



Access to Irrigation and Gender:
The case study of Bontanga Irrigation Scheme in the North-
ern Region of Ghana

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List of Acronyms

AAGD	Accelerated Agriculture Growth and Development
BIS	Bontanga Irrigation Scheme
CEDAW	Convention on Elimination of All forms of Discrimination against Women
FAO	Food and Agricultural Organization of the United Nations
FBO	Farmers Based organizations
FGD	Focus Group Discussion
GADS	Gender and Development Strategy
GIDA	Ghana Irrigation Development Authority
GOG	Government of Ghana
GSS	Ghana Statistical Service
IRDD	Irrigation Reclamation and Drainage Division
IMF	International Monetary Fund
JICA	Japan Technical Cooperation Agency
LAC	Land Allocation Committee
LAP	Land Administration Project
MDG	Millennium Development Goals
MIDA	Millennium Development Authority
MOFA	Ministry of Food and Agriculture
MTADS	Medium-Term Agriculture Development Strategy
NGOs	Non-Governmental Organizations
SAP	Structural Adjustment Programme
SMC	Supreme Military
UN	United Nations
WB	World Bank
WUA	Water Users Association Council

Abstract

As climate change in the savanna belt of Ghana poses great limitations on rain-fed agriculture, governmental and non-governmental agencies turn to irrigated agriculture to provide employment and food for the growing population. Gendered analyses of the Bontanga irrigation project reveal that in many cases women's participation in irrigated agriculture has been limited due to lack of access to land. Past research suggests that variables other than access to land condition low women's participation in irrigated agriculture. Fully understanding women's participation in terms of their access to irrigated land demands the examination of how intra-household dynamics and the market, as well as the state, interplay as constraints to women access to irrigation land.

Relevance to Development Studies

Women access to a productive resource such as land is an important tool as it determines their bargaining outcome which further contributes to the eradication of poverty by stimulating the household economic growth and promotes socio-economic development. When women are empowered by having equal access to strong bargaining power it will enable them to get a stronger fall back within and outside the family to contribute significantly to the household economy. With the gendered nature of land allocation in most irrigation schemes, acknowledging the roles of households, market, and state plays should be considered as an enforcing factor on women access to land. Consequently, in order to ensure equality in resource allocation, it is important that gender-specific concerns are embedded in the design of projects right at the implementation stage. This entails that development practitioners have to be well informed and integrate the various constraints to women access to land in designing developmental projects.

Keywords

Gender, Access, land, Irrigation, scheme, allocation, Bontanga, Ghana

Chapter 1

Introduction and Problem Statements

1.1 Introduction

Generally, it is recognized that the pervasive level of gender inequalities in societies throughout the world is the cause of high level of poverty among most women in males dominated families. Meanwhiles, women constitute the majority of the active working population in these same males dominated families as farmers and farm workers and ensuring household food security. However, regardless of their major role in the agricultural sector, they do not have access to productive resources such as; land, capital, and water. This to some extent is the fact that most socio-cultural norms, institutions, and structures do not create an equal enabling grounds for both men and women to benefit. Women normally lack the power and are dominated by men in the allocations of agricultural resources (FAO 2002:15).

According to Nelson et al. (2012), over 2.5billion people from developing countries live in rural communities with a majority of them being women and they depend on agriculture as their source of livelihood. Yaro in his study also pointed out that women are mostly the ones who provide the majority of the labor needed for food productions that are normally far above men and yet earn very less in wages (Yoro 2013:152). In the area of ownership, Most property rights in Africa on land do not clearly define the rights of women and their access to land is shaped by the pre-existing Customs, histories and the practices of the people (Joireman 2008:27). But it is very important to point out that productivity and equality in access to resources are mutually reinforcing each other for growth in agriculture productivity. Gender equality in resources distribution ensures agriculture growth when resources are shared equally across sexes (Cotula 2006:3). As stated by the late Dr. Esther Ocloo, an award winner of the Africa reward for leadership for the sustainable end of famine;

“From my several years of working experience with the women farmers of Africa, I can assure you that if the right environment and incentives were created for women farmers, and the problems facing them now were addressed, the sustainable end of hunger would be a reality (the African Farmer: 1991: 39)”.

Also, gender equality in the allocation of resources is receiving greater attention at both national and international levels. That is, many national and international policies are pushing for women to have the chance to equal access to resources as men. The operations of most international policies have specific gender provisions and rules that stress on women’s rights to resources. For instance, the international human rights law, the international environmental law, and the soft-law instruments all create space for equality in the distribution of resources. The international human right law has embodied on it a key gender provision which states that women have the right to personally manage their own property without discrimination (CEDAW, art. 15) and on this provision, women are supposed to have equal treatment in all issues relating to land and agrarian reforms. Likewise, with the soft-law instrument, gender discrimination with respect to acquisition and the securing of land is a violation of the human right law and with that, state governments are urged to amend existing laws and policies that will not encourage the practicing of discriminating customs and tradition. Finally on gender and the environment, the Rio Declaration, the Johannesburg Declaration and the conversion to combat desertification are all international environmental platforms that give recogni-

tion to the vital roles of women to achieving environmental managements and sustainable development (Cotula 2006).

On irrigation development, the sector is the largest most developing countries spent much on when it comes to investment to improve the agriculture sector by adapting to climate change. The World Bank has estimated that within the later part of 1980, the irrigation sector alone receives half of the total investment in agriculture (World Bank 2003). The adaptation of irrigation farming is now seen as a modern sustainable rural livelihood intervention to addressing the problems that come with climate change in many developing countries (Hasnip et al. 2001). With this huge investment in this area, women adaptation to irrigation farming in the sub-Saharan African especially is low and the reasons accounting for this is that women do not have equal access to farmland, tools, market, and public support. Most often, men are placed at an advantage side over women as the traditional workload of men in crop production is lower than women. The inequalities in access to irrigation farming between men and women and others factors warrant their low participation in this form of agricultural farming. But as Joireman (2008:27) stated; productivity and equality in access to resources are mutually reinforcing each other for growth in agriculture productivity. And is no exception in irrigation productions; both men and women should have an equal opportunity to access irrigation at significant scales.

Studies had it that land allocation policies in irrigation schemes in West Africa rarely allow women to have access to their own irritable plots of land to farm. Plots distribution in most irrigation schemes is assigned to household family heads who are predominantly in many cases men. The notion for this is that the plots are limited in number and many would be denied access when women especially married who can benefit from their husband are to individually have their own plots of land within the same family households. Thus, they are assigned to benefit from their husbands. It is further assumed that when women have access to their own plots in an irrigation scheme, the total productivity of the scheme will be low as they will now spend less time in their husband farm works. However, a study by Zwarteven (1997) has shown that some scheme has proven this assumption wrong as many women who were assigned their own plot of land succeeded in managing their farms well and still finds some time to help their husband's farm works as well and those schemes have experience increase in both productivity and labor. Women are seen to manage their own plots of land and still maintain the same level of contribution to their husbands' farms (Zwarteven 1997:1-13). When women have access to their own land in a scheme their income and productivity level increased which leads to positive social benefits.

1.2 Statement of the Problem

Land in Ghana is controlled by both customary and a formal land administration systems. Agriculture land in rural communities in northern Ghana, for instance, is under customary land tenure and about 80% of the rural land is governed by the customary laws under the traditional authorities. According to the customary laws of Ghana, all member of a lineage have an equal right to access land regardless of one's sex. However, this is not what is seen in real life; women do not have equal access to land. Their access to land is being influenced by marriage, gender division of labor, patriarchal ideology and the organization of production (Dejene 2008:15). Access to land in rural northern Ghana is easy to access by men, in the sense that a man could acquire land for farming by

getting in touch with the relevant traditional leader, or the “tendana¹” and then make an offer in a symbolic price which could be in the form a bottle of gin, cola nut or a very little amount of money and with this, the individual is offered a land to start farming (Kranjac 2015). Though it is still practiced in most remote parts of northern Ghana is very uncommon in urban communities in the northern Ghana where everything is commodified now. These practices are mostly carried out by only men and not women. Women can only do so through their husbands or a male relative on their behalf. The customs and Tradition of most ethnic’s communities in northern Ghana do not give women the rights to own land.

As a result of the above mention unfavorable policies, Ghana as a country has recognized women access to resources as a national problem and is equally pursuing gender equality through the constitutional provisions, general plans of action, law reform, and sensible decision. Ghana is a signatory to CEDAW and for this has introduced conventions in the country that give women the right and protections to land, politics, and nationality when they marry. In addition to this is to help women secure property rights and ensuring sustainable solutions to their problems in accessing land. The GOG in recent time is also implementing land administration projects (LAP) which intend to compliment with other legal reforms to ensure fairness and transparency in the land administration systems. In this new project will be a gender strategy that sensitizes traditional authorities to increase women access to land (Dejene 2008:15).

However, enough is not still done on gender inclusive legal regulatory reforms on the operation of the diverse lineage on access to and control of land (Dejene 2008:10). Most women, especially in the rural communities, are still subjected to discrimination in the allocation of agricultural land and irrigation schemes. Women who form the majority of the active labor force in the scheme do not have access to their own land. Out of about 525 registered farmers within the 14 beneficiary communities in the catchments, only eleven (11) women have access to their own land and this is due to the fact that traditionally, women are not landowners, men are considered breadwinners and heads of the household. This represents only two percent of the entire farmer’s population. Women are expected to work on the farms of their husbands (Braumah et al. 2014). Women participation in decision making is equally very low at the bontanga and statistics had it that the ratio of women to men representation in decision making is 12:35 respectively (ibid).

This further worsen their problem of lands access and it is causing them to earn low income, unemployment, food insecure and exposes most of them to child marriage, child labor, increase in school drop-outs and outmigration to urban centers in the southern part of the country to engage in “kayayei²” or head porting (GSS 2014). Thus, when women have access to manage their own land in the scheme, it could serve as a security against their livelihood being and all the above vices they are vulnerable to will be at a reduced rate.

The guiding assumption for this study was based on the fact that women have low accesses to irrigated plot of land of their own and this has contributed in making them poor. It is in this background that the research is in an attempt to investigate why women access to irrigable land is low and the extent to which this contributes to making the lives of women within these beneficial communities poor.

¹ Tendana-the fetish priest

² Kayayei-head porter

1.3 Research objectives

In spite of these significant contributions of women to agriculture in Ghana, the majority of women have limited access to agricultural lands especially irrigation schemes, labor, and capital ownership. This is due to the cultural and institutional factors which serve as a constraint for them to increase their productivity and income level. However, enough is not still done on gender inclusive legal regulatory reforms on the operation of the diverse lineage on access to and control of land (Ghana Gender Assessment profile 2002:10). Most women, especially in the rural communities, are still subjected to discrimination in the allocation of agricultural land. The agriculture sector is central to the economy of Ghana; providing income, food, and employment to the majority of the working population. The performance of women in the agriculture sector has over the years been of growing importance in Ghana. The agriculture sector alone engages about 4.5million of the country's population with women being the majority (Heinz 2012:40). Women form 52% of the agriculture sector labor force and produce 70% of food crops. Women constitute 90% of the labor force in the marketing, crop production and processing of farm produce (Duncan 1997). This shows how active they are in the agriculture sector than men.

The objective of this research was to specifically investigate the causes of low access of women in agricultural irrigation schemes in the Bontanga area of the Northern region and how gender considerations and policies influence irrigation land allocations. The study also examined the factors that determined women access to irrigation lands as well as how these can be modernized to benefit women in the study area.

1.4 Research Question

Given the problems height above, the fundamental research question is:

Why are women accesses to irrigation lands in the Bontanga irrigation scheme considerably low?

Sub-questions:

What are the causes of low women access to irrigation lands in Bontanga?

How are irrigation lands allocated and does gender consideration play a role?

What can be done to improve women access to irrigations lands in Bontanga?

1.5 Research Process and Methodology

This section of the research highlighted the various research processes and methods that were used during the cause of the research. This included the selection process of the study area, respondents' selection, data collection techniques, analysis of both primary and secondary data and the limitations of the research. Also to gain more understanding of the various study areas, the research made use of both primary and secondary data. On primary data, the researcher employed qualitative data collection methods.

1.5.1 Selection of Case Study

According to Dinye (2013:60), poverty and hunger is a fundamental challenge to human welfare in the Northern Region for which Bontanga area in the Kumbungu District is no exception, and this is attested to the heavy reliance on rain-fed agriculture, subsistence farming and exclusion from trade. He further pointed out that the low agricultural productivity is further driven from droughts and floods which consequently lead to; low incomes, rural-urban migration, low productivity which leads to poor nutrition derived from the unavailability of horticultural crops that provide vitamins, mineral, and

dietary fiber. Given these problems, the only way out is irrigation farming schemes that will provide farmers with water for all year round farming activities. And the Bontanga irrigation scheme was one of the interventions set up to create employment and an all year round food production to communities within its catchments. But studies have shown that access to irrigations land by women under this scheme is very low and this was the most compelling reason why this area was selected for this study.

Furthermore, the research will provide good literature on gender studies and women access to productive resources such as an irrigated land in the operations of various schemes in Ghana. As the study seek to highlight factors that displace the women to having access to managing their own productive resources such as the irrigation land in an irrigation scheme and how this contributes to making their lives not better.

1.5.2 Respondents Selection

A non-probability method was employed in the selection of the respondents as it was purposive directed to cover all the fourteen beneficiary communities within the catchments of the Bontanga irrigation scheme. They were selected base on the fact that they are part of the beneficiary community and have good knowledge of the operations of the scheme. In addition to the respondents within this category, other key informants and stakeholders willing to participate in the research process were included. The use of nonprobability (purposive) selection technique clearly agrees with the sampling objectives suggested by Cooper and Schindler (2006).

In all, a sample population of eighty-four (84) respondents was targeted to be covered. Of these, sixty-three were interviewed and out of this forty-two were women from the 14 beneficiary communities and twenty-one men too. The selection of more women respondents was to help get first-hand information from the women on the reasons why they have low access to irrigation lands. Furthermore, to attain a balanced and unbiased view, the eleven registered women farmers who have access to their own land were also selected and nine were interviewed. The men were selected base on their knowledge and experience of the scheme and to also get their views on the low access of women to irrigation scheme in the study area. Five stakeholders who work with the cooperate committees and the FBOs were also interviewed and the rationale for their inclusion in the research process is to get independent feedback on the subject under study.

1.5.3 Field Data Collections

To facilitate data collection and faced with limited time factor the researcher engaged two research assistants who were from the communities and were known to the farmers and have experience on data collection. Also, the presence of these research assistants did not only reduce the workload but it made it easier to create rapport with the farmers as farmers feel comfortable in talking to the research team. Having the sample population, the research team then conducted using in-depth face-to-face interviews with all the respondents and stakeholders. The main advantage of these face-to-face interviews was that it gave the researcher team the opportunity to ask for a complete data and clarification, whiles doing so with much cautious so as not to influence the respondent's answers making the results bias.

The researcher team also used different data collection techniques such as a brief focus group discussion (women separated from the men), observations, phones calls and informal conversations, in order to triangulate previous information gotten from the use of the interview techniques. This help in getting rich and insightful information. Sixty-three respondents were interviewed to gathered qualitative data. The interviewed ques-

tions were divided on issues such as; demographic features, the household dynamics, on labor and ownership of property, the socio-economic and cultural factors that influence the individual access to land ownership at the BIS. The field data was audio recorded and later transcribed in a narrations form.

1.5.4 Secondary Data

The research equally made use of available literature from a secondary source by reviewing published books, journal Articles, reports and government policy documents from the ministry of agriculture on irrigation, gender, and land allocation, documents from GSS, GIDA policies documents, reports on Ghana gender profile and from non-governmental organizations such as MIDA, JICA, FAO, world bank among others were used as a source of information.

1.5.5. Data analysis

Data generated in this research was qualitative in nature and analysis relied on both descriptive and thematic narrations of the response from respondents in this case - farmers. The researcher also utilized Statistical charts to demonstrate the significance of variables under the study and salient research findings.

1.5.6. Scope and Limitation

Most of the data that were used in the analysis were a qualitative extract from the audio recordings. The selection of respondents for the interview was intrinsically carry-out. Since most of these respondents were illiterates who could not speak English and information gotten from them has to be translated into English, in the process of transcribing some vital data might be misinterpreted or not explain well. This set as a limitation to use the study findings obtained in making a generalization to other areas.

Though the research population and different data collections methods provided many useful data for the study, it cannot be said to that to a number of respondents interviewed is a good representation of women under the Bontanga irrigation scheme. Thus could not be used for generalization. Furthermore, the limited time for data collections made the research an intense one, therefore, most of the data was audio recorded and could have resulted in the loss of data during the transcribing process. Added to this were the challenges in transcribing every data on audio to written form and identifying the ones that answered the research questions.

Also at the time of the research, it was raining season and farmers were busy with their farm works and it was hard for some farmers to stop their work and attend to the researchers and this destructed the planned respondents that the research team intended to cover. Upon booking appointments with respondents, sometimes the research team had to go and come back later or wait for them to finish or meet them at their homes after work and this raises the cost of the research. Our presence also kept high expectations on the respondents to get an immediate benefit in the form of money or gift after giving out the information.

Chapter 2

Conceptual Framework of the Analysis

2.1 Introduction

This chapter discusses the relevant theoretical concepts that were very useful in analyzing the data gathered. It deals with various interacting concepts that influence women access to resources such as irrigation land, and also to further help answer the main research question: why the low access to irrigation land by women at the BIS? Among others, the study made use of concepts and theories such as; the theory of access, the concept of gender in a broader picture and also in the light of the study. This section of the study also adapted Agarwal's (1994) theoretical framework on women and land rights in southern Asia which analyses the constraints of women by the family, community, market and the state. This model is very much fitting to the study because data from the field clearly pointed out that low access to irrigation land in BIS are caused by families, market and the state institutions under the various mechanisms of access by Ribot and Peluso(2003) theory of access.

2.2 The theory of Access

The term 'Access' is mostly used in the development academic literature with little clarification and this according to Ribot and Peluso (2003); the term access and property are not the same in many ways. Access is defined as "the ability to derive benefit from things" which could be in the form of a resource, material object, institutions, symbol or person (Ribot and Peluso 2003:153). While property, on the other hand, is the right to an enforceable claim in deriving benefit from the use of a resource, and is enforceable and backed by the society through laws, customs, and conventions. Ribot and Peluso (2003) further pointed out that access from the definition could take the forms of an ownership, freedom to lease out, mortgage or even selling and is ascribed to power. And power is the capacity to change the ideas and practice of people or a relational flow with intended and unintended consequences. Benefit measures the level of the value that is derived from the resources. Thus the theory of access seeks to explore more on who benefit from a resource and the process that is actually used in benefitting. That is, it focuses on who does and who does not get to use what, in what ways and when (ibid). Access to irrigation land in this study focuses on both property relation and the varied social relation that prevents or promotes women to have access to a resource.

Ribot and Peluso (2003) further stated that there are so many ways the individual could derive benefit from the use of resources, and through these means, the holder determines who benefit, control and maintain the use of a resource. Women access to land in most cases is often determine by these factors. These mechanisms are first put into two and that is the right base mechanisms and the relational or structural mechanisms. First with the right based, an individual access to land is determined by both legal and illegal factors. That is when the ability to derive benefit from resources is determined by right attributes, then it means the laws, customs, and convention of the people accept it and it is a legal access. That is legal access could mean the same as property if it is enforceable by the laws of the community or state and the right holder of the irrigation land can engage in an exchange of access for fees or service to individual who do not have that right to access. Also, the right-based mechanism could also be illegal if it is not

sanctioned by the state or community or when access to irrigation land is operated through threat in attempting to gain, maintain, and control it use (Ribot and Peluso 2003). For instance, we often see people in high positions using the power of that position to protect what belongs to them.

Access to resources could also be structural or relational when resources are controlled by specific political-economic and cultural frames. The individual access to resources here is influenced by who and how the institution or individual gain, maintain or control the use of a given resource. Relational or structural access to resources is shaped by the individual access to technology, capital, market, knowledge, authority, social identity and social relations (ibid). Women levels of access to these elements are often low as their access are often shape by these mechanisms of access and also describes an individual mode deriving benefit from a piece of irrigation land. To help do the analysis of findings from the studies would be focusing on how women access to irrigation land in the scheme is determine by their access to capital, authority, knowledge, labor and labor opportunity and by networks or negotiations, which would be elaborated in a later part of the chapter under various constraints to women access to irrigation land.

Now focusing on irrigation land as a thing, there are varies ranges of power that is embodied in the various social relations that affect women ability to have equal benefit of irrigation land in terms of ownership as compared to men in an irrigation scheme. Access according to Agarwal (1997) is the right to both ownership and the use of a land, which could also be in a form of an informal privilege that is granted to a friend or kin (Agarwal 1997:19). For instance, a woman gaining access to a plot of irrigation land through her brother for a cropping season with which the brother did out of just being nice. This further means, access to irrigation land is not determined by only the institutions but also by practices. By access, the study aim is to look at how women gain access to both ownership and the use of irrigation land.

2.3 The concept of Gender

By the term gender, different communities, religions, and cultures have characterized gender relationship between men and women differently. This according to Agarwal (1997) makes gender largely social constructed and its meaning depends on the particular social context that it is being used. This means gender is seen at all range of human endeavors, ideologies, and representation in the division of labor, rules, and resource between the male and female sexes. Gender is also the power relation that is seen between men and women in the family, market and the state level (Agarwal 1997:51). On gender and resources allocations, the common practice in most sub-Saharan African countries is that men have the power to control household's properties and this power is passed on to a male and not female heir when the man is no more.

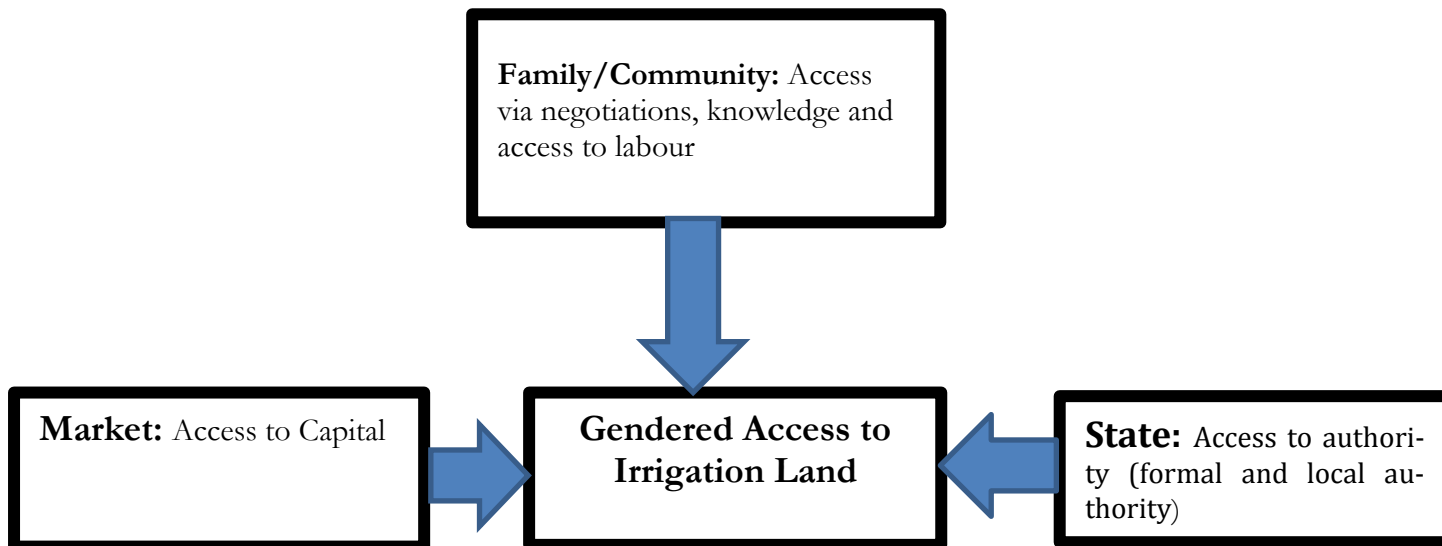
This form is termed as cultural gender ideologies as it is the cultural and traditions that largely shape or control rights and responsibilities and determined what is 'appropriate' behavior for women and men. The cultural settings to a large extend influence access to and control over resources, and participation in decision-making and reinforce the male power and the idea of women's inferiority (Reeves and Baden 2000). In line with this, Lastarri-Cornhiel (1997) stated that women access to own land mostly depends on their ability to negotiate for the power to purchase land or their relationship with the male relatives who have access to land ownership (Lastarri-Cornhiel 1997). Women are often regarded to be part or belong to their husbands' class and thus often get a share of land from their husbands to farm as long as they are still married to their husbands and

they (the men) are still alive and these rights only ceases when there are difficulties in the marriage or a divorce.

2.4 Analytical framework

The theoretical framework presented below envisages the main concepts that are central to the research questions. The model demonstrates the relationships between the various factors that influence women to access from an irrigation land in the BIS. At the family or community level, women access to irrigation is determine by their access to knowledge, labor opportunities and the rate at which they can engage in negotiating for irrigation land uses. Next, at the market for irrigation land in the scheme is determine by the level at which women can get access to capital in the form of finance and equipment to aid their benefits derive from the use of a land. Finally on the state as an institution with the authority favors some women to have access whiles others do not. However, all these in one way or the other influence the research questions.

Figure 2.1



2.4.1 The family/community and gender

According to Agarwal (1997), the family is a complex matrix of ongoing negotiation which is subjected to constraints by gender, age, kinships affiliation, and “undisputed tradition”. The household is featured with both cooperative and conflicting interacting elements that make members be better off when they cooperate than when there are conflicts. The level of cooperation in negotiation determines one's access level. This is in relation to who gets what, who does what, and how each member of the household is treated. The household bargaining power depends on one's level of fallback (Agarwal 1997:54). By fallback, it means the options a household member has outside the family and since women spend most of their labor hours working for their husbands and on domestic duties that they earn nothing or very little, these contributions are often attached with little value to the household economic. This makes woman contributions to the household economy less and a less value is attached to their well-being than when their contribution to the household economy is huge. And this is further transferred to the sharing of household property, where women normally receive low share because of

the fact that their contributions are seen to be low and they deserve low since they do not have any source of earnings outside the household that they can gain a strong fallback position in the family. This limited fallback among women is due to the fact that the inheritance system is not favoring them and women usually have low access to education that could have boost their chance of getting a job out the family.

However, on women and transfers of lands in a patrilineal inheritance system, properties and lineages are traced through the male line. The females (wives and daughters) are not entitled to inherit land from the husband or father (Lastarria-Comhiel 1997:1320). Marriages are most often exogamy or virilocal and women married from outside and move out. The inheritance law does not give women the right to inherit from her family and the reason is that the husband will take over the control and benefits of the land since the woman are considered a property of the man (ibid: 1320). A woman whose husband allocate a land to the wife does that in order to reduce the responsibilities on him such that he expect the woman to use the income gotten from the use of the land to take care of her needs and the needs of the children. Widowed with young children of a deceased can still have access to her husband land in as much as there is a son among the children and she is still living in the man's house. This right only ceases when the woman moves back to her parent home or is married to a different man outside.

Women limited access to earnings outside the family is due to their low access to education which further limit their access to information and knowledge. Women in a patriarchy family are often considered as a man's property and investing in her education is usually not considered important. Education contributes a lot in shaping the individual access to the use of a resource. With education, the individual is able to gain higher status in the family that give her the chance to access resources with the help of her access to higher education, some privileged information, special training, labor opportunities, and networks. However, at the household level, men dominate women and are more often the holders of information on resources distribution which they use to maintain their control over the use of the resources. Education again boosts one chance with the knowledge to operate a technological tool, women low access to this often constrain their access to the resources (Ribot and Peluso 2003). For example part of an irrigation scheme with less water supply, plots owners with water pumping machines stand a better chance of accessing land usage than those without the machines. Access to land and water in this case in the downstream is determined by who has access to a water pumping machines. Women often have low access to knowledge and technology and this is because they are not favored by the beliefs, ideology, and the discursive practices.

Women low access to education further limits their access to formal paid jobs outside the household. The control of labor opportunities such as jobs can be used to shape access to resources. Labor surplus and scarcities affect the relative portion of resources enjoyed by those who control labor, access to labor opportunities is a means people with the desire to maintain their access to resources can derive benefit by engaging in a working relation. Access to labor opportunity also has to do with the ability of someone to labor and maintain access to employment with others. This means, an individual may not have access to a land through the legal means, may not have the money to transact for the right to access a given land but yet can gain access through a working relationship with the owner of the irrigated plot. To maintain this access, the individual usually invest in the social relation with the owners in order to maintain her access to both labor and the land in the scheme. The individual is able to derive benefit from his labor for engaging with the resource in a form of cash or quantity of the farm produce. At the household level, women spend most of their time to labor for their husbands and the families,

their access to land depend on their husbands. The husband determines whether or not the woman gets the chance to access a given a land. Sometimes in order to get access to the land of their own, women have to work or impress the husband in way before a land is assigned to her.

2.4.2 The market-based gender

The market is the ability to gain, control, or maintain entry into an exchange relation that involves a monetary transaction. The value of a resource is often determined by the market for that resource. The market for a resource is usually controlled by the forces of access to capital (equipment and credit), labor, and access fees (Ribot and Peluso 2013:166). Access to capital refers to the individual level of wealth in the form of finance and equipment which can be in the form of farm inputs, labor and labor mobilization that shapes how people can gain benefits from resources. Capital can be in a form of income that is used in buying the rights to control the use of a resource through payment of rent, hiring fees, or as a gift in lobbying for the right to use resources. An individual access to capital can also influence in creating other modes of access since wealth gives people the privilege to have access to production, exchange, opportunities, authority and knowledge of any form (ibid). With market-based constraints, the forces of demand, supply and prices determine who benefit from the use of a land. Women access to land in an irrigation scheme is often determine their bargaining power, as stated above are normally low to engage in an exchange for land used. Woman access is normally shaped by their access to equipment's and income to engage in either renting or acquiring their own irrigated plot of land. Low bargaining power makes women often enter the market for a productive resource with low income and low political power which makes their access to land, inputs and equipment low. This affects the extent to which they can engage in an exchange relation to own an irrigated plot of land in a scheme (Lastarria-Comhiel 1997: 1326). And in most cases, women have to get a man to lead them to buy the land as the market for irrigation land is often a male thing. Aside this irrigation agriculture has been capitalized such that one need money to buy or rent the land and to cultivate the land.

2.4.3 The state and gender

The relationship between the state as an independent body and women play a key role in ensuring equality in the distribution of land in an irrigation scheme. The formal state through GIDA has the mandate to enact policies such that it favors both men and women equally. This mostly depends on the relationship between the state and it interest in the course of women. When the relationship between the state and the plight of women are positive, then, of course, women stand the chance of enjoying positive programmes that are not gender bias and favor them on having equal access to irrigation land in irrigation schemes. The state sometimes is a force to do so if women fight for their course in a group than individually. Women access to both formal and local state authority shapes their individual right to access resources in that if one is privileged to have access to the institutions or state policies with the authority to making and implementing laws, that can influence the person's chance of having access to the use and ownership of the irrigation land. For instance this is often seen in the legal process of applying for a permit or a land to be allocated to a farmer, most farmers do lobby the officials to get policies bend in favor of them to get the good lands with easy access to water and those who cannot afford to do the lobbying are denied access to the land or are sent to places where water hardly reach. Access to state policies or authority is an important factor in the play of power in ensuring who gets what, how and how much. As authority is connected to both direct and indirect form of access control with varied

means of access interplaying in both the formal and informal institutions, women are often not able to compete with the men to have access to land in a scheme (Ribot and Peluso 2003).

2.5 Linkage to the study

Firstly, the theory of access analysis is important in understanding the various mechanisms that influence women to access to both the use and ownership of an irrigation land. Secondly, a gender perspective is significant in understanding the level of inequality in land distribution because of its gendered nature. This is in addition to comprehending the constraints to women access to land from the family, market and the angle of the state. Lastly, it challenges socio-economic development planners to comprehensively integrate gender equality needs in the design and implementation of irrigation land allocation policies and subsequent initiatives such as women empowerments.

Chapter 3

Contextualizing Irrigation Development in Ghana

3.1 Introduction

This section gives a general idea of the study area, historical overview, structural and gender institutional context under which irrigation farming and land distribution in Ghana are operating.

3.2 Overview of irrigation farming in Ghana

Ghana is naturally endowed with both arable land and adequate water resources for the intensification of agriculture through irrigation farming. It is estimated that less than one percent of the total irrigable land area of the country is under cultivation (FASDEP 2011: 11). And poor management of the existing ones further limits the effectiveness of public irrigation projects. According to available data, Ghana is endowed with about 2,489 cubic meter per capital renewable water resource in a year and a total dam capacity of 148.5 million cubic meter places Ghana irrigation potential between 0.36-1.9 million hectares with which a slightly above 33,000 ha are under irrigation farming. Northern Ghana has about almost 30 percent of the country's potential irrigable land area and is featured with most of the prominent tributaries of the Volta River and other major streams make the area ideally for the intensification of agriculture in the area (Kranjac 2015).

Historically, the development of irrigation in Ghana can be traced to a few centuries back in the 1960s and before then; irrigation was practiced in the early 1880s at the Keta area in Volta region. The people had to practice this form of agriculture to adjust to the natural conditions so as to be able to practice intensive methods of cultivation by irrigation, manuring, and crop rotation. The first irrigation scheme was constructed by the government in the year 1920. The years 1950s and 1960s saw the development of more schemes in the Guinea-Sudan, and Coastal Savannah belts of Ghana. Most of which were purposely to provide water for domestic, livestock and dry season irrigated farming. Although it is often accepted that it was in 1959 that the first national irrigation project was constructed, but the records shows that irrigation development in the country dates to about a century ago (Kyei-Baffour et al. 2006). Regardless of which timeline is used, it is clear that serious and modern form of irrigation is a more recent phenomenon. Irrigations system in Ghana is put into two; that is the conventional/public system and emerging system. While the convention system is developed by government or Non-governmental organizations (NGOs), the emerging systems are initiated by a private individual and farmers (Namara et al. 2011:4).

The construction of irrigations became more prominent in 1983 when Ghana's agricultural sector was recovering from almost total collapse and this was as a result of the frequent change of military regime, causing political instability. From 1983 onwards, successive reforms aimed at improving the incentive for increased agriculture performance through irrigation farming to ensure food availability have been implemented at all levels by different governments since then (Yaro 2013:86). It was therefore not surprising that the government of Ghana under the rule of Dr. Hillar Limann (1979-1981) observes that irrigation agricultural practice is a better intervention to addressing the

food needs of the country. Thus, cutting sods for the construction of the Bontanga irrigation project and others to commence in the northern region.

3.3 Irrigation Management in Ghana

Since the inception of formal or project-type irrigation after independent, the management of public irrigations system has always been in the hands of government and quasi-government bodies (Kyei-Baffour et al. 2006). During the early 1960's, the country lacks the expertise and engineering input to manage irrigation facilities. This is evidenced by the size of outlet pipes of existing old dams constructed during that period and current dams that have a very large outlet for emergency spillage. As at then (the 1960's), the management of public irrigation schemes was under the Land Planning and Soil Conservation Unit of the Ministry of Food and Agriculture (MOFA), which was later kept under the Irrigation Reclamation and Drainage Division (IRDD) of MOFA. It later became the Irrigation Department of MOFA between 1974 and 1977 (ibid).

To enhance an effective and good management of irrigation schemes in Ghana, the SMC (supreme military council) Decree 85 (April 1977) recognized the Ghana Irrigation Development Authority (GIDA) which was established as a semi-autonomous public body to be responsible for the management of irrigation schemes in the country. Ever since the management and development of irrigation have been in the hands of GIDA. The responsibilities of GIDA, according to the Decree are to formulate plans for the development of irrigation, develop the water resources of the country for irrigated farming, livestock improvement, and fish culture, and execute comprehensive programs for the actual use of irrigation plots of land in cooperation with the extra agencies involved in giving extension services to farmers. GIDA is also to carry out land usage planning in areas reserved for development in order to preserve the soil and water resources in individual areas and design the environs of the exclusive project area for housing drives and for the establishment of other social amenities. Finally, GIDA is to Liaise with other organizations for maintenance the health and well-being of all individuals living within and by irrigation project areas (Namara et al. 2011:7).

3.4 Gender and irrigation land policies

Various agricultural policies of past governments had considered women to be primarily associated with the production of food crops. As men are largely into the cash crop farming that earns them quick income. Policies such as the; gender and agriculture development strategy (GADS), the accelerated agriculture growth and development strategy(AAGD), vision 2020, Ghana medium-term agriculture development strategy(MTAD), among others, have all endorsed the role of gender in agriculture and have kept the welfare of women and their access to resources in the center of their programme. For instance, one key policy thrust in the national irrigation policy is to remove all constraints and promote a balanced socio-economic engagement with land and water resources. Among this is to remove imbalances between ownership rights, a division of labor and incomes. Therefore, to achieve this policy streamline, the following strategic actions are enforced in the mainstream gender issues throughout the project life cycles: address land tenure problems especially with respect to women, assist disadvantaged groups to participate fully in project cycle and benefits, ensure equitable access to irrigation services by women, ensure full participation in WUA/Cooperatives activities and leadership by women and disadvantaged groups, train NGOs in gender issues and adopt downstream level control on shared distribution systems (MOFA 2011:11).

3.5 The Study Area

The study was carried out at Bontanga in the Kumbungu district in the northern region of Ghana. Kumbungu district is one of the 216 districts in the country and the 26th district in the northern region (GSS 2014). The district's economy is a typical agrarian and it has a high potential for all year round farming along the banks of the White Volta through irrigation. Farming is the occupation of the people living in these communities. According to the 2010 population and housing census, 95.4 percent of the households in the district are engaged in farming. Bontanga is 34km away from Tamale, the regional capital. It shares boundaries with so many districts making it a central point for agricultural marketing. To the north of Bontanga is West Mamprusi district, to the south is Sagnerigu district, to the east Savelugu district and to the west with north Gonja and Tolon districts, and Tamale Metropolis (Regional capital) to the northwest. The BIS is located at latitude and longitude of 9° 34' 15.75" N and 1° 01' 21.13" W respectively (Gordon 2006:12).

The dominant ethnic group living in the communities within the project catchment is Dagombas, as they are the indigenous people living in these communities. Other minorities' groups are the Ewe and Gonjas who migrated to fish at the dam and along the basin of the White Volta. Aside the irrigation farming, the Bontanga dam is equally used for fishing as well. The main crops grown in the irrigation scheme are rice and vegetables which are normally farm in the dry season. The labor contribution of women cannot be downgraded as they are found in all works that are carried out in the scheme and mostly engage in farming, buying and selling of both fresh fish and farm produce from the scheme. On religion, Islamic and traditional religions are predominantly practiced by the people, though a few are engage in the Christian religion (GSS 2014:30). This makes polygamy marriage to be commonly practiced by the people in the area. The Bontanga irrigation scheme and that of the libga irrigation scheme are the two major schemes in the district.

3.6 The Bontanga irrigation scheme

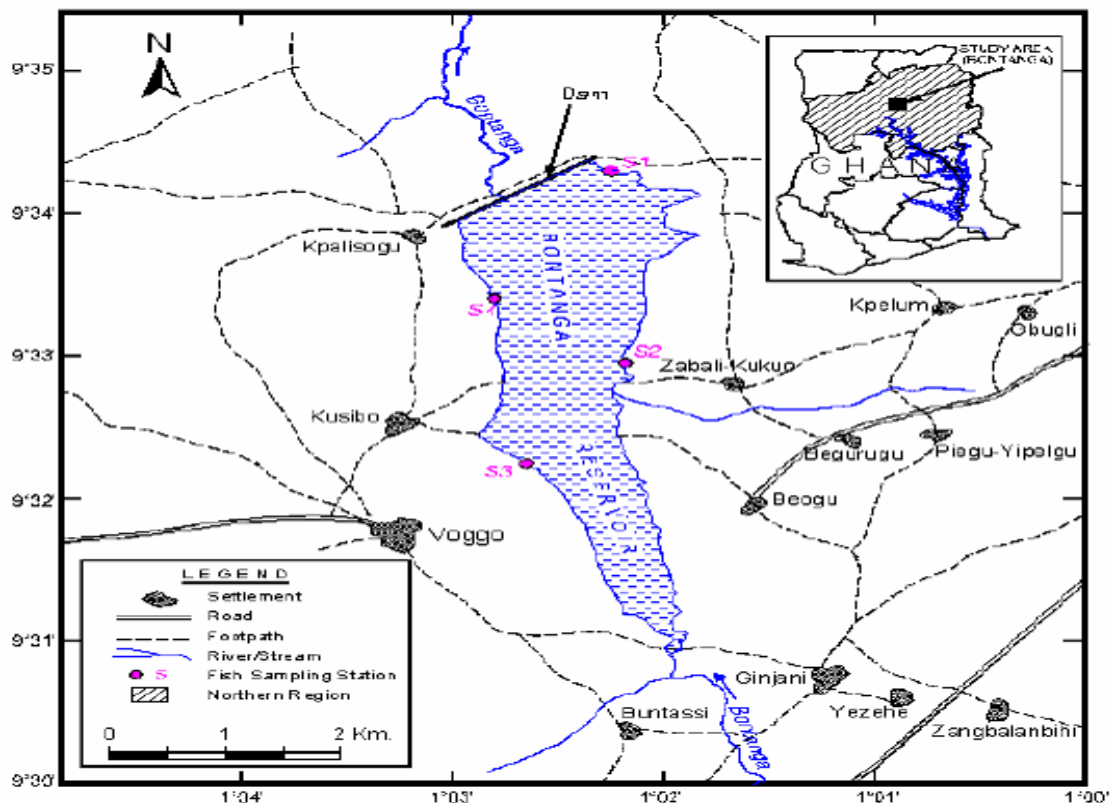
The Bontanga scheme is the largest irrigation scheme in the northern region with a potential area of 800ha with 495ha presently as the irrigable land of which 240ha is used for lowland rice cultivation and 255ha for upland vegetable production. The scheme gets its water source from a large reservoir fed by the Bontanga River. The reservoir is capable of storing 25 Mm³ of water. The vegetables are produced only in the dry season that is from October to April and rice produced both in the dry and wet season. Currently, there are 14 communities in the scheme catchment and 525 farmers with only 11 being women. The head works of the scheme comprise a 12m high and 1900m long earth fill dam wall with two off-take structures and a drop inlet spillway located at the middle of the dam embankment. The two off-take structures feed water by gravity into main canals on the left and right bank and a total of 28 laterals are serving the farmers plots. The discharge of the two off-take structures is 1.52 cubic meters each and also an emergency spillway at the left bank. The average farm holding size on the scheme is 0.6 hectares and that of women is 0.4hectare (The Republic of Ghana, 2012; Ministry of Agriculture, 2011). The scheme is operating under the following management units, which is the land allocation committee, the agricultural committee, the discipline committee, the appeal committee and the farmers' association.

The lands allocation committee is made up of the political head of the area and that is the district chief executive who is the Chairman, a representative of the chief executive of the irrigation Authority, the scheme manager who is the secretary, a representative of

the traditional council within the area and two representatives of the farmers' association of the irrigation project. The LAC plays the function of allocating land to full-time farmers on the irrigation scheme and re-allocate when farmers failed to cultivate within a year. Next is the agricultural committee and it consists of the heads of technical departments of the management and two representatives of the farmers' associations. Their functions are to plan and implement all agronomic practices, protect the irrigation network by ensuring that farmers use the land for the purpose specified in the agreement and do not transfer or sublet land allocated to them. The disciplinary Committee consists of five elected senior management staff and two elected representatives of the association. Their role is to investigate infringements or alleged infringements of the terms of the Agreement and to impose the appropriate penalty when necessary. The appeals Committee is made up of five elected senior management staff and two elected representatives of the Association. Their role is to consider cases of appeal arising from the decisions of the disciplinary committee. The farmers' association is made up of the registered farmers in the scheme with an elected member among themselves who is the chairman of the association and represents members in all transactions with private and government agencies concerning the scheme, he/she participates in the business of the management and acts as arbitrator in disputes involving members of the association.

The selection of the area was purposely due to the fact that it is near, the largest dam in the region and has a lot of activities going on around the scheme catchments aside the irrigation farming which has impacts on the lives of the people in diverse ways. The choice of this area was also base on the researcher good knowledge on the culture and language of the people.

As shown below is a map of the Bontanga dam and the fourteen beneficiary's communities within the scheme catchments. **Figure 3.1**



Abdul Ganiyu et al. 2012

Figure 3.3: The Bontanga Dam



Source: field work, 2016

Figure 3.3 Photo narration of how women can have access to irrigation land



Source: field work, 2016

Figure 3.3: Photo narration of how land allocation was carried out at the BIS



Source: field work, 2016

Chapter 4

Presentation and analysis of findings

4.1 Introduction

This chapter presents the data analyses and discusses the research findings from the field. The analyses in this section include; criteria for land allocation, mode of women access to land in the scheme and the constraints for low women participation in managing their own land at the BIS. The analysis was carried out by adopting a framework that combines selected concepts of Agarwal (1997), Ribot and Peluso (2003) on women access to land. The frame identifies the various mechanisms and constraints to women access to land and for that matter irrigated land under the Bontanga irrigation scheme that was well fitted in the research.

4.2 Criteria for land allocation at the BIS

Formally, any individual from any of the fourteen beneficiary communities is qualified to have access to farm under the Bontanga irrigation scheme (BIS) for his or her subsistence needs. The Land Allocation Committee (LAC) is in charge of determining who qualifies for the use of a plot. The main responsibility of land allocation committee is to determine the farmer's proven ability to manage the irrigated farms. The core point here is that one need to demonstrate his or her ability and interest in farming and must be a member of the beneficiary communities on the scheme. One respondent in reacting to how land is allocated in the scheme did say the following:

I do have a land in the scheme and it was given to me by the IDA who saw my hard work as I was always seen busy working on my husband plot that is on the other side of the dam in every cropping season and base on that when I applied for my own land, I was given a plot of land to farm. Woman, 40, interview on 14-07-16

4.3 How to gain access to plot of land in the BIS

Generally, on access to land under the scheme and as agrarian communities both men and women in one way or the other depend largely on the scheme as their major source of livelihood and yet all do not have the same level of access to land in the scheme. On who gets access to irrigation land in the scheme, both men and women gain access to land through varies means. Access to land is determined by the interplay of various forms of structural and the relations on who gets access to what land in the scheme. Though all the men selected for the interviewed had direct access to ownership and control of land in the scheme; that was not the case for the women who were selected and interviewed. Whiles some have access to ownership of land; others do not have but can only gain access by working for those who have land. It is reveal from the field data that about 40.5% of the women interviewed during the study have access to benefit not directly as land owners but indirectly through engaging in working relation.

As it is in the case of other studies which revealed that women have insecure and low access to land in most developing countries and as a result of this they depend on men for land access (Wahaj et al. 2007), this was the same in this research. Analyzed data from the study shows that men were at the advantage side as compared to women in general, and among women too, landless women are also more disadvantaged to that of

women with the land. And since women do not have the same level of access to land and thus the smaller level of fallbacks to gain access to income-generating opportunities outside the family. Throughout the study, it was made clear by all the respondents (women) that access to land is very crucial for their survival due to the fact that subsistence farming is the only major source of income to the family. Also, it was pointed out that, access to ownership and control of irrigation land strengthens one bargaining power. The mode of one's access to land in the scheme is not just determined by state institutions but also by the interplay of a number of structural and relational mechanisms which further contributes in determining women access to land. In all, women access to land in the Bontanga irrigation scheme is determined by their level of access to capital to engage in the market for irrigation land usage, labor and labor opportunities, authority, knowledge and their access to network or negotiation of social relations.

Elaborating on the role of the state authority, it was realized that the performance of local institutions do aid some women to gain access to ownership of land in the scheme. Institutions such as the chieftaincy institutions with which local authorities are vested with power from the chiefs to control all lands under their command do have more land that they transfer rights to ownership and control to the women who are married or are relatives to them. Thus, the wives of late chiefs and existing chiefs are the ones with the highest landholding among women farmers in the scheme. As narrated by a beneficiary woman in the scheme.

The area in which the plot I am currently working was under the control of my husband's late father who was the chief of this community. So my husband had a number of plots to himself through the father and one of these plots is what is given to me to farm on now and this is how I gained access to farming on this land for the past years. Woman, 40, in a FGD – 21-07-16

Regardless of this arrangement, a formal source of authority to access ownership and control of land in the scheme is GIDA as it is the legal or formal institution entrusted with the authority of the state to determine who has access to ownership or used of the irrigation land under the scheme. While a few lucky women had land allocated to them by the scheme. The data on the field shows that the scheme allocated more land to men (75%) than to women (25%). Although women access land through the authority of the scheme, but this was determined by how close one (in this case the woman) is to the authorities in charge of the management of the scheme. This was how one interviewed woman put it:

I do have a plot of land in the scheme and it was given to me by my uncle who was previously the head of the technical unit in the scheme. He gave it to me when I express interest in farming under the scheme. He got me my plot in his name. Women, 38, 24-07-16

Furthermore, most women in the beneficiary communities have gained access to plots of land in the scheme via family negotiation. That is, women access to land has to do with the level of intra-household negotiations that she engages with the husbands or male relatives with plots of lands in the scheme. This mostly depends on how strong the relationship that exists between the woman and the husbands or a male relative with the land. By family negotiation, it was revealed that in some of the polygamous home, most

men do have their favorite wives that they release land to them as a privilege in demonstrating how she is more important than the other women. These in most cases are women who are not just liked by the man because of their beauty but are mostly the ones with a strong bargaining power to contribute to the household economy. This practice is normally done to show how the man places more value on the wife with land than her colleagues without any fallbacks to support the family. More women had a land transfer to them through their husbands than men had through inheritance as the communities practice polygamy marriage and patrilineal inheritance system. As narrated by one female respondent on how she gained access to land in the scheme during an interview that was carried out on 19-07-16

I am the second wife of my husband, though I help in family farm works, I spend most of my time in my porridge business which really supports the needs of my husband and that of the children. Yet still, my husband thinks that it is a good thing for me among his wives to have a plot of my own in the scheme and so I was given this plot of land to work on by my husband. Woman, 35

Also, another factor that played a role in women access to land is their access to capital in the form of finance and equipment. Women with a fall back outside the family afford to engage in an exchange for land use. Most of the women were able to do so through migration. It was revealed that about 2.4% of women who migrated to the urban centres to work do come back home with enough of their savings after spending on household expenses, surplus of the remittance is used in acquiring a land. Thus, women who engage in alternative livelihood activities outside the home mostly are the ones who could engage in farming under the scheme as they can afford to enter any form of exchange for land use. One woman is quoted as saying:

I bought the land with my own money from my last trip to Accra (the capital town of Ghana). Though my money was not up to the total amount, my husband added me some money to buy the land. Woman, 28, interview on 22-07-16

Finally, most women do not have a direct access to ownership of land and can indirectly get access by having access to labor and labor opportunities in order to get access to a benefit on the use of land, since most of the women (41.2%) do not have access to ownership of land. This is the only possible way they could get access to benefit the use of land in the scheme. However, the majorities (41.27%) of the women interviewed are landless, and only gained access to benefit by working for farmers who had less time or too much land that they engage the landless women in working on their farms with which they are rewarded (income, and sometimes foodstuffs) for their labour in return. This was how a landless woman was narrating how she derives benefit from the use of the land by engaging as farmworker under the irrigation scheme:

I do not have my own farm land there, the time they were sharing the plots I was with my husband in a different community and by the time we came back, all the lands were shared, that is why myself and my husband are not having land in the scheme. However they do employ us (landless women) sometimes to work during the dry season in the scheme, though it is an on and off thing and not sufficient, but it is still better than doing nothing in the dry season. Woman, 48, interview on 19/07/16

4.4 Barriers to women access to plots of land

Data from the field shows that majority of the women showed interest in managing their own land in the scheme. Out of the total women interviewed 80% expressed interest in managing their own land and 20% did not. With limited opportunities in the communities, having access to one's own plot of land further aid the individual woman,

the chance to tap into other livelihood opportunities elsewhere to increase her bargaining power. As narrated by a female respondent who was interviewed at the field on how important it is to have a plot of one's own:

Having a plot here is a good thing and you see now I am trying to get some vegetable for cooking which I would have used money to buy. If you have a plot of land, you will spend less income in buying cooking ingredient since one can easily have access to vegetable for cooking. This plot is for my husband, though I gain access to benefit by sometimes farming okro and pepper in addition to what he decides to farms in the land. I wished he releases part of it to me. I am planning to start farming watermelon and the current space is very small for that. I sell watermelon in the market and I get my supply from farmers in the Dalug(a nearby beneficiary community) and sometimes the prices there are very expensive that I wish to supply myself. At least owning a watermelon farm by myself would reduce the business cost that is involved and increases my profit margin. Also, with land under the scheme, I will be engaged throughout the dry season as I will share my time proportionately between selling my watermelon and the farm works. Sometimes in the dry season, I barely have work to do. It is very importance to have a plot here as is normally what my husband does is to use part of the seeds and income that he gets in the raining season elsewhere to farm at the project and part of what he gets at the project in the dry season to also farm elsewhere in the raining season, in that manner he hardly makes lose. If here in the scheme is not good, there elsewhere will be good. Woman, 33, interview on 18/7/16

However, with these important benefit women derive from engaging in plot of land, their access to land are constrained by a number of factors. The constraints of women having access to ownership or benefit from irrigation plot of land in the scheme are categorized under family or community-related constraint, market base, and the state institutions. Within these three that issues of inheritance rights, patriarchy ideology, women workloads and responsibilities, women access to knowledge or capacity-development, women access to capital and their access to state gendered institutions in the allocation of plots under the scheme prevents some women from having access to a benefit or ownership of a land.

4.4.1 Patriarchy ideology

Data from the field indicates that men are well-thought-out to be the leaders of the household in the communities. Close to 88% of all the women interviewed agreed that the men decide on major issues that have to do with the household management and properties ownership. They normally determine who get what, how much, and sometimes what should be done with the household property. Most of the women interviewed depend on their husband for most of their needs. The custom, norms, and traditions of the people place the man above the woman and with this, they are not included in decision making. This affects the level of benefit that they are entitled to when it comes to distributions of benefit (land and others) and women do not have control of determining who gets what. This cultural pattern further affects the size of the land holdings of the women as it was obvious from the findings that men have the highest land holding that is one (1) hectare compared to that of women 0.4 hectare. Therefore the cultural practices within the study area whereby men are placed higher than women do play a major role in determining the level of benefits women derive from ownership and the use of land within the irrigation scheme. And this clearly demonstrates how insecure women are when it comes to their access to land due to the fact that in all matters of importance the men are placed first. Women are discriminated in the allocation of land and even the majority of women who have access to their own plot of land had it transfer to them either from their husbands or male relatives. This further proves how

disadvantaged and dependent women are on their husbands or male relatives. For instance, the narration below is the plight of a woman who is being disadvantaged because of her sex.

It is good to be a man here because, when you are a man, things works bit better for you when it comes to land ownership than when you are a woman. The men own almost everything; they even own part of us too. I do not have a full wish as my wishes are limited to that of my husband when it comes to access to who control the benefit on the use of a land. I wish I have my own land in the scheme but my husband will not get me one because I am supposed to work on his land. Woman, 40, interviewed on 18-07-16

More so, besides women being disadvantaged to access to land due to the cultural arrangements, women are also powerless and are not included in decision making on the properties sharing in the house. The research showed that men are favored by gaining access to land through the customs and traditions and therefore family lands are either transferred to them by the mere fact that they are considered as the heads of the family and the breadwinners to the neglect of women who are from the same family and also have rights to their family properties. The woman is rather expected to work on the farm of the man since it is assumed that the income that is generated by the man is used to cater for the family while that of the woman is hers. However, other women did not share such views and according to one female respondent she totally disagrees with the widely held view of most men that they cater for the family and stated the following during a group discussion.

I do not think the men use the benefits gain from the farm for everything in the family; we are three wives to a man with children. Every one of us the women determines almost what the entire family should eat when it gets to our turn of cooking. The contribution of some men in this direction is always low as some only provide the woman with the raw food (maize or rice), no money for grinding, no money for the soup, no money for any other thing. He expects you the woman to do your miracles to ensure that the raw food provided by the man is turned into food for the family. With all these, the cultural belief is that we woman are not breadwinners and for that should not own or manage our own land that will help us generate income that will support the family in this direction. Woman, 38, FGD 21/07/16

The marginalization of women according to most women during the study is believed to be the cause of their low access to benefit from most family properties such as irrigation land.

4.4.2 Women workloads and responsibilities

It was also revealed from the findings that women spent so much time in their domestic work and reproductive work that they barely have time to engage in other work, especially working on their own plot of land. This was the reason cited by most of the women who do not have an interest in managing their own plot in the scheme. To them, farming in the scheme need a lot of time and considering the time they spend on their domestic, reproductive and other works and still make time to farm in their husband's farm. Thus it is a hard thing to combine all these work with their personal farm work. This was a main contributing factor to the reasons why more women were not seen engaged in participating in intensive agriculture in the scheme and it is a cause of women having limited opportunities to gain bargaining power. As narrated by a woman interviewed during an FGD:

I have half a plot there; my husband gave it to me. I think the size is ok for now even though I wish I had more but cannot because of the fact that I am the only wife of my husband and the only woman in the house that the workload on me now is too much

to get the time that will enable me to combine my work at home now with the work on a much larger farm in the scheme. The domestic work alone takes two-third of my day time. Now as I am speaking we are staying with my husband old mother, his younger brothers who are not married yet, my five children and two children of my husband's relatives. Imagine I have to take my responsibilities of managing them by cooking, washing and cleaning their stuff each and every day, what time I will get for myself to manage a large size land? Woman, 35, FGD 2

4.4.3 Inheritance Rights of Women

In a patrilineal household, men seem to be favored by the custom, norms and the traditional practices on the transfer of land and other properties. Women are disadvantaged by not having rights to inherit household property. During the field data collection process, most of the farmers interviewed with their own plots, had it transferred to them through inheritance. These traditions do play a vital role in women access to irrigated land as none of the women interviewed had land transfer to them through inheritance and this was so because as a traditional patrilineal communities, the local institutions do not allow women to have the right to inherit properties, not even as a widow when the husband dies and she is not having a male son with him. Women are still entitled to the properties that are known to be owned by them but not to inherit her husband properties nor from the family. Land and other properties are handed down from the father to a male child. These customs together with the Islamic practices on inheritance further places the men above the women and this confines them to be subordinated to the men on rights to property. If a man dies without a son to inherit his property, a brother or another man from the deceased lineage can inherit those properties. Daughters are not allowed to inherit their father's properties when he dies and in all women are being constrained to access land by this rights that they do not enjoy. This is what one respondent has to say in an interview with him on how he gains access to a plot of land through inheritance.

The land was allocated to my father who was farming here before the dam was constructed; so they have to allocate some part of his plot for him after the dam was constructed. Now my father has passed away and now the land is now managed by myself and my younger brother. My sisters are not included when land and other properties of my late father were shared. Since they are not part of us, they belong to a different family and it will not be culturally right to give what belong to our family to a different family. A man from a different lineage will marry and take them away and I only come in if the husband is not able to meet his responsibilities as a man and I can help my sister with my land then I can give her. Our custom does not permit women to inherit land from their fathers. We the men are supposed to do that, I am the first son of my dad and I have now taken the full role of my father. Man, 42, 16/7/16 in an interview

This means culturally women are not landowners since they are not considered permanent members of the family and a daughter is expected to marry and move out of the house of her birth family to her husband house. This makes women stay in their parent home a temporal one. They are for instance considered to belong to the husband and cannot inherit the father's farmland for the husband family to control. Indirectly, their access to land is being constrained by this practice.

4.4.4 Low women access to knowledge

The educational profile of the respondents generally is very low, most especially the women. For instance, the research revealed that a 44.4% of the women interviewed did not have any form of formal education, while that of men represented only 6.4% as

shown in appendix 2, table 4.3.1. The reason attributed to this was based on the notion that women are not considered permanent members of the family and with that parent do not see the need to educate them. Also, married women still spend so much time on both domestic and reproductive duties such that they cannot get more time to engage in other activities such as informal education that will build their capacities to certain level to equip them so as to be able to access jobs outside the family circles to earn income to enter the market for use of land. The lack of knowledge further affects women in the communities within the project catchment as they have limited level of skills, access to information, and knowledge that can aid their chances of engaging in alternative income generating activities to gain better financial standing or fallbacks so as to be involved in any land contractual arrangements in order to gain benefit to land.. Most of the women interviewed were all illiterate who according to the interviews agreed to the fact that farming in the scheme is all about money. Aside from the fact that the cost of renting or buying a land is very expensive to women, the lack of the requisite skills to manage their own farmland is a challenge too. Also, the lack of skills prevents them from getting work elsewhere to earn income to buy or rent land for farming resulting in limited women chances of having access to opportunities both within the family and outside the home that could have helped their land access.

I have not been to school, neither have I learned any apprentice or skilled job that I can do to earn a living here. All I do aside my domestic work as a married woman is to help my husband on his farm works in the raining season and sell the surplus of the farm produce if there is any or engage in picking Shea nuts in when the season comes. Earnings from these works are not enough to enter the market for the use of a plot of land under the scheme. Renting or buying a plot of land under the scheme is very expensive.

Consequently, the low level of education contributes in making their status and income level very low and having a lasting effect on their access to land which is highly control the level of cooperation they engage with their husband as they are not skilled enough to access any labor opportunities outside the family or earn income, acquire or rent their own plot. These makes them poor to enter the irrigation land market with cash income or enough political backing that can push their negotiation power for irrigation land.

4.4.5 Low access to capital

The entire agriculture under the scheme is capitalized and commodified that women need a stronger bargaining power to engage in order to gain benefit from the use of land. Data from the field shows that some women had access to control of land but could not access benefits because they could not afford the cost of irrigation, and others too could not just afford to acquire or rent their own land let alone pay for irrigation services to gain access to the benefit. On average, the cost of entering into any contractual agreements to use an irrigated plot in the form of rent was three hundred Ghana cedis (Gh300=\$75) for a cropping season and not less than two thousand Ghana cedis (Gh2000=\$500) to buy. This was too expensive according to the women interviewed for them to engage in and gain access to the benefit. This was in line with the fact that most women have low bargaining power at the household level since they have low fall-backs to access paid jobs outside their household work. They equally lack what it takes to access credit that can aid their access to ownership and benefit of an irrigation land in the scheme. For instance, farming at the downstream left of the scheme where water hardly reaches and farmers in this area need to have a pumping machine to access water from a nearby canal is were some landless women were given plot. But they could not gain access to land because of the fact that they lack capital in the form of finance to aid them

to acquire the equipment such as water pumping machine and others. One of them have this to say:

Some time ago the GIDA invited me and others to come for plots of land to engage in farming in the scheme, we went and the area that was given to me was on the downstream left-hand side where water hardly reach. One needed to buy a pump machine before one can access water to her plot. The machine was too expensive and I could not afford to buy. I needed to buy it in addition to other farm inputs before I can farm for that season. When I considered the high cost involve, I have to allow them to give my plot of land to a different person. Women, 35, 19-07-16

4.4.6 Lack of effective gender equality policy in the allocation of plot in the BIS

Regarding women access to irrigation plot of land, customary practices among other practices has not ensured equal access to land ownership and control within the household. Due to this the national irrigation authority as an independent state institution brought on board mandatory policy provision that entreats all the twenty-two irrigation schemes operating under its jurisdictions to ensure gender equality in the allocation of irrigation plots among subscribers. However, with this provision by the GIDA, the Bontanga irrigation scheme in previous years has not ensured the effective enforcing the policy in the allocation of plots to farmers. With the reason being that culturally women within these beneficiary communities are not land owners and do not engage in farming on their own land but gives support to their husbands. However, in recent times more women are now into farming and are seen managing their own land. Yet this perception still holds since earlier on irrigation land was allocated to male dominated farmers because of the above-mentioned reasons. Plots of land to some extent are permanently allocated to farmers and those who earlier on have had access are still the majority holding land in the scheme. Reallocation of land is no more carried out in the scheme and since most of them went to the male farmers, it is now difficult for a new farmer to get access entering. Access to irrigation land is now either sold or rent out to the farmers with interest in farming. Women participation is still low and more expresses interest in managing their own plot of land in the scheme. This prompted management of the scheme to secure some land from the chiefs who are currently still holding enough plots. The scheme was able to secure some plots of land for a few women who were interested in farming under the scheme and farmers with more land were advice to share or give some to their wives.

You know the time the allocation and reassignment of the land were done, there was a national gender policy provisions in the allocation of plots of land. Though we do not have an instructing rule on that but we used to create a quota for women who were interested in farm under the scheme but this was not effective because most of the women are not educated to be informed enough to know that beyond their cultural practice they have the right to seek for land use under the scheme and because of this most of the plots went to the men. These days most women are interested in farming yet no land for them to start. (The scheme manager), 22/07/16

The scheme itself has a quota for women who were interested in farming under the scheme, apart from the national irrigation policy on irrigation management and land allocation which openly considered the inclusion of women in the allocation of irrigation land to farmers. The national policy provision on irrigation land is often overcome by the customary, norms, male-dominated management and other prevailing issues of gender bias of the community where the scheme is sited. Land under the BIS are normally shared on a first come, first serve basis and most women who had interest but due to the fact that they are not land owners keep them away. The reason given was that the plots are limited and women are traditionally not land owners.

4.5 Intra- family gender and access to irrigation land

According to Agarwal (1994), the family as an institution is linked to unequal positions of men and women on access to resources as all decisions are made with contestations or consensus. Intra-family gender relation on the property is controlled by individual economic self – interest of family members, which is featured with persistent inequality in the distribution of resources, access to labor, cultural interactions, spending and decision-making (Agarwal 1994:53). Women access to resources such as land in the family is determine by the level of cooperation and conflicts with which members of the family are better off when they cooperate than when there are conflicts. On who get what on land allocations, it is determined by the bargaining power of members of the household. A member bargaining power is a defined by the strength of member's fall back and the degree of social or legitimate recognitions that is given to the member's claim. (ibid: 54). By access to knowledge, men are favored by the beliefs, ideology, and discursive practices. However, on access by negotiations, women mostly invest in both family and community networks as access to resources depend on the ability to negotiate successfully with the network and the resources as stated by (Ribot and Peluso 2013:168).

During the research, it was shown that women access to irrigation land in the Bontanga irrigation scheme within the family circles is determined by the level of negotiation that they engage with their husbands or male relatives, the strength of their fallbacks and degree of legitimacy of their claim through inheritance and other cultural practices. Therefore, most women inability to have a benefit on land is due to the fact that, traditionally they are not land owners and are not supposed to farm on their own land but rather give supporting hands to the husband's farm works. Men are considered superior to women as the law on transfer of properties favors them than the women and most women from the beneficiary communities do not have the right to inherit land from their husbands or fathers. They are also limited in taking part in decisions that have to do with control, ownership and use of land. As majority (45%) of the women interviewed have access to land use by transfer or shared with their husbands or male relatives, most women are constrained by lack fallback and socio-cultural practices. Thus women access to irrigation land under the scheme within the family is determine by the level of bargaining power which is further influenced by their fallback that depends on their level of access to knowledge and negotiations.

4.6 The state and women access to irrigation land

Access according to Agarwal (1997) women right to ownership and use of a land is influenced by both formal and informal state institutions which grant privileges to a particular group of women against others (Agarwal 1997:19). Access to authority is an important tool that gives people the power to derive benefit from the use of a resource as these state and other authorities can be manipulated along a particular line of either social or economic lines(Ribot and Peluso 2003:170). This turn to favors some groups of people with money or social status whiles those without are not favored.

This theory clearly elaborates on the inability of most women to gain access to land in the scheme due to the fact that they do not have access to any form of authority. From the findings of the research, the 25% of the women who formally had access to land are in one way or the other connected to either a source of formal or informal authority in the scheme. Though the scheme is regulated by state formal institutions, however, these institutions are dominated by the interest of individual management and facilitators of informal institutions which makes allocation of schemes plots of land to be

along particular line and women who are not connected to this social or political line normally finds it hard to gain access to plots. The wives, relatives, and people who are connected to the chiefs had easy access to ownership of land. Thus access to irrigation land is not determined by only these institutions but also the cultivation of social relations that they engage with the facilitators of these institutions.

Before I got this plot of my own here, I have to keep reminding the then scheme manager who promised to get a land assigned to me. I used to send him fish anytime my get enough fishes from the dam. One lucky day the manager came to my house with the news that I am now a member of the scheme. I was very happy that day. Woman 47,

For instances, there is a state provisions on equity in the allocations of plots in all irrigation schemes but the interest of the chiefs who claims ownership of the land in different areas in the scheme will still want to have control over larger parts of these areas making it difficult for management to execute what is stated in their policy documents. Most women are landless because they are not formally or informally connected to anyone of these people that can facilitate their access to land at the scheme. If women have access to institutions, it will increase their bargaining power as they can have access to land, which further gives them a fall back to have value to contribute to the household economy.

4.7 Gender and market-based access to irrigation

Women access to land is usually control by their ability to bargain in the market for an irrigation land, which is mostly determined by the forces of capital in the form of equipment and finances. Capital can be used to purchase the right to derive benefit from a resource in the form of land through rent or by the acquisition of the property rights of that irrigation land in a scheme (Ribot and Peluso 2003:165). Women access to ownership of land strengthens their bargaining power; this according to Agarwal (1994) is affected by existing gender ideology and practices on women access to a wage-earning job that will increase their bargaining power. Women spent so much time on domestic work that they are constrained with limited access to information to compete for a fair wage that would strengthen their chances of job options. This means that gender beliefs, practice, and norms are not just limited to the home space but in the public space as well (Agarwal 1994:73).

From the findings, it was vividly shown that farming in the scheme has been capitalized and women need enough capital in the form of farm inputs, finances or equipment to facilitate their direct benefit from the use of land under the scheme. According to the study, most women (40%) are landless because they do not have a stronger bargaining power to engage in any exchange relation to derive benefit from the use of an irrigation land in the scheme. As the scheme was able to release plots of land for women who were interested in a farm under the scheme, some could not farm because they needed to buy some machine together with other inputs deny them the chance of benefiting from the land used. This is so because they lack the needed knowledge and other things that can boost their chances of getting a job that will earn them income. In total 50% of the women interviewed do not have access to education as shown in table 4.2 in appendix 1 and this means will have a low fall-back. Women who were able to afford to buy or engage in monetary exchange for the use of land were those with fallbacks outside the family who are those who migrated to the urban centers and came back home with remittance that they could use to enter the market to buy or rent a plot of land in the scheme. It, therefore, can be concluded that market plays a role on women

access to irrigation land coupled with their access to knowledge or skills, state institutions and intra- family forces such negotiation.

Chapter 5

Conclusion and summary of the study

The objective of this research was to specifically investigate the causes of low access of women in agricultural irrigation schemes in the Bontanga area of the Northern region and how gender considerations and policies influence irrigation land allocations. The study also examined the factors that determined women access to irrigation lands as well as how these can be modernized to benefit women in the study area. This was guided by the main research question which was: *why are women access to irrigation lands in the Bontanga irrigation scheme considerably low?* In an attempt to answer this and related questions, the study identified the various factors that obstruct women from having access to managing their own irrigation land with a complex gender lenses within the family, market-based access and the impact of state institutions subject to bargaining and struggling. For example, during the study it was revealed that some women had access to ownership of land and could not afford the cost of carrying out farming in the scheme, some could neither afford to acquire or rent a land let alone pay for irrigation services or farm inputs.

From the result of the findings, it was shown that women who have access to land within the family were those with access to bargaining power which is determined by the strength of their fallback. As the entire agriculture under the scheme is being capitalized and commodified. Women level of fallbacks were determine by both internal and external forces. The external and internal forces all together determine women bargaining power to engage in an exchange relation in gaining access to land in the scheme. Internally, whiles women access to land is determined by their access to knowledge or information to get an income earning job outside the family and the strength of their negotiation power. The external force, on the other hand, is determined by women access to state institutions and other socio-cultural practices.

However, both the internal and external forces combine in determining women access to bargaining power that determines their access to land. Internally, women access to land is determined by their access to bargaining power or fallbacks outside the family, and the research really showed that most of the women with access to ownership and used of land were women with good fallbacks. The reverse is true with most landless women as they were those who do not have access to stronger bargaining power and were limited to the household works. The research data also shows that factors that influence women access to fallbacks within the family were the much time spent on their domestic work and that, they are left with little time to spend on managing a much large land in the scheme.

The research further pointed out that access to knowledge and capacity is constrained by the socio-cultural notion that women are not part of the family and are supposed to marry and move out of the family. This notion affects their level of access to education or the upgrading of their knowledge-based to get a paid job that would help them get stronger fallbacks in the family to acquire their own land and contribute to household economy

Within these theoretical factors are the operations of external forces such as existing socio-cultural practices and ideologist that determines women access to land. For instance, patriarchy and inheritance laws make men more superior than women and are considered valuable than women when it comes to decisions that have to do with the

sharing and ownership of land generally. On inheritance rights, most irrigation lands were transferred to farmers from their father and what happens was that daughters, married women, and widow are not favored by this inheritance law of the communities. As a review by Nation (2010), when women can gain a strong bargaining power at the household by working on their own plots of land than working on her husband plot, it gives her a strong fall back in widowhood or divorce period (Nation 2010). This is possible in a matrilineal society where women have the right to inherit plots and also have a say in intra-household decisions making that have to do with plots ownerships and income. But this was not the case in this research. According to a study by Van Koppen et al. (2013) shows that more women turn to adopt irrigation farming in matrilineal homes in Ghana and Zambia and it is so because of the fact that females have the right to plot ownership and in decision making (Van Koppen et al. 2013). But this was not the case in the BIS as the cultural system is patrilineal.

Finally, another external force that influence women access to irrigation land is access to state authority. When women have access to both formal and local authorities their chances of gaining access to ownership of irrigation land is boosted. On access to local authority, while some women have access to land through the authorities of the chiefs, other women gain access formally through the authority of the scheme. The majority of the landless women were those who could neither negotiate through the chiefs nor the GIDA. Though national irrigation policy document recognized and gives a strong directive to all irrigation schemes operating within the country under the constitutions of GIDA to consider gender equity in the allocation of plots of land. However, this provision is not effective in the Bontanga irrigation scheme and persistently being ignored by management with the impression that women are not land owners and do not farm on their own land but rather help on the husbands to farm. Due to this, there has been gender consideration in the allocation of land within the Bontanga irrigation scheme as there is a quota for women who are interested in farming under the scheme. However, these are dominated by the cultural placement of the women. Because of this, they are directly excluded to formally have access to irrigation land in the scheme.

In conclusion, the study has confirmed the overall working hypothesis that women have low access to irrigation land at the Bontanga irrigation scheme, and has also revealed that women within the fourteen beneficiary's communities were underrepresented on access to land use and ownerships. Women do not have an equal access to ownership and use of land under the scheme as compared to men. The study conforms to other studies elsewhere which show that women access to irrigation land as a productive resource is not only subjected to male control in Ghana but also in other countries as well. As in Burkina Faso, irrigation farming is perceived as a domain for men and women are expected to concentrate on their domestic roles and also help in working on the man's farm (Zwarteveen 1997:7). Clearly, women access to land is crucial and very important in achieving success, not only under the scheme but when women are given a fair opportunity to have equal access to irrigated land, agricultural productivity would have increased greatly in Ghana. This would at the end of the day contribute immensely to the central goal of Government achieving the Millennium Development Goals. Specifically Goal 1 and 2, which is to reduce the proportion of people living in extreme poverty and hunger by 2015 to half and also to promote gender equality and women empowerment (GSS 2013: 6-23). Due to limited time to carry out the research, a future research will look at how women low access to land influences their access to water and women participation in the management of the scheme.

Appendices

Appendix 1

Table 4.1 Sample composition and respondents Ages

Sex	18 – 35	36 – 60	Above 60	Total	Percentage
Male	9	10	2	21	33
Female	17	21	4	42	67
Total	26	31	6	63	100

Table 4.2 Access to education

Level of education	Male	Female	Total	Percentage
None	4 (6.4%)	28 (44.4%)	32 (50.8%)	
Basic	8 (12.7%)	11 (17.5%)	19 (30.2%)	
Secondary	3 (4.8%)	1 (1.6%)	4 (6.4%)	
Tertiary	2 (3.2%)	0 (0%)	2 (3.2%)	
Others	4 (6.4%)	2 (3.2%)	6 (9.5%)	
Total	21 (33.3%)	42 (66.7%)	63 (100%)	

Appendix 2

QUESTIONNAIRE ON IN-DEPTH INTERVIEW

(Interview Guide for Farmers)

1. PERSONAL DATA

- ❖ Age of respondents (a) 18-35years (b) 36-60 years (c) 60 and above
- ❖ Gender: Male Female.....
- ❖ Marital Status: Single... Married Divorced... Others ...

❖ Level of Education

.....
.....

❖ Religion

.....
.....

❖ Ethnicity

.....
.....

❖ Family size (dependents)

.....
.....

2. Do you practice irrigation farming under the irrigation scheme?

.....

3. Do you have an interest in farming your own plot under the scheme?

4. For how long have you been farming under the scheme?

.....

5. How did you get access to the land?

6. What prevents you from having access to your own plot under the scheme?

7. What land size do you cultivate under the irrigation scheme?

(HA).....

8. Is this land size enough or you wish to have more land than you got?

.....

9. Who determines how much land area should farm in the family?

.....

10. Does the allocation of irrigable plots favors women? If yes/no, How?

.....

11. What prevents/allow you to get access to irrigable land under the scheme?

.....
.....

12. By what specific rules and regulations do you operate under?

.....

13. Do the rules affect your farming practices under the scheme? If yes in what ways?

.....

14. Do you co-manage the farm with your spouse or alone?

.....

15. If yes, what role does your spouse play? Please specify

.....

16. Do you cultivate crops on other lands other than under irrigation? What land size?

.....

17. How will rate farming under the scheme and elsewhere? Which one is profitable and why?

.....
.....

18. Do you think the distribution of irrigated land in the scheme is bias against? Why is this so? Explain the reasons

.....
.....

19. Who determines the use of irrigable land and why?

20. Do you engage in other trades or income generation activities apart from farming? If yes name them.....

21. Does this supplement your income from your farming? How?

.....

22. Would you say women do these works because of the role women play (gender) in the society?

23. Has your participation in the irrigation project improved your livelihoods in anyways?

If yes, how?

.....
.....

24. Would you say the institutional structures of the project play a role in your current economic situation?

.....
.....

25. Do you think women in this community have benefited from this project and should be given more irrigable land area?

.....
.....

26. In your view, do you think the irrigation scheme has contributed to reducing poverty in this area?

.....
.....

27. Is there anything about farming under this scheme you will like to discuss with me?

.....
.....

28. Would you like to make recommendations about how the irrigation scheme should be run?

.....
.....

Key Informants Interview guide with Staff of Ghana Irrigation Development Authority (GIDA)

Senior Staff

Junior Staff

1. A brief background of the scheme?
.....
.....
2. How is the scheme structured and constituted?
.....
.....
3. What are the functions of the management?
.....
4. Are there committees for the allocation of land under this irrigation scheme and how were they formed?
.....
.....
5. Who qualifies to be a member?
.....
6. What are the functions of the land allocation committee in respect of the management of the irrigation scheme?
.....
.....
7. Are there formal rules and regulations regarding the allocation of land under the scheme? What are they?
.....
8. How do these rules and regulations affect access to land women and their participation?
.....
.....
9. Do all farmers especially women willing to participate in the scheme get access? How?

10. What political dynamics takes place in the operation and running of the scheme and how does this affect the participation of vulnerable social groups, especially women?

.....
.....

11. Has the irrigation facility led to increasing in farmers' income and overall poverty reduction in the area? If yes, what are the means of verifications? And If no why?

.....
.....

12. Are there any issues you would like to discuss with me in respect of the operations of the Botanga Irrigation Scheme?

.....

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