Due to the existing systems in households and societies, women suffer significant gender-related limits and vulnerabilities as compared to men (World Bank 2016). Changes in agriculture provide up new avenues for livelihood and food security, but they also bring with them substantial risks that contribute to unequal distribution of resources especially in an undisputed with high level of social constricted traditional norms (Ibnouf, 2009). Concerns about equity have been raised for poor and small producers, many of whom are women that may be shut out of lucrative high-value marketplaces due to their inability to compete on cost and pricing with larger manufacturers. Globalization and trade liberalization have created more worldwide market opportunities and, in many cases, increased innovation and efficiency. However, these developments may exacerbate the vulnerability of people with few means, particularly poor women, who have historically had restricted access to critical services and opportunities due to continuing cultural, social, and political biases (Fernandes, et al., 2006).

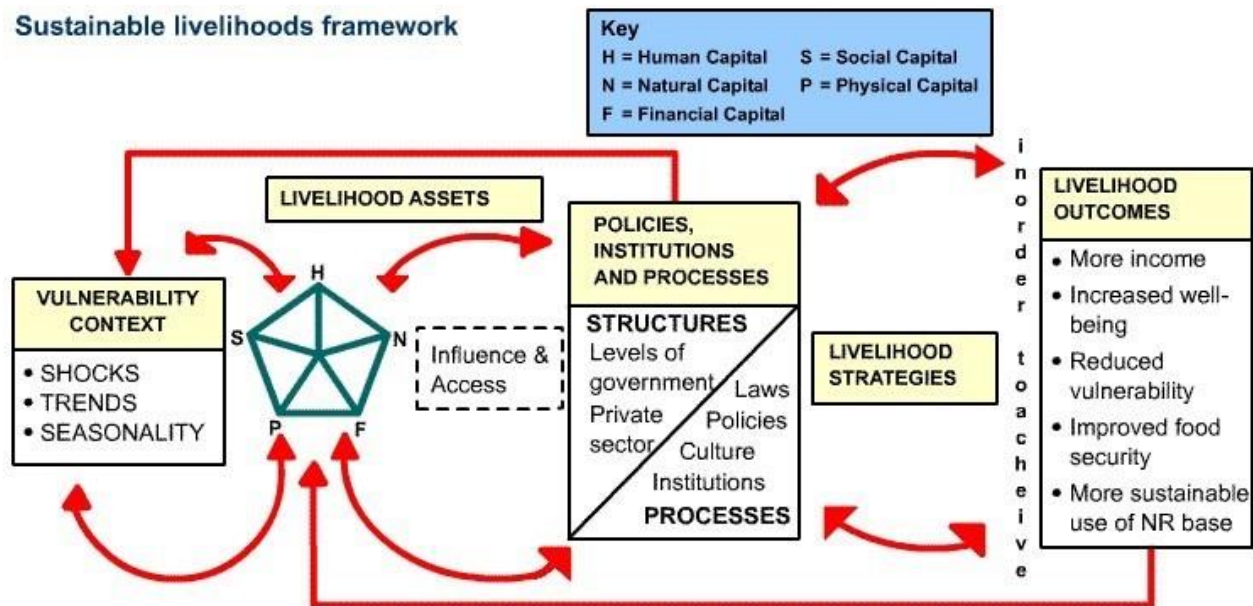
In the Liberian society, access and control over the use of household's assets varies according to region. The Liberia National Gender profile of agriculture and rural livelihood assessment conducted by the Food and Agriculture Organization (2018) report, concluded that in the North Western part of Liberia, women are more in control of economic resources, while key decision related to other household's resources like materials use for farming are made together. It is whispered that in this region of Liberia, the control over household's income is headed by women and leads to good decision making. In other regions like the South Eastern part of Liberia and along the coast built, major decisions on household's resources are made largely by men and they take full control of how those resource are use.

In line with the sustainable livelihood framework are cultural and traditional norms, in this research studied as transforming structures (see figure 2).

2.7 Conceptualization with the Sustainable Livelihood Framework

The sustainable livelihood framework is a utensil used to understand how the livelihoods of households interrelate with their environment, policies, and institutions. To effectively assess the participation of rural women in rice production in Todee District Montserrado county, the sustainable livelihood framework was used.

Figure 1: Sustainable Livelihood Framework



Source: Broman & Henrik, 2017

The framework will be used to understand the participation of women in rice and charcoal production as livelihood strategies, related to transforming structures and processes and livelihood assets, in the Todee District. Generally, the sustainable livelihood framework (SLF) has been used to analyse the livelihood situation of a given population (Serrat, 2017). To create a satisfactory standard of living to meet a goal such as lessen risk and determinants that deprive people of gaining access to assets, the SLF is appropriate to used (Broman & Henrik, 2017). The sustainable livelihoods perspective aims to understand the factor that led to the choice of rural people livelihood strategy, to strengthen the positive aspects to promote flexibility of choice and lessen the restraints or undesirable effects (DFID, 1999). Livelihood strategies deal with the improvement of well-being, lessen susceptibility, enhance food security, and enable people to use their natural resources sustainably (Leung, et al., 2011).

To create a satisfactory standard of living to meet a goal such as lessen risk and determinants that deprive people of gaining access to assets, the SLF is appropriate to used (Broman & Henrik, 2017). There are different ways the SLF is used, according to Addison, et al., (2016), in developmental exercise, the SLF is a method used to enable people that are participating in development programs to point out main constraints and opportunity to make a recommendation for a solution or provide intervention which is the aim of this research.

For the purpose of this research, the sustainable livelihoods framework was adapted as shown in figure 2.

To have a better understanding of the constraints on rural women participation in lowland rice production in the Todee District, components of the sustainable Livelihood Framework (SLF) were used to operationalize the main concept; rural women participation in livelihood activities (lowland rice and charcoal production). The components of the SLF studied in this research are the livelihood assets, and the transforming structures and processes. Those key components were selected and used based on their ability to analyse challenges as it relates to livelihood.

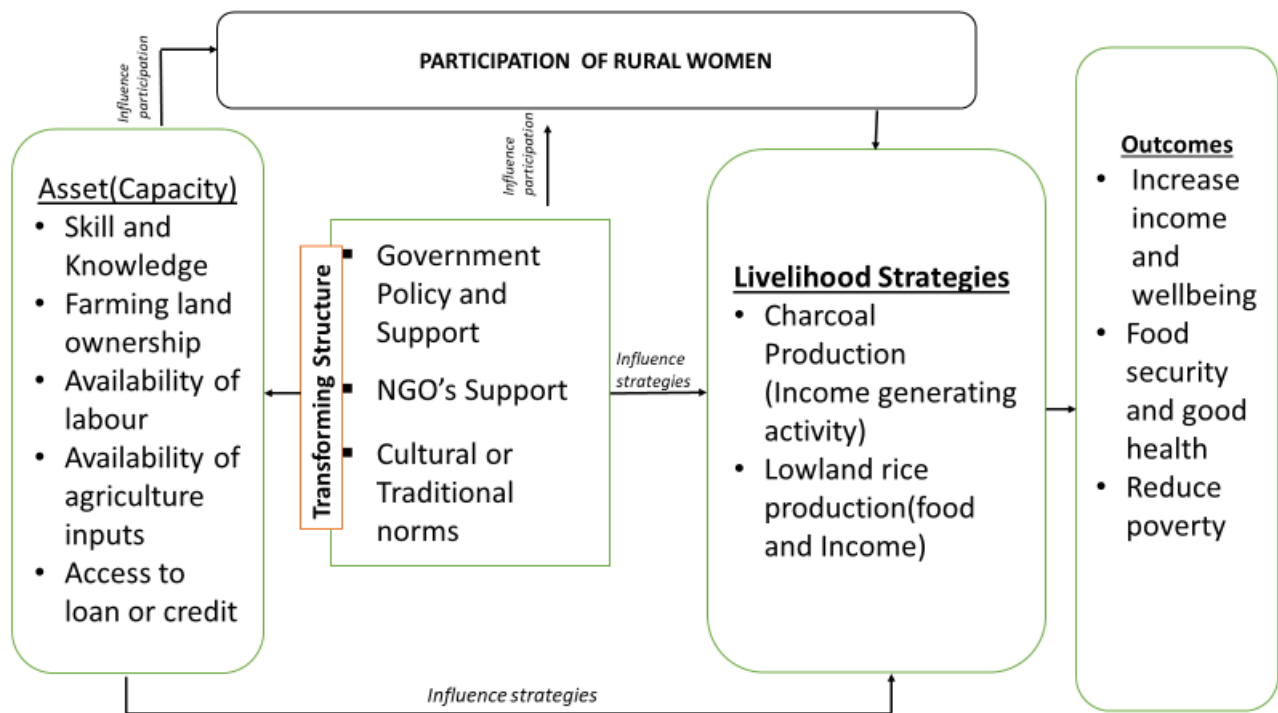
According to the SLF, livelihood assets are categorized into five and are considered as different household-based resources (Ottermannsa, et al., 2018). The five assets are human, natural, financial, physical, and social. Livelihood assets are very significant because household wealth depends on them and also lead to the livelihood outcome of the household (Ottermannsa, et al., 2018). As shown in figure 2, in this research assets are operationalized as skills and knowledge, farming land ownership, availability of labour, availability of agriculture inputs and access to loan or credit.

According to the SLF the transforming structures and processes comprise of institutions and policies that distress the lives of the rural poor from the government, private agencies to state policies and culture (Leung, et al., 2011). These can convert the vulnerability context and the assets of the rural poor have access to (Feindouno & Goujon, 2016). According to DFID, (1999) the structure is very vital in the framework because it is considered as the organisations, both private and government – that create and implement a policy of legislation, and other roles that impact livelihoods (Leung, et al., 2011). The relevance of structure is that it makes the processes work. If there is no legislature, there will be legislation. According to Leung, et al., (2011), the processes can change and enhance livelihoods and encourages donor for development activity. The focus of the process is to build or improve policies, laws, and institutions to provide better opportunities for the rural poor (DFID, 1999). Due to the transformation processes can make to livelihood make them a key focus for donor activity (DFID, 1999).

In this research transforming structures are studied by looking at the support provided to women for participation in rice production and by looking at the cultural and traditional norms (see figure 2).

Based on the analytical ability of the SLF components used, sub questions were developed to address the issue of (constrained on rural women participation in lowland rice production) in the main research question. The arrows shown in the conceptual framework (figure 2) indicate how one component of the adapted SLF have influence over the others. The arrow from the assets (capacity) to the livelihood strategies means the assets of the rural women can influence the kind of strategy employed by the women. To study this relationship sub questions 2 and 4 are formulated, looking at capacity and land ownership. The arrows from transforming structure to assets and to livelihood strategies also implies that Government Policy, NGOs supports, and Traditional Norms can influence the Women's assets and strategies in a positive or negative direction, and it also have impact on the kind of outcome produce. Sub question 3 therefore investigates the supports provided to women. Cultural and traditional norms are also considered transforming structures. This is studied in sub question 5, while sub-question 1 study the general reason why more rural women are involved in charcoal production then rice production.

Figure 2: Conceptual Framework for women participation in charcoal and rice production



Source: Constructed base on literature

Chapter 3.0. Methodology

This section describes the different methods of research and tools that were used by the researcher. It clarifies the reason why these methods are essential to be applied in the research. Due to the covid-19 pandemic, the researcher employed the health protocol of social distancing and the wearing of facemask during each of the methodology applied. Under this section, the researcher discussed the content of the research, the role of the researcher, the research design, the study area selection, the sample size and strategies, and the data analysis processes.

3.1. Context of the Study

Due to the COVID 19 pandemic measures (travel restriction) during the data collection period from July 14 to August 22, 2021, the researcher was unable to visit the field of the study area for data collection. The pandemic outbreak was declared as a public health emergency international world concern on January 30, 2020 (WHO, 2020). According to WorldOmeter, (2021), 215 countries have been affected by COVID-19 with total cases 176,417,357, total death of 3,810,763 with a total recovery of 160,389,773. Even though travel restrictions from the Netherlands (EU travel ban) have been lifted on Liberia. However, the present upbreak of the pandemic in Liberia has caused travel restriction for travellers from abroad. Liberia has a total of 250 new cases of corona per week (WorldOmeter, 2021). The government of Liberia has decided to quarantined travellers from abroad upon their arrival in the country for 14 days. These conditions make it unfavourable for the researcher not to travel to her home country for data collection instead of a research assistant. To address the limitation, the researcher recruited two research assistants (Male and Female) who were familiar with the research community and works for the commissioner (WESA). The research assistants have extensive data collection experiences and were fluent in the local language at the researcher requested. Therefore, the research assistants had an excellent characteristic that provided data quality and positive outcome to the research. The researcher, on the other hand, did everything in her power to be in constant contact with the research assistants making sure they meet with the community authority to be aware of their present in the community, conduct first meeting with the respondents to explain their mission and communicate the research activities (FGD, SSI) to the different group be the actual starting of the data collection.

3.2. Role of the Researcher

For the research to be conducted successfully, the researcher communicated the research objective to the respondents through the research assistants and explained that the research is meant for academic purpose therefore, there was no rewards for participating in discussions and providing information. The researcher assistants listened carefully to the responses from participants and observed their behaviour and asked a probing question for proving detail information. For the purpose of qualitative research, the research consists of interviews guide such as semi structure and key informant. According to Berge, (2001), researcher must build the idea of observation, analytical skills, and theories from an extensive range of information sources through interview and focus group discussion that clearly describe the idea of the research. According to Denzin & Lincoln, (2004) research is considered as a tool for data collection" the logic is that data are collected from human explanation rather than from inventories. According to Greenbank (2003), a qualitative researcher needs to exhibit self-appropriation of character including biases and assumptions, any expectations, and experiences that will make him or her succeed in conducting the research. Therefore, the values of ethics were exploited in this research by the researcher assistants and a respectful attitude were highly considered in the process of conducting the research. The researcher informed the research assistants and notes were taken on all ethical concerns while on the

field. Consent for participation from respondents were sought first, and respondents' confidentiality were ensured before conducting the SSI, KII, and FGD. The researcher assistants requested permission to record and photograph the participants. Researcher assistants adhered to all cultural protocols and worked in line with the research community's rules and regulations.

3.3. Research Design

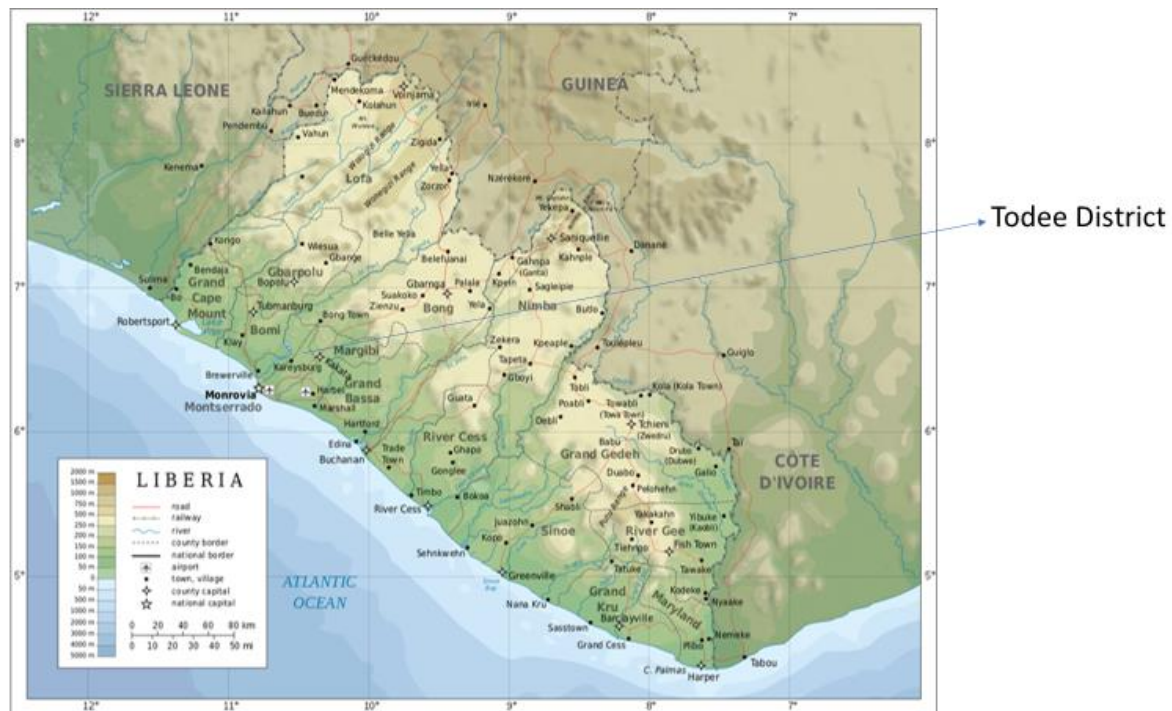
During the research, primary and secondary data was collected. Secondary data from desk study was collected through e-library, my greeni, google scholar and science direct databases and the primary data was collected from the field through discussion with both women and men group, conducted interview with community chief, district Agriculture department representative, and interviewed individual women who were engage in coal and rice production. The data obtained from these databases enable the researcher to reference what earlier researchers have done over the past. The information from the literature gathered had supported the researcher to understand and gather opinion from individual writers on the research problem. The primary data was collected from the respondents under the study. Primary data was collected to enable the researcher to know the problems and those who are directly involved with the problem.

3.4. Selection of Study Area

Todee is favourably situated between two of Liberia's urban capitals; Kakata and Monrovia cities which are twenty kilometres apart. 62% of the district land space is high land/upland while 38% is low land/swamp. The vast portion of the farmlands in the district is either privately owned and planted with tree crops, especially rubber by elite smallholder farmers or the Firestone rubber Plantation. The soil is Shallow, coarse latosols cover about one-eighth of the land in the hilly and rugged terrain. Along the coastal plains, infertile or sandy soils, can be found on a very small land space. Highly fertile alluvial soils account for a highest percentage of the land area and are primarily used for agriculture (LISGIS, 2008). Due to the productive soil quality of the soil in the Todee District, 75% of the district population are engaged in different agriculture activities. Out of the majority population engaged in agriculture activities, half of them are rice farmers. According to LISGIS 2008 report, the Todee district is the second district in local rice production per annual in Liberia. In addition to rice production, charcoal production is the second major livelihood activities of the district population.

The district is characterized by the indigenous of various local tribes and governed by chiefdoms and clan systems. It was based on these characteristics that the district was selected for this study to understand how women participate rice production since the district is known for their involvement in rice and coal production as the major livelihood activities, and additional, since they have been ranked before as the second district in Liberia that produce local Liberia rice.

Figure 3: Map of study area



source: world Bank 2018

3.5. Sample Size and Strategy Used

The sample size of this research consists of characteristics which enable the researcher to have the rightful respondents that the research needed. Therefore, the research contains female and male headed household, young adults' men, and women. The researcher assistants conducted two focus groups for both genders which enabled each gender to express themselves freely without any barrier. The researcher invited 8 women for the FDG, 4 from women who been doing lowland rice farming or who are still doing rice farming, and another 4 from women who are currently involved in charcoal production. They were selected based on the random selection of houses and asking of question to know if they are engaged in lowland rice farming or in coal production. The same strategy was used to select the 8-person invited for the Male FDG. The researcher used 8 members for the FGD because the researcher wanted to have a manageable size and follow the COVID 19 measure of social distancing. In addition to the FGD, the researcher used semi-structure and key-informants interview. The researcher considers 32 (16 women and 16 men) respondents for the semi-structure interview. The researcher considers the respondents because she wanted to generate more information to achieve the research objective. The selected respondents from the district were female and male headed household in lowland rice and charcoal production. In the characteristic sample size, female and male headed household were selected randomly from household in the community, however the random selection was specifically focus on women and men who were involved in rice farming or are still doing rice farming, and those who are presently in charcoal burning. The respondents were contacted using the snowball method meaning "contact one and locate the others" The strategies of random sampling were selected because the researcher saw that the

population of coal producer were many, therefore the researcher had to do random selection to avoid favouring one person over the other. The result from the selection of the respondents shows that all (32) were involved in rice production before engaging in charcoal burning, only 3 persons were currently doing rice farming. The researcher considers them because they all have some level of knowledge and experiences about the benefit and challenges on lowland rice farming since they all been involved before.

3.6. Semi-Structured Interview

The researcher used the semi-structured interview as a utensil for gathering information to understand the factors that influence rural women participation in lowland rice production. This tool was used because it enables the researcher interacted with the respondents individually and were able to share their experiences with no fear of being in a group. The research assistants clarified their roles to the respondents as a research assistant at the starting of the semi-structured interview that they're helping a student who is unable to return home for her thesis for data collection as the result of the COVID 19 pandemic. After the introduction, the research assistants made a phone call to the researcher to form part of the interview. For example, during the interview, the researcher assistant makes a call and put the phone on speaker as a means for the researcher to probe and ask question while the respondent was explaining. Voice recording and note-taking were carried out during the semi-structured interview to ensure that all information provided by the interviewee was collected for processing and analysing. The each of the interview took the maximum time of 40minis and the minimum of 37 minis. The each of the interview was conducted to a very quiet area at different location identified by each of the interviewee.

3.7. Focus Group Discussion (FGD)

The tool that allows all members in a group to share their thoughts on a problem is Focus Group Discussion (FGD) (Aborisade, 2013). In this research, FGD was used due to it relevant to provides evidence and understandings of a significant problem. Furthermore, it provides evidence on an issue that cannot be provided by interviewing a single individual. It digs up a lot of information from a distinct point of view of a group in a short period. To substantial the information on how women participation in rice production in the Todee District, the assistant's researchers used FGD by connecting the researcher by means of messenger, WhatsApp, phone call because the researcher was not physically present in her home country for data collection due to the COVID 19 pandemic. The researcher informed the research assistants to observe all ethic and facilitate with the researcher by skype, phone call, WhatsApp during the FGD to ensure the discussion was not dominated by a person in the group, moderate the interaction and make it participatory by allowing every respondent to share their thoughts, beliefs, and feelings on the situation. FGD begin with an introduction and highlighted the objective of the researcher. The research assistants explained to the group that they're only helping a student researcher who asked them to help in her data collection for her thesis. In addition, the research assistants called the researcher through WhatsApp during the group discussion on the various topics; what kinds of supports provided for rice farming, who provides the support, how do people get land for farming, how farmers get loan for farming, why more people are involved in coal production, etc. During the discussing, the researcher was asking probing questions through the WhatsApp communication with the group. The whole process was facilitated by the two-research assistant for the period of 1:25 minis under a Town hall identified by each of the group. The research assistants sought consent from the group to record and take notes.

3.8. Key Informants Interview

Key informants' interview was considered in this research as those individuals who play major role in the study community (Laws, et al., 2013). They're basic knowledgeable about the community activities

concerning women participation in rice production. The informants of this research were the District Agriculture Department (DAD) Officer, the Community Chief (Town Chief), A representative from NGO and Representative of Charcoal Brokers. These stakeholders were chosen based on their knowledge, involvement, and contribution to livelihood activities (charcoal and rice production) in the Todee District. The officer was interviewed on the topic; their role, activities, and policy in promoting rural women participation in rice farming. The interview with the DAD officer lasted for 42 minis and it was conducted at his office. The interview with the community chief was conducted at the back of his home for a period of 44 minis and it was conducted on the topic but not limited to how do women acquire farmland for rice cultivation. The interview with the charcoal broker was conducted on the topic but not limited to what quality you to get loan for coal production, and if they provide supports to rice farmers also. The interview with the broker took about 37 minis right in front of his house during the evening hour around 5pm after his business.

3.9. Data Collection Procedures

Data was collected using a semi-structured, FGD and key informants interview guide (see appendix 1, 2, and 3) with open questions were used. In the semi-structured interview, key informants and FGD, data was collected through notetaking and voice recording to capture every information that were shared by respondents.

3.10. Data Analysis

During the analysis, the researcher makes use of the adapted portion of the Sustainable livelihood framework in the operationalization. The Harvard Analytical Framework (HAF) (see appendix 4) was also used to analyse the roles of women in lowland rice production in the Todee District. The framework aims to help plan design more efficient project to enhance productivity (Mar, et al., 2010). The framework was used in this research due its appropriateness to map the work and resources of women in the Todee District and highlight the key differences between both genders. It was also preferable to use in this research due to its design for gender analysis and a grid that is identified as a matrix for collecting data at the micro-level, the community and household level. It is a useful tool for organising data and can be adapted to many situations. Therefore, HAF was suited for data analysis in this research. The Framework was Published in 1985, as one of the first frameworks designed for gender analysis At the Harvard Institute for International Development in the USA, it was developed by researchers working together with the WID office of USAID (Mar, et al., 2010). According to Mar, et al., (2010). The HAF has four key parts. The Activity Profile, the tool identifies all pertinent productive and reproductive tasks and answers the question: who does what?

The analytical procedure immediately started with the collection of suitable information and verification through cross-checking, arranging, and coding according to the sub-question used in the study. The Qualitative data was collected and analysed based on the triangulation of information disclosed during the FDG and individual interview or semi structure interview. Relative to the sub-questions was planned and logged into the pre-designed Microsoft excel sheet in line with the pre-identified concepts.

3.11 Ethical Considerations

To begin with data collection, the researcher identified the leadership of the research community and seek authorization before the research began in the study area. The researcher worked in line with the community culture and norm such as “women are not allowed to join with men in the same working

group” and “women not allow to fell tree on the farm only for man” The aim of the research was told to the head of the research community and the respondents. The researcher seek consent from the respondents for any interview. The researcher vowed to the respondents to keep their confidentiality.

Chapter 4: Results

This section discloses the outcomes of the data collected on Rural Women Participation in Lowland Rice and charcoal Production in Todee District, Montserrado county. The results of the research are presented according to the main theme in each of the sub-questions indicated in the chapter one of this document. The main theme used for the organization of the study results are Women involvement in charcoal burning and lowland rice production, Women capacity to participate in lowland rice production, supports for women participation in lowland rice production, the process of land acquisition for lowland rice production by women, and Cultural or Traditional influence on women’s participation in lowland rice production. For the purpose of illustration in this chapter; tables, images, grafts, and figures have been used to provide detail understanding of the results.

4.1 Women Involvement in Charcoal Burning and Lowland Rice Production

In analysing the reasons why women are more involved in charcoal burning then rice production, several questions were posted to the respondents (both man and women) considering the challenges and benefits burning charcoal and cultivating rice. Before analysing the benefits and challenges of the two activities, other important characteristics like the respondent’s status in marriage and the number of household workforce that might have influence on their involvement were analysed (see table 1 and figure 4) based on their status of involvement in the two activities.

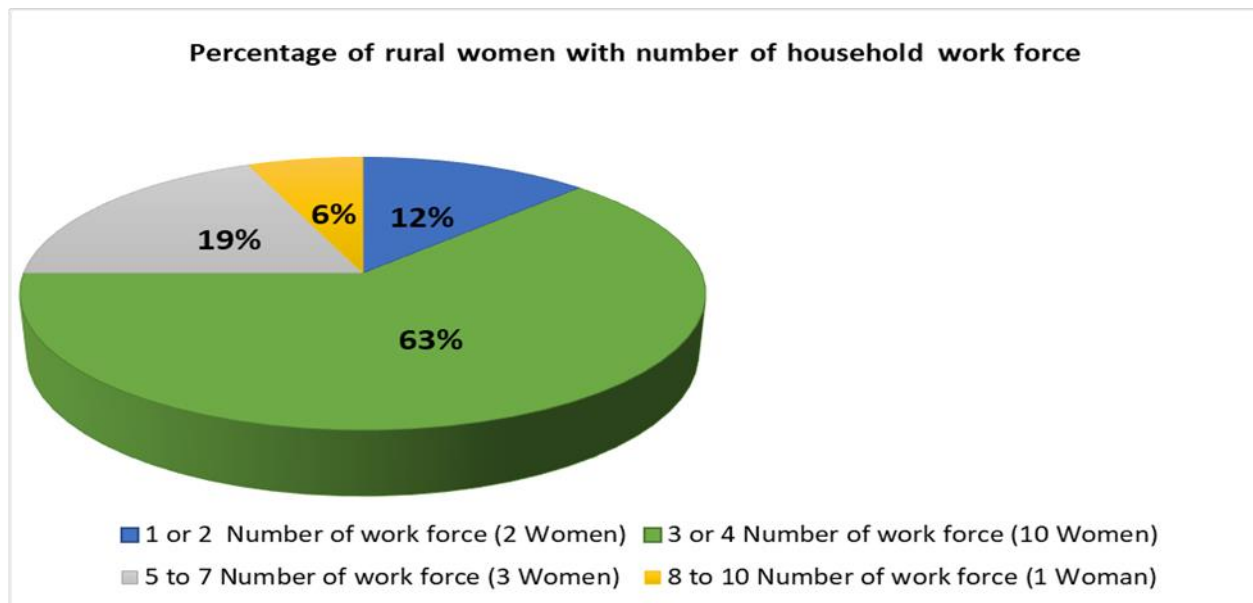
Table 1: The marriage status of women and their major livelihood activity

Activities	Married women	Single women	Married men	Single men	Total
Before and now in lowland rice production	3	0	6	0	9
Before in rice farming and now in charcoal production	1	12	2	8	23
Total	4	12	8	8	32

Source: Author field data

In table 1, the 12 single women who were engage in rice production before and now doing charcoal burning include 2 women who were divorced, 3 who were widowed and 7 who have not married before. These different characteristics sum up to the total of 12 single women. The 8 single men were all not married before.

Figure 4: Percentage of rural women with the number of household labour force



Source: Author field data

From the respond analysis, the majority (23) of the 32 respondents interviewed discloses that the two activities require money spending even when doing it at small scale or large scale. This discloser came about because the majority respondent (men and women) was engaged in rice production before going to coal burning. They explained that the advantage coal burning has over rice is that the coal brokers are willing loan coal producers. Interestingly, the majority (13) of the 23 respondents were women while 10 respondents were man. Most of the women further explained that money generated from the charcoal can be used to buy their staple food (rice) and offset other home expenditures. They went on to explain that rice cultivation is so stressful where you make all the efforts and at the end, you still have to buy rice because the yield generated from the farm cannot feed your family up to the next farming season. This same discloser from the majority women was also expressed by all the men interviewed regarding limited yield as the result of lack of financial and material support to address some of the challenges like availability of seeds, fertilizers, loan and even improve tools for cultivation. This information provided during the semi-structure interview with both men and women, was similarly expressed during the women's Focus Group Discussion (FGD) where the group agreed and said *"the benefit of charcoal production can't be compared to lowland rice cultivation, especially in tern of cash benefit which is our most focus because the money we earn can be used to buy food and take care of the family. However, there are challenges in coal production but at the end the financial benefit we acquire are encouraging compared to rice cultivation that is more labour intensive and time consuming, the yield generated cannot give any sustainable income to support the families even throughout the faming season"* See image 1 for pictorial evident that interpret charcoal marketing.

Image 1: Charcoal transportation centre in Todee



Source: Author field data

Image 2: Charcoal market in Crozierville



Source: Author field data

Probing further for more detail information about women who are involved in the two activities, it was very interesting to know that 12 out of the 13 women involved in charcoal production were single women, while the few who were engaged in rice cultivation were married women and none were single (see table 1). According to the few married women, their farm work is shared in two where the husbands are responsible for brushing, felling of trees and cleaning the farm while they are responsible for planning, maintenance and harvesting of the rice. The majority of women disclosed that it is easy for a businessperson to support you in coal burning compared to supporting you for rice production.

More women are involved due to the financial supports from brokers and the profiteering of charcoal burning. Charcoal production has become an enterprise which is organized by and mostly amongst women to give themselves a better business opportunity. The finding from the semi-structured interview and the FDG established that the annual return from charcoal sales is appreciable to cover most expenses and provide household supports for women and their family. For example, a female charcoal producer explained *"I sell a 50kg bag of coal for five hundred Liberian dollar or four United State Dollar (\$500.00 LRD/4 USD) and in most cases am able to hire the services of others including my family members to produce at least one hundred and fifty (50kg) bags of charcoal within the period of at most two months"* Women in the research community are mostly the trusted partners in charcoal business relationship, as such some charcoal brokers provide start-up support to enable the women hire services and purchase resources (rice, woods, gasoline, engine oil, etc.) to ensure that the required quantity of charcoal bags are produced. This information provided during the key-informant interview was confirmed by one of the men during the interview where he said *"Most of the charcoal brokers in our community trust women more than we the men, for example, the other time we needed money to pay worker to bagged our coal, so I decided to go and ask the broker surprisingly he told me that only my wife can sign for the money not me, so I have to go back and call her before the money was given"* When the charcoal is produced in Todee district, it is sometimes transported to the nearest Peri-urban market by some of the producers where brokers are comfortable to make payment and take it to the central Monrovia Markets. The strategy of transporting the charcoal after production to the nearest Peri-urban market was disclosed by majority 12 of the 16 women interviewed. Those majority women were all single women involved in charcoal production. Most of the women who produce the coal and transport to the nearest Peri-urban market indicated that they received more income (about \$300 Liberia after deducting all your expensive) compared to selling it at the production site where you just 125 Liberia dollars after all your expensive. See image 3 for pictorial evident

of charcoal transportation system to the Peri-urban market. They also said that they are free to carry their coal to any market because they are not married for man to control their going about.

Image 3: Text with coal



Image 4: Make it rail with coal



Source: Author field data

Source: Author field data

The minority women (three married and one single) who sell their coal right at the production site disclose that the quantity of coal produced by them are not enough to make additional expensive to the bigger market, therefore they preferred to sell to brokers that come to the production site. The fewer women explained that no matter where you sell your coal, you will get profit, maybe it might not be compared to carrying it to the gigger market, but the good thing is we have never lost profit in our coal burning. Some of the few (three person) said that their engagement with their homework don't also allow them to go fir from their family especially when their husband is not in favor of them going to the bigger market. The coal producers who residing along the train track (previously Used to transport Iron ore from Bong mines to the free port of Monrovia) in the district have develop a local rail transport system by assembling wooden materials as an open bucket truck built in the form of automated train bucket, which they called the "make it rail" system as seen in Image 4. This enables the transport of bagged charcoal to a Peri-urban (Crozierville) market where sales are conducted with charcoal brokers. The women are privilege to have access to post sales transport payment for charcoal they have brought to the market using the make it rail system. This is largely because the rail system is owned and managed by the local communities who owed much of their transport earning to the women who trade in charcoal burning.

In addition to the majority of the women who disclosed that coal burning provides them satisfactory financial benefit, fewer of the women(three) explained that lowland rice cultivation has been their major livelihood activity that they are so use to then any other livelihood activities. They further explained that rice cultivation helps them to feed their household and other family members. The few women disclosed that, they are not involved in coal production because it requires good amount of money, or some supports from a businessperson at the beginning before you can engage in the production. They also explained that if you don't have some opportunities for financial assistant, you will not be able to get enough income at the end of your production. For example, one of the women who is engaged in rice cultivation said *"I don't have any financial supports to engage in coal production, it is very expensive to do, rice cultivation is also expensive but not compared to coal production. For me I have my family land, and it make farming abate easy because I don't need to ask other community people for lowland for farming. I can manage my family labour especially help from my husband and cultivate large farm that can yield enough for my family food and sometime sell some to buy other things"*

From the finding, it was clear that women were more interested in the financial benefit from charcoal production which in another way the income can be used to acquire food rather than cultivating lowland rice that they don't have access to credit or loan as it is for charcoal production. Despite the role of women in food preparation, many women choose charcoal production as their major livelihood activity because they have access to receiving some financial assistant from charcoal brokers for production which they don't see such opportunity in rice production. In addition, charcoal production is supported by broker and is profitable wherein the producers can afford food and other materials for households using the income from charcoal.

4.2 Women Capacity to Participate in Lowland Rice production

The capacity of women to participate in lowland rice production were analysed looking busily at the following: marriage status, membership of a farming group, access to credit or loan for rice farming, knowledge on farming, number of household labour and availability of land for farming. The finding shows that majority (75%) of the women interviewed were single women and had some level of knowledge on rice farming, however none of them were involved in rive cultivation (see table 1). Few of the single women have ownership of farming land but were not member of any farmer to farmer working group.

Table 2: Analysis of rural women capacity

Status of women interviewed	Knowledge on rice farming	Ownership of farmland	Member of farming group
4 (25%) Marriage	4	3	4
12 (75%) Single	12	2	0
16 Women	16(100%)	5(31%)	4(25%)

Source: Author field data

Interestingly from the finding, the minority (4 person) who were married were the only interviewees who were member of a farmer to farmer working group and have ownership of farming land (See table 2). According to the few married women, they are member of a female farmer to farmer working group, while their husbands are also part of a male farmer to farmer working group. This information disclosed during the interview with the women was also express in the FGD with the man where they said *"the farmer to farmer working group is one of our strength for farming especially we who are rice farmers. In most parts of our community, there are men farmer to farmer working group and women farmer to farmer working group. The women group are responsible for planning the rice, weeding, and harvesting, while we the man began the farming by bushing and cutting down of the trees. Most of us that married it is better for us because our wives will join the women group while we the man join the men group and it make our family rice cultivation abate easy"* According to the few marriage women, most of the land owned by them were given by the man family for farming upon their married. It is because of the farming land ownership that they are encouraged to join the farmer to farmer working group so they can be able to cultivate large plot of land for rice. See image 6 for pictorial evident of farmer to farmer working group action.

Image 5: Farmer to Farmer working group



Source: Author field data

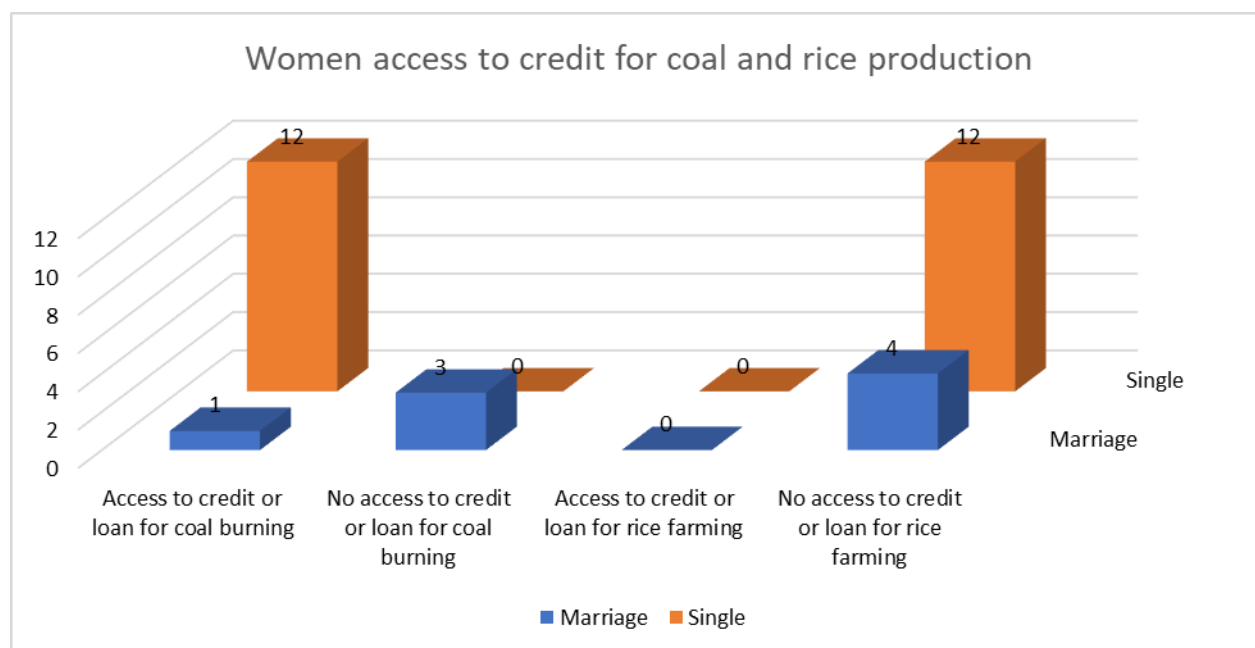
Image 6: Farmer to Farmer group action



Source: Author field data

Expending more on capacity for women participation in lowland rice production, information was collected to compared women access to credit or loan for rice and charcoal production. The finding shows that majority (13 out of 16) of the women have easy access to credit for charcoal production from charcoal brokers compared to access to credit or loan for rice production. See graft 1 for the description of the women responses regarding access to credit or loan for charcoal burning and rice production respectively.

Figure 5: Women access to credit for rice farming or for charcoal production



Source: Author field data

According to most of the rural women, it is very easy to receive credit from a charcoal broker especially when they know that you are involved in charcoal burning or have trees and want to produce charcoal. Probing further for more information to understand whether the trust of giving women loan is based on the marriage status, the women said during the interview that the most concern of the broker is to see if you have trees to burn the coal, by that they will give you the money and their agent monitor your production to the end and sell to the broker. This information provided by the majority rural women was also attested by all the males interviewees, for example, a male rice farmer said *“If the way business people are willing to supports coal producers whenever they want to burn charcoal in this community, is the same way they are willing to supports rice cultivators, it was going to be very fine because we will not be thinking about buying rice, however that is not the case in this community so everybody are just focusing on charcoal burning because it is the only activity that business people are really willing to support”* In addition to women capacities regarding their access to credits or loans for charcoal burning and rice production, the finding from the semi-structure interviews with women and man, from both man and women FDG also shows that 60 % of the household farming activities, ranging from cooking meal for workers are being carry out by rural women, while male farmers carryout brushing and felling activities. Rural women have the capacity to lead farming activities from soil tillage or seed broadcasting up to harvesting and post-harvest activities (storage, trashing, and rice seeds drying, pounding, fanning and sales at local markets. However, these activities can be done by the instruction of a household head, father, or husband. Rural women who are single household heads do not have the capacity to endeavor unilaterally; as such they seek other rural livelihood alternative activities in other to sustain their dependents and themselves.

In addition to land ownership, being member of farmer to farmer working group, have access to credit or loan, the rural women’s capacities were also analysed with respect to the number of household labour

force (see figure 3 at the beginning of this chapter). From the finding it was disclosed that majority (63%) of the women have only 3 or 4 household members who could contribute to the labour force of the women's household livelihood activities. Interestingly, the few women (4) who have 5 to 7 and 8 to 10 household members who contribute to household livelihood activities were the married rural women, and they were the one engaged in the lowland rice production.

The finding also disclosed that most of the women with lesser number of household workforce, were the one engaged in other livelihood activities especially charcoal production. According to the minority women, rice cultivation requires more labor supports either from your family members or have money to hire additional workforce. For people who don't have more family members to support their farming, they are not prepared to engage in rice farming because no business institution or individual is even willing to loan you money that will enable you hire workforce. For example, one of the single women explained *"I am not married to have husband who will help me in doing rice farming, beside I have three children and only one of them able to work but he and I alone not able to make rice farm accept were we have money to hire people. Since I don't have money to hire people, I preferred doing other thing that I can get assistant from people rather than doing rice farming where no one is willing to loan me money"* From the finding, it's clear that the capacities of women are limited especially their access to financial support for farming, limited number of house workforce and limited access to land ownership reduce their participation in lowland rice production.

4.3 Supports for Rural Women Participation in Lowland Rice Production

In analysing the supports for women's participation in lowland rice production, questions were posted to the women with specific reference to Family Workforce (FW), District Agriculture Department (DAD), Non-governmental Organizations (NGOs) and Farmer to Farmer Working Group (FFWG). The finding from the semi-structure interview shows that majority (44%) of the women only received labour support from their FW and their FFWG (see table 4). Most of the women acknowledge the present of NGOs and the DAD in their community, however they explained that they had never received any form of farming supports from those institution. Probing further; it was unveiled that most of the women who depend on their FW and their FFWG were no longer involved in lowland rice production. Similarly, the few women (19%) who have received some level of farming supports from NGOs and DAD were also no longer involved in rice cultivation. This information disclosed during the interview with the women, was also expressed by one of the NGOs Representative (See image 7) who said *"In 2019, we trained about 20 lowland rice women farmers how to carry out sustainable lowland rice farming, but surprisingly when the organization came back to identify those women so they can be given some rice seeds and planting materials, not of them were doing farm anymore"*

Image 7: Interview with NGO Program Officer



Source: Author field data

Image 8: Interview with DAD Staff



Source: Author field data

Another group of women who have had support link with NGOs and DAD also indicated that, the last time they ever received seeds and other farming materials from NGOs and the DAD was about two to three years ago. This indication by few of the rural women was also disclosed by a key-informant/DAD Staff(see image 8) who said *“Every year, the National Government provide us with some farming inputs to distribute to our farmers for rice cultivation but many times those inputs are not enough to cover our rice farmers, it is actually a challenge for our institution, however we always try to supply the little that are provided by National Government”* This statement from the DAD officer was similarly disclosed in the two FDG conducted with women and men, where they explained that supply from the DAD is very little that even 2% of the farming population don’t receive anything during the farming season.

Table 3: Number of rural women with the kind of support and source

Number of women	Percentages of women	Source of supports	Type of supports
3	19%	NGOs, DAD, FW and FFWG	Rice production training, provision of seeds, family members help with farming labour and farming group helping with labour.
4	25%	DAD, FFWG and FW	Tools, fertilizer, family members help in farming and farming group helping with labour.
7	44%	FW and FFWG	Family members help with farming labour and farming group helping with labour.
2	13%	FW	Family members help with farming labour

Source: Author field data

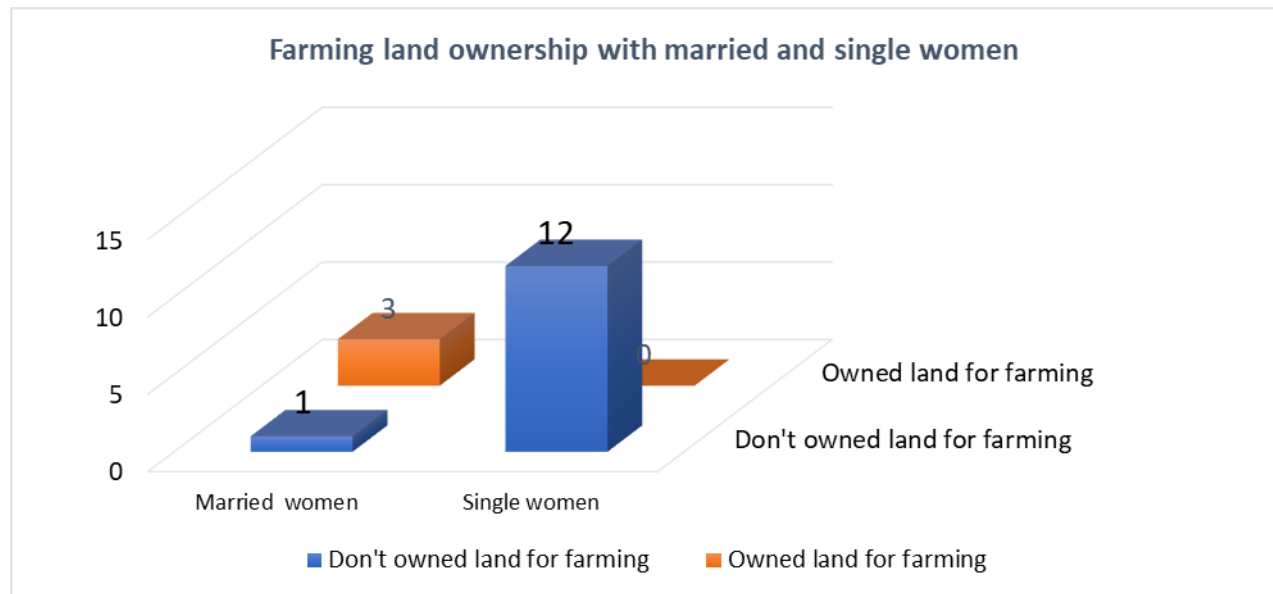
Another few group of women (25%) who disclosed the receipt of some inputs, also explained that the few farming inputs (a bag of fertilizer, 25kg of rice seeds for two farmers) that are sometime provided by DAD are not enough to hope on for rice farming because they are not enough and don’t come intime. However, those few women were the one still involved in rice cultivation. The few women also explained that their major supports such as family and farmers working group providing labour force during farming seasons

are what still encouraging and sustaining them in the cultivation of lowland rice. Rural women are provided with labor supports through their male household heads or husbands and their male child who is not yet married. At the initial stage of subsistence rice farming activities, the male head or a household male representative is involved with group membership called Kuu, (Farmer to farmer working group) to provide brushing support at each other respective plot. The initial farming activities are being carried out by males, as this is a very intense labor activity that requires traditional farming using rudimentary tools and is time bound. If the brushing season elapses without the achievement of brushing and felling targets the plot of land will not burn to give in for the women to begin soil tillage of seed broadcasting, weeding leading to harvest and post-harvest activities. These initial activities can only be supported by males. If the decision is not considered by a male household, women cannot participate in lowland rice production. Due to the role play by man and women during farming, it is challenging for women who are not married, or it can only be better if she has some working boys' children to engage in rice farming. The finding from the various strategies (FDG and SSI) clearly shows that the supports provided to rural women are not enough to motivate the women participation in lowland rice production, moreover, it was also confirmed by the finding from the KII interview.

4.4 The Process of Land Acquisition for Rice Production by Women

To have detail understanding as to how rural women acquire farming land for lowland rice production, several questions were posted to women during the semi-structure interview, the FGD with both men and women group as well as to community leaders about land availability for women participation in rice production. The finding from the semi-Structure interview reveals four separate responses; married women with farming land ownership and those with no farming land ownership and single women with farming land ownership and those with no farming land ownership (See graft 2). From the finding, most (12) of the women have no farming land ownership were single women. According to the majority women, only few people who their family purchase their farmland and was issued with land-dee have right to land ownership, besides those few people, all the farming land belong to all the citizens from the community, however the community chief (leader) managed and control the uses of the farming land. The majority women further explained that the community chief usually give small plot of farming land to women who are not married or not living with man as their husband for farming, only husband and wife can be given more plots of farming land when they ask to make farm. To verify this information provided by the majority women, the Community Chief was interviewed and he said *"the community farming land belong to all community members, but we give it to people base on their capacity, for example if you are married (husband and wife) and want land for farming, we give you large portion of land because you will be working while your husband will also be working on the same plot of land, in that case the land will be used well. But in a case where you are not married and don't have bigger boy children, we give you small portion of farming land because we don't want the land to be wasted"* When this same issue was raised in the FGD with man, the group similarly give the same information provided by the women during the semi-structure interview about how farming land are acquired in their community. It was also interesting to know from the community chief that some of the women who was given farming land did not cultivate the land rather left farming and engaged in charcoal burning. As such, the community chief will take the land from them and give to those who will make use of it by planting rice or other food crops.

Figure 6: Women responses to land ownership



Source: Author field data

According to the few (3) married women who have ownership to farming land, they owned the farming land because they are married to men who their parents were able to purchase their own farming land. When the parents of their husband die, the land was passed on to them and their husbands. They also explain that they can acquire additional farming land from the community chief to add on to their owned land to expend their farming site since they are back by their husband. Generally Rural Women acquire land for farming through their respective male household heads under voluntary land donation by rural community's leadership (Clan chief, Town Chief, Village Chief, Quarter Chief, and traditional elders). If the household head is a single woman and specifically a widow, this means she does not have a male backing her in farming. In other specific cases women are given consideration to carryout rice farming on the community farming land if they are part of farming group or association. In this case there are Limited rights given to them because if they are not farming on the land given to them by the community, it will be taken from them and given to other women who are able to effectively farm on the land.

4.5 Cultural /Traditional Influence on Women's Participation in Lowland Rice Production

In analyzing the cultural or traditional norms that limit women participation in lowland rice production, the researcher developed a guide that contain question like what women are to do or not to do when they want to venture into lowland rice production. All the women interviewed similarly disclosed that in their community, men and women are not allowed to join the farmer to farmer working group together even if the woman is able to effectively do the work as men she is not still allow. As the result of this cultural norms, there are several of women's farmers working group and men's farmers working group in the community (see image 9 and 10). The women farther explained that they are not allow to fell trees on the farm, according to them, the felling of trees on the farm is consider a specific job for man. If any woman is engaged in this kind of activity on the farm and cough, she will be reported to the community chief and she will pay an amount that will be decided by the community chief.

Image 9: Women Farmer's working group



Source: Author field data

Image 10: Men Farmer's working group



Source: Author field data

When contacted the community chief to verify the information provided by the women, the chief agreed to the information provided by the women and father give details as it regards to why women should not engage in farm trees felling and even joining men in the same working group. During the interview, the Chief explains *"During the days of our parents, it was the time this community law was put in to place to protect our women from doing some of the difficult farm work like cutting down of farm trees. According to my grandfather about seventy-five years ago when I was still a child, there was a woman who was felling trees on her farm doing the farming season and mistakenly the tree fall on her and die in the process. It was from that time that this community law came in to being and now it has become our tradition"* The Chief farther explained that it was because of the same reason that men and women are not allow to join the same working group because some of men' farming activities are what women are not allowed to do, so it is not possible to join the same group. This issue was also raised in the man FGD where they agreed with the chief statement and additionally said that the kinds of work, they do are so difficult for women, even if it has not been a community norm, women could find it difficult to work in their group. In addition to the restriction of women in doing setting farm jobs, the women also disclosed that it is very difficult for the few businesspeople who some time give loan to farmers for rice farming to give lone to women farmers, accept where the woman is married and represented by the husband. This finding shows that single women who are rice farmers find it difficult to get loan assistant even if they want to engage in to farming. Besides, it is even difficult for unmarried women to make the decision to engage in rice farming, the fact that they are not allow to fell farm tree or even join men working group that could serve as help to them in cutting down the farm trees. In this case, single women will be preferred to engage in other livelihood activities.

In addition to the community traditional norms regarding women forbidding to engaged in the felling of trees during farming and the restriction of women joining the same farmers working group with men, there were other issues of who played what role in the farming family home between man and woman during the analysis with the Harvard Analytical Framework. From the analysis taken into consideration the reproductive role (Childcare, food preparation, market-related activities, and home Cleaning) of man and woman in the farming home. The finding shows that majority (14 person) of the rural women interviewed disclosed that all the reproductive roles are carry out by the women(mothers) and the girl's children. According to the majority women, it is a practice that is accepted as their tradition and is highly respected.

They further explained that the boy's children are to be with their father and learn how to do farm work. Most of the women believe that allow their husband to do the reproductive role like food preparation, going to the market, taking care of children and cleaning means a disrespect to man as the head of the home. This information provided during the interview, was also attested during the FGD with the Men who explained *"our women and the girl children are responsible for taking care of the home activities, and we the men along with our boys children are there to start the farming activities from the beginning. After we finish the bushing and felling of trees, then it is now time for women to perform their productive role by planning the rice, weeding, and harvesting"* In addition to the majority women, fewer of the women (2 person) disclosed that their husbands are involved in performing some of the reproductive, especially for going to the market and taking care of the children. The fewer women also explained that their husband and their boy's children also help in the planting and harvesting of their farm rice.

Chapter 5: Discussion of Results

This chapter presents the discussion, taken into consideration the results of the research to compared and constrict with other research results indicated in the literature review section of the study. The chapter

discussed the study results in line with the objective presented in the previous chapter which was to assess Rural women participation in lowland rice production, to propose recommendation to WESA for formulating strategies that can improve rural women participation in lowland rice production. The study was conducted Todee district by two research assistants who were well knowledgeable about the research community, however the two researcher assistants where no longer living in the community for over five years prior to the research, therefore the respondents were free to disclose all needed information with no fear or favor. The two research assistants work in line with the rules of the research community though out during the implementation of all the research activities.

Rural women participation in rice production has since been analyzed by different researcher (Cuberes & Teignier, 2016, Setiajiati & Hendrayanto, 2017) where they similarly concluded that in livelihood intervention activities, women are more engaged in activities that gear toward achieving household food security since they are involved in household food preparation. However, the research finding disagreed by disclosing that women involvement in any livelihood activities is based on the benefit they received after, especially the financial benefit. This is because women under the study choose to be more involved in the charcoal burning which is an income generating activity compared to the lowland rice production which is mostly for household food consumption. Women participation in lowland rice production require their access to available farmland that will enable them carryout cultivation. The issue of land ownership for women in most of the developing countries are quite challenging as the result of community or family traditional norms (Mar, et al., 2010). This was the similar case under this study, where the few women who have ownership on farming land were through their husband, this means that the single women have no ownership to farming land. However, single women have some access to community land, but it was based on the decision of the community chief. This indicate that those single women have no decision on the size of land to be use for their rice production, it also implied that even if the women have financial supports to expand their rice cultivation, it will base on the willingness of the community chief since they don't have ownership to farming land. However, women participation in rice production could be enhance if they have access to financial support that will allow them to maintain their rice production. In the process where there are two major livelihood options for people participation, people make choice base on the financial support attached to the livelihood option. This was the case in the study where the majority women choose charcoal production because they had access to financial support to engaged in charcoal burning as their income generating activities. The income generated from the production is used by women to access imputed rice from the market, to sponsor their children in school especially the single women who don't have husband to provide some financial assistant for children schooling. The income generated from charcoal is also used purchase food like fish, meat, cassava, and other material like clothing for children. This make the women more interested in the financial benefit from charcoal production rather than the rice production where they are being constrained with the issue of getting farming land, loan, or credit for their farming activities and how setting farm job like felling of farm trees. Women involvement in the coal production could also be as the result of their easy access to credit or loan for charcoal burning which was not the same for lowland rice production. This finding from the study is in line with the study done by Addison, et al., 2016, where they concluded that women participation in Agriculture activities is based on the benefit and supports received. Their study further concluded that women are always

concern about household food security, as such, they concentrate more on food production. However, women involvement in food production activity like rice farming can be very low as the result of lack of financial and material supports. This was the similar issues disclosed in this research, where women preferred charcoal burning because they could easily access financial assistant by going to a broker who is willing to credit them to carry out the coal production. The rural women choose coal production as their major livelihood activity because the income generated from it can be used to solved some of their major problem paying medical feed, children school feeds, buy household food, and even help other family members. The involvement of rural women in coal production does not any way mean that they are not interested in rice production, but it is because they are interested in livelihood activities that people are available and willing to support financially like in the case of charcoal production. This finding from the study is similar to the research conducted in Bangladesh by Rahman (2016), where it was established that women seek labour on the farms of wealthier peasants in rice processing, domestic household tasks and find other income generating activities to address their household needs. This means that women go for any opportunity that enable them to generate income that can be used to make food and other household use available since they are more responsible for the care of the family. This was the same case with men where majority of them were involved in coal burning compared to rice cultivation. This also means that man and women equally need financial support to their livelihood or change to a livelihood option that have opportunity for financial support.

The partial or unequal division of labour discovered in this research, where women were responsible for all the reproductive role like childcare, household food preparation, and cleaning of home while at the same time engaging in other productive role like planning of rice, weeding, and harvesting, and men only do productive work like bushing of farm and felling of trees. The numerous tasks performed by women especially their reproductive roles make it difficult for women to focus more on rice cultivation. This finding is in line with the research conducted by Gurung et al., 2013, where they concluded that Women's activities in rice farming, particularly post-harvest processing, are typically the most time-consuming and exhausting. This puts a pressure on women who are also in charge of most childcare and domestic chores, especially for a labour-intensive crop like rice.

The capacity of women in rice production under this study was greatly influence by their status of marriage, however they have other opportunity of acquiring loan or credit for coal production without considering their status of marriage. As it was disclosed that most of the women involved in the cultivation of lowland rice were married women, this means that the labour contribution of men in rice cultivation play a major role in the encouragement of women participation in rice production. However, single women can be encouraged to engaged in rice production if there are financial and material supports that will enable them to hire men to do some of the man's specific job that are difficult for women. The finding from the study shows that most of the single women were previously involved in the cultivation of lowland rice before engaging in charcoal burning due to the lack of financial and material support, they had when they were in rice production. This result from the study is in line with OECD-FAO,2015 reports on women in rice production, where it was established that female farmers have been less likely supported in using productivity for enhancing rice technologies such as enhanced seeds, fertilizer, insecticides, or small machinery, and also the provision of credit or loan for effective women participation in rice production. The contribution of family labour was identified as one of the key factors that influences the participation of women in rice production. This is because women with the higher number of household member who can work were the one engaged in the cultivation of lowland rice during the study. This also justified that

the more household labour force a rural woman has the better chance she stands to participate in the cultivation of lowland rice. This statement is line with the study carry out by Rahman 2016, where it was established that women rely heavily on their family labour to expend their farm, and dependent on the revenue it generates to address some of their household problem. However, household labour force is not only enough to enhance the participation of women in lowland rice production, but if there are other supports like the provision of seeds, tools and fertilizers, the women will be able to cultivate without seeking for labour force from outside their family.

The major source of labour support disclosed in the study come from an organized farmer to farmer working group that was established by both men and women lowland rice farmers to enhance their labour need doing farming. This was a good initiative that could contribute to promoting women participation in lowland rice production, but interestingly, there were some gender restrictions where women were not allowed to join in the same working group with men. Interestingly, there is no traditional norms in the community that restricted on any of the farming activities, therefore, a man who can perform all the farm work can cultivate rice without depending on women. Despite the norm restriction on women from joining men in the same working group, women were united by working together in the same group. Notwithstanding, single women excluded themselves from joining the women working group because they could not carryout farming without help from men as the result of their limitation on felling farm trees. This was where the financial or materials supports was necessary because with access to loan or credit, the single women will be able to hire men and do the man' specific jobs that could allow them join their friends' women to do the other jobs like planning, weeding, and harvesting of rice. The study finding shows that few of the women received agriculture inputs like fertilizers, seeds, and tools from the District Agriculture Department (DAD) and NGOs, however, those supports are not enough to improved women participation in lowland rice production. This information from the study agreed with NORAD 2013, where it was concluded that in developing countries, project and programs that are implemented to strengthen and provide support for women' agriculture activities usually provide limited resources that can't meet up with women' production needs in the agriculture sector. Providing training for rural women as strategies to build their skills in lowland rice production is important, however, training must go in line with the provision of farming inputs to sustained women and promote their participation in the production of lowland rice. This was evident in the study where most of the women who were trained in lowland rice production could not continue due to the lack of material and financial supports from those who provided the training. Rural women are more interested in livelihood activities where they can find assistant and be able to improve their house food access through the income from those activities. This was the case in the study where most of the women left rice farming for charcoal production.

5.1 Reflection on Research Strategies

During the proposal stage of the research, the researcher intended to use one researcher assistant who was a male. The researcher decided on the male because he was more familiar with the community and besides, he had access to his own moto bike that could be used for traveling for data collection in the community. This plan for using only male research assistant was an issue at the beginning of his first visit in the research community to meet with both men and women who was targeted in the research. During the first meeting, the women asked a question *"Only you who will be interviewing both the man and the women? Why you didn't come with woman to interview us too"* Based on the question from the women,

the researcher felt that the women could have problem really explaining their self to the male research assistant. Therefore, the researcher immediately told the male research assistant to tell the women that a lady is coming to join he during the interview. It was based on this that the female research assistant was included so that the credibility of the data can't be question since the women requested to be interview by their friend woman. On the second day after the first meeting conducted by the male research assistant, the female research assistant arrived in the community and conducted meeting with the women. At the meeting, the women were so excited interacting with the female researcher assistant. Their excitement could be that they are more freed to interact with another woman. During the semi-structure interview the male research assistant was interviewing the male while the female research assistant was interviewing the women. Before this arrangement, the male research assistant interviewed two women who from their responses appear like they were not free to share some of their information to the male research assistant. For example one of the women said *"I want to tell you how we the women can feel when all this household work is on only we the women, but I can't tell you because you are man"* From this experience, the researcher feel that if the male research assistant continue to interview the women sensitive information will not be provided by the women and it will have impact on the validity of the result, therefore, the researcher decided that only the female research assistant will interview the women. Based on this, the female research assistant has to re-interview the two women previously interviewed by the male research assistant. This was the strategy to make sure that all information collected are the true representation of the reality facing women in the district.

From the beginning of the research at the proposal stage, the researcher did not include any representative from the charcoal broker as key-informant, but during the data collection period, the researcher realized that majority of the women disclosed that they have easy access to finance from charcoal broker for coal production. Based on the responses from the women, the researcher decided to include representative from charcoal broker who was a male as key-informants to understand from he more about the qualification of women to get credit or lone for coal production. The researcher felled that if information is not collected from the broker, it will be unclear as to the process of getting loan or credit from the broker. During the interview with the first broker identified, there was an emergency called received by the broker at the middle of the interview, he immediately told the research assistant that he can't continue with the interview because he must travel to the city now. Since the interview was not completed, the researcher realized that using incomplete information from the broker could not balance the analysis and might have impact on the result of the research, therefore, the researcher identified different charcoal broker making them two persons. The first person was interviewed halfway, and the second person was fully interviewed. However, the responses from the two-broker were similar and all the information needed from them was provided.

The two-Focus Group Discussions (FGD) with both men and women were conducted in two separate town-hall also called palava hot. Before the inception of the data collection during the proposal stage of this research, the researcher was not too confident with using 8 members for each of the two FGD. The thinking of the researcher was that people will not want to sit in any group due the COVID 19 pandemic, however, this thinking was proven wrong by the two groups. More people wanted to found part of the group, but the researcher decided to maintain the eight members as it was planned. During the discuss, two of the women wanted to monopolize the discussion in the group, but immediately the female research assistant reminded them on the rule set at the beginning of the discussion, and the discussion become interactive among the women. Regarding my role as a researcher and more especially a distance researcher during

the period of COVID 19 where am always thinking about my family, I was not confident from the beginning that I was going to make this study work. The lack of confidence continued with me until when my research assistants started the data collection in the field, interestingly, my confidence started when I interacted with the first respondent during the semi-structure interview, especially when she started explaining about how she goes about with coal production. From that day I created the spirit of research and became more effective in communicating with my researcher throughout the different interview strategies that produced all the needed results to achieve the objective of this study.

Generally, the result of this study might not be generalized in other regions since social issues like cultural and traditional norms vary according to the region, country, and district. In so doing, the strategies, the framework and the outcome of the study can be an assistant to development workers in designing strategies to address the improvement of rural women in lowland rice production in developing countries.

5.1 Conclusion and Recommendation

The study assessed rural women participation in lowland rice production and propose recommendation to WESA (research commissioner) for formulating strategies that can improve rural women participation in lowland rice production. The objective was achieved by conducting interview with 32 respondents both men (16 person) and women (16 person) through semi-structure interview, two FDG with 8 men and 8 women separately, and three key-informants' interviews with community chief, District Agriculture Department (DAD) officer and one charcoal broker representative. The objective of the research was achieved by gathering needed information from women who were involved in rice production before and now in coal production, and women who are still in rice production in Todee district. Information was also collected from men with the similar characteristic.

From the finding, it was established that women were more interested in the financial benefit from charcoal production which the income was used to acquire food rather than cultivating lowland rice that could not benefit them due to the lack of or limited financial and material support for production. The women had no access to financial support for rice production, as such they were unable to effectively engage in rice production for food and generate income as they do from charcoal production. Despite the role of women in household food preparation, many women choose charcoal production as their major livelihood activity because they have access to receiving some financial assistance from charcoal brokers for production which they don't see such opportunity in rice production. In addition, charcoal production is supported by broker and is profitable wherein the producers can afford food and other materials for households, using the income from charcoal. The capacities of women to participate in lowland rice cultivation are limited especially their access to financial support for farming, access to land ownership and lack right on the continued use of community land. The marital status of few women served as strength for their participation in rice production since their husband could perform other farming activities like felling of trees which women are not allowed to do as the result of their community norm. However, the reproductive role like caring for children, household food preparation and clearing of the home were perform by only women without help from man. This also contributed to the limitation of women participation in lowland rice production. In addition to the lack of financial support for rice production that was faced by all the rural women (both married and single), the single women were more constrained due restriction in performing some of the farming job (felling of farm trees). This could only be address if the single women have access to loan where they can hire work force to do the man specific job. This could be one of the major strategies to improved single women participation in the production of lowland rice.

Generally, rural women participation in lowland rice production is influence by their access to financial and material supports, their traditional community norms related to gender roles, No help from man to women in carryout the reproductive role, and their limited access to farming land ownership.

5.2 Recommendation

Based on the finding from the research on the participation of rural women in lowland rice production in the Todee district, it is recommended to WESA the consider the following:

- It was due to the lack of financial support from institutions or individuals to rural women to engage in lowland rice production that encouraged most of the women to leave rice production. Since they can get loans or credit from brokers to engage in charcoal production, they are pulled into charcoal production. Therefore, it is recommended to WESA to establish a village saving loan association for rural women rice farmers, which will enable women to manage among themselves where they can get credit from during farming season to acquire needed farm inputs.
- It was disclosed in the research that most of the women perform all the reproductive roles of their household without the men helping, this also limit women from carrying out some of their farming work, thereafter, limiting their participation in rice production. It is recommended to WESA to initiate a program like the gender awareness USAID program implemented in 2018 by ACDI/VOCA Sapo community in Sinoe county. The project raises awareness in primary schools and educate boys and girls especially at the elementary level where the basic of learning starts. If this project is replicated in the district, it will enable the younger children (boys and girls) to understand the importance of man and woman involvement in both productive and reproductive tasks. This will also become a long-term development goal that will promote equal participation of both gender and make the next generation gender aware.
- It was disclosed in the study that the continued use of community land by women is based on the decision of the community chief, therefore it is recommended to WESA to work along with local government authority and community leaders to give permanent status on the use of setting portion of land given to an individual woman who want to engage permanently in local rice production and other food crops for achieving their household food security.

Based on the research results, also recommendations to other stakeholders can be formulated:

- It was disclosed in the study that the community traditional norms restarted women from doing setting farming job like felling of trees, as the result most of the women who were not married could not engaged in rice farming, therefore it is recommended that NGOs work along with the District Agriculture Department to create a program similar to the project implemented in 2016 by the Liberia ministry of gender in the southern region in Duizon district, where a farmer working group was establish and included both men and women to work on each other farm. In the group, work that are difficult for women are been done by men while other work like weeding, planning and harvesting that men choose not to do are done by women. With the introduction of such program in the Todee district, single women will be encouraged to found part of the group because they know that men in the group will fell their farm trees that they are not allowed to do due to community traditional norm.

- It was disclosed in the study that the charcoal brokers were only providing loan or credit to those who want to produce charcoal, therefore it is recommended to those broker to also consider diversifying their business by giving people who are willing to engage in rice production especially women since rice production is one of the major livelihood activity, the brokers can also set up a credit union that will not only be focus on coal producers but other livelihoods activities where farmers will have the opportunity to get loan from the union. Diversifying business is necessary because charcoal business is not sustainable especially where the cutting down of trees increases deforestation and increase climate change impact on the country. Therefore, if government enforce forest sustainability policy on the cutting down of trees, the coal business will be affected, but if the business is diversified by giving loan to rice farmers, the business will still be sustained.

References

- Addison, M., Edusah, S. . E. & Mensah, P. S., 2014. Developing Country Studies. *Gender Constraints and Rice Varietal Characteristics Preferences*, 4(1), pp. 1-15.
- Africa Rice, (2021). Africa Rice. [online] Available at: <https://www.africarice.org/>.
- Arndt, C., R. Benfica, J. Thurlow, and R. Uaiene. 2009. Biofuels, Poverty, and Growth: A Computable General Equilibrium Analysis of Mozambique. *Environment and Development Economics* 15: 81–105
- ALLISON, E. H., AHMED, N. & ALLISON, E. H., 2008. Using the Sustainable Livelihoods Framework to Identify Constraints and Opportunities to the Development of Freshwater Prawn Farming in Southwest
- Addison, M., Yankyera, K. O. & Antoh, E. F., 2016. Gender Role, Input Use and Technical Efficiency among Rice Farmers at Ahafo Ano North District in Ashanti Region of Ghana. *Journal of Food Security*, 4(2), pp. 27-35.
- Adeyemo Remi et al., 2015. Women Access to Land: The Compatibility of Property Rights on the Farming Activities of Women in Rice Producing Areas of Osun State, Nigeria. *International Journal of Research in Agriculture and Forestry Volume*, (2)10, PP 34-42
- Akinola A.A and Adeyemo R (2013): Effects of property Rights on Agricultrural Production: The Nigerian Experience. *Journal of Development and Agricultura Economics*, Vol. 5(10), Pp 382- 380
- Alfaro, O. F. & Jones, B., 2018. Social and environmental impacts of charcoal production in Liberia: Evidence from the field. *Energy for Sustainable Development*, 47(1), pp. 124-132.
- André, P., Enserink, B. & Connor, D., 2006. *Public participation international best practices principles*, Fargo, USA: International Association for Impact Assessment.
- Babu, C., Gajanan, N., & Hallman, J. (2017) 'Nutrition Economics 'Intra-Household Allocation and Gender Bias in Nutrition: Application of Heckman Two-Step Procedure 3, (10) 161-162.
- Bangladesh. JOURNAL OF THE WORLD AQUACULTURE SOCIETY, 39(1), pp. 1-15.
- Barbier, E. B., 2019. Overcoming environmental scarcity, inequality, and structural imbalance in the world economy. *Sustaining Agriculture on Marginal Land: A Policy Framework*, 77(3), pp. 251-270.
- Berge, Z. L., 2001. Review of research in distance education, 1990 to 1999. *American Journal of Distance Education*, 15(3), pp. 125-872.
- Broman, G. I. & Henrik, K.-. R., 2017. A framework for strategic sustainable development. *Journal of Cleaner Production*, 40(1), pp. 17-31.
- Cuberes , D. & Teignier, M., 2016. Aggregate Effects of Gender Gaps in the Labor Market: A Quantitative Estimate. *Journal of Human Capital*, 10(1), pp. 1-15.
- FAO, 2016. Country program framework Liberia, food, and agriculture organization of the united nation. 1(1), p.4-10
- Feindouno, S. & Goujon , M., 2016. Human Assets Index retrospective series:. *fondation pour les études et recherches sur le développement international 2016 update*, 1(1), pp. 1-5.

Feindouno, S. & Goujon, M., 2016. Human Assets Index retrospective series: *fondation pour les études et recherches sur le développement international 2016 update*, 1(1), pp. 1-5.

Fernandes, ECM, Oktingati A, and Maghembe J., (2006) The Chagga home gardens: a Multistoried agroforestry cropping system on Mt. Kilimanjaro, Northern Tanzania. *Agroforestry System*, 2:73–86.

Gurung K, Bhandari H, Paris T, Mohanty S (2013). Gender Dynamics in Changing Rice-Based Agricultural Systems in Bangladesh. Village Dynamics in South Asia (VDSA), Policy brief, IRRI. OECD/Food and Agriculture Organization of the United Nations

Government of Liberia. 2007. Liberia Poverty Reduction Strategy (PRS). Monrovia, Liberia

Ibnouf, M. (2009). The Role of Women in Providing and Improving Household Food Security in Sudan: Implications for Reducing Hunger and Malnutrition. *Journal of International Women's Studies*, 10(4), 144-167. Available at: <http://vc.bridgew.edu/jiws/vol10/iss4/10>.

International Monetary Fund, 2008. Food and Fuel Prices: Recent Developments, Macroeconomic Impact, and Policy Responses, Washington, DC.

Idowu E.O. (2006): The national agricultural land development programme in Nigeria: impact on farm incomes in Oyo and Osun states. *FAO Land Reform, Land Settlement and Cooperatives 2006/8*: 85-94.

Kolawole, A., Oladele, I. O., Alarima, C. I. & Wakatsuki, T., 2011. Gender Roles in Sawah System of Rice Production in Nigeria. *Journal of Human Ecology*, 36(1), pp. 1-15.

Leung, A. et al., 2011. Searching for Happiness: The Importance of Social Capital. *J Happiness St A Guide to Gender Analysis Frameworks* Candida March, Ines Smyth, and Maitrayee Mukhopadhyayud (2011), 12(3), p. 443–462.

LISGIS. (2008) National Population and Housing Census Report. Monrovia, Liberia: LISGIS

MOA, 2018. National Rice Development Strategy of Liberia Doubling Rice Production

Muthayya, S., Sugimoto, J. D. & Maberly, S. M. G. F., 2014. An overview of global rice production, supply, trade, and consumption. *Annals of the New York Academy of Sciences*, 1324(1), pp. 7-14.

March, C., Smyth, I., Mukhopadhyay, M., 2010. A Guide to Gender Analysis Framework

NORAD, 2013. *A Framework for Analysing Participation in Development*, Oslo Norway: Norad Norwegian Agency for Development Cooperation.

Ottermannsa, R. et al., 2018. Uncertainty in site classification and its sensitivity to sample size and indicator quality – Bayesian misclassification rate in ecological risk assessment. *Ecological Indicators*, 94(1), pp. 348-356.

Piškur, B. et al., 2014. Participation and social participation: are they distinct concepts?. *CLINICAL*, 28(3), p. 211–220.

Qiu, X. et al., 2015. Physical assets and service sharing for IoT-enabled Supply Hub in Industrial Park (SHIP). *International Journal of Production Economics*, 159(1), pp. 4-15.

Rasheed, A. et al., 2020. Women Participation: A Productivity Strategy in Rice Production. *Sustainability*, 1(1), pp. 1-10.

Rahman, F., Shammi, S., Parvin, M., Akter, N., Khan, M. and Haque, S. (2016) "Contribution of rural women to rice production activities in two different areas of Bangladesh", *Progressive Agriculture*, 27(2), pp. 180–188. doi: 10.3329/pa.v27i2.29329.

Serrat, o., 2017. Sustainable Livelihood approach. *Knowledge Solution*, 1(1), pp. 21-26.

Save the Children, 2014. The Charcoal Livelihood System, Liberia

Sillah, A. & Taylor, . M. F., 2015. social and environmental impacts of charcoal production in Liberia. *Paper from all field of science*, 1(1), pp. 1-15. Serrat, o., 2017. Sustainable Livelihood approach. *Knowledge Solution*, 1(1), pp. 21-26.

UNHCR, 2018, UNHCR WFP Joint Principles for Targeting Assistance to Meet Food and Other Basic Needs to Persons of Concern

UNDP, 2014. lowland rice production an alternative to food security economic. 1(2), p.1-17

UNDP, 2017. Accelerating progress toward the economic empowerment of women, annual progress report. Monrovia, Liberia.

USAID/ARD. 2009. Assessment and Institutional Reform at the Ministry of Agriculture. Monrovia, Liberia.

United Nations (2015), OECD-FAO Agricultural Outlook 2015, OECD Publishing, Paris. http://dx.doi.org/10.1787/agr_outlook2015-en.

World Bank, 2019. Opportunities for Charcoal and Sustainable Forest Management, Liberia Forest Sector Project. (Sillah & Taylor, 2015)

Zahoor, . A., Fakher, A., S, A. & Sarwar, . F., 2013. Participation of rural women in crop and livestock activities: A case study of tehsil Tounsa Sharif of southern Punjab Pakistan.. *Int. J. Adv. Res. Manag. Soc. Sci.* , 2(1), p. 98–121

Appendix

Appendix 1: Semi-Structured Interview guide

DEMOGRAPHIC DETAILS

Name of District _____ Name of Respondent Village/ Town _____

- Name of Respondent:
- Marital Status: Married () Single ()
- Gender: Male () Female ()
- Age:
- # of Household Members (family): Relationship to Household: Member () Head ()
- Level of Formal Education attained: Kindergarten () Elementary () Junior High () Senior High

Questions of women involve in lowland rice

- What do you think the most common farming practices utilized by residents in this locality are?
- Source (s) of Livelihood: Farming () Charcoal Burning () Trade () other ()
- Aside from farming, what other activities do you participate in?
- Kind/ production or service type and scale:
- Could you tell me about your farm?
- What kinds of crops do you grow on your farm?
- What kind of farms do you have?
- Are you involve into lowland or upland rice farming?

Questions on assets

Human asset

- What information do you receive about involvement into lowland rice farming?
- Have you been farming for a long time?
- Do you have any other skills?

Social asset

- Is there a farmer's cooperative in this town? What are the names of the farmer cooperatives?
- What role does membership in these cooperatives help improve livelihood?
- Do you depend on family or friends for assistance?

Financial asset

- What are the most used financial methods (credits, loans, etc.) in this community?
- What makes you think they're the most popular?

Natural asset

- How do people in this community obtain farmland?
- What are your most important natural resources? Why do you think they're important?
- What natural resources are in short supply?

- How long does it take you to get farm water?
- What are your thoughts on the availability and accessibility of farming land in the community? Is the land adequate or not?

Physical asset

- What methods do you use to harvest your crops?
- What kind of equipment do you use?
- What are your thoughts on the road system?
- How long does it take you to bring your produce to market?

Transforming structures and processes

- What government agency is present in this neighborhood?
- Do you receive any government or non-governmental organization (NGO) assistance while farming? If the answer is yes, what kind of help are you looking for? How does it contribute to increased output?
- How have laws or policies impacted your farming operations?
- How do you get extension advice for your farming? How? Explain

Appendix 2: Focus Group Discussion Guide

I'd like to emphasize that everyone's opinion is valued, which means you don't have to agree but can instead express your thoughts freely. Let us also agree to be courteous to one another and refrain from interrupting, raising our voices, or shouting at one another.

Time	Description
10 min	First and foremost (names, activities engaged) Please introduce yourself and explain what livelihood activities you are involved in and how long you have been doing so.
25 min	Getting to know farmers involved in lowland rice production What are your most valuable assets? Name a few and explain why they are significant to you - What assets do you need, want, or want to have more of to increase your production? What traditions and beliefs influence your farming activities? What other activities do you participate in?
15 min	Break

35- 45min	<p>Structures and institutions</p> <ul style="list-style-type: none"> - How well do you understand the laws and regulations that apply to your activities? - What are your thoughts on these laws and regulations? - In what ways does the government assist you? What is it capable of doing better? - What do you know about non-governmental organizations (NGOs) in your area? How beneficial are they? What do you anticipate from them?
	<ol style="list-style-type: none"> 1. List all the capital assets in the community that members of the community use to make a living. 2. Classify these as the five capital assets (i.e., natural, human, physical, financial, and social assets). 3. Describe the major livelihood strategies apart from farming that have occurred in this community in the last ten years. What impact have these events had on your day-to-day life? 4. How does the community deal with the effects of high food insecurity?
5min	Finally, some final thoughts. Is there anything else I left unsaid?

Appendix 3: Key informants interview guide

- How do most farmers cultivate their crops in relation to low land and upland rice farming? (District Agricultural Officer, Agricultural Extension Officer)
- How do lowland rice farmers contribute to reducing the high level of food insecurity? (Farmer Union Head)
- What is the most common crop grown by farmers in the area? (Community Chairman and Farmer Union President)

Transforming structures and processes

- Which government agencies or non-governmental organizations (NGOs) are working with farmers in the community? (NGO Representative, District Agricultural Officer)
- What role does the government or non-governmental organizations play in promoting farming? (District Agricultural Officer, NGO Representative)
- What laws or policies are in place to promote agricultural activities in the community? (Community Chairman,

Physical assets

- How do farmers in the community obtain agricultural tools and equipment?
- Is there a storage facility for farmers groups or cooperatives? (Community Chairman, Farmer Union Head) (Farmer Union President)
- Is the irrigation infrastructure in good condition?

Human asset

- What capacity development programs are available in the community for farmers? (Extension agent)

If such programs are available, how do farmers benefit from them? (Extension agent)

Natural asset

- How do people in the community acquire land for farming? (Community leader)
- What are your thoughts on the availability and accessibility of farming land in the community? Is the land adequate or not? (Community Chairman, Extension Specialist)

Social assets

- How effective are any local farmer cooperatives in the community in terms of participation? (Farmer Union Head)
- How important are the cooperatives to farmers agriculture production? (Farmer Union Head)
- Is there any farmer to farmer working group in the community? (Community Chairman)
- What is the role of farmer to farmer working group and how important are there in the community? (Farmer Union Head, Community chairman).

Human assets

- What capacity development program are available for farmers in the community? (Extension worker)
- If available, then how do farmers benefit from those capacity programs? (Extension worker)

Appendix 4: The Harvard Analytical Framework for gender analysis.

Activities Profile

Activities	Women/Girl	Men/ Boy
Productive activities: Formal job		
Major Agriculture activity		
livelihood strategies/income generation activities		
Reproductive activities Childcare Food preparation Market-related Cleaning		

Source: (Mar, et al., 2010)

Harvard Tool 2: Access and Control Profile - resources and benefits

This tool permits researcher to list the necessary resources that are used by people to carry out their tasks that are identified in the Activity Profile. It indicates whether women have access to resources, who controls their use, and who controls the benefits of a household or community use of resources.

Resource profile table

Resources	Access and control	
	Women	Men

Land ownership		
Equipment ownership		
Labour force		
Education/ skill -training		

Source: (Mar, et al., 2010)