What Determines Access to Irrigated Land: A case of Golinga Irrigation, Tolon District, Ghana.

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List of Acronyms

FAO	Food and Agriculture Organization
GIDA	Irrigation Development Authority
GIP	Golinga Irrigation Project
GOG	Government of Ghana
GSS	Ghana Statistical Service
IRDD	Irrigation Reclamation Division
LAC	Land Allocation Committee
LPSC	The Land Planning and Soil Conservation
MIDA	Millennium Development Authority
MOFA	Ministry of Food and Agriculture
NGOs	Non-Governmental Organization
SMC	Supreme Military
UN	United Nations
WB	World Bank

Abstract

Majority of people in Ghana depends on agriculture for their survival particularly those in rural areas. Not enough food is produced from relying on rain-fed agriculture, that is why irrigation farming is more appropriate method to be used to complement rain-fed agriculture to improve agricultural production in order to enhance food security and poverty reduction throughout the country. Establishing irrigation projects and the allocation of irrigated land brings about issues regarding unequal access largely due to power relations because of the limited number of the irrigated lands. Certain individuals will not have access because they don't have the means to do so. The study aims to determine the factors that determines access to Golinga irrigated land in Tolon district, Ghana. Who has access to the Golinga irrigation project and what determines who they are. Purposive sampling technique were used to select the respondents for the study. The respondents consist of those having access to the project and those that do not but within the catchment area of the project. Semi-structured interviews were the data collection method used to obtain the relevant data for the study. Data was appropriately analysed and discussed.

Relevance to Development

The research is relevant to development studies because access to resources like land is very important to rural livelihood since majority of the rural folk depends on agriculture for their livelihoods. Having access to resources (land) is beneficial since it can help in the improvement of the livelihoods of people such as their level of income, as a source of employment and enhancement of their household food security. Such productive resources are mostly scares and not everyone can have access to it. Power and influence has an important role to play in determining who has access to these resources. Access to these productive resources is being influenced by age, gender, class etc. Men, the rich and the elderly are favoured when it comes to access to these productive resources leaving out the weaker groups such as the poor, the youth, women. If these groups are able to access these resources, then their livelihoods will be enhanced. In view of these, the research seeks to contribute to current debate on access to irrigated land and its implication on the livelihood of peasants

Key words
Access, Land, Gender, Irrigation, Irrigation Management, Project, Golinga, Ghana

Chapter 1

Introduction and Problem Statement

1.1 Introduction:

Agriculture plays a very significant role in the development process in many developing countries. It contributes to the reduction in poverty and also leads to an increase in the income, the sector employs about 60 percent of workforce in developing countries (Dethier and Effenberger 2012). In Ghana, it plays a very important role in the development of the country. It is practiced by many people in the country particularly those in rural communities. The sector is understood as the backbone of Ghana's economy with more effect on reducing poverty much more than any other sector in the country (Ministry of Food and Agriculture 2016). There are higher levels of poverty in the northern region of Ghana mostly in the countryside of the region, it consists of 20 districts, it is the biggest region in the country with a total land cover of 70,384km (King and Bugri 2013). The total population of the region is 2,479,461 with 80 percent of the population living in the countryside (Ghana Statistical Service 2012). The people in the rural areas of the region mostly depends on agriculture for their survival which was previously rainfed. Reliance on rainfall agriculture is not enough to feed the growing population in the country due to the adverse effects of climate change that usually causes fluctuations in the rainfall patterns. Anytime there is inadequate rainwater with irregular supply, it is inevitable that crops do not fail (Mengistie and Kidane 2016:2). This generally affects crop yields. In view of this practicing irrigation farming is important in the enhancement of the livelihood of many people since it enables the regular supply of water for crops production and increase in crop yield. Irrigation emerged as a technique for increasing the agricultural productivity particularly in arid and semi-arid countries in the world (Bhattarai et al. 2001).

Irrigation can be defined as the process whereby water is applied to the land in other to enhance its moisture content for plants to grow well in it (Ayele 2011). Ghana have recognized the importance of irrigation to the development of its economy since in the 1960s (Kuwornu and Owusu 2012). Since then, the government of the country has established irrigation facilities to complement the rainfed agriculture in order to ensure the food security of the country. The contribution of irrigation to agriculture productivity is very high in the world, a total of approximately 40 percent of global food crops has been manufactured by irrigation with the use of about 17% of global agricultural land (Inkoom and Nanguo 2011). Irrigation facilities also enable farmers to continue agriculture production throughout the year, thereby contributing to

improvement of their general livelihood such as their level of income, as a source of employment and enhancement of their household food security. Currently growth in irrigation is viewed as a practical approach in reducing poverty in rural areas (Bacha et al. 2011:2). One of such irrigation facility is the Golinga irrigation project.

Land is an important aspect of production in an agrarian economy (Dharmasiri 2009:434). Individuals have greatly depended on land for their subsistence and for acquiring other things (ibid). Land helps to enhance the livelihood of people and secure them from poverty and can also serve as a mechanism in providing their immediate necessity (Agarwal 1994:31). This goes to show how important land is as a resource to the livelihood of the rural poor. According to Agarwal 1994:12), one has rights to a land by inheriting it from the family or community, owing the land through government allocation. Land can also be rented and paid for cash or in-kind.

Individuals having access to land can benefit directly from it through the cultivation of agricultural produce for sale and also for subsistence and for animal rearing, they can also benefit indirectly from it by using the land as a collateral security for accessing loans, others also benefit by being agricultural wage labourers as a result of the availability of land, it can also be sold for cash as a commodity (Agarwal 1994:32). But then not all groups have equal access to land. The weaker groups in society due to power relations are often faced with a number of challenges regarding access to land.

The Golinga irrigation project was established by the government of Ghana to enable peasants in the Tolon district to continue cultivation of crops all year round in order to help in the improvement of their livelihood such as their level of income, as a source of employment and enhancement of their household food security. The research seeks to explore issues regarding access to the Golinga irrigation, who has access to this project, what determines access to the project and what shapes access to the project. Some groups in the communities have access to the irrigation while others do not because of the power relations that exist in the society. Some lacks the power to access resources like land. It looks at the people who get to benefit from the Golinga irrigation project and what determines who they are, how they have been able to access it and the contribution of the irrigation facility to their livelihood.

The guiding question in this research is why some people (groups) have access to the Golinga irrigation facility and some do not within the district. In order to answer this question, a qualitative data was collected from the five communities within the catchment area of the project using interviews and observation. Secondary data was also obtained from Irrigation Development Authority (IDA), Ministry of Food and Agriculture (MOFA) in the region. After which the data was appropriately analysed.

1.2 Problem Statement:

Land continues to be a significant part of development particularly for individuals in the rural areas (Yaro 2010:199). Land in Ghana is administered through the use of formal legal instrument and customary land laws but in most rural areas of the country, the customary land tenure procedures are commonly used in the management of land (Akudugu and Issahaku 2013). All persons in Ghana have an equal right of access to land. But this is not what which happens in practice. Ownership and control of resources like land is shaped by different factors such as age, gender, social and marital status (Yaro 2010:207). In Ghana, land access in the past was an easy thing to do, it was acquired by visiting the chief of the community and presenting customary items such as Kola nuts, fowls, tobacco or other items as customs demand based on the location (ibid). Currently things have changed but this norm is still carried out in most rural communities of the country. However, in the urban areas of the country land is traded for cash as a commodity (Yaro 2010:210). There are so many factors that influence people access to land for cultivation in Ghana. In most communities in the country, land for production of crops are usually controlled by the chief. land is given to people on political basis and on apparent necessity (Goldstein and Udry 2008:4).

Even though, irrigation projects have been established by the government given rights of access to every individual in the community but then because of inequality in power relations such rights in practice are not exercised by everyone. People may have right to a resource but lacks the capability to exercise their right over the resource in practice. Developmental programs and projects put in place in communities do not always result in achieving the food security and poverty reduction for the rural poor largely due to the fact that there is unequal access to it because of gender, age, class among others rather such projects may push the poor into a more marginalized position that they are in already since there is the likelihood that the chiefs in the locality, the rich and the influential people can take charge of such projects for their own interest which results in the dispossession of the rural farmers of their land who depend on it for subsistence.

This can also widen the inequality gab in the society since it may lead to accumulation of profits for the already well to do individuals like the chief, the rich Etc. In the Golinga project case, the rich, traditional leaders, men get to access the Golinga irrigable lands for farming.

This paper argues that, the fact that government has established the irrigation for the communities to continue farming throughout the year, does not mean everyone can utilize the facility. Certain conditions might not allow everyone to have access to it. In view of this, the research seeks to investigate why some people have access to the Golinga irrigation facility and some do not within the district and to contribute to already existing debates on access to irrigation facility and its implication on the livelihood of peasants.

1.3 Main Research Objectives:

The main objective of the research is to investigate the dynamics of access to the Golinga irrigation project in Tolon district, Ghana.

Specific Objectives

1. To find out the factors that determine access to the Golinga irrigable lands.

2. To be able to find out why some people in the community do not have access to the facility.

3. To find out the impacts of irrigation on the livelihood of small-scale farmers, who have access to it. It aims to contribute to current debate on access to irrigation and its implication on the livelihood of peasants.

1.4 Main Research Questions

The main research question is what determines access to the Golinga irrigated lands? With this am going to look at the possible determinants of access to the Golinga irrigated land. By determinants am going to focus on class, gender and authority/leadership.

Sub-questions

1. How do small-scale farmers access Golinga irrigable land for farming? Is a sub-question and with this am going to look at how irrigated lands are being accessed at the Golinga irrigation project and to find out if other groups like women are being disadvantaged in the allocation of irrigated land.

2. Who has access to the Golinga irrigation project? Is the next sub-question and with this I want to find out who are the peasants, who are able to have access to the Golinga irrigated land for farming. Does everyone have access or does certain conditions prevent/allow some to have access to the Golinga irrigation?

3. How does access to irrigation farming affect the livelihood of small-scale farmers? Is the last sub-question and with this I want to find out the contribution of the Golinga irrigation project to the livelihood of the peasants who have access to it. Does the irrigation project help to improve the livelihoods of the peasants that depend on it for their survival and for that of their families?

Chapter 2

Theoretical Framework of the Analysis

2.1 Introduction

This section will review academic literature on access to irrigation. There has been a lot of literature on irrigation and its implication on the livelihood of peasants in developing countries (Mengistie and Kidane 2016; Bacha et al. 2011:2; Balarane and Oladele 2014). However there have not been enough written on the factors that determines and shapes access to irrigation facilities. The research therefore seeks to contribute to existing literature on the factors that determines access to irrigation facilities. It will deal with the definitions of the key concepts used in the research. The researcher made use of social relations of production using the first two key questions of political economy by Bernstein 2010, “who owns what and who does what?” The Theory of Access by Ribot and Peluso (2003), The concept of Gender (Agarwal 1994) and so on.

2.2 Social Relations of Production and Reproduction

Social relations of production and reproduction using the first two key questions of political economy by Bernstein 2010, “who owns what and who does what? referring to social relations of property and social relations of labour" respectively (Bernstein 2010:22). Social relations of production refer to a collection of diversified individuals access to “productive resources and hereafter to control over what they produce” in the entire society (Ellis 1992:47). Reproduction is the recurrence from one period of production to the other of the technical and societal production basics and of the relationships amongst them, therefore, for reproduction to happen, the production means (say land) must be restarted and the social output dispersed between the workers and those who control the production means in a way that production might begin in its former way (Friedmann 1980:162). Putting this theory in the Golinga irrigation project case, who owns what, land in Marxist term the means of production (Ellis 1992), is own by the rich peasants (leaders like chief), they own the capital as well and have the capacity to buy the labour power of the landless peasants in the communities. They are the influential people in the community and can easily obtain irrigated lands for agricultural production as well as obtain irrigated land for peasants they want to help in the community.

The second political economy question by Bernstein 2010 who does what. In the Golinga irrigation project case, those who do not own lands under the project (landless peasants) sell their labour power to the capitalist. The lack of another way of ensuring once means of survival,

forces landless peasants to sell their labour or capability to labour to the capitalist who are in possession of the production means and also needs the services of another person (worker) to produce commodities for profit generation (Bernstein et al. 1992:28). The political economy lens will help the researcher to be able to explore the dynamics of access to the Golinga irrigated lands and how it affects some peasants in the communities who do not have access to it.

2.3 The Theory of Access

According to Ribot and Peluso (2003), access is different from property, it is the "ability to derive benefits from things" which is different from property which is the "right to benefit from things", access here is more of a "bundle of powers" than a "bundle of rights". Access theory is relevant for us to recognize some factors that can determine access to irrigated land use. The distinction between access and property refers to that, people can gain benefit from a resource like land but not having any right to that resource, for instance, people may receive benefit from farming field through work (labour) or through exchange in the market though they do not have ownership right to the land (Sikor and Lund 2010). This is in line with what Ribot and Peluso (2003:167), said that although, an individual may not be able to have resource access by having right to the property (land) and may not have capital to purchase the resource or engage in an exchange but may be able to benefit from the resource through labour (worker) relations with the resource owner or controller. In many developing countries, "patron-client relations" have been a significant mechanism of being in control and attaining resource (land) access and work chances (ibid). By means of work, individuals are able to drive benefit from a resource (land) in monetary terms or in-kind (i.e. using food crops) as way of paying for their work down (Ribot and Peluso 2003:167).

Similarly having an official right over a property does not automatically mean that the actors having the right do benefit materially from the resource (land), people may have rights to the resource but lacks the capability to benefit from it (Ribot and Peluso 2003:154). With the concentration on ability and not property right, this way draws our mind to a broader series of social relations that can deprive or permit individuals from gaining from resources (land) and not just concentrating on the relationships of property only (Ribot and Peluso 2003:154). Access here helps to enable enquiry into who really gains from resources, by what means they are able to benefit (ibid).

There are varieties of "powers" included in and carried out through several ways, procedures and societal relationships that influence individuals' capacity to gain from resources (land) (Ribot and Peluso 2003:154). Some individuals and organizations have the ownership and control of resources (land) whiles other individuals get access to those resources through the people who are in charge of those resources (Ribot and Peluso 2003:154). Access here will enable people to know why some individuals and organizations gain from resources (say land) either they have

rights to the resource or not, it is the packs or networks of “powers” that allow individuals or stakeholders acquire, regulate and sustain resource access (Ribot and Peluso 2003:154). Access has to do with entire probable ways whereby individuals can attain gains from a resource whereas property implies some sort of societal organise and reinforced rights either that recognition is through legal, customary or an agreement (ibid).

Not assigning rights alone but political, informal control together with production relationships, trade greatly structure forms of dispersal (Ribot and Peluso 2003:156). Mostly, individuals possess additional power in certain relations more than in other relations (ibid).

Due to the power and the position that comes with being wealthy, people who possess wealth may also have advantage over productive resource access and trade, chances, knowledge procedures, authority (Ribot and Peluso 2003:156). An individual may possess the right to receive gain from a resource but might not be able to utilize that right without capital access or having access through labour (Ribot and Peluso 2003:156). This will be a situation of possessing property (right) and not having access (capacity) to benefit (ibid). According to Ribot and Peluso (2003:170), authority access is a significant stage in the network of “powers” that helps individuals gain from resources, individuals or a combination of individuals can achieve and sustain access to other productive means and trade through these authorities.

In the case of Golinga irrigation project, the government established the facility for the communities within the catchment area to continue agricultural production throughout the year which can be seen as a right to them but it is not everyone who can have access to it, it is existing power relations. That is if you are rich and powerful in the community, you can be able to have access to the irrigation facility by paying for it or renting the irrigated land. Also, landless peasants who are associated to the rich through social relationships are also able to have access to the facility.

2.4 The Concept of Gender

Gender relations refers to the ways by which groups of men and women interact with one another over an entire variety of societal group, it could be in terms accessing productive resources, payment of work done and so on (Pearson 2000). According to Agarwal (1994), gender relations are not the same in every society, they vary from society to society, it refers to power relations among men and women which are shown in a variety of thought, practices and also roles, properties between men and women and assigning dissimilar roles, duties, behaviours, ability among others, it can basically be seen as a social construct which varies over time and location.

According to Deere and León (2003), the primary way ownership of land can be acquired is by inheriting it through the family, it can also be inherited in the community or through community

redistribution of land or by government through land allocation programs, it can also be bought. However, in many parts of the world men are favoured more than women in terms of land allocation through any means. Many women in rural areas do not usually have the ownership and control of land (ibid). Land and others resources are usually owned and controlled by men.

According to Bina Agarwal (1994), There are a lot of struggle surrounding the view that women need to own land by themselves, having land access is utilized in many scholarly literatures loosely and requires some explanation, access can occur through tenure rights and usage but then there can also be access through unofficial allocation by a person to relatives or friends. He added that, the hazards of poverty and the personal safety of a woman and her offspring might rely importantly upon the fact that she has access to resources directly like land or finance and not by having access through the means of other family relatives(male) or through marriage (husband) (Agarwal 1994). This goes to show how important land is as a resource and helping women own and control their own lands will help them in the improvement of their livelihood.

The total population of farmers that cultivate crops at the Golinga irrigation project site are 150 farmers with only 12 women since 2012 (Braimah et al. 2014). From this it can be clearly seen and stated that women have access to the Golinga irrigation but their access is limited since the men who currently have access are more than the women. Gender is also a factor that determines access to the irrigable land.

2.5 Land

Land in agricultural societies is said to be the utmost significant asset to rural people, it is a common known fact that in many African countries there is series of unequal access to land in small, large and government farms, rectifying this unequal access maybe in certain societies a significant strategy of reducing poverty efficiently (Jayne et al. 2003). Land access can generally be explained as the method whereby individuals, independently or jointly are able to utilized land either for a short or long time, these procedures comprises involvement in official or unofficial marketplaces, having access to land by means of relationship and system connections with the transfer of rights to land by inheritance and among households and also land distribution by the government and other stakeholders (Cotula et al. 2008). Land in Ghana is administered through legal means and customary laws, however, in some areas of the country precisely rural areas, land ownership is through customary laws, in general lands accessibility for utilization in any way in Ghana is being influenced by the rules of tenure agreements (Akudugu and Issahaku 2013).

Land tenure therefore, is the organization of procedures, institutions and rules by which individuals get legal land access, they utilize it, take parts in gains from it, own, control and can also trade it (Cotula et al. 2008). According to Yaro (2010), the path to having access to land in

Northern Ghana is through the old system of patrilineal inheritance of buying or to borrow from someone, customarily people usually gain access to land by inheriting it, borrowing or requesting it, women often obtain access to land through social relations such as marriage, from household relatives i.e. making use of their husband, father or brothers land, they can also request or borrow it from other men, outsiders can also gain access to land through tenure agreements or by buying it. Irrigated land is very important to farmers in many drought prone areas. According to the Food and Agriculture Organization (2004), about forty percent of global food is presently being produced in about 250 million hectares of irrigable land. This goes to show how important having access to irrigable land can help in the food security of any given place.

2.6 Land Ownership in Northern Ghana

Northern Ghana is an agrarian society with land seen as the most significant resource on which animals feed on, cultivation of crops, hunting of forest creatures, fruits are gathered etc. (Yaro 2010:200). The region is made up of 20 percent of the total population of Ghana with land cover of 70,390 square kilometres (ibid). The land tenure system is expected to give individuals secured access to a particular piece of land and protect its safety and utilization (Akudugu and Issahaku 2013:57). Land tenure therefore is the organization of procedures, institutions and rules by which individuals get legal land access, they utilize it, take parts in gains from it, own, control and can also trade it (Cotula et al. 2008). Drawing from this definition, land tenure is understood as the root by which individuals demand possession of land or attain land access (Akudugu and Issahaku 2013:57:56).

Land tenure system in Northern Ghana is managed by both state and customary institutions (Yaro 2010:214). Customary institutions have taken charge of the complete regulation of land tenure since in 1992 together with the government institutions granting assistance for land dealings to be carried out well (ibid).

In Tolon district, Ghana, there are plenty of lands in the study area which is owned by the community. Both irrigated and non-irrigated lands are community lands and for that matter not for sale. Rather a peasant who has been allocated an irrigated land can gift it out, rent it for a payment in cash or in-kind.

2.7 Land and Gender:

Land is an important resource since it can help in the improvement of the livelihood of people. Growth in the population is one of the important issues that contributes to the investment in land, also the different ways in which land can be put to use has also played a role in making it very important (Feder and Noronha 1987). Land in many African countries is under the control of customary system which is administered through some rules (social and cultural) that is

supposed to give households among groups with a shared interest in the resource equal access, in other to sustain once livelihood, some amount of access and ownership to land is needed, a lack of it put once livelihood in a great risk (Yaro 2010). Having rights to land might influence agricultural investments in many ways, having access and control of land can help in increasing investment in agriculture, also you might be prevented from getting access to credit facility if the right a person has to a land are not clearly defined to be used as collateral security for loans (Goldstein and Udry 2008). In Africa, for instance access to land is unequal between men and women and this is one of the significant causes of economic disparity (Tripp 2004). According to White (1982), women make up the greater number of labour force in agriculture in many agrarian societies. Yet their contribution to agriculture is not well recognized. They have limited access to own and control land.

2.8 Impact of Irrigation on the Livelihood of Peasants

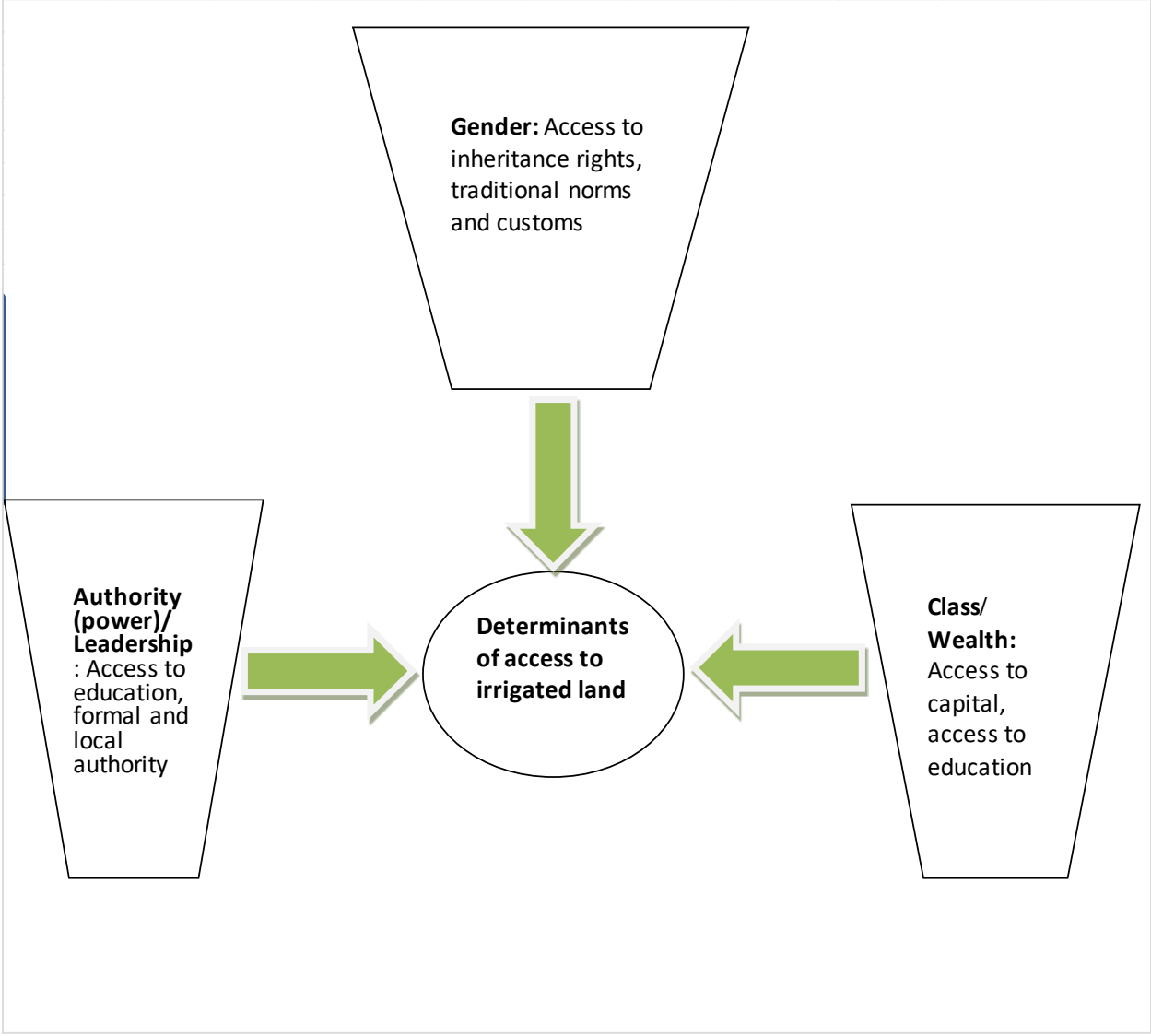
A research carried out in Ethiopia in Ambo district to find out small-scale irrigation impacts on poverty of household, it was carried out through the use of survey from household farmers having access to irrigation for farming and those not having access to the facility for farming with a sample of 222 respondents, 107 people having access to the irrigation for farming and 115 not having access to the irrigation for farming, the analysis of data was through descriptive statistics and the findings revealed that those using the irrigation for farming purposes had relatively low poverty compared to those not using the facility, in other words, there is a greater amount of wellbeing improvement among the farmers having access to the irrigation facility for farming, since they are able to continue agricultural production all year round, this will lead to an increase in productivity and enhance their household income and food security (Bacha et al. 2011).

A study by Tesfaye et al. (2008) on the impacts of small-scale irrigation on the food security of households with a sample of 200 farmers in Ethiopia indicated that more than half of the sampled population (70%) of the farmer household using irrigation for farming were more secured in terms of food with only a few of the farmers (20%) not practicing irrigation farming to be seen as also secured in terms of food, this indicates that having access to irrigation for farming helps farmer household to be able to cultivate crops throughout the year, increase their agricultural productivity, income and improvement in their household food security. Another study was conducted in 2016 on the implication of small-scale irrigation on families' livelihood by Mengistie and Kidane (2016) through the use of "interviews, focus group discussion", participatory observation and questionnaires as the tools of data collection with sample 374 respondents selected for the research. The results of the study showed that the use of small-scale irrigation farming leads to improvement in yearly income of households using the irrigation for farming.

2.9 Analytical Framework

The framework is used to analyse access to the Golinga irrigable land. This is supported by using some concepts from social relation, Agarwal (1994), Ribot and Peluso (2003) in the analyses. Access to the Golinga irrigable land is determined by Gender, class/wealth and Authority (Power)/Leadership. All these help in answering the research questions.

Figure 2: A conceptual framework for access to irrigation



Source: Authors' own construct 2017

2.9.1 Gender

Gender relations refers to the ways by which groups of men and women interact with one another over an entire variety of societal group, it could be in terms accessing productive resources, payment of work done and so on (Pearson 2000). According to Agarwal (1994), it refers to power relations among men and women which are shown in a variety of thought, practices and also roles, properties between men and women and assigning dissimilar roles, duties, behaviours, ability among others, it can basically be seen as a social construct which varies over time and location. Land can be used in the production of goods and services, it can also help one in the accumulation of wealth and can serve as a source of security to peasants having access to it. In other to sustain once livelihood, some amount of access and ownership to land is needed, a lack of it put once livelihood in a great risk (Yaro 2010). Land can be inherited in the community or through community redistribution of land or by government through land allocation programs, it can also be bought. However, in many parts of the world men are favoured more than women in terms of land allocation through any means (Deere and León 2003).

When women have access to their own land, it will not only tackle their material deprivation alone but also can possibly lead to gender equality (Rao 2011). The hazards of poverty and the personal safety of a woman and her offspring might rely importantly upon the fact that she has access to resources directly like land or finance and not by having access through the means of other family relatives(male) or through marriage (husband) (Agarwal 1994). However, women are often faced with a number of challenges regarding land access.

Gender is also a factor that determines access to the Golinga irrigated land. Men within the project catchment area have more access to the irrigated land than women. Agarwal argues that women that own land have a better negotiation influence than women without land (Agarwal 1997:7). Women make up the greater number of labour force in agriculture in many agrarian societies. Yet their contribution to agriculture is not well recognized. They have limited access to own and control land (White 1982).

2.9.2 Class/Wealth

Landlessness may be a significant problem to peasants in Ghana particularly those in rural areas who predominantly depends on agriculture for their survival. People of higher class are able to easily have access to resources like land since they have the means for acquiring the land or other resources. According to Ribot and Peluso (2003), People can gain access to a resource like land through labour, market, capital, they may not have the right to the property but are able to benefit from it through working i.e. their labour or through market exchange. Similarly, people

may have rights to a land but may not have the capacity to benefit from it (wealth). Wealth for that matter class is therefore a determinant of access to the Golinga irrigated lands. Due to the power and the position that comes with being wealthy, people who possess wealth may also have advantage over productive resource access and trade, chances, knowledge procedures, authority (Ribot and Peluso 2003:156). An individual may possess the right to receive gain from a resource but might not be able to utilize that right without capital access or having access through labour (Ribot and Peluso 2003:156).

Wealth is the overall financial worth of the resources own by a household with a deduction of all its debts (Shapiro 2006). Wealth is an important sort of finance since it denotes resource ownership and control. It is a significant type of finance used to initiate flexibility in the society, generate opportunities or worth or transfer gains to one's off springs (ibid). Individuals can gain access to resources like land through the means of relations in a group, through labour or investing in capital or a mixture of these (Shipton and Goheen 1992). Having access to capital can help one to own and control their own land. Access to capital is mostly seen as wealth access in either monetary terms or equipment that can be used to access and control resources (land) for production procedures (Ribot and Peluso 2003:165). Wealth can be used to determine access and control over resources (irrigated land) by buying, renting, paying fees (water charges and even influence resource access from the access holders (ibid:). Capital access in a way of credit is a mechanism of sustaining access to resources (say land) (Ribot and Peluso 2003:165).

2.9.3 Authority (power/ Leadership)

Control over resource like land is an essential part of political leadership (Shipton and Goheen 1992). Authority/leadership is one factor that determines access to the Golinga irrigated land. According to Weber (1976 in Sikor and Lund 2010), authority refers to an occurrence of control that is related with at least the smallest voluntary compliance with the livelihood that a command of precise level will be adhered to by a particular group of individuals. It constitutes the ability of political institutions like traditional institutions, religious groups, state and other establishments to influence other people (ibid).

Access to authority is the direct and indirect ways of powers that people acquire to drive benefits from irrigated land (resource) (Ribot and Peluso 2003:170). Traditional leaders such as chief, and other non-state authorities can influence irrigated land access and control and then apportion the land to their favourite relatives and other known groups (ibid:171). According to Ribot and Peluso (2003:170), authority access is a significant stage in the network of "powers" that helps individuals gain from resources, individuals or a combination of individuals can achieve and sustain access to other productive means and trade through these authorities.

Chapter 3

Research Methodology and the Study area

3.1 Introduction

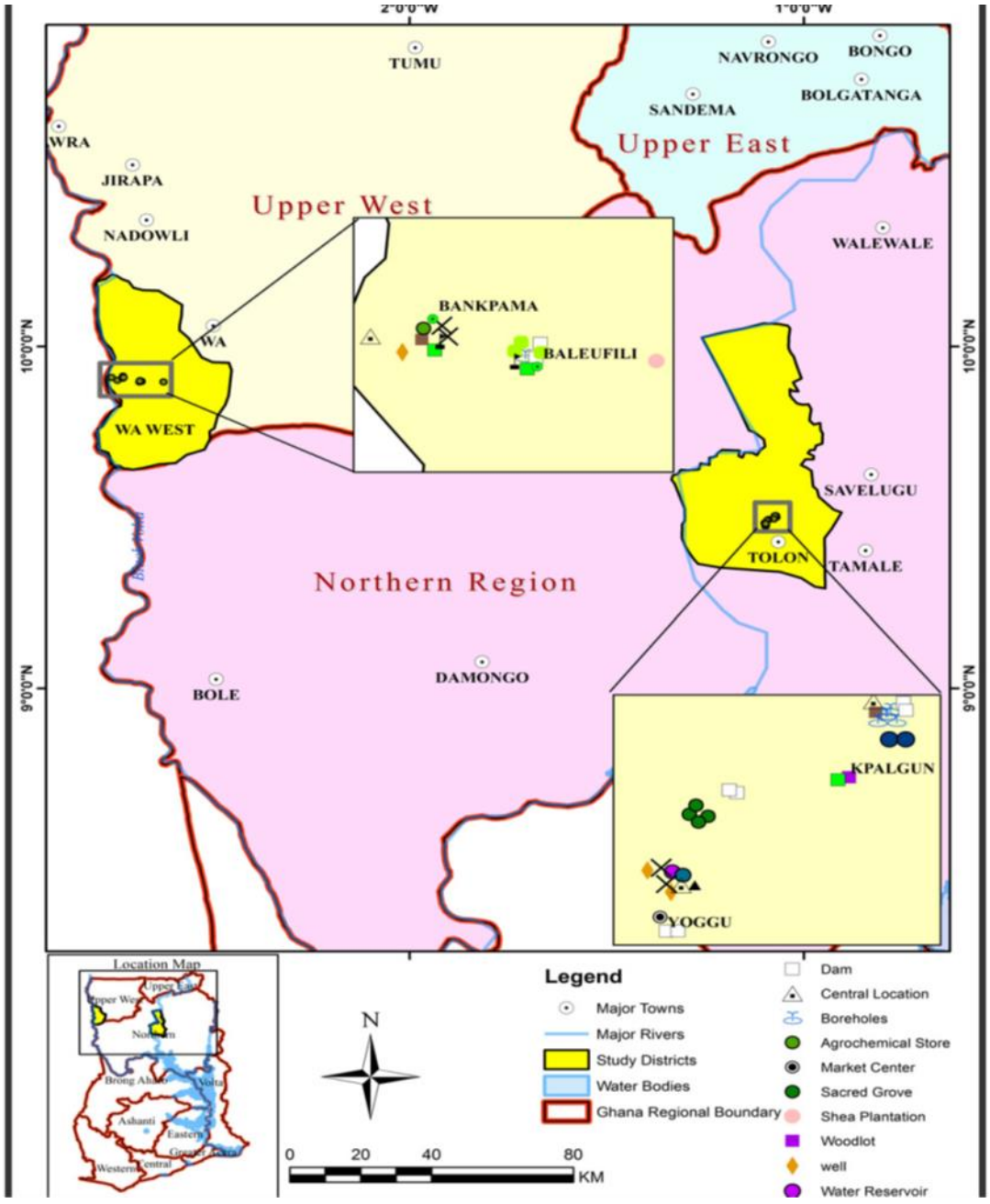
This chapter looks at the methodology of the study. To be able to gather enough information for the research, the study employed both primary and secondary data collection methods. It looks at the study area and the research methodology (selection of a case study, primary data, secondary data collection and analysis) as well as the research limitation.

3.2 Description of the Study Area

The study was carried out in Golinga in Tolon district. There are 216 districts in Ghana, from which 26 districts are found in the northern part of the country (GSS 2014). Tolon district is one of the districts in Northern Ghana. Most people in the district are agricultural farmers. According to (2010) Population and Housing Census, Tolon district has a population of 72990 i.e. approximately 2.9 percent of the total population of the Northern Ghana (GSS 2014). It shares boundaries with Kumbungu to the North, to the West is North Gonja, to the South is Central Gonja and to the East is Sagnarigu districts (GSS 2014:1). Most people in the district are agricultural farmers. Practicing agriculture for their livelihood. 94.4 percent of the population in the district are engaged in farming (crop production and livestock rearing). Regarding the livestock rearing, poultry is the dominant animal that is being reared in the district. The dominant ethnic group is the Mole-Dagombas representing 98.2 percent of the population. Other minority ethnic groups found in the district are Akan, Ga-Adangbe, Guan, Gurma. Bugum (Fire) and Damba are the festivals commonly celebrated in the district (GSS 2014).

Islam is the main religion in the study area with a percentage of 94.1, followed by Christianity with percentage of 3.7 and Traditionalist 1.5 (GSS 2012). Polygamy is commonly practiced in the district since the majority of the people are muslims. The Golinga irrigation project is the only irrigation facility found the Tolon district. The Golinga Dam (Kornin river) is not only used for irrigation farming but also for fishing and as a source of drinking water for the communities around the project. The crops cultivated under the project are vegetables bra, ayoyo, okru, lettuce and rice.

Figure 3.1: Ghana's Map Depicting the Study Area, Tolon District



Source: Boafo et al. 2014

Figure 3.1: District Map of Tolon

Source: Ghana Statistical Service 2014

3.3 Research Methodology

This part of the research will look at the methods of data collection, processing and analysis that were used in carrying out the research. It comprises of case study selection, the criteria it employed in the selection of respondents (sampling), techniques of data collection (primary data collection method, secondary data) and data analysis of both primary and secondary data and research limitation.

3.3.1 Case study:

There are higher levels of poverty in the northern region of Ghana mostly in the countryside of the region, it consists of 20 districts, it is the biggest region in the country with a total land cover of 70,384km (King and Bugri 2013). Rainfall is irregular in the region due to these; the region is characterized with severe poverty and drought (Dinye and Ayitio 2013) of which Tolon district is no exception to since it is one of 20 districts in the region. The Tolon district was separated from the West Dagomba district in 1998, it is said to be an agrarian economy, engaged in agriculture for their survival (Kuwornu and Owusu 2012). The dry season ranges from 7-8 months (October-April) which is long while the raining season ranges from 4-5 months, this makes irrigation farming important to the people since there are long periods of no rains for the cultivation of crops (Dinye and Ayitio 2013). Therefore, the government of Ghana has established the Golinga irrigation projects for the peasants in the area but not everyone is able to have access to the facility for farming, that is why I selected the case to be able to explore access to the irrigation and its implication on the livelihood of peasants and to able to contribute to existing literature on small-scale irrigation and its implication on the livelihood of peasants.

3.3.2 Sampling

In other to obtain the number of respondents for the study, I employed Non-probability sampling through the use of purposive sampling since the respondents was purposely selected to include all the five communities (villages) that cultivate crops at the Golinga irrigation project. The total number of respondents of the study that were interviewed was 50. 30 had access to Golinga irrigable lands for farming (they consisted of both male (22) and female (8) peasants who own irrigable land, rented or hired another peasant to work the land) and 20 were those not using the Golinga irrigable lands for farming but just dependent on rainfall for their agricultural production but within the catchment area of the project (men 8 and women 12).

The 30 irrigators respondents were selected because they had access to the project and for that matter were benefiting from the project and therefore will be able to give the researcher relevant

information on the project for the study. The 20 other respondents who did not have access to the project were also selected because they lived within the catchment area of the project and for that matter will be able to give more information on why they were not using the project for farming, is it just that they are not interested in practicing irrigation farming or because of certain existing conditions, that is why insights from them is relevant for the research. Additionally, the manager of the Golinga irrigation project and one staff of GIDA were also selected as the key informants of the study largely due to the fact that they have more knowledge on the project and for that matter will be will be able to give relevant information for the study.

3.3.3 Primary Data Collection:

The primary data was collected through the use of interviews, Key informant interviews and observation to be able to gather enough first-hand information directly from the respondents in the field. The primary data was collected from the field within five (5) weeks from 17th July -14 August. The observation was used to get direct information about the land areas the peasants cultivate, the types of crops they cultivated. This was a very useful data collection method. According to O'Leary (2004), observation is a data collection method that allows the interviewer to use his senses to collect information for the research.

Semi-structured interviews were also used to get information needed for the research. This type of interview is more flexible, it allows the researcher to begin with a clear define design of questions and then move along in a casual way like in a conversation to allow the respondents of the study to be able to answer the questions naturally (O'Leary 2004). With these method, the researcher is able to move to a more exciting line that unfolds in the course of the conversation (ibid).

3.3.4 Secondary Data Collection:

Secondary data made use of already existing data relevant to the research. It made use of previous literature on irrigation and its implication on the livelihood of peasants, course materials. Other sources of secondary data were journal articles, books, reports, government policy documents, Ministry of Food and Agriculture (MOFA) on irrigation, Ghana Statistical Service (GSS), Ghana Irrigation Development Authority Etc.

3.3.5 Data Analysis:

The data obtained from the field was appropriately documented in the field notes to help in the analysis of the data. Data analysis was descriptions and narrations since the data gathered was qualitative data.

3.3.6 Research Limitation

The raining season in Northern Ghana starts from May and end in late October (Kuwornu and Owusu 2012) and the research falls within this period due to these one limitation the researcher encountered while on the field was that, it was difficult getting the farmers to collect information for the research since the farmers were busy working on their farm, they usually go to their farms early in the day to start working on the land and back at home in the evening, what the researcher did was sometimes to meet them on their farms to collect the data for the research but on rare occasions some were meet at homes. Also, unfavourable weather condition due to the rains led to a prolonged stay of the researcher on the field since on days of heavy rains the researcher could not go to the field and even sometimes the researcher gets drenched in the rain. These were some of the challenges the researcher encountered while on the field.

Also, most of the participants of the study were illiterates and cannot speak English, they only spoke their local language “Dagbani”. Speaking to them was not much of a problem since the researcher was fluent in their local language. The only limitation here was that the information gathered had to be interpreted into English language by the researcher and in doing so some information might be interpreted differently. This challenge was met by making questions clearer for respondents of the study to answer them clearly, hence well interpreted by the researcher.

Chapter 4

Overview of Irrigation Development in Ghana

4.1 Introduction

This chapter provides an overview of irrigation development in Ghana, its management and The Golinga irrigation project.

4.2 Context of Irrigation Development in Ghana

The awareness of the role of irrigation in the development of agriculture in Ghana can be traced back to the 60s (Daniel 2015:20). In 1959 shortly after independence, Dawhenya, the first state irrigation project began but historical accounts existing shows that an irrigation project called Asutsuare was the first irrigation project finished in 1967 (ibid:20). But small-scale irrigation practice can be traced back to 1880 in Keta locality in southern Ghana (Kyei-Baffour and Ofori 2006). The first government irrigation project was established in 1920 (Smith 1969 quoted in Daniel 2015:20). This shows clearly that historically, irrigation started a long time ago. However, serious practice of irrigation is a more current event (Daniel 2015:20). That is about fifty years ago (Namara 2011:43).

There are two (2) types of irrigation system practiced in Ghana, they are conventional and emerging system (Namara 2011). The government of Ghana (GOG) or various Non-governmental organizations (NGOs) primarily started and advanced the conventional irrigation system while emerging systems are started and advanced by independent business people together with the peasants, not much is known formally about the emerging systems but they are growing rapidly (ibid).

There are 22 developed government irrigation districts in the whole country, monetary and technical help coming from joint collaboration with the Formal Soviet Union, Taiwan, China, Republic of Korea etc helped in carrying out most of the government irrigation districts, added assistance came from other international establishment as well as World bank (WB), UN Food and Agriculture (FAO) (Namara 2011:4). From the beginning of irrigation in 1960s to 1980, developed irrigable land area is about 1900 ha, it increased to 33,800 ha by 2007 (Namara et al. 2011:4).

Ghana offers enough space for improvement in agriculture via irrigation development due to the vast lands that can be cultivated as well as the adequate water resources the country is endowed with (Namara et al. 2011:4). Extensification (cultivation of additional lands) and intensification (expansion of agricultural production using existent land) are the means through which

improvement in agriculture may be attained. In many situations, irrigation is key to the intensification technique (Namara et al. 2011:4). The Golinga irrigation project is a project that has been establish by the government for the peasants within the project catchment area to continue agricultural production throughout the year in order to help enhance the food security of the people.

4.3 Management of irrigation in Ghana

Irrigation schemes management in Ghana after independence have been handled by several governments and quasi-government since the start of "formal or project-type irrigation" (Kyei-Baffour and Ofori 2006). The Land Planning and Soil Conservation unit was the unit that began irrigation management in Ghana. It was a unit under the Ministry of Food and Agriculture (MOFA) (Gyarteng 1994 in Kyei-Baffour and Ofori 2006). The unit was placed under the "Irrigation Reclamation and Drainage Division of MOFA" between 1965 and 1974, it was then changed from 1974-1977 to "irrigation Department of MOFA", in recent times however, irrigation management is by a public body called GIDA (ibid).

In April, 1977, the supreme Military (SMC) Decree 85 set up GIDA, from that time onwards, GIDA have been the government body that handles the management and development of irrigation (Daniel 2015:20). GIDA is a public organization under MOFA, it is responsible for the management of irrigation project (Namara et al. 2011). It has the responsibility of surveying locations for the development of irrigation, maintenance and management of irrigation project district, distributing agricultural skills to peasants etc, a total of 22 irrigation project district of different dimensions with a total land cover of 8,800 ha has been developed by GIDA (ibid).

The responsibility of GIDA according to the Decree are: For plans formulation to help in irrigation development, to improve livestock and fish culture, to develop the water resources of the country for irrigated agriculture, to carryout broad projects for actual utilization of irrigable lands in collaboration with additional agencies engaged in given extension services to peasants, to execute land use planning in places reserved for development, for the purpose of conserving the soil and water in such places, to collaborate with additional agencies in order to maintain the health and the protection of the individuals that lives around the area of irrigation schemes etc (Kyei-Baffour and Ofori 2006). Golinga irrigation project is one of the projects that is being managed by GIDA.

4.4 The Golinga Irrigation Project

The Golinga irrigation was constructed by the government of Ghana in 1976 (Adongo et al. 2015). It "lies between latitudes 09º 15 and 10º 02 N and Longitudes 0º 53 and 1º 25 W" (Abagale et al. 2014). It is situated in the northern part of Ghana at Golinga in the Tolon district, the source of

water for the scheme is the “kornin River”, it has a potential land area of 100 hectares with 40 hectares developed area currently used as irrigated land for farming, the crops cultivated under the project are vegetables (tomatoes, onion, okru) which are cultivated mainly in the dry season (October-April) and rice that is usually cultivated both in the raining and dry season, the number of communities (villages) that cultivate crops at the Golinga irrigation project site are five (5) with a total of 150 farmers only 12 women since 2012, the average hectares of land a farmer can hold under the scheme is 0.2 hectares (Braimah et al. 2014). The communities that cultivate crops at the Golinga irrigation project are Gbalahigu, Golinga, Kalinkpegu, Naha and Tuunayili. The farmers also engage in fishing (Abagale et al. 2014). The Golinga Dam also serves as a source of drinking water for the communities around there. The project is managed by the Ghana Irrigation Development Authority (GIDA), an organization under the Ministry of Food and Agriculture (MOFA) (Namara et al. 2011).

The Golinga irrigation project is under the management of five (5) committees such as the land allocation committee (LAC), the agricultural committee (AC), the disciplinary committee (DC), the appeals committee (AC) and the farmers (FA) association. The land allocation committee has the function of allocation and reallocation of irrigated lands to peasants under the project, it is made up of the district chief executive (DCE) (chairman) (who is usually put into office by any political party government in power and changes when there is a change of government), appointed manager of the project by GIDA, “a representative of the chief executive of the irrigation Authority, one representative of the traditional council within the area”, two farmers’ cooperative representatives that are elected (Braimah et al. 2014). The agricultural committee has the responsibility to plan and apply agricultural method, safeguard irrigation connection, make sure that peasants utilize the irrigated land for the reason stated in the arrangement and do not pass possession of irrigated land assign to them, it is made up of the two farmers’ cooperative representatives and the “heads of technical departments of management” (MOFA) (ibid).

The disciplinary committee plays the role of inspecting violations or alleged violations of the agreed terms and enforce suitable punishment when needed, it is made up of two farmers’ cooperative representatives and 5 selected senior management staff (Braimah et al. 2014). The appeals committee looks into request cases resulting from disciplinary committee’s decision, they are made up of the “chief executive of the Authority” and the assistant chief executive of GIDA. (ibid) The farmers’ association plays the role of representing the members in their dealings with the government and non-governmental organization (NGOs) regarding the project, it takes part in administration, acts as the mediator in disagreements that involves association members (Braimah et al. 2014). The farmer’s association has a chairman who is elected by the members of the association by vote. The elected association chairman and his assistant automatically becomes the two cooperative representatives that forms part of the LAC, AC and the DC.

There has been rehabilitation of Golinga irrigation in Northern region of Ghana. The rehabilitation was done in 2011-2012 by the Millennium Development Authority (MIDA), (Adongo et al. 2015).

There was an excavation of the “drainage system”, some “logistics” have been provided to the farmers, infrastructure facilities (roads), remodeling of some farm house (6) among other things as part of the rehabilitation exercise (Ghana News Agency 2012). According to the chief executive of the Millennium Development Authority (MIDA), the rehabilitation work was done to help the farmers continue agricultural production throughout the year and also to bring about an increment in the agricultural production of crops (such as vegetables, rice, cowpea and maize) in other to help in the improvement of their livelihood (income) and to facilitate the development of the country as a whole (ibid). There was also overflooding of the Golinga dam in the raining season which lead to the water over flowing out of the dam to areas of the community that the water is not needed. This contributes to the water not being enough for the crops. In 2014, MIDA came to the aid of the community by building walls to prevent the loss of water through the overflooding.

Peasants under the project gain access to the irrigable lands through allocation of lands by the government. Factors such as wealth (i.e. your ability to pay for the irrigation fee charged), leadership (chief and his assistant, elders) and gender determines access to the irrigable lands.

4.1: The Golinga Irrigation Canal

4.2: Photo narration of how irrigated lands are allocated at GIP

4.3: Photo Narration on how Irrigated Land at the GIP is accessed by Women

Chapter 5

Presentation and Analysis of Findings

5.1 Introduction

This chapter is the presentation and analysis of the main findings of the study regarding the major factors that determines access to the Golinga irrigated lands.

The table below shows the data collected from the field on the sample compositions and respondents ages.

Table 5.1 Sample compositions and respondents ages

Sex	18-35	36-60	Above 60	Total	Percentage
Male	7	20	3	30	60
Female	8	10	2	20	40
Total	15	30	5	50	100

The table below shows the data collected from the field on access to education.

Table 5.2 Access to education

Level of education	Male (irrigators)	Male (Non-irrigators)	Female (irrigators)	Female (Non-irrigators)	Total
None	3 (6%)	4 (8%)	5 (10%)	9 (18%)	21 (42%)
Basic	5 (10%)	3 (6%)	2 (4%)	1 (2%)	11 (22%)
Secondary	11(22%)	0 (0%)	1 (2%)	0 (0%)	12 (24%)
Tertiary	1 (2%)	0 (0%)	0 (0%)	0 (0%)	1 (2%)
Others	2 (4%)	1 (2%)	0 (0%)	2 (0%)	5 (10%)
Total	22 (44%)	8 (16%)	8 (16%)	12 (0%)	50 (100%)

5.2 Formal Mechanisms of Access to Golinga Irrigated Land

In the Golinga irrigation project, irrigated lands are allocated formally by the rules put in place. That is, everybody regardless of the gender difference in the five (5) communities within the catchment area of the project is qualified to access the Golinga irrigable lands for farming. Again, the person must show interest, capability of managing their farms well by being able to pay the irrigation fee charged in every dry season and should also be hardworking. All these rules are the duty of the land allocation committee. Is a committee that is set aside to determine who have access to the Golinga irrigable lands for farming. It allocates irrigated lands to peasants who possess all these qualities and are also within the five beneficiary communities that cultivate crops at the Golinga irrigation project before land can be allocated to the person. In an interview with one respondent of the study, this was his narration on how he got access to the Golinga irrigated lands:

> I was allocated an irrigated plot of land under project by the IDA due to the hard work and interest I had in farming. I had no plot of mine then, so I helped on the farm of my father. When later I formally requested for a plot of land under the project to farm, those who use to see how am serious at my work gave good recommendations about me. After which I was given a portion of land to cultivate crops, Man, 45, interview 17/07/17.

5.3 Determinants of access to Golinga irrigable land

The data collected indicated determinants of access to the Golinga irrigated lands as access to capital, access to inheritance, access to education and traditional norms and customs. These are the factors which can help an individual to easily have access to the Golinga irrigated land for farming.

5.3.1 Access to Inheritance Rights

The beneficiary communities in the Golinga irrigation catchment area practice patrilineal inheritance. This inheritance is inheriting through the father line. In these communities, the first male born child (elder male) always inherits more properties (land) than any other child. The first male child always has access and control to the late father's irrigated land. The elder who is the first male child, has the power to decide on who owns what plot of irrigable land and how large the size of the land. Most first-born children in a family always try to have the large portion of land or own everything. But, in some cases, they share small portion to others, especially those that are from the same mother. Besides that, the first male child is the one who knows the father's properties very well, the rest are not always aware. So, when the father dies, the eldest

man (first male born) in the family sometime claim some of the properties (land) as his own and the others cannot say anything since they do not know their late father's properties well. Therefore, the first male born always drive more benefit from the irrigable land through inheritance. Below is the narration of one of the respondents.

> I do not own irrigated land under the project but when my father was alive I used to help him in farming under the project since he was allocated an irrigated land. Now, he is no more and the plot of land he had has been taken over by my father's first male child who is not my direct brother (not the same mother but the same father). The third male child brother is having a small portion of that irrigated land, which was given to him by his direct brother but because I am not his direct brother even though I am the second boy, he refused to give me part of the land of my late father with the reason that, the plot is not enough (Man, 43years, interview on 20-07-2017).

5.3.2 Traditional norms and customs

The norms and customs of the communities determine one access to the irrigable land for farming. From the data collected from the field it is revealed that those who are above 60 years interviews were 75% that own irrigable land. Irrigable lands were allocated to those who were old and respected in the communities. The norm is that an old or elder person cannot be there and irrigated land will be given to the younger ones. These elders in the communities mostly drive benefit from the irrigation scheme leaving the younger ones. But sometime, some of them give them some small portion of the irrigable land to farm but not ownership. Family heads are also part of those who have access to the Golinga irrigable land because of the norm that the head of a family control everything in the family and makes all the major decisions. It is also a norm that women do not own land for farming but rather help the husband or family relative to farm. This has made women access and control to the irrigable land difficult. Below is one of the respondent narrations.

> I owned 0.4ha of irrigated land in the Golinga irrigation project, which I cultivate for so many years now. It was allocated to me because I was the family head, at the same time I was one of the oldest person in this community. I normally cultivate 0.2 hectares from that irrigated land and from the remaining 0.2, I allocate a portion of that to my wives to cultivate vegetables for subsistence purposes and what is left from the 0.2 is usually rented out and paid for cash or in-kind. I gift out the remainder from the 0.2 more than renting it and when this is done, my reward comes from God (Man, 72years, interview on 29-07-2017).

5.3.3 Access to education

The field data collected shows that most of the non-irrigators and women have low or no education at all. 28% of women interviewed do not have education at all, 26% of non-irrigators interviewed have no education at all, 14% of men interviewed have no education at all and 16% irrigators have no education at all. The reason behind all this low education is that, the communities believe women are house wives and their education ends up with pregnancy and marriage. For that matter, they will not waste their money in educating the females. The other reason for the men who are not educated is their lack of income to pay fees and limited time to combined education with farming activities. Most of those communities' members who do not have education have limited access and control of the irrigable land since they are not able to lobby to have access to the irrigated land or to rent irrigated land for farming. Through education people are able to get information, knowledge and income earning skill jobs for them to be able lobby to have access to irrigated land for farming.

Education enhances one fall-ball position outside the home in the communities, which can increase one bargaining power in order to drive benefit from the irrigation farming. Most of those who were having access to the irrigable land were those educated in the communities since they were those who could lobby to have access to the irrigated land for farming and also the income they get from skilled jobs are then used to rent an irrigated land for farming. Below is a respondent narration.

> Agriculture is my major source of livelihood. I depend on it for survival and for taken care of my family. However, I do not practice dry season farming since I do not have irrigated land under the Golinga irrigation project, I only practice rainfed agriculture. In most dry season, things become so hard for me since I have nothing to do either than working on the plots of others and get paid either in cash or in-kind. If I had access to Golinga irrigated land for farming, things would have been much easier for me and my household. Had I been educated up to the senior high level, I would have been recognised to have access to the project. With education one becomes recognise in the community. Education is very rare in this community and those who are educated are seen as 'big people' in this community and with this recognition one can easily access the irrigated land for farming. Besides I would have been able to use my education to get a skilled job in order to get income to be able to lobby to get access to irrigated lands for farming. Also, I would have been able to rent irrigated land under the project. The wage I earn from working on the plots of others during the dry season is not enough for me to rent a plot of land under the project for farming and besides the wage is used to cater for the household during the dry season. Had I been educated things would have been much easier for me (Man, 43 years, interview on 28-07-2017).

5.3.4 Access to capital

The data collected from the field shows that access to the irrigable land is mostly determine by access to capital. Those who have more cattle to sell or are having income earning activities outside the home have access and control over the irrigable land. Access and control is determined by how rich you are in the communities. The richer you are, the more you are recognised and the more you drive benefit from the irrigation because you are capable of paying for the irrigation fee. Besides that, if you have enough income it increases your bargaining power in order to lobby or rent irrigable land for farming. Below is what a respondent said.

> I was not having a plot of land when they were sharing it because I was not rich to be recognised in the community as being capable of paying for the irrigation fee charged. At that very time of land allocation, I thought of seeing the chief of Naha, my community to see what he can do, so that I could also be allocated a plot of land under the project but I stopped myself from doing that because I knew if I did that, they would still need me to pay for the water charges in every dry season, which I could not pay. But now, I have a plot of land to farm which I am renting because, I now have a lot of cattle to sell and get access to the project (Man, 49 years, interview on 30-07-2017)

5.4 Who has access to Golinga irrigation Project?

The field data indicates that majority of the respondents of the study wished to own and control their own irrigated lands under the project due to the enormous benefits one can get from having access to it. But not everyone has access to it. Certain conditions do not allow everyone to have access to it. Below are those who have access to the irrigable land for farming. The rich (those capable of paying for the irrigation fee charged), Gender (men have more access than women) and also those in leadership position in the communities like the chief and elders are those who has access to the Golinga irrigated lands for farming.

5.5 Impact of Golinga Irrigation on the livelihoods of Peasants

Irrigation can lead to an increase in the quantity of crops cultivated within the country, it can also help peasants having access to the project to be able to buy extra items that the family lacks as a result of the income gotten from selling their food crops from the irrigated land (Domènech 2015:28). A study by Adam et al. (2016) in the upper west region of Ghana on small-scale irrigation and poverty reduction with a sample size of 235 farmers, 120 farmers practicing irrigation farming and the remaining 115 farmers were not practicing irrigation farming but reliance on only rain fed. The results of the study revealed that small-scale irrigation leads to

reduction in poverty by providing a continues employment for the farmers since they are able to continue their farm work all year round to improve the income of their household, enhance their food security and enable them to be able to access basic social amenities like health, payment of their children school fees and also obtain some items that the household needs. The study above is in line with the research findings that, Golinga irrigation project helps in the improvement of the livelihood of the peasants such as increase in income, source of employment and improvement in household food security of the peasants who have access to it. It also helps the peasants within the catchment area of the project to continue agricultural production throughout the year. The study reveals that, more than half of the respondents (90%) within the catchment area of the project had some form of improvement in their livelihood since they have been able to access the project. Below is a narration from a peasant, age 48 on how Golinga irrigation project has helped in the improvement of his livelihood:

> Having access to my own plot of land under the Golinga project has improved my livelihood by helping me work throughout the year. It also helped in improving my household food security. Also, the income I get from the sale of the rice I cultivate on the Golinga irrigable lands are used to acquire other items needed for the household. My wives no longer buy vegetables from the market for cooking for the family. The vegetables I cultivate at Golinga irrigated land is made available for the household (man, 48years, interview on 25/07/17).

Also, having access to the Golinga irrigated lands prevents people in the communities from travelling to elsewhere like Accra, the capital city of Ghana to do "Kayaye" business in other to obtain an income to better their livelihoods. In an interview with a respondent of the study, this was the impact of Golinga project to her livelihood:

> I use to travel to Accra to do "Kayaye" business in most dry seasons to make an income and come back home to trade with it since there was nothing to do during those times. But now with the construction of the Golinga irrigation project I no longer do so in dry seasons. Even though I do not have my own plot of land under the project but am able to rent the land for farming and pay cash for it. This is made possible only because of the construction of the Golinga irrigation project (Woman, 36years, 3/08/17).

5.6 Equity in Allocation of Irrigable Lands

The research revealed that women do not have equal access to irrigated lands under the Golinga irrigation project because of traditional norms that says women do not own lands by themselves but depends on their husbands or relatives (men) for access to lands for farming. The traditional believe is that, women perform household chores only and has nothing to do with land ownership. What they are supposed to do is to help on the farms of their husbands. The customs and traditions of the place also believes that men are the heads of the family and for that matter

controls all the family lands and also makes the major decisions in the family such as who owns what and who does what? Again, women are seen as not part of the family because they get married and moves away from the family, as a result of this, they are not allowed to own lands in the family rather only the men in the household own lands. They also believe that, the income men make from the sale of crops are being used to cater for the whole family, but women income, is used by them only. Women are therefore expected to help the man(husband) on his farm to cultivate crops to take care of the household.

The study also revealed that, in the Golinga irrigation project, the highest size of irrigated land women own is 0.2 hectares whiles that of men is 0.4 hectares. This clearly shows that women own smaller plots of land compared to men. Most women under the project gained access to the plots of land through their husbands (i.e. their husbands have given a small portion of their land to them to farm). Some also gain access to the Golinga irrigation project through renting a portion of land from others. Others gain access through gift i.e. gift of a portion of land to farm and returning it after harvest. In all, women have limited control of irrigated land under the Golinga irrigation project.

5.7 How can Irrigated Land Access be Improved at GIP

Community lands in the communities that benefits from the Golinga irrigation project are in abundant. Both irrigated and non-irrigated lands are community lands. Data from the field shows that land access at the Golinga irrigation project can be improved by the expansion of the irrigation through the removal of sand from the dam to make room for more water to be collected in the raining season and adequately stored for usage in the dry season. Currently, due to the sand under the dam, in most times, the irrigation water is not enough for their crops. The scarcity of water mostly affect crops yields during those periods. The respondents of the study say that if authorities could come to their aid and remove the sand from the dam, there will be more water for crops to grow well. This when done together with extension of the irrigation canal, then there will be improvement in their land access.

Community lands are still very much available around the project and if the irrigation canals were extended into the others areas, so that the water can move into more distant areas, then more lands will be made available for them to cultivate crops. The study again revealed that in most times, sand and other particles falls into the irrigation canals preventing the free flow of water into the irrigated land. If equipment designed for removing the sand in the canal were provided to the community, then they would be able to remove the sand to allow the water to move freely into the farms to water the crops. When this is done more water and more irrigated lands will be made available for more people to have access to it. Below is a narration from a respondent of the study.

> I was allocated 0.2 hectares of irrigated land under the Golinga irrigation project. This plot of land is not enough for me and my household. Practicing irrigation farming is good and it helps a lot especially in the dry season but I get more agricultural produce from my other community land that is different from the Golinga since that land is bigger than the Golinga irrigated land that I own. I wish I had more land area under the project. That way I would have been able to allocate some portion to my wives to cultivate crops for subsistence purposes. More lands would have been made available for us to use if the irrigation canals were extended into other communal land areas since the community lands are available. The landless peasants and those of us who needs more, would have had more lands under the project for farming. Also, if equipment for removing sand in the irrigation canals were provided without them even removing it for us, we would have removed the sand by ourselves. That way, irrigated land access will be improved since more lands would have been made available for farming (Man, 47, 30/07/2017).

5.8.1 Gender

In the Golinga irrigation project, there is unequal access to the irrigated land though almost all individuals (men and women) within the catchment area of the project relies on the project for survival. With the total number of peasants under the project being 150, only 12 are women, indicating the level of unequal access to the irrigated land. In many parts of the world men are favoured more than women in terms of land allocation through any means (Deere and León 2003). Many women in rural areas do not usually have the ownership and control of land (ibid). According to White (1982), women make up the greater number of labour force in agriculture in many agrarian societies. Yet their contribution to agriculture is not well recognized. They have limited access to own and control land. This is clearly seen in the Golinga irrigation project case where women do not have an equal access to the irrigated land under the project. The men who currently have access are more than the women. Other studies elsewhere in Africa, have revealed that access to land is unequal between men and women and this is one of the significant causes of economic disparity (Tripp 2004).

Access to irrigated land at the Golinga irrigation project can be obtained by men and women in the five (5) communities through relations with others and through other different ways. The women respondents of the study said that having access and control of their own irrigated land under the project is very significant for their survival and that of their families. This is in line with what Agarwal (1994) said that, the hazards of poverty and the personal safety of a woman and her offspring might rely importantly upon the fact that she has access to resources directly like land or finance and not by having access through the means of other family relatives(male) or through marriage (husband)). The study revealed that women have access to the project but their

access is limited compared to the men in the communities. More lands were allocated to the men than women under the project. The percentage of men who have access to the project is 92 percent and that of women is only 8 percent. This shows how limited women have access to the irrigated land under the project.

The male respondents of the study controlled their own irrigated land under the project but not all the women respondents of the study controlled their own irrigated lands, most of the women respondents had access to the irrigated land through relations with others (e.g. husband or any family member), rent a plot of land and paying for it. In short, most of the women respondents of the study were either working for the family or being an agricultural wage labourer. The lack of another way of ensuring once means of survival, forces landless peasants to sell their labour or capability to labour to the capitalist who are in possession of the production means and also needs the services of another person (worker) to produce commodities for profit generation (Bernstein et al. 1992:28). 50 percent of the women respondents in the study access the project indirectly through working relationships (labour) and as a result of that have been able to drive benefit from the project. This is the narration from a woman respondent of the study on how she had access to the Golinga irrigation project through her labour:

> I do not own irrigated land under the project rather I work on the farms of others for which I get paid for cash, at other times I get paid with foodstuffs from the farm. I wish I had a plot of my own under the project. I am currently working on the farm of a man who is busy doing non-farm work. There is more labour work under the project during the harvesting season and during those times, I get a lot of foodstuffs as payment for my work done. Which has really helped me and my family (Woman, 35 29/07/17).

According to Ribot and Peluso (2003:167), Although, an individual may not be able to have resource access by having right to the property (land) and may not have capital to purchase the resource or engage in an exchange but may be able to benefit from the resource through labour (worker) relations with the resource owner or controller. In many developing countries, “patron-client relations” have been a significant mechanism of being in control and attaining resource (land) access and work chances (Ribot and Peluso 2003:167). By means of work, individuals are able to drive benefit from a resource (land) in monetary terms or in-kind (i.e. using food crops) as way of paying for their work down (ibid). The above statements are in line with the research findings that, most of the women respondents in the study do not own the irrigated land but had access to it through working relations and through this, they have been able to drive benefit for the project.

Any land access and ownership women has relied on particular relations she has created with men (Jefremovas 1991). Some women gain access to the Golinga irrigated land through family

relationships. Most of the men who have access to the Golinga irrigated lands gives a portion of their land to their wives to farm. In an interview with a woman this was her narration on how she had access to the project:

> The irrigated land I currently farm on was given to me by my husband from his own irrigated land that was allocated to him. I am involved in the business of selling cooked rice to the school children in the community. Even with this I cultivate rice and vegetables on the land my husband gave me for subsistence purposes. I also help on the farm of my husband to cultivate crops since it is my duty as his wife to help on his farm (Woman, 40, 20/07/17).

In recent times, in many African countries, men own and control land due the fact that, the community leaders have assigned land to the male heads of the families, these lands are then transferred to the male successors through inheritance, women therefore, have to access the land through their male relation or their husbands (Lastarria-Cornhiel 1997). Women are obligated to farm on their husband's farm land to cultivate crops (ibid). Therefore, the traditional norms and customs in most African countries instruct that, men own resources (land) whiles women have to maintain their access through their husbands or male relations (Lastarria-Cornhiel 1997). This statement coincides with findings of the research that the customs and traditions of the place puts the men above the women. It is believed there that women traditional, do not own land by themselves. What they do is to help on the farms of their husbands, since their husbands are the head of the household. The income they make from the sale of crops are being used to cater for the whole family but the income from women belongs to them only. Below is a narration from a woman respondent of the study who was not in agreement with this.

> I do own an irrigated land under the project. It was given to me by husband from his own plot of land under the project. This piece of land has really been helpful to me and my family. What my husband normally do is to provide a bag of maize for the family. The vegetables he cultivates at the Golinga irrigated land is also available for the household and provides a little amount of money for cooking which is usually not enough. I the woman will have to top it up to be able to cook a healthy meal for the family. At other times, when my husband does not have money, he simply says he does not have money and provides only the bag of maize. I the woman will have to provide the money for cooking for the family since I cannot allow my children to go hungry. Had he not given me this portion of irrigated land for farming, I would not have known what to do to support my family during those times. This land is of great importance to me and my household.

Mostly, women are not assigned resources (land) directly by their communities or households neither do they access land through inheritance (Lastarria-Cornhiel 1997). Women are not permitted to access land through inheritance (Kweka 1998). This is in line with the research

findings that the patrilineal inheritance of the people makes the men have more access to the project whilst preventing women from having access. The first male born child of the family have the access and control of his fathers irrigated land when he passes away. This explains why there are more men under the project than women. Some of the male respondents of the study had access to the irrigated land through transfer by inheritance from their father. Women do not access the irrigated land through inheritance.

5.8.2 Class/Wealth

Access to labour opportunities is a way of working for oneself and working for others (Ribot and Peluso 2003). An individual may not have the access of resources (irrigated land) through property rights and cannot also purchase a resource (land) but can drive benefit from the resource (irrigated land) by engaging in a good working collaboration with the owner of the resource or through other ways of access (ibid:167). According to Ribot and Peluso (2003:165), access to capital is mostly seen as access to wealth in either monetary terms or equipment that can be used to access and control resources (land) for production process. Wealth can be used to determine access and control over resources (irrigated land) by buying, renting, paying fees (water charges) and even influence resource access from the access holders (ibid:165). Capital access by way of credit is a mechanism of sustaining access to resources (say land) (Ribot and Peluso 2003:165).

Due to the power and the position that comes with being wealthy, people who possess wealth may also have advantage over productive resource access and trade, chances, knowledge procedures, authority (Ribot and Peluso 2003:156). An individual may possess the right to receive gain from a resource but might not be able to utilize that right without capital access or having access through labour (Ribot and Peluso 2003:156). This will be a situation of possessing property (right) and not having access (capacity) to benefit (ibid). Access here is more of a “bundle of powers” than a “bundle of right” (Ribot and Peluso 2003:156).

Having access to the Golinga irrigated land for farming can help in the improvement of the livelihoods of the peasants in the communities but then not everyone can have access to it. The rich are able to have access to the project. There is an irrigation fee charged of GH160 = $32for using the irrigation water for farming. Before one can have access to the Golinga irrigated land for farming, one has to be capable of paying for the irrigation fee charged. The monetary status of a person is therefore a factor that determines access to the Golinga irrigated land. Wealth can therefore help one to have access to the Golinga irrigated land for farming purposes to help in the improvement of their livelihoods. The irrigated lands at the Golinga project are not for sale, they are allocated to the peasants within the catchment area of the project. However, before one can gain access to the land, he/she must be capable of paying for the irrigation fee charged

in every dry season. In an interview with a respondent of the study, this was his narration on how he no longer cultivates crops at the Golinga irrigated land:

> I used to have access to the Golinga irrigated land for farming because I was capable at that time to pay for the irrigation fee charged but now times are hard for me and I could no longer pay the fee for three consecutive years. Due to this, after several warnings from the project association, the irrigated land that was allocated to me was taken away from me and reallocated to another peasant capable of paying the irrigation fee charged. If I was still capable of paying for the irrigation fee charged, this land would have still been under my control. It was really helpful to me and my household and losing it has really affected me greatly (Man, 48, 22/07/17).

Also, through education, one can get a formal paid job (like teaching, security personal etc.) and with this one will be capable of paying for the irrigation fee charged and this can enhance once access to the Golinga irrigated land for farming. Again, this income gotten from the formal paid job can help one to easily rent a plot of irrigated land under the project for farming. Below is a narration from a respondent of the study on how he had access to the Golinga irrigated land for farming.

> I was still young at the time of allocation of irrigated land under the project and so I was not able to have access to the project through the allocation of the irrigated land but due to the small education I have, I have been able to get a small job as a security personnel and with the salary I get from my work. I have been able to have access to the Golinga irrigated land for farming by renting a plot of land from the owner of the land and paying cash for it (Man, 38, 20/07/17).

5.8.3 Authority (Power)/Leadership position

Leadership is also a factor that determines access to the Golinga irrigated land. It constitutes the ability of political institutions like traditional institutions, religious groups, state and other establishments to influence other people (Weber 1976 in Sikor and Lund 2010). Access to authority is the direct and indirect ways of powers that people acquire to drive benefits from irrigated land (resource) (Ribot and Peluso 2003:170). Traditional leaders such as chief, and other non-state authorities can influence access and control of resources such as irrigated land and then apportion the land to their favourite relatives and other known groups (ibid:171).

According to Ribot and Peluso (2003:164), access to a resource can be through legal rights or illegal rights, illegal rights are rights-based that is not by state law or community law in a form of threats or using force, legal access rights are access by state law or community law. The rights to access irrigated land by legal or illegal means in a society shows how powerful an individual is.

Government officials, political leaders and traditional leaders are powerful in the communities and uses their position to influence access to irrigated land in the Golinga irrigation project.

People with leadership position in the communities can easily have access to the lands under the project. The study reveals that the chiefs and their elders, the assembly men, women leaders and their assistance can easily have access to the Golinga irrigated lands. They were allocated irrigated lands under the project. These findings are in line with what Agandin (2015) said that resources like land is allocated in favour of influential individuals (bigger individuals, traditional leaders) who are privileged to have access to irrigated lands whiles leaving out other groups such as the women, young, the poor peasants.

According to Ribot and Peluso (2003:170), authority access is a significant stage in the network of "powers" that helps individuals gain from resources, individuals or a combination of individuals can achieve and sustain access to other productive means and trade through these authorities. This statement is in line with the findings of the research that the influential people in the communities can easily lobby for plots of land for their relatives including anyone they want to help acquire the irrigated land for farming. In an interview, this is the narration from a man on how he gains access to the Golinga irrigated land for farming:

> I had access to the Golinga irrigated land for farming purposes through my father who was the chief of Naha community, so a plot of land was allocated to him under the project. Now I am in charge of the land since he is no more. This is how I have been able to have access to the Golinga irrigated land for farming. The leadership position of my father gave me access to the project. Now he is no more and his land has been transferred to me through inheritance (Man, 45, 5/08/17).

Traditional institutions like chieftaincy institution plays an important role in helping some peasants to be able to access the Golinga irrigated lands for farming. The local authority in the communities is the chief and has some influence in the land allocation. A representative of the traditional council forms part of the LAC and through this, those associated with the chief are able to have access to the plots of land under the project. The chief of all the five beneficiary communities owns lands under the project and can easily help others to gain access to irrigated land for farming. A narration from a respondent age 40 on how he had access to the Golinga irrigated land for farming:

> I own irrigated land under the Golinga Irrigation project for farming purposes. I have been able to access the land through my father who is the chief of Gbalahi, so when I wanted to cultivate crops under the project, this portion of land am currently cultivating was allocate to me to farm from his own irrigated land that was allocated to him (Man, 40, interview on 6/08/17).

GIDA is the government body responsible for formal land allocation at the Golinga irrigation project. It determines who can have access to the Golinga irrigated lands for farming. Some peasants in the beneficiary communities of the project have access to the ownership and control of their own land under the project but some do not. The study revealed that some peasants under the project had access to the irrigated land through the formal authority GIDA. This was established through the relations or some kind of association that a person has with the management of the project. Some of the respondents of the study who had access to the Golinga irrigated land had some kind of connection with state authority GIDA and through this connection, they have been able to access the irrigated land for farming. 10 percent of the irrigators respondents interviewed had access to the project through having links/connections with the GIDA staffs, land allocation committee, and the chiefs. These formal and local institutions are powerful and can easily influence once access to the irrigation project. In an interview with a respondent, this was his narration on how he had access to the Golinga irrigated land for farming:

> I cultivate crops on my own irrigated land at the Golinga irrigation project. I had this land through a staff of GIDA who lives in the same area as my friend in Tamale. I got to know this when I told my friend of the interest I have in farming under the project, that was when he told me that, one of the GIDA staff lives in his area. So, my friend connected me to him and so this irrigated land I farm on was allocated to me through him (Man, 43, interview on 22-07-2017).

Most lands that are under agricultural production are owned and controlled by the state and thus accessing it does not depend on the gender of a person or community rules but it depends the capability to lobby among the stakeholders responsible for land allocation (Oboso-Mensah 1999 quoted in Obuobie et al. 2006). This statement coincides with the findings of the research that 10 percent of the irrigators respondents had access to the irrigated lands through their ability to lobby with GIDA staff, LAC etc. This finding is in line with what Ribot and Peluso (2003:154) said that some individuals and organizations have the ownership and control of resources (land) whiles others individuals get access to those resources through the people who are in charge of those resources.

Also, through education, people are able to get leadership position in the community like the women leader, assemble men etc and as a result of this leadership position, one can gain access to the irrigated land for farming. Through education some members of the communities become recognized and given leadership roles. This makes them to be able to negotiate for a plot of irrigable land for farming and Those with the leadership roles were also given irrigable land for farming. Below is the narration of a respondent.

> I am the one that access/control of this irrigable land for farming. I have been farming on that plot for years with my children, who are very helpful especially

when it comes to harvesting. My husband also helps on the farm in most of the time. The irrigated land was allocated to me by the land allocation committee. Though, it is not easy to get a plot of irrigable land for farming especially if you are a woman in this community. Women in the community are faced with a number of challenges regarding access to land for farming because of the norm that women do not own lands by themselves, their duty is to help on the farms of their husbands to cultivate crops for sale and also for subsistence. But the reason why this irrigated land was allocated to me was that, I am the women leader ('Mangaziya') in this community and this leadership role was given to me because of my educational level in the community. I have a bit of education (senior high level). Even though I do not have a formal paid job because of this small education that I have but I can still speak in public and for that matter can represent the women in any gardening that their presents are needed. This is why I was given the role of the women leader in the community. And when the irrigated lands were being allocated, I was also given a plot of land under the project because of the position I hold in the community (Woman, 37 years, interview on 29-07-2017).

Chapter 6

Conclusion

The objective of the research was to investigate the dynamics of access to the Golinga irrigation in Tolon district, Ghana. To find out the factors that determine access to the Golinga irrigated land. Why some have access to the project whilst others do not and what determines those who have access. In trying to answer the main research question, what determines access to the Golinga irrigated land? the study touched on how irrigated land is allocated formally at the Golinga irrigation project. Irrigated land in the Golinga irrigation project is formally accessed by being a member of the five beneficiary communities irrespective of the gender differences, the person should be showing interest in farming and capability of managing the irrigated land (payment of water charges). All these are determined by the land allocation committee before a land can be allocated provided there are available irrigated lands.

Access to irrigated land in the Golinga irrigation project is determined by access to inheritance rights, traditional norms and customs, access to education, access to capital, formal and local authority. Access to inheritance rights is one of the determinants of access to the land (irrigated land). Irrigated lands are mostly inherited by the first born male child of the family in the communities benefiting from the Golinga irrigation project. The first male born child of the family drive benefit from the irrigated land through inheritance. This explains why there are more men under the project than women. Since men gets irrigated land transferred to them through inheritance. Women do not inherit land and for that matter cannot acquire the irrigated land through inheritance. The traditional norms and customs also determine one's access to the irrigated land. The norms of the place help the men to have access to the irrigated land for farming since men are the heads of the family and for that matter are in control of land. women traditionally, do not own lands by themselves and for that matter do not own or access irrigated land directly but rather indirectly. That is depending on their husbands or the family relative (men) for access by helping them.

Access to education is also one of the determinants of access to the irrigated land. Through education people are able to get information, knowledge and income earning skilled jobs for them to be able to access irrigated land. This is because one becomes capable of paying for the irrigation charges and have the ability to negotiate for irrigated land. He/she can benefit from the irrigation project by renting an irrigated land for farming. Besides that, those who were educated in the community were recognised and given leadership position (like assembly man, women leader) which made them to access the irrigation project very easily.

The findings also show that access to capital was a determinant of access to the irrigated land in the sense that, those with cattle or other income earning activities were having bargaining power in order to lobby or rent irrigated land for farming. The findings show that access to the irrigated land is also through formal and local authority. 10 percent of the irrigators respondents

interviewed had access to the project through having links/connections with the GIDA staffs, land allocation committee and the chiefs. These formal and local institutions are powerful and can easily influence once access to the irrigation project. On equity in the allocation of irrigated lands under the Golinga irrigation project. The research revealed that women do not have equal access to the irrigated lands under the Golinga irrigation project. With the total farmer population being 150 only 12 are women indicating the level of unequal access to the project. Also, the highest size of irrigated land men own under the project is 0.4 hectares and that of women is 0.2 hectares. This clearly shows that women own smaller plots of land compared to men. In all, women have limited control of irrigated land under the Golinga irrigation project.

On the Impact of Golinga irrigation on the livelihoods of peasants. The Golinga irrigation project helps in the improvement of the livelihood of the peasants such as increase in their income, source of employment and improvement in household food security of the peasants who have access to it. Also, the Golinga irrigation project prevent the community members from travelling during the dry season to elsewhere to work when they have nothing doing during those seasons. With the construction of this project peasants are no longer idle in the dry season. They can work on the irrigated land for subsistence and also for sale to improve their livelihood. On who has access to the Golinga irrigated land. The rich, Gender (men have more access than women) and those in leadership position in the community like the chief, women leaders etc are those who has access to the Golinga irrigated land for farming.

In general, this research has confirmed that existing power relations in society makes it difficult for the poor and the weak to be able to benefit from resources that are limited in supply. The Golinga irrigated lands are limited which makes it difficult for everyone to benefit from it. Those who have power and influence are able to benefit. State investment in irrigation does not always lead to the poverty reduction and food security for the poor because not enough people have access to it because the lands are not always enough for everyone to have access to it. The few available lands are being taken over by the rich, traditional leaders, and those affiliated to them leaving out the poor. The government irrigation project could have worked better, if the irrigation was bigger. That is if finance was available to remove sand from the dam to produce more water and irrigation canals were extended to make more land available for the peasants.

The study conforms with other studies carried out elsewhere in Ghana and in Africa. A study in Africa goes like men own and control land due the fact that, the community leaders have assigned land to the male heads of the families, these lands are then transferred to the male successors through inheritance, women therefore, have to access the land through their male relation or their husbands (Lastarria-Cornhiel 1997). Another study elsewhere in Africa revealed that access to land is unequal between men and women and this is one of the significant causes of economic disparity (Tripp 2004). This shows that unequal access to irrigated land does not occur in Ghana alone but in elsewhere as well.

Another study elsewhere in Ghana revealed that, resources like land is allocated in favour of influential individuals (bigger individuals, traditional leaders) who are privileged to have access to irrigated lands whiles leaving out other groups such as the women, young, the poor peasants

(Agandin 2015). This indicates that irrigated land access in favour of men, the rich, chief does not only occur in Golinga case alone but in others places as well.

Finally, the determinants of access to the Golinga irrigated lands are access to education, access to capital, access to inheritance rights, traditional norms and customs, access to capital, formal and local authority. All these determinants are under Gender (access to inheritance rights, customs and tradition), Class/wealth (access to capital, access to education) and leadership/authority (power) (access to education, formal and local authority).

List of References

Abagale, F.K., A. Oredola Tunde and O. Agyemang (2014) 'Organochlorine Pesticide Levels in Irrigation Water of the Golinga Dam, Tolon District Ghana'.

Adam J.N., S. Al-Hassan and D.A. Akolgo (2016) 'Small Scale Irrigation and Rural Poverty Reduction in the Upper East Region of Ghana', African Journal of Science and Research 5(2): 38-42.

Adongo, T.A., F.K. Abagale and G. Kranjac-Berisavljevic (2015) 'Soil Quality of Irrigable Lands of Irrigation Schemes in Northern Ghana'.

Agandin, J.B.A. (2015) , Negotiated Entitlements: A Study of Land and Water Access in the Tono Irrigation Project in Navrongo, Ghana.

Agarwal, B. (1994) *A Field of One's Own: Gender and Land Rights in South Asia.* Vol. 58. Cambridge University Press.

Akudugu, J.A. and M. Issahaku (2013) 'Danamics of Land Ownership and Management in Small-Scale Irrigation Schemes in the Bawku East District of Ghana'*, European Scientific Journal* 9(11).

Ayele, G.K. (2011)*, The impact of selected small-scale irrigation schemes on household income and the likelihood of poverty in the Lake Tana basin of Ethiopia*.

Bacha, D., R. Namara, A. Bogale and A. Tesfaye (2011) 'Impact of small-scale Irrigation on Household Poverty: Empirical Evidence from the Ambo District in Ethiopia'*, Irrigation and Drainage* 60(1): 1-10.

Balarane, A. and O. Oladele (2014) 'The Impact of Irrigation Farming on Livelihood Strategies among Smallholder Farmers in the North-West Province, South Africa'*, WIT Transactions on Ecology and the Environment* 185: 223-234.

Bernstein, H. (2010) Class dynamics of agrarian change, Halifax: Fernwood Publishing, pp. 13-24
Bernstein, H., B. Crow and H. Johnson (1992) Rural Livelihoods: Crises and Responses. Oxford University Press, USA.

Bernstein, H., B. Crow and H. Johnson (1992) Rural Livelihoods: Crises and Responses. Oxford University Press, USA.

Bhattarai, M., R. Sakthivadivel and I. Hussain (2001) *Irrigation Impacts on Income Inequality and Poverty Alleviation: Policy Issues and Options for Improved Management of Irrigation Systems.* Vol. 39. IWMI.

Boafo, Y.A., O. Saito and K. Takeuchi, (2014) Provisioning ecosystem services in rural savanna landscapes of Northern Ghana: An assessment of supply, utilization, and drivers of change. J. Disaster Res, 9(4): 501-515.

Braimah, I., R. King and D. Sulemana (2014) 'Community-Based Participatory Irrigation Management at Local Government Level in Ghana', *Commonwealth Journal of Local Governance* (15).

Cotula, L., N. Dyer and S. Vermeulen (2008) *Fuelling Exclusion: The Biofuels Boom and Poor People's Access to Land.* Iied.

Daniel, Z. (2015), The Impact of Irrigation Schemes on Farmers Income and Livelihoods in the Upper-West Region of Ghana.

Deere, C.D. and M. León (2003) 'The Gender Asset Gap: Land in Latin America', *World Development* 31(6): 925-947.

Dethier, J. and A. Effenberger (2012) 'Agriculture and Development: A Brief Review of the Literature', *Economic Systems* 36(2): 175-205.

Dharmasiri, L.M. (2009) 'Land Ownership and Land Management: A Case Study of Karuwalagaswewa, Sri Lanka'.

Dinye, R.D. and J. Ayitio (2013) 'Irrigated Agricultural Production and Poverty Reduction in Northen Ghana: A Case Study of the Tono Irrigation Scheme in the Kassena Nankana District', *International Journal of Water Resources and Environmental Engineering* 5(2): 119-133.

Domènech, L. (2015) 'Improving Irrigation Access to Combat Food Insecurity and Undernutrition: A Review', Global Food Security 6: 24-33.

Ellis, F. (1993) "Elements of peasant political economy" In F. Ellis, Peasant Economics, Farm Households and Agrarian Development (Second edition) Cambridge, Cambridge University Press Chapter 3, pp. 45-60

Feder, G. and R. Noronha (1987) 'Land Rights Systems and Agricultural Development in Sub-Saharan Africa', *The World Bank Research Observer* 2(2): 143-169.

Food and Agriculture Organization of the United Nations/FAO 2004. 'Land and Water: The Rights Interface'. Accessed 12 June, 2017. http://www.fao.org/docrep/007/y5692e/y5692e07.htm.

Friedmann, H. (1980) 'Household Production and the National Economy: Concepts for the Analysis of Agrarian Formations', The Journal of Peasant Studies 7(2): 158-184.

Ghana News Agency /GNA (2012). Accessed 2nd May 2017. http://ghananewsagency.org/economics/mida-inaugurates-bontanga-golinga-irrigation-projects-41336

Ghana Statistical Service (GSS) (2014) '2010 Population Housing Census District Analytical Report' Tolon district

Ghana Statistical Service (GSS) (2014) 'Ghana Living Standard Survey (GLSS) Poverty Profile in Ghana' (2005-2013)

Ghana Statistical Service, (2012) 2010 Census. Accra: Ghana Statistical Service.

Goldstein, M. and C. Udry (2008) 'The Profits of Power: Land Rights and Agricultural Investment in Ghana', *Journal of political Economy* 116(6): 981-1022.

Inkoom, D.K. and C.Z. Nanguo (2011) 'Utilisation of Irrigation Facilities Towards Poverty Reduction'.

Jayne, T.S., T. Yamano, M.T. Weber, D. Tschirley, R. Benfica, A. Chapoto et al. (2003) 'Smallholder Income and Land Distribution in Africa: Implications for Poverty Reduction Strategies', *Food Policy* 28(3): 253-275.

Jefremovas, V. (1991) 'Loose Women, Virtuous Wives, and Timid Virgins: Gender and the Control of Resources in Rwanda', Canadian Journal of African Studies/La Revue canadienne des études africaines 25(3): 378-395.

King, R. and J. Bugri (2013) 'The Gender and Equity Implications of Land-Related Investments on Land Access, Labour and Income-Generating Opportunities in Northern Ghana', *The Case Study of Integrated Tamale Fruit Company. FAO, Rome*.

Kuwornu, J.K. and E.S. Owusu (2012) 'Irrigation Access and Per Capita Consumption Expenditure in Farm Households: Evidence from Ghana', *Journal of Development and Agricultural Economics* 4(3): 78-92.

Kweka, R. (1998) 'Women in Smallholder Irrigation in Tanzania', Gender Analysis and Reform of Irrigation Management, Concepts, Cases and Gaps in Knowledge.

Kyei-Baffour, N. and E. Ofori (2006) 'Irrigation Development and Management in Ghana: Prospects and Challenges', Journal of science and technology (Ghana) 26(2): 148-159.

Lastarria-Cornhiel, S. (1997) 'Impact of Privatization on Gender and Property Rights in Africa', World Development 25(8): 1317-1333.

Mengistie, D. and D. Kidane (2016) 'Assessment of the Impact of Small-Scale Irrigation on Household Livelihood Improvement at Gubalafto District, North Wollo, Ethiopia', *Agriculture* 6(3): 27.

Ministry of Food and Agriculture/MOFA (2016). Accessed 12th May, 2017. https://en.wikipedia.org/wiki/Ministry_of_Food_and_Agriculture_(Ghana).

Namara, R.E., L. Horowitz, B. Nyamadi and B. Barry (2011) 'Irrigation Development in Ghana: Past Experiences, Emerging Opportunities, and Future Directions', *Ghana Strategy Support Program (GSSP) Working Paper* (0026).

Obuobie, E., B. Keraita, G. Danso, P. Amoah, O.O. Cofie, L. Raschid-Sally et al. (2006) 'Irrigated Urban Vegetable Production in Ghana: Characteristics Benefits and Risks'.

O'Leary, Z. (2004) The Essential Guide to Doing Research. Sage.

Pearson, R. (2000) 'Rethinking Gender Matters in Development'*, Poverty and Development into the 21st Century:* 383-402.

Rao, N. (2011) 'Women's access to land: An Asian perspective', Expert paper prepared for the UN Group Meeting 'Enabling Rural Women's Economic Empowerment: Institutions, Opportunities and Participation'. Accra, Ghana, pp20-23.

Ribot, J.C. and N.L. Peluso (2003) 'A Theory of Access'*, Rural Sociology* 68(2): 153-181.

Shapiro, T.M. (2006) 'Race, Homeownership and Wealth', Wash.UJL & Pol'y 20: 53.

Shipton, P. and M. Goheen (1992) 'Introduction. Understanding African Land-Holding: Power, Wealth, and Meaning', Africa 62(3): 307-325.

Sikor, T. and C. Lund (2010) The Politics of Possession: Property, Authority, and Access to Natural Resources. John Wiley & Sons.

Tesfaye, A., A. Bogale, R.E. Namara and D. Bacha (2008) 'The Impact of Small-Scale Irrigation on Household Food Security: The Case of Filtino and Godino Irrigation Schemes in Ethiopia', Irrigation and Drainage Systems 22(2): 145-158.

Tripp, A.M. (2004) 'Women's Movements, Customary Law, and Land Rights in Africa: The Case of Uganda'*, African Studies Quarterly* 7(4): 1-19.

White, C.P. (1982) 'Socialist Transformation of Agriculture and Gender Relations: The Vietnamese Case'*, The IDS Bulletin* 13(4): 44-51.

Yaro, J.A. (2010) 'Customary Tenure Systems Under Siege: Contemporary Access to Land in Northern Ghana'*, GeoJournal* 75(2): 199-214.

Appendices

Guided In-depth Interviews Question for Peasants having Access to Golinga Irrigable Land:

1.Personal Information

- Age of participants ……
- Gender: (a) Male (b) Female
- Marital status: (a) Single (b) Married (c) Divorce (d) Others ……..
- Educational level: (a)Primary (b) Secondary (c) Tertiary (d) Not Attended School
- Religion: (a)Islam (b) Christian (c) Traditional (d) Others ……

2. How long have you been farming on the Golinga irrigable lands ……..

3. Do you own the irrigable lands that you farm on?.....

4. How did you get access to irrigable land …….

……

5. What is the size of the irrigable land you farm on? ……

6. Is the irrigated land size own enough for you or you wish to own more?.....

…….

7. Do you know the average acre of land a peasant can farm under the project? (a) Yes (b) No

8. What is the average acre of land a peasant can farm under the project? …….

9. Who determines how much land area a peasant can hold under the project …….

…….

10. Is there a law/rule one has to follow before getting to farm on the irrigable lands? ……..

11. What is the law? ……

……..

12. Who makes the law? ……

13. Do you think this rule prevent/allow people to get access to the irrigable lands?.....

……..

14. Does everyone have equal rights to the irrigable lands? ……..

……

15. Does the land allocation favour any group in the communities? ……

16. Which group does it favour and why? ……..

17. Is your farm land managed by you only or is it managed with your spouse? ……

18 What does your spouse do regarding work on the farm? ……

……

19. Has the practice of irrigation farming improved your livelihood in any way, if yes how? ……..

……

20. Has the Golinga irrigation project contributed to reducing poverty in this area? ……..

…….

21. 28. What do you cultivate on the Golinga irrigable land? …….

……

22. What do you do with it? ……

……

23. How many communities cultivate crops at the Golinga irrigable land. Name them?

……
….

……

24. Do you cultivate crops in another land that is different from Golinga irrigable lands? …….

25. What do you do during the raining season? ……

……..

26. Do you engage in any other work apart from farming? ……..

27. What is it? ……..

28. How long have you been doing it? ……..

29. Between farming and no-farming activity, which one gives you more income? ……

……

Guided In-depth Interviews Questions for Peasants not having Access to Golinga Irrigable Lands but Depends on only Rainfed Farming:

1. Personal Information

- Age of participants …….

• Gender: (a) Male (b) Female

- Marital status: (a) Single (b) Married (c) Divorce (d) Others ……..
- Educational level: (a)Primary (b) Secondary (c) Tertiary (d) Not Attended School
- Religion: (a)Islam (b) Christian (c) Traditional (d) Others ……

2. How long have you been farming in this area? ……

3. Have you ever cultivated crops during the dry-season using Golinga irrigable land? If yes…….

- Where you the owner or were you working for somebody else?.....
- Why are you not farming there anymore?.....

4. What do you do during the dry season? …….

5. Would you like to cultivate crops on the Golinga irrigable land and why? ……

……..

6. Why then are you not cultivating crops on the Golinga irrigable land? ……

……

7. What do you think makes people get access to the Golinga irrigable land? ……

……

8. Do you think the land allocation favour any group in the communities? If yes

Which group does it favour and why? ……

……..

9. Do you manage your farm with your spouse or alone? ……

10 What role does your spouse play on the farm? ……

11. Which crops do you cultivate on your farm?.....

……

12. What do you do with it? ……..

……

Guided Interview Questions to Key informants in the Study (Selected Staff of Ghana Irrigation Development Authority).

1. A brief history of Golinga irrigation project?.....

……..

2. What is the reason for establishment of this project? ……..

……..

3. Is the Golinga irrigation a practical option for reducing poverty in the region and why?.....

……

4. Have the Golinga irrigation project contributed in reducing poverty in the area and how?.....

……

5. Who manages the Golinga irrigable lands?.....

6. What role(s) does management play in the Golinga irrigation project? ……..

……

7. Is there a committee for land allocation under the project? ……

8. What qualifies one to be a member of the land allocation committee?.....

……

9. What are their functions? ……

……

10. Who is the chair of the land allocation committee? ……

……

11. What qualifies one to be the chair of the land allocation committee?.....

…….

12. Is there any lay down rules with regards to land allocation under the project? If yes, name them ……
…….

…….

13. Does this rule favour or prevent any group in the communities from getting access to the irrigable lands? ……..

…….

14. Does everyone have equal access to the irrigable land?.....

.....