AMERICAN UNIVERSITY OF BEIRUT

THE IMPLICATION OF LAND EXPROPRIATION FOR GOLD MINING ON THE LAND TENURE SYSTEM AND SMALLHOLDER FARMERS LIVELIHOODS IN THE TALENSI DISTRICT OF GHANA

by
ALBERT AYINPOYA AKAFARI

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AN ABSTRACT OF THE THESIS OF

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Title: The Implication of Land Expropriation for Gold Mining on the Land Tenure System and Smallholder Farmers' Livelihoods in the Talensi District of Ghana.

Land is the primary source of livelihood for smallholder farmers. However, recent years has witnessed a huge transformation in the agrarian sector with the introduction of neoliberal policies leading to the expropriation of land. The neoliberal policies have paved the way for the proliferation of individuals, companies, and government expropriating the farmlands of smallholder farmers. The expropriation of land has evolved the expulsion of smallholder farmers and limiting their source of livelihoods, which has negatively affected their welfare in rural communities. As a result, the study sought to assess the implication of land expropriation for gold mining on the land tenure system and the livelihoods of smallholder farmers in Ghana.

The research is a cross-sectional study based on a mixed-method. With the mixed method, both qualitative and quantitative data were collected from 120 research respondents using structured and semi-structured interviews and focus group discussions. Focus group discussion was also used to solicit historical data from the traditional authorities. Key informants such as the Ghana Mineral and Exchange Commission, the mining companies and other community members were also interviewed.

The quantitative data were analyzed using descriptive statistics and linear regression to determine how changes in respondents land resulting from the expropriation have resulted in the change in household income. However, themes and content analysis were used to analyze the qualitative data while maintaining direct quotes.

The results of the research reveal the emergence of land expropriation for gold mining has created tenure insecurity and expulsion of smallholder farmers without consultation and compensation, and the transformation of the customary land tenure system in the community. The study also reveals the emergence of land expropriation has created social differentiation among respondents and created social tension in the community. The findings of the research show farmers are exiting agriculture as a primary livelihood source to non-agrarian livelihoods. The results indicate that land expropriation has led to the reduction of farmers crops output, food insecurity, and a decline in households' income of respondents. Respondents adopted measures such as livestock production, and non-agrarian measures like migration to sustain their livelihoods.

In summary, land expropriation in the study community has a negative implication on land access and security and has affected farmers livelihoods.

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CHAPTER I

INTRODUCTION

A.Background and Problem Statement

Recent years has witnessed a huge transformation concerning agricultural land use. The world's agriculture sector has experienced a great transformation with the expropriation of farmlands meant for farmers by the multinational organization, governments, and individual entrepreneurs on a large scale (Cotula et al., 2014). This transformation of agricultural land into other uses has come with a lot of debated in the literature due to the implication of the expropriation on smallholder farmers (Borras Jr & Franco, 2012). The land expropriation sideline and deny farmers their right to land use by dispossessing and displacing them, which has a long run dire consequence on their livelihoods (Anseeuw, Wily, Cotula, & Taylor, 2012). Most scholars term this phenomenon of expropriating and transforming agricultural land use as land grabbing (Cotula et al., 2014).

The land expropriation which is displacing smallholder farmers especially at the countryside has been described as an implication of the neoliberal agrarian policies of free trade and the prescription of a new set of rules of governance by countries in the Global West (Martiniello & Nyamsenda, 2018). The neoliberal policies follow the policy direction of the World Bank and other international organizations purported to have the potential of

boosting agriculture production in emerging countries, through foreign capital investment towards a reduction of hunger and poverty (WDR, 2008).

Globally, about 203.4 million hectares of land was expropriated from the year 2000 to 2010. Out of the total value of land expropriated, 134.5 million hectares (ha) which represent 66% occurred in Africa, 43.4 million ha expropriated in Asia, 18.9 million hectares expropriated in Latin America, 4.7 million hectares in Europe, and .7 million hectares in the Oceania resulting from the expropriation and land rush by corporation, individual entrepreneurs, and governments (Anseeuw et al., 2012)**.** Africa has been the prime target of land expropriation due to the claim of availability of abundant and wasted land in the continent (Martiniello, 2015b). African countries such as Ghana, Uganda, Cameroon, Ethiopia, Liberia, Madagascar, Mali, Senegal, and Sudan are among countries that have been hit strongly by land expropriation in recent years (Cotula et al., 2014; Martiniello, 2015b; Joseph A. Yaro, 2016).

Land expropriation is not new, but a reinvigoration of the historical phenomenon of capitalist accumulation of farmlands for profitability at the detriment to smallholder farmers (Martiniello, 2016). What is contemporary about the land expropriation discourse is the trend, processes, justifications and the political premise in which the expropriation is being demonstrated (Peluso & Lund, 2011; White, Borras Jr, Hall, Scoones, & Wolford, 2013). Land expropriation in Africa is argued as a reinvented form of colonization which is spearheaded by the World Bank and other international organizations to transform agricultural policies in developing countries with the introduction of neoliberal policies through free trade and elimination of limits to the purchase of land in the global South (Alden Wily, 2012). The discourse of land expropriation has resumed an international

debate in recent years with especially European countries and countries from the GULF expropriating land for food production in Africa and other parts of the world to meet their food needs (Anseeuw et al., 2012; Balehegn, 2015). The new wave of land expropriation emerged out of GRAIN report in 2008, pointing to how governments, corporations, and individual entrepreneurs are engaging in large-scale land acquisition in the countryside (GRAIN, 2008).

Land expropriation in Africa and other parts of the world is driven by several factors such food security, biofuel production, mineral extractions, expected returns on investment, the emerging carbon market with potential value, and a perceived incentive for development by developing countries (Aha & Ayitey, 2017; Anseeuw et al., 2012; Cotula et al., 2014). Gold extraction in mineral-rich countries is a key driver of land expropriation displacing smallholder farmers of their livelihoods (Hausermann et al., 2018).

Land expropriation in Ghana represents a strange case, not for the size of land involved, but the expropriation is spearheaded by chiefs and traditional rulers who control up to 80% of the total available lands (Cotula et al., 2014).In Ghana, the current land expropriation started in the 1980s, with the adoption of the Structural Adjustment Program (SAP) introduced by the IMF and the World Bank. The introduction of SAP in Ghana opened up the economy to capitalist and investors through economic transformation and liberalization with the introduction of free trade (Amanor, 2013). This economic transformation and the introduction of neoliberal policies of land reforms has made Ghana one of the epicenter for land expropriation (Joseph A. Yaro, 2016). The neoliberal policies have led to the proliferation of individuals and corporations in the expropriation of farmlands belonging to smallholder farmers for gold extractions (Nyantakyi-Frimpong &

Bezner Kerr, 2016). The expropriation of land for gold extraction and the expulsion of smallholder farmers of their livelihoods has been intensified in the recent era of the gold rush (gold price hikes) with the proliferation and scrambling for land by individual investors and companies for small-scale gold extractions in Ghana (Hausermann et al., 2018). The neoliberal policies and the associated gold rush, making gold extraction business more lucrative has led to the expropriation of about 8730.2 acres (3,637.58 ha) of land in the Gbani community in the Talensi District of the Upper East Region of Ghana for gold extractions.

Land expropriation has tremendous implications on the affected communities since it involves the displacement of smallholder farmers. Land expropriation dispossesses smallholder farmers from their most important asset required for pursuant of livelihood activities. The security of the existing land tenure system and right of smallholder farmers is affected by the expropriation of land creating a long term implication on the livelihoods of the affected communities (Kariuki & Ng'etich, 2016). Furthermore, the food security of affected communities is further worsened with the emergence of land expropriation, denying smallholder farmers the opportunity of self-sufficient and food sovereignty (Daniel, 2011; Martiniello, 2015a). Expropriation of land also negatively affect the ecological framework of the natural environment with soil fertility reduction, the destruction of water bodies, and biodiversity destruction which deepens the existing poverty among smallholder farmers in Africa (Grant & Das, 2015). Finally, it inflicts on the fundamental human rights of people and tends to ignite conflict and social tension in the agrarian flamework (Martiniello, 2017).

Considering that land is the basis for farmers to pursue their livelihood activities and form the foundation for human existence in rural communities, the expropriation of land and expulsion of smallholder necessitate an investigation on the implication on farmers livelihoods and land tenure system in the study area.

B.Justification of the Study

The surge gold extraction in Ghana and other countries has led to the expropriation of land, which is the source of smallholder farmers livelihoods. As already pointed out, the expropriation land for gold extraction which displaces smallholder farmers has a greater implication on the affected communities in terms of food security, land tenure security, livelihoods, conflict and social tension, and social differentiation (Aha & Ayitey, 2017; Cotula, 2009; Martiniello, 2015b; Nyantakyi-Frimpong & Bezner Kerr, 2016). In the study area, about 70% of land expropriated for gold extraction are farmlands, which were hitherto used by smallholder farmers for their livelihood activities. About 500 smallholder farmer households have been affected by the activities of land appropriation for gold extraction in the study area (Field-Research, 2018-2019).

Since the renewed interest in land expropriation, numerous researches have been conducted on the implication of land expropriation on livelihood activities. However, most of these researches on land expropriation on livelihoods have concentrated on the expropriation of land for food and biofuel production (Boamah, 2011; Cotula et al., 2014). Except for few scholars (Ayelazuno, 2011; Bush, 2009; Hausermann et al., 2018; Nyantakyi-Frimpong & Bezner Kerr, 2016), little attention has been paid to the implication

of land expropriation for gold extraction on smallholder farmers livelihoods. Studies like Aha and Ayitey (2017); Joseph Awetori Yaro (2009); Joseph A. Yaro (2016), have dealt into land expropriation and tenure system in Ghana, however, a much deeper analysis of the expropriation for gold extractions and implication on tenure system is necessary.

Proponents of land expropriation have argued, expropriation is a form of investments to the countryside which will improve the development of those areas and reduce poverty among poor people in the rural areas where the expropriation takes place (Deininger, 2011). However, this assumption seems to be far-reaching with the incidence of poverty in the Talensi District staggering at 56.5% (GPMR, 2015). The Talensi District also has an unenviable picture of high food insecurity with about 39% of households in the area suffering from severe or moderate food insecurity (WFP, 2012). To the best of my knowledge, no research has been conducted on the implication of land expropriation on the land tenure system and smallholder livelihoods in the study area. Furthermore, research on land expropriation in rural communities has relied on qualitative research. This study applied a mixed-method to unveil how land expropriation for gold extraction in the study area is affecting the land tenure system and smallholder farmers' livelihoods.

C.Research Objectives

The main objective of the study was to investigate the implication of land expropriation on the tenure system and smallholder farmers' livelihoods in the Talensi District of Ghana. The study specifically aimed to:

1. Assess the implication of land expropriation on the land tenure system

2. Investigate the effects of land expropriation on social differentiation among smallholder farmers
3. Examine the implication of land expropriation on smallholder farmers' livelihoods
4. Identify the measures adopted by smallholder farmers to sustain their livelihoods

D.Significance of the Study

The research provides a detailed understanding of how land expropriation in the study area is impacting on the existing land tenure system and land access, and the livelihoods of smallholder farmers. Research has shown that land expropriation over the years in Ghana is transforming the customary land tenure system that had existed (Joseph Awetori Yaro, 2009). The literature on land expropriation has shown the existence of social inequalities in affected areas due to these transformations in the tenure system (Martiniello, 2015b). The study explored the various transformation occurring and inequalities emanating from the study area due to the expropriation for gold mining, which will serve as a guide to policymakers. The study will help policymakers design an appropriate policy framework to enhance the livelihood and welfare of the affected farmers of land expropriation.

E.Limitations of the Study

Though the research adopted field research, the key limitation associated with the study was a language barrier because the people of the study area speak Talen. Two research assistants with prior research experience and natives of the study area and could

speak the language of the area were engaged and trained to support the research with interpretation. This curtailed language as a barrier which could compromise the quality of the study.

Furthermore, Respondents of the study area were initially hesitant with the presumption that the research could be a way of soliciting for their views regarding a renewed social tension in the community. However, an introduction IRB approval documentation and the student ID card, and an indication of the consent of the traditional authorities in the community helped to overcome this challenge.

F.Organization of the Study

The study has been organized into five chapters. Chapter I entails the background and problem statement, justification of the study, research objectives, significance of the study, limitations, and organization of the study. Chapter II focuses on a literature review which encompasses land expropriation and drivers, perspectives of land expropriation, expropriation and the environment, agrarian differentiation and conflicts, land expropriation in Ghana, livelihood approach, the land tenure system, gold extractions and legal framework, theoretical and conceptual frameworks. Chapter III focuses on the methodology, which comprises the research approach, methods, and data collection process, background of the study area, and the empirical model. Chapter IV encompasses the results, discussion, and linkage of the findings with the theoretical and conceptual framework. Chapter V encompasses the conclusion and summary of results, recommendations, and highlighted areas of future research

CHAPTER II

LITERATURE REVIEW

A.Land Expropriation

Land is core to the social, political, and economic development in most African countries where agriculture and land are the main sources of livelihood and survival of the population (Chambers & Conway, 1992). Since land is crucial to the livelihoods of households in a rural community, expropriation of land has become a key agenda in rural development due to the pace and dimensions of land expropriation in recent years (Alden Wily, 2012).

According to Feldman and Geisler (2012), land expropriation refers to the displacement of people not necessarily as refugees or refuge seekers but also the displacement of people within their homelands. This description of land expropriation goes beyond the transboundary displacement of people normally arising from conflicts to mean that land expropriation can emanate within the society with the taping of the resources of the culprits (Feldman & Geisler, 2012). It also involves the impounding of the property of people, such as land to fulfill a public service obligation (Boztoprak, Demir, & Coruhlu, 2016). Such instances involve an internal displacement by governments and the elite groups with the view of facilitating developments in the host.

De Schutter (2011), refers to the expropriation of land as the large-scale acquisition of farmlands by investors. This definition focus on the expropriation of farmlands for

biomass (food and biofuel) production. The definition by De Schutter (2011), also emphasizes foreign investors and governments especially the GULF countries and countries scrambling for farmlands to engage in large scale farming and investment to meet their food deficit and biofuel production. Cotula et al. (2014), has a similar assertion about land expropriation involving the large-scale acquisition of farmlands by foreign agribusinesses for investments.

In another dimension, land expropriation involves the acquisition of large tracts of land for environmental purposes which range from environmental conservation, biocarbon impounding, biofuels, ecosystem services, to ecotourism (Fairhead, Leach, & Scoones, 2012). It simply involves the dispossession of communities and smallholder farmers with an environmental motive. The environmental motive of land expropriation is called green grabbing due to the implication that the acquisition of land has on smallholder farmers and their communities (Fairhead et al., 2012).

Martinez-Alier et al. (2014), referred to land expropriation as the attainment of lands in the form lease arrangements, allocation, concession, or outright purchase by individuals, corporations or states for either private use, production of food crops, biofuel crops or any other mega project that involves displacing hundreds of families and individuals. Unlike the definitions provided in the preceding paragraphs, the definition by Martinez-Alier et al. (2014) provides a broader view of land expropriation. This definition encompasses both domestic and foreign drivers as agents of land expropriation at the peripheries. The definition also has a wider scope in concerning the use of the expropriated lands or the essence of expropriation including food, biofuel, mineral extraction,

infrastructural project and all other projects on farmlands which has dire consequences on land by displacing smallholder farmers and denying them their rights and livelihoods.

In line with the above, land expropriation can be seen as the capturing of control of relatively huge tracts of land and other natural resources by numerous mechanisms and arrangements which are executed with extra-economic coercion associated with large-scale capital and often shifts resource use orientation into extraction for international and domestic purposes (Borras Jr & Franco, 2012). This definition includes the aspect of coercion that is associated with land expropriation. Due to the coercive nature and lack of consultation, expropriation normally welcomes resistance from the affected communities (Martiniello, 2015b).

For this study, the definition by Borras Jr and Franco (2012) will be used to assess the implication of land expropriation on the land tenure system and smallholder farmers' livelihoods. In summary, land expropriation is the use of various tactics by individuals, governments, and corporations to acquire large scale lands for whatever purpose by displacing smallholder farmers and their livelihoods.

1.Drivers of land Expropriation

The recent wave of land expropriation that is dispossessing smallholder farmers of their livelihoods is driven by several as discussed in detail in the ensuing paragraphs.

Food security is a key factor in the recent wave for land expropriation in the countryside. Since the year 2000, global food prices have been increasing astronomically by hitting a skyrocket in 2007 and 2008 where prices of commodities such as rice, maize,

and wheat doubled (Bush & Martiniello, 2017; Cotula, 2009). According to Cotula (2009), the food price hikes which is the period of world food crises emerged as a result of low productivity in the agrarian sector due to externalities, the quality of soil and water supply, climate change effects, and population growth. The food crises led to the proliferation of investors from the GULF and other European countries to engage in primary production in Africa and other parts of the world to meet the food deficit leading to the expropriation of land which was hitherto occupied by smallholder farmers (GRAIN, 2008). Bush and Martiniello (2017) argued the graved food crisis has a strong connection with the changes in food regimes accentuated on the neoliberal free market and commercial agriculture. Consequently, the changes in the food regimes and the food crises after the dispossession of smallholder farmers of their livelihoods has triggered conflicts in many countries (Bush & Martiniello, 2017).

Additionally, biofuel production is a key driver of land expropriation. The period 2007 and 2008 of food crises was tandem with the world energy and oil crises with high and fluctuating energy prices (Bush & Martiniello, 2017). With the high global energy prices, countries are seeking to ensure energy security and to provide alternative sources to energy, engaged in land expropriation in the countryside to produce crops for biofuel production. The production of biofuel is also based on a projected decline of nonrenewable energy sources, culminating with countries making favorable policies to support biofuel production (Cotula, 2009). The increase in consumption for fuel and high fuel prices drives the increase in demand for biofuel meant to restrain the reliance on imported fuel and to curtail green gas emission linked to fossil fuel. The expropriation of land for biofuel

production is also in line to meet the European Union 2020 target of 10% transport fuel emerging from renewable sources (Anseeuw et al., 2012).

Also, a positive return on investment is a key driving factor of land expropriation. With the increase in agricultural (food and biofuel) prices on the global market and global financial crises in the 2000s, investment in the expropriation of land for agricultural purpose became lucrative(Cotula, 2009). The financial crises also fueled the gold price hikes making the expropriation of land for gold extraction the safest heaven for financial investments (Ayelazuno, 2011; Hausermann et al., 2018)

Furthermore, the emerging carbon market (pollution rights markets and carbon Credits) is another driver fostering land expropriation with expected positive returns on land. Following the Kyoto climate change regime which is encouraging the reduction of green gas emission and deforestation to earn payments, individuals and companies have been acquiring large-scale land under the pretext of environmental conservation with the expectation of potential benefits (Anseeuw et al., 2012; Cotula, 2009).

Tourism, industrial development, and natural resources and raw materials extractions such as gold mining, timber, oil have also led to the expropriation of land in the countryside (Anseeuw et al., 2012). According to Cotula (2009), countries at the countryside also play a key role in land expropriation by shaping their policies to attract Foreign Direct Investment (FDI) as a source of growth and development leading to the expropriation of smallholder farmers land by the investors.

2.Africa as the Destination of Land Expropriation

Africa has become the epicenter for the new wave of land expropriation. As has already been expressed, much of the land expropriated for varied reasons are coming from Africa with varied reasons (Martiniello, 2016). Africa has become a hot spot for land expropriation due to the perception of the availability of idle and underutilized land (Matondi et al., 2011). This perception of wasted and underutilized land is partly based on the global agroecological assessment which estimated that land with cultivation potentials globally was about double of the land area in actual usage from 1994–1996 with about 80% of this area located in Africa and Southern America (Fischer, Van Velthuizen, Shah, & Nachtergaele, 2002).

Secondly, Africa was considered a destination for land expropriation due to the perception that land could be acquired easily from the continent. Due to poverty and underdevelopment in the African continent, it was perceived by investors as the utmost opportunity to acquire land with minimal or no payment from governments in the continent (Anseeuw et al., 2012). Additionally, governments from most African countries were craving for foreign direct investment. Foreign direct investment has been seen as the heavens to develop the African continent. Hence, various African governments put in measures to create the enabling atmosphere for foreign direct investments, which gave way for land expropriation (Anseeuw et al., 2012).

Furthermore, the agrarian and land governance system in Africa is fragile without adequate protection of tenure security for farmers creating a niche for investors to explore (Alden Wily, 2012). However, with a fragile ecosystem surrounding the land governance in Africa and the related pressure for the expropriation of land for food production, mineral

extractions, and other uses, Africa will become an easier and conducive environment for the proliferation of investors for large-scale land acquisition in the neoliberal regime.

B.Perspectives of Land Expropriations

1.Arguments in favor of Land Expropriation

Since the emergence of land expropriation debate following the resurgence in recent years has come with varied perspectives. The proponent of land expropriation presents the large-scale acquisition of land in the peripheries such as Africa as a positive omen towards the development of these countries (Byerlee & Deininger, 2012; Deininger, 2011; S. Holden, Otsuka, & Deininger, 2013; Matondi et al., 2011).

Land expropriation has overly been emphasized as the way forward for developing countries, considering the trend of global economic issues. Following the crave for development in developing countries and rural areas, land expropriation is viewed as the solution and stimulus for investments and development (Matondi et al., 2011). The decision by proponents such as the World Bank following the economic crises was to embark on a structural transformation by seeking land in developing countries, especially in Africa (Deininger, 2011). The benefits outlined by proponents to alleviate rural people from poverty include the creation of both farm and off-farm jobs to create opportunities for the reduction of poverty. The expansion of the infrastructural base, such as the provision of schools, hospitals, roads, and other services in developing countries which will serve as an impetus for growth and development. Finally, it is presumed land expropriation will lead to the creation of food security and stability in the global market (Byerlee & Deininger, 2012).

Byerlee and Deininger (2012), further made a case by using Latin America, Brasil, where soya beans production increased dramatically and increasing export through the application of modern technology resulting from the investment in research and development as a case study. Matondi et al. (2011) have further stressed, the expropriation of land for investment creates a mutual relationship and benefit between rural communities and investors, which can contribute to development in the countryside. Deininger (2011) has added that the relationship created with the expropriation for investment initiatives will lead to smallholder access to improved inputs and technology, and financial credits to boast their production activities.

2.Arguments against Land Expropriation

The arguments raised by proponents of land expropriation and the justification has come with a strong opposition and objection from scholars argued from the political economy perspective with a myriad of concerns regarding the justifications (Aha & Ayitey, 2017; Borras Jr & Franco, 2012; Cotula et al., 2014; Ghebru & Lambrecht, 2017; Li, 2011; Martiniello, 2017). The opponents have argued that the purported benefits of land expropriation involving land investment and productive use involve the dispossession of smallholder farmers who are the indigenous occupants of the land hitherto the expropriation (Borras Jr & Franco, 2012; Cotula et al., 2014). It has been opined, even if the purported benefits associated with land expropriation is something to believe, the impasses in the governance structure of the land tenure system in developing countries such as Africa will not be favorable for such investments to strive (Alden Wily, 2012).

Similarly, the argument which seeks to specify land expropriation as a source of employment is flawed. The World Bank, which is a proponent of large-scale land acquisition, has explicitly acknowledged the purported land investments, may not necessarily lead to employment (Morris, Binswanger-Mkhize, & Byerlee, 2009). Using the Brazil agricultural mechanization program as a case study, despite the introduction of agricultural subsidies and modern technology, poverty and unemployment perpetuated. The labor policies and capital subsidization encouraged mechanized agriculture production activities, which did not necessarily lead to employment for the displaced farmers (Rezende, 2005). There is also mostly a mismatch between the skilled labor demand and the technical ability of the affected communities of land expropriation. Hence, most of the skilled labor employed by the investors are either imported from foreign countries (especially with a foreign investor) or brought from other communities. The readily available employment opportunities are unskilled labor, which offers seasonal employment to the affected communities (Chinsinga, Chasukwa, & Zuka, 2013). For instance, there were rumors in Southern Africa that, Chinese brought their supplies and prisoners as labor for land expropriated for extraction activities (Hall, 2011). Chinsinga et al. (2013) stressed, even if these employment avenues are available, the affected communities are exploited with low wages and salaries. In using Malawi as a case study with the establishment of Limphasa Sugar Company, about 200 unskilled labor with employment was seasonal. These seasonal workers were paid USD 0.70 per day, meaning each person could be earning about USD 168 per annum. This amount is far less than the average USD 280 annual earnings of a smallholder rice farmer cultivating five plots (Chinsinga et al., 2013).

Additionally, this exploitative characteristic of land expropriation leads to the outright takeover of land and all the resources by the investors and establish the infrastructure that enhances their operations without necessarily benefiting the affected areas (Hall, 2011). This model of development is enclaved. With the enclave model, the benefits of investment on land expropriation mainly help the investor at the expense of the affected communities. With this model, any form of investment is linked to the enhancement of the activities of the investors and their benefits (Ferguson, 2006). The current wave of land expropriation for gold mining and other uses in Ghana and other parts of Africa which only benefit the investors at the expense of smallholder farmers can be described as a form of enclave development. Besides, the extractive activities and purported investments are not sustainable in the long term (Hall, 2011).

Furthermore, the claim that large-scale land acquisition will lead to infrastructural development for the affected communities remains elusive (Chinsinga et al., 2013; Hall, 2011). The claimed benefit of land expropriation to development is not absolute. Evidence from Vizara Eco-Timber, an agricultural-based company which has been operating in Malawi for 40 years and expropriated about 3,507 ha of land belonging to smallholder farmers have confirmed the resultant development is far-reaching (Chinsinga et al., 2013).

Finally, the expropriation displaces smallholder farmers and their livelihoods, which negatively affect the food security of the affected farmers (Nyantakyi-Frimpong & Bezner Kerr, 2016). Evidence from Oromiya in Ethiopia highlighted how the expropriation of about 10,700 ha of land to private investors had created food insecurity among affected households (Alamirew, Grethe, Siddig, & Wossen, 2015).

The literature reveals that land expropriation has a huge negative implication among smallholder farmers and the affected communities. Also, the tenure security, livelihood, and food security of the smallholder farmers will be trampled upon with expropriation of land, hence, who benefits and who losses even if there are any benefits? Against the backdrop of information about how land expropriation has on smallholder farmers and the affected communities in Africa, the study sought to assess the implication of land expropriation for gold mining on the land tenure system and livelihoods of smallholder farmers in the Talensi District of Ghana.

C.Land Expropriation and the Environment

Land expropriation has the potential of degrading the natural environment and reducing the quality of soil and biodiversity cover. Consequently, this may create deforestation, which contributes negatively to global climate change (Lazarus, 2014). It has been argued, the benefit of land expropriation associated with the neoliberal reforms has been a mirage, with the visible part being the implication on the natural environment (Dell'Angelo, D'Odorico, & Rulli, 2017). For example, the Brazil Amazon, which entails about 40% of the world's remaining tropical rainforest has had mass destruction leading to an average of 1.8 million ha of forest land lost annually between 988–2008. The destruction of the Amazon is associated with large-scale mechanized and commercial agriculture. The large-scale deforestation with mechanized agriculture has contributed to the released of about 250 million tons of carbon into the atmosphere (Rodrigues et al., 2009). This deforestation as a result of plantations has been linked to the recent changes in the weather

and climate in the area (Lazarus, 2014). The expropriation of land for mineral extraction, plantations, etc., uses energy-intensive which is mostly dependent on fossil fuel has a high tendency of deteriorating the earth surface and contributing negatively to the embattling climate change (Martiniello, 2016).

Additionally, land expropriation has a huge implication on water bodies. The expropriation for plantations and other extraction activities involves rigorous usage of water, which has a long-term effect on affected communities (Martiniello, 2016). The intensification of plantation and extraction activities means an intensive and overuse of both ground and surface water which disadvantage wildlife, human existence, and the livelihood activities of smallholder farmers (Matondi et al., 2011). For example, the Kilombero Sugar Company Limited (KSCL) large-scale land acquisition in the Morogoro Region of Tanzania for sugar production has been linked to the low level of water in Ruaha River in recent years due to the company operations and drawing water from the source (Martiniello, 2016).

The transformation of agriculture with the expropriation of land for large-scale food and biofuel production entails the use of genetically modified seeds, agrochemicals, and fertilizer to improve productivity. The commercialization and intensification of production, which is associated with the use of dangerous chemicals damage the existing flora and fauna species in an ecosystem (Matondi et al., 2011). Martiniello (2015a), argued that the introduction of improved/ genetically modified crops varieties in an exposed setting to improve productivity has a higher possibility of triggering the pollination of indigenous crops varieties (Martiniello, 2015a). In Cote D'Ivoire, gold extraction is the main source of mercury emission into the atmosphere, which has a negative implication on human health

and affects plants and animals. Evidence also shows water bodies close to mining areas and fish stock in these water bodies have a high concentration of mercury, which are threats to human health (Mason et al., 2019). Similarly, a test of eight water bodies at gold mining centers in Ghana shows a heavy concentration of metals in the water bodies which poses a health risk in those environments (Hadzi, Essumang, & Ayoko, 2018).

Considering the implication of land expropriation for mineral extraction and other uses on human health and the environment, the productivity of smallholder farmers and the process of ensuring sustainable development could become a mirage with the perpetual land expropriation in developing countries.

D.Effects of Land Expropriation on Agrarian Differentiation and Conflict

1.Land Expropriation and Social Differentiation

Land expropriation is a key driver of social differentiation among farmers and the affected communities. The exploitative nature of land expropriation for mineral extraction, plantations, and other uses widens the existing inequalities in many African societies (Nyantakyi-Frimpong & Bezner Kerr, 2016). Proponents of land expropriation have always advocated that expropriation creates a win-win situation in developing countries; however, available evidence point to the level of social differentiation in many of these communities. The benefits of land expropriation have a political implication with the capitalist and elites in the affected communities always benefiting at the expense of the many smallholder farmers who suffer from expulsion (Vicol, 2017).

The social differentiation transcends the different implication of the expropriation on different people in the community to include how different people perceive the effect diversely (Borras Jr & Franco, 2013). According to Amanor (2012), the recent policy formulation and the emergence of capitalist in land expropriation is a burial ecosystem for smallholder farmers making way for their dispossession and creating space for their exit from agriculture or transformation into laborers. Bush et al. (2018) argued the capitalist actors come with immense competition on landed resources due to the attractiveness of their exploitative schemes to the few elites, creating huge pressure among the existing smallholder farmers and their eventual demise (Bush et al., 2018). Social differentiation generated from land expropriation is leading to the emergence of a new form of an agrarian class of landless farmers (Nyantakyi-Frimpong & Bezner Kerr, 2016).

Furthermore, land expropriation initiates and perpetuate differentiation in gender relations in the affected communities (Bush et al., 2018). With the emergence of land expropriation, relatively stable social relationships within communities are gender-oriented (Borras Jr & Franco, 2013). Land expropriation entrenches gender inequality following the existing gender inequality in the control and use of land and other assets (D. Tsikata & Yaro, 2014). During land expropriation, women are in opaque, and opportunities for employment and wages are equally differentiation against women (Behrman, Meinzen-Dick, & Quisumbing, 2012). For example, the expropriation of 19,843 ha of land belonging to smallholder farmers for oil plantations in Cameroon has consolidated the prehistorical inequalities in land tenure system by offering employment and compensation for men without the majority of women who lost their farmlands (Ndi, 2019).

2.Land Expropriation and Conflict

Land expropriation with the associated expulsion and agrarian differentiation in rural communities has not gone without contestations from affected communities. Recent years have envisaged the revitalization of resistance in many communities in African countries to protect their livelihoods and register their displeasure. The resistance of communities affected by land expropriation may come in different forms with social movements protesting the dehumanizing act of expulsion from their farmlands (Martiniello, 2017). Martiniello (2017), describes this process of resistance as 'agrarian struggle'. Hall et al. (2015) asserted this 'political reaction from below' is embedded in smallholder agrarian politics. Smallholder farmers have adopted agrarian struggle as a weapon against oppression, expulsion, and social differentiation resulting from the agrarian change. These agrarian struggles may transcend the mere resistance of land expropriation to include the mobilization and protest for improved compensation and mobilization for improved contracts or employment packages associated with land expropriation investments (Hall et al., 2015). Borras Jr and Franco (2013) classify the pollical struggle from below and the agrarian struggle into three categories; contestation between poor people (smallholder farmers) and the corporate players (resistance against exploitation), contestation between smallholder farmers and the state (resistance against dispossession), and contestation between smallholder farmers and smallholder farmers (inter and intra-class contestations). There are also instances where these forms of resistance could play along with each other, with the most common form of contestation being the resistance against exploitation and resistance against dispossession (Borras Jr & Franco, 2013).

The contestations by smallholder farmers could come in an uprising or violent form (Martinez-Alier et al., 2014). The contestation of smallholder farmers could also be in the form of subterranean or the use of a silent approach (Martiniello, 2017). The subterranean form of smallholder farmer contestation is what Scot describes as the weapon of the weak (Scott, 1985 as cited in Martiniello, 2017).

E.Overview of Land Expropriation in Ghana

Land expropriation in Ghana is not new but a colonial continuity of large-scale expropriation of communal lands by the British colonial masters. During the era of colonization, large tracts of smallholder farmers farmlands were expropriated by the British for food production and natural resource extraction aiming at capital accumulation (D. Tsikata & Yaro, 2014). It is estimated that during the colonial era, huge hectares of land were expropriated in Ghana between 1874–1957 by about 400 mining companies (Howard, 1978 as cited in D. Tsikata & Yaro, 2014). After Ghana gained independence in 1957, various governments have initiated different policies and programs that have transformed the agrarian sector of the Ghanaian economy (D. Tsikata & Yaro, 2014).

Ghana's agrarian sector policies have been a pendulum after independence. During the early days of independence, the agricultural sector of the country was propelled by the state through the promotion of import substitutions industries with the establishment of state farms, Workers' Brigades and the promotion of farmer cooperatives. In 1966, the agrarian sector focus was on the support of private sector development in line with the existing land grant model in the US. In 1972, the country adopted a mixed approach of state

farms and support for private sector development. Based on recommendations from the World Bank, in the mid-1970s, the country adopted the contract farming model to lure smallholder into producing rice and vegetables through the nucleus model. The period from the mid-1970s in Ghana was also associated with economic crisis and bankruptcy, leading to the adoption of the structural adjustment program in 1980s (Amanor, 2013).

The structural adjustments program, which is a market-led agrarian reform obliged Ghana to liberalize the economy with the market being the ultimate decider in the economy. The neoliberal agrarian policies which discouraged government intervention and supported private sector was the impetus for the emergence and proliferation of governments, individuals and private investors to engage in large-scale land acquisition for capital accumulation in the country (Joseph A. Yaro, 2016). The land expropriation in Ghana is executed on customary lands which are entrusted in custody of traditional authorities such as the Chiefs and Tindaana on behave of the local people (Aha & Ayitey, 2017). The reforms have created the avenue for investors to expropriate farmlands in line with the traditional authorities in an opaque manner without consultation and compensations of the smallholder farmers (Ghebru & Lambrecht, 2017).

It is reported that from 2004 to 2010, the Ghanaian government, village chiefs, Tindaana and family heads allocated between 89,000 and 1,075,000 hectares of land for investments in large-scale agriculture, mining, and biofuel production (Cotula et al., 2014). What is striking is that a large amount of these land expropriated was executed in rural communities at the Northern part of Ghana (Upper East, Savanna, North East, Northern, and Upper West regions) inhabited mainly by smallholder farmers who are already wallowing in poverty and food insecurity (Boamah, 2011). Joseph Awetori Yaro (2006),

argued that the pace and dimensions of land expropriation under the neoliberal regime of agrarian reforms in Ghana are accelerating the process of de-agrarianization due to the expulsion of smallholder farmers of their farmlands and livelihoods.

F.Sustainable livelihood Approach (SLA)

1.Brief Background of the SLA

The SLA became more prominent in development thinking in the UK, when the Government's White Paper on International Development, published in 1997, manifested the need for transformation of the exiting development approaches. With this new development idea, the SLA focus on poor people and efforts toward the reduction of poverty by improving the welfare and standard of living of rural populations. The SLA is also concern about the critical role that institutions and policy environment play in ensuring the eradication of poverty in rural societies (Ashley & Carney, 1999). After the publication of the white paper, the question remained how the policy dimensions and goals, institutional support, and the various strategies could be integrated to achieve sustainable livelihoods (DfID, 1999).

The SLA can be traced to the Brundtland Commission Report of 1987 on sustainable development. The Brundtland Commission Report defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987, p. 1). The SLA emerged due to the growing level of poverty in rural communities and the new thinking of addressing poverty, leading to the conceptualization of SLA. The approach is therefore

used to assess the lives of poor people and how they can make strides towards poverty reduction in an institutional framework (Carney, 2003). The concept has gradually become a subject of discussion in the literature relating to rural development trajectories and environmental thinking (Scoones, 1998).

2.The Concept of the SLA

Livelihood refers to the ability to combine resources to drive optimum benefits. Livelihood includes the activities individuals and households undertake for a living, the assets that give them the capability to achieve the desired living, the environmental factors (tress and shocks) they bear in mind in managing their assets, and the policy and institutional framework that may enhance or hinder them from improving their living (Ellis & Freeman, 2004). Resources in the SLA are referred to capital or assets which are broadly categorized into five main distinct groups: human capital (knowledge, habits, capability, education, health,), physical capital (infrastructure, machinery, produced investment goods), financial capital (cash, savings, loan access), natural capital (land, water, environment) and social capital (networks and associations) desired for improved living (Ellis & Freeman, 2004).

Chambers and Conway (1992), refers to livelihood as made up of the capabilities, assets (tangible and intangible) and the various choices required and undertaken by an individual or a household for a living. It includes the disposal assets of people, the strategies/activities undertaken to satisfy a living and to enhance all the factors that hinder or promotes the access to livelihood assets and strategies (Chambers & Conway, 1992).

Chambers and Conway (1992) added that livelihood is sustainable when it is resilient and can withstand and recover from disturbances and can still maintain or enhance the resource base to ensure the desired outcome. Three main concepts are considered by Chambers and Conway (1992) in the SLA analysis: The capabilities follows the capability approach of Sen (1985), which suggest the evaluation and development of people and households should be based on their capabilities. Additionally, the definition is also focused on equity as the equal distributions of resources and opportunities for poor individual and households to improve their wellbeing. Finally, it focused on sustainability which Chambers and Conway (1992), distinguished between environmental (maintaining and preserving the natural resource and the environment) and social (maintaining or enhancing the livelihoods while preserving and improving the quality of the resources and opportunities) sustainability (Chambers & Conway, 1992).

Scoones (1998) argued a livelihood is sustainable when it can endure and recover from stresses and shocks and can still maintain or improve its value with the ability to enhance welfare. Sustainable livelihood is also a livelihood that is resilient to stresses and shocks and at the same time enhances its capabilities and assets, both now and in the future, while not undermining the natural resource base (Hussein & Nelson, 1998). In summary, a livelihood is sustainable if it can cope with disturbances or transformation in the ecosystem of people while maintaining the poverty reduction objective.

G.Land Tenure System

Land tenure system refers to the rules, policy framework, and the relationship among individuals and households regarding land. The relationship could be legally or customary enshrined in an institutional framework with rules, regulation, responsibilities, and restraints regarding the rights to land. Tenure system includes the allocation, the usage, transfer of land, land distribution, and protection (Panichvejsunti, Kuwornu, Shivakoti, Grünbühel, & Soni, 2018). Land tenure systems are in the form of private, public, communal, state-protected lands, and customary (Robinson et al., 2018). The various categorization of tenure systems entails the number of rights pertained to each bundle of tenure system (Robinson et al., 2018).

A land tenure system is premised on the bundle of rights and the governance system (Aha & Ayitey, 2017). Land rights are based on use rights, control rights (, and transfer rights (Panichvejsunti et al., 2018; Pitoro, 2017). Hence for an effective land tenure system and tenure security, there is the need for appropriate land governance and tenure security. The security of the tenure system is pertinent in ensuring that smallholder farmers pursue their livelihood strategies (Pitoro, 2017).

Land tenure security is an individual perception of land rights in a sustainable manner with the ability to put it into use at any given time without restraint (Roth & Haase, 1998). It involves the assurance that the rights with regards to land will be upheld by society (Robinson et al., 2018). There are three kinds of land tenure security encountered in the literature; legal tenure security which follows the conception of property rights and individual ownership of land, de facto tenure security which is the control over land based

on the actual circumstance that exist, and perceived tenure security which is the perception of control (Van Gelder, 2010).

The insecurity of land tenure system can also be determined based on effective and perceived insecurity. Effective insecurity is mainly dependent on past experiences of disturbances or evictions, while perceived insecurity is based on potential insecurity envisaged (Aha & Ayitey, 2017). The land tenure security is therefore imperative for farmers to sustain their livelihoods, and this can be achieved with effective institutional framework and policies guiding the tenure system and security of usage.

H.Background of the Land Tenure System in Ghana

1.Precolonial Land Tenure System

Before colonization, the land tenure system in Ghana was a communal land tenure system with the control and management of land-based on the traditional customary system (D. Tsikata & Yaro, 2014). With the communal land tenure system, the traditional institutions regarded land as a common good without the alienation of any member of the community. The communal tenure institutions subscribe that land belongs to the entire family or community, the past and future generation with the current generation only acting as trustees (Ndi, 2019). Land was trusted and managed collectively with each member of the society having easy access to land for food production and construction. Individuals had a freehold/ usufructuary interest without limiting them from the usage of land for crop production and construction (Aha & Ayitey, 2017).

2.Colonial Land Tenure System

During the colonial era, the allodial title of land was conferred on the seat of government with decisions regarding the control and allocation of land vested in the state. The colonial governments in Ghana shaped the tenure system with the introduction of institutional frameworks to claim ownership and trusteeship of land (Boone, 2015). The colonial regime associated with the transformation of the Ghanaian economy was in tandem with transformation of the land tenure system that existed before colonization with the introduction of capitalist orientation leading to the commodification of land (Joseph Awetori Yaro, 2009).

Though part of the pre-colonial land tenure system was preserved, the land tenure system by the colonial masters was crafted to establish authority over the local people (Joseph A. Yaro, 2016). The colonial administration collaborated with the local elites to defined new codes by combining traditional rules with the English Law to land tenure system with the introduction of indirect rule (Boone, 2015; Joseph A. Yaro, 2016). For instance, land in Northern Ghana was solely managed by the Tindaana before colonization. The British installed Chiefs who seem to have accorded higher authority by the colonial masters. This reinvention of the land tenure by undermining the authority of the Tindaana has come with numerous land disputes in northern Ghana (Joseph A. Yaro, 2016).

Similarly, after the successful passage of the Land and Native Rights Ordinance, land in the northern part of Ghana, which was originally egalitarian was subjected to rent for occupancy (Joseph Awetori Yaro, 2009). Kasanga (1995) argued the colonial ordinance provided the foundation for land market in Ghana. The land tenure system under the colonial mandate created a hierarchical relationship among the elites and their subject in

land access (Boone, 2015). The regime was also associated with expropriation of land by the state and resistance from smallholder farmers and pastoralists (Joseph Awetori Yaro, Teye, & Torvikey, 2017). The recoded land tenure system of the colonial administration was differentiated towards men as against women and promoted individual property rights and served as the impetus for land expropriation in Ghana (D. Tsikata & Yaro, 2014).

3.Postcolonial Land Tenure System

After independence, Ghana adopted legislative instruments that promote the market system of land access and privatizations (Joseph Awetori Yaro & Tsikata, 2013). The tenure system initially adopted was in line with the colonial era with the control and management of land vested in the powers of the state. In the 1970s, there a was a public outcry by elite groups against state control of land leading to the divestiture of land back to traditional authorities following a legislative enactment in 1979 (Joseph A. Yaro, 2016).

In 1986, the land title law (PNDCL 152) was instituted to promote privatization and individual land tenure system. Ghana formulated its first comprehensive National Land Policy in 1999, adopting a market-led trajectory with support from the World Bank. Additionally, in 2003, the World Bank and other partners on the agenda of land administration transformation in Ghana led to the establishment of the Land Administration Programme (LAP) which incorporated customary systems of documentations into land administration, and the Customary Land Secretariats (CLS). The land tenure system after independence which supports privatization and individual property rights claim to ensure

the security of tenure system with land titling and registration (Aha & Ayitey, 2017; D. Tsikata & Yaro, 2014; Joseph A. Yaro, 2016).

The introduction of the colonial system of land tenure and the different land reforms instituted in Ghana after independence which has reinvented the land tenure system in Ghana contrarily to the customary (communal) tenure system forms part of the agrarian politics paving the way for land expropriation and social differentiation in Ghana (Joseph Awetori Yaro & Tsikata, 2013).

Currently, the land tenure system in Ghana is pluralistic, which encompass customary (communal) and statutory tenure system. The customary tenure is based on unwritten but laid down traditional customary practices, while the statutory system evolved from land rights based on laws and enacted legislation (Abdulai, Owusu, & Goetz, 2011). However, what is common among the two tenure systems is the feature of trusteeship with each of the institutions of land tenure playing fiduciary duties on behave of the people of Ghana (Aha & Ayitey, 2017).

The customary land tenure which represents 80% of total land area in Ghana is controlled and managed by traditional authorities such as Chiefs, Tindaana/Tindaama, clan/family/community heads guided by social norms and values of a community. The remaining 20% of land in Ghana is under the control of the president/state based on codified regulations which are managed by the Ghana Lands Commission (Aha & Ayitey, 2017; Joseph A. Yaro, 2016). The management of the customary tenure system is based on the allodial interest, which is conferred onto the leader of the community/family/clan with individuals possessing freehold/usufructuary interest. (Aha & Ayitey, 2017). The above

signifies that both the formal and informal institutions manage the land tenure system in Ghana.

I.Gold Rush, Mining and Effects on Rural Communities

1.Gold Mining

The global food and financial crises, which took the world economy by storm in 2007/2008 were tandem with gold price hikes in the global market. As discussed above, gold extraction and investment in natural resources such as gold extraction and land acquisition was a safer place for investment during the food and financial crises. Individuals, investors, corporations, and governments resorted to landed resource as the ultimate avenue for them to sustain their capital investments (Bloch & Owusu, 2012; Cotula, 2009). This scenario ignited gold price hike, which achieved an all-time high global gold price of US$1900/ounce in September 2011. The historic gold price high triggered what is termed as the recent ‘gold rush’ with the scramble for mining concessions by individuals and groups of investors to engage in large and small-scale mining activities (Hausermann et al., 2018).

It has been argued, the extraction of gold is fundamental in the development of mineral-rich countries, especially in Africa, where poverty is rampant. The argument is centered on gold extraction as the means to the development of most rural areas with the provision of basic services and infrastructural development. Gold extraction has been viewed as a source of employment which will boast the livelihood of people in rural communities (Bloch & Owusu, 2012; Hinton, Veiga, & Veiga, 2003; Whitmore, 2006).

Hinton et al. (2003) asserted small-scale mining in rural communities serve as a source of livelihood for rural dwellers to diversify their income generation and contribute to their welfare. Similarly, Okoh and Hilson (2011) indicated gold mining had become the main source of employment in rural areas due to the failure of the agricultural sector. Using the Brong Ahafo Region of Ghana as a case study, it indicated that agricultural is no more lucrative for smallholder farmers compelling them to engage in small-scale mining (galamsey) [1]as a means to diversify their livelihoods and increase their households income (Okoh & Hilson, 2011). Using Australia and the USA as case studies, proponents have argued mining was the benchmark for sustaining and enhancing the economies of those countries, hence gold and other minerals could be the fortunes for mineral-rich countries (Whitmore, 2006).

Contrary to the above backdrop, gold mining has received a lot of criticisms over the years. It has been argued gold mining is a form of exploitations by investors in the rural areas which leave smallholder farmers in poverty (Betancur-Corredor, Loaiza-Usuga, Denich, & Borgemeister, 2018). For example, evidence from Colombia points to the high level of poverty in mining communities as compared to communities farther away. There is also evidence of low secondary education enrollment rate in mining communities as compared to non-mining communities (Acemoglu, García-Jimeno, & Robinson, 2012). Gold mining is also the basis for the expulsion of smallholder farmers in the community through land expropriation, which has a huge implication on their livelihoods and welfare (Cotula, 2009). Gold mining has been flagged as a key driver to environmental pollution

[1] Galamsey refers to the illegal gold extraction activities that is artisanal

and the discharge of dangerous chemicals into water bodies, which are a threat to human health (Matondi et al., 2011). Mining communities are also associated with perennial conflicts (Betancur-Corredor et al., 2018). It has also been argued, governments royalties and revenues evolving from mining are misspent by various mineral-rich governments without fulfilling the objective of development and creating jobs in the rural areas (Betancur-Corredor et al., 2018). For example, it is reported that since 1990, Ghana has earned over $68.6 million of royalties from mining, however, the utilization of these funds to propel development remains a mirage (Hilson & Banchirigah, 2009).

It is undeniable that gold extraction is beneficial to mineral-rich countries; however, the above arguments point to the bottom that god extraction does not come without challenges to the rural communities and smallholder farmers who hitherto used the mining areas for their livelihood activities. Hence this research sought to assess the implication of land expropriation for gold mining on smallholder farmers livelihood and tenure system in Ghana.

2.Gold Mining in Ghana and Legislative framework

Gold mining in Ghana stretches over 1000 years now, with Ghana being a major producer of gold in Africa and the world (Hilson, 2002). Ghana is ranked as the highest producer of gold in Africa, with 4.8 million ounces of gold produced in 2018 (Bloomberg, 2019). The mining sector in Ghana contributes about 5.8% to the country's GDP, with gold extractions constituting about 95% of the mining contribution to GDP. Gold extraction also contributes 43% to Ghana’s export earnings (Bloch & Owusu, 2012).

Mining in Ghana predates the coming of the Europeans, but artisanal mining activities mainly dominated it. However, large-scale gold mining in the country commenced in the 19th century during the regime of British colonialism (F. S. Tsikata, 1997). Colonial policy to gold extraction was the Concessions Ordinance established in 1900, which aimed at using negotiation to acquire concession as a response to resistance from the local people (Hilson, 2002).

After independence in 1957, the Minerals Act 1962 (Act 126) was enacted which vested all mineral extractions onto the president. With this act, all mining companies previously under the control of the British were nationalized. The Administration of Land Act 1962 (act 123) also vested in the president, the power for management and control of lands in the trustee of the local people. (Hilson, 2002; F. S. Tsikata, 1997). The mining Act remained to guide the extraction of gold in Ghana until the 1980s when Ghana adopted the Economic Recovery Program (ERP) under SAP which liberalized the economy and the gold extraction sector (Hilson, 2002).

The neoliberal economic policies which emerged in Ghana during the 1980s opened the economy to the global capitalists who are thrilled with the ulterior motive of profit maximization (Ayelazuno, 2011). The reform program privatized state-owned gold mining companies and offered generous tax incentives to foreign companies with the prime aim of attracting Foreign Direct Investment (FDI) into the country (Hilson, 2002). In total support of the neoliberal policies, the Ghana state in the1980s passed the Mining and Minerals Law (PNDCL 153) which granted foreign mining companies investment incentives such as: tax reductions and breaks, variable royalties between 3 and 12%, removal of restrictions on the

transfer of dividends, reduction of mining tax from 55– 45%, reduced import duties etc (Hilson, 2002, p. 24).

The plight of the smallholder farmers have further been complicated with the introduction of the Mining and Minerals Act, 2006 (Act 703) making a venture in the gold mining business for entrepreneurs more lucrative (Ayelazuno, 2011). The Act (703) has reduced the amount owed by corporations in the gold mining business as royalties from between 3% and 12% to between 3% and 6% (Act, 2006). The dispossession of the farmers on the land through mining activities has been legalized by the Mineral Commission Act (Act, 2006 section 25). The Act (Act 703) stipulates, once the land is leased out for gold mining, all right of usage is transferred to mining companies with the smallholder farmer right to access been ceased (Ayelazuno, 2011, p. 540. See Mineral Act 2006, Act 703).

In 1989, small-scale gold extraction was legalized based on the Mercury Law, Small-Scale Gold Mining Law, and Precious Minerals and Marketing Law to create a vibrant gold mining sector. The formalization of small-scale gold mining was only meant for Ghanaian investors to acquire concession for small-scale mining (Hausermann et al., 2018). Despite the exclusivity of the small-scale gold mining rights to Ghanaians, recent evidence has shown that lapses in the mining rights which allow foreign investors to act as service providers to the small-scale sector have led to the proliferation of foreign investors in small-scale mining in Ghana (Hausermann & Ferring, 2018).

From this background, it is evident that the legislative framework of gold mining in Ghana is being influenced by the neoliberal politics of reforms in Ghana leading to the proliferation of foreign and local investors to the study area at the expense of smallholder farmers without consultation and compensations.

J.Theoretical Framework

The study used primitive accumulation to analyze the implication of land expropriation on smallholder farmers' livelihoods and tenure system. Primitive accumulation as a term coined by Karl Marx emerged within the period of the rapid transformation of states from feudalism to capitalism in Europe between the fifteen and eighteen centuries. During this regime of transformation, peasants who hitherto had their land rights secured under the feudal system were no longer guaranteed of their source of living with the transition (W. Holden, Nadeau, & Jacobson, 2011). Primitive accumulation describes the historical process of decoupling producers from their assets or means of driving livelihoods (De Angelis, 2001). Marx's description of primitive accumulation includes the coercive expulsion of peasants from their land which is their source of livelihood, the privatization and commodification of land and labor, the promotion of individual property right and the suppression of the fundamental human rights of peasant and the imperialistic process of alienation of smallholder farmers (Harvey, 2003). It has been argued that Marx primitive accumulation was a remorseful critic of capitalism meant to depict how capitalism use 'extra-economic' power to decouple peasants from landed resources and commodify both labor and land, and how capitalist system exploit labor in an opaque manner (Moyo, Yeros, & Jha, 2012).

Primitive accumulation was viewed as a transitionary and temporary process leading to the emergence of capitalist hegemony (Marx, 1887). Primitive accumulation was seen as an evolutionary stage having occurred in the development of capitalism, which was

presupposed to cease with the emergence of capitalist in the world economy (Glassman, 2006). To affirm the transitionary notion, Marx (1887), argued primitive accumulation was going to generate a class of proletariats of urban-industrial workers who would eventually overthrow capitalism based on a forecasted conflict between capitalism and labor.

Despite Marx's logic of primitive accumulation being a transitionary and temporary regime that creates the foundation for capitalism, the structures of primitive accumulation still exist in the modern era of the capitalist economy (Ayelazuno, 2011). Harvey (2003) argued that the expulsion of smallholder farmers through land expropriation, the creation of social differentiation with the emergence of landless farmers, the privatization of state-owned industries, and the gradual demise of smallholder farmers with the taken over by agribusiness and investors is still pertinent in the agrarian economy in the modern era. Marx view of primitive accumulation was meant to comparatively short-lived, but the persistent marginalization and the use of violent and untransparent means to displace smallholder farmers are still the basis for the economic structure of most developing countries (Bush & Martiniello, 2017). The continued existence of primitive accumulation in the recent era is what has been described as accumulation by dispossession (Harvey, 2003). Bush and Martiniello (2017) describe the continuous existence of primitive accumulation in the era of neoliberalism as a contradiction of capitalism. It also argued that the continuous primitive accumulation has also come with contestations and conflict in the countryside (Bush & Martiniello, 2017).

According to Harvey (2003), capitalist formation and accumulation can be driven by both internal and external factors with strong support from the state power. It is also imperative to realize profit is the key benchmark to the capitalist order of production. The

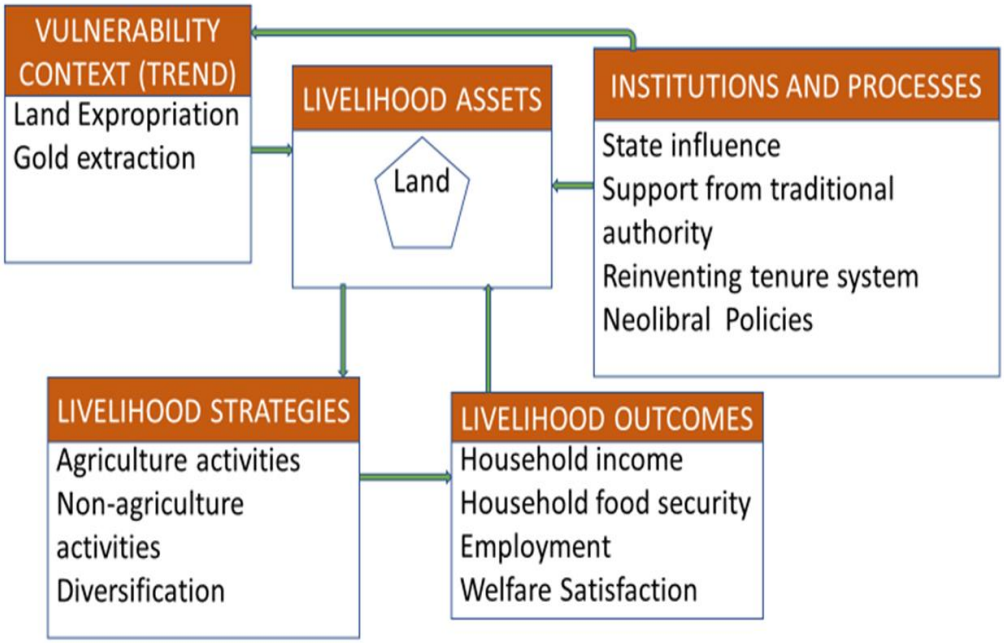
capitalist mode of production is individualistic and self-centered order without attention on social welfare. Inherently, the capitalist order is unfair and exploitative to a class of people (mainly smallholder farmers) in the countryside (Ayelazuno, 2011; Bush & Martiniello, 2017). Given these backdrop, the livelihoods of smallholder farmers are sacrificed by the profit derivative of the capitalist mode of production culminating the coercive and violent approach of primitive accumulation with the expulsion, exploitation, imperialism of smallholder farmers without consent and compensation (W. Holden et al., 2011; D. Tsikata & Yaro, 2014). Using gold extraction in Ghana, for instance, Ayelazuno (2011) argued despite the proliferation of investors in gold mining at the era of neoliberal agrarian reform in Ghana which involves the expropriation of smallholder s farmlands; it has only benefited the investors at the expense of farmers and the communities.

An important component of primitive accumulation and accumulation by dispossession is the creation of a condition among a large mass of people who have no alternative source of livelihood strategy than to offer their labor for wages. The condition is culminated by the transformation of the existing conditions of people who hitherto were in control of wealth and landed properties to be content with their labor as the only source of livelihood (Shivji, 2008). Considering the persistent existence of primitive accumulation in a democratic country like Ghana with the exploitative form of decoupling smallholder farmers from their farmlands, it is pertinent to digest the implication of this undemocratic path of control of resources and expropriation of land on smallholder farmers livelihoods in Ghana.

K.Conceptual Framework

The conceptual framework is adapted from the DfID (1999) livelihood framework to analyze the livelihood of smallholder farmers under a policy framework. The conceptual framework is used to assess the livelihood and welfare implication of smallholder farmers with the growing land expropriation in a neoliberal world. The framework for assessing the livelihoods is imperative for understanding how micro- and macro-level decisions, social and political factors determine the way households make a living. Figure 1 focus on the analysis of the livelihoods at the household level.

Figure 1: A Conceptual Framework Analyzing the Livelihoods of Farmers



Source: Adapted from DfID (1999)

The livelihoods of smallholder farmers depend largely on the external environment which they have no control over. The livelihoods and asset base of farmers required for a sustainable livelihood can be affected by the trends, shocks, and seasonality of the environment (DfID, 1999). In this case, the expropriation of land for gold extraction, which is out of control of smallholder farmers will affect their ability to pursue livelihoods. Land expropriation converts farmlands into other uses other than farming and denies the use right of farmers (Aha & Ayitey, 2017). Evidence shows that the expropriation impact negatively on the livelihood on the natural assets (land) and this has a dire consequence on their welfare (Ayelazuno, 2011; Cotula, 2009; Hausermann et al., 2018).

The enabling environment for smallholder farmers is shaped by the systems, institutions, organizations, policies, laws, rules, customs, and processes (DfID, 1999). Institutions play a critical role by positively or negatively impacting the environment and the assets base of farmers (Abebe, Chalak, & Abiad, 2017; Pitoro, 2017). For instance, the introduction of policies such as the neoliberal reforms leads to land expropriation (Martiniello & Nyamsenda, 2018). Ayelazuno (2011) asserted the neoliberal reforms such as SAP coupled with tax incentives by the state, led to the proliferation of investors into gold extraction through land expropriation for capital accumulation. It is also evident that traditional authorities in some communities have reinvented the customary land tenure system responding to the neoliberal demands paving the way for land expropriation (Boone, 2015; Joseph A. Yaro, 2016). It is reported that the traditional authorities with support from the state expropriate several hectares of land, which affects the assets base of farmers and their welfare (Cotula et al., 2014).

The ability to sustain or improve welfare depends much on the available resource. The effective and efficient combination of these resources is the basis for livelihood interventions (DfID, 1999; Scoones, 1998). In this context, the concentration will be on land as a natural capital that rural people use as a source of their livelihoods. Evident shows that land is a key resource for the wellbeing of smallholder farmers in rural communities. Land is the key assets dependent on by rural communities to pursue their livelihood strategies; hence the availability and security are key for unlocking rural poverty (Chambers & Conway, 1992; Huang, Huang, He, & Yang, 2017). As shown in Figure 1, changes in the available land size and quality lead to change in the livelihood strategies pursued by a household.

The livelihood strategies adopted by smallholder farmers depend on the changes and availability of land. The livelihood strategies include both on-farm and off-farm activities such as agricultural, diversification, and migration, which reflect the rural setting. The livelihood outcome of rural people, such as an increase in household income, food security, employment, and general satisfaction, can be achieved from the livelihood strategies (DfID, 1999; Scoones, 1998). The right combination and adoption of the livelihood strategies are critical in ensuring sustainable livelihoods that will sustain/improve the welfare of people while improving the assets base (Chambers & Conway, 1992).

In summary, the livelihood of smallholder farmers can be sustained or improved upon the availability of suitable land for farming activities. Hence, institutions and policies that undermine access to land will render smallholder farmers more vulnerable.

CHAPTER III

METHODOLOGY

A.Research approach

The research is a cross-sectional study that employed a mixed-method research approach. The mixed-method comprised the use of both quantitative and qualitative methods. The quantitative method involves the investigation of relationships between variables. On the other hand, the qualitative research method involves the exploration of believes, attitudes, perceptions, and reaction to a social or human phenomenon. The mixed-method builds on the premise of testing theories, controlling for biases, and being able to make inferences and replication of findings (Creswell, 2009). The Mixed method provided a holistic, flexible and dynamic platform for analyzing contemporary issues which provide richer information about the issue investigated such as land expropriation (Yoshikawa, Weisner, Kalil, & Way, 2013).

Survey research, as a strategy of the quantitative method of research, was used to solicit quantitative information from a sample of the population (Bernard, 2006). Case study as a qualitative research strategy was adopted to obtain an in-debt view of the research issue. Case study strategy as a basis for investigation for investigating a social phenomenon explores the what? The how? And the why questions (Yin, 2003). Considering the complexity and dynamism of land expropriation and livelihood related issues, the research adopted the mixed methods to assess and provide the best

understanding about the implication of land expropriation on the land tenure system and smallholder farmers livelihoods in the study area.

The research gathered information from primary and secondary sources. The primary data were sourced from smallholder farmer households affected by land expropriation by the gold mining activities, traditional authority (Chief and elders), key informants in the study area, Talensi District Assembly, and the Ghana Mineral and Exchange Commission in the Upper East Region. The primary data provided the opportunity for the research to access trustworthy firsthand information from the affected people on the field. The secondary data were drawn from peer-reviewed articles, books, and reports in both electronic and printed. Data were solicited from both primary and secondary sources to extensively explore the issue of study and carefully analyze the research objectives.

Before commencing the study, ethical procedures were undertaken to pave the way for successful data collection. The researcher got into contact with the Assembly Member of the study area after prior introduction at the Talensi District Assembly about the research. The Assembly Member introduced the researcher to the traditional leaders (Chief and elders) of the study area. The subject of research, objectives, and significance was communicated to the traditional leaders for their approval before beginning the data collection process. Data collection was undertaken within two months period (December 2018 to January 2019).

B.Methods and Data Collection Process

1.Data Collection Tools

Quantitative and qualitative information was collected with structured questionnaires, semi-structured interviews, observations (Bernard, 2006; Creswell, 2009). The study adopted a face-to-face strategy in the administration of the research questionnaires. The face-to-face strategy was adopted because the research population had a low or limited level of formal education, making them unable to respond to the questionnaires without guidance. The face-to-face administration was also necessary to clarify questions to respondents to obtain reliable and valid information. It also provided the opportunity to properly observe the situation of study from the field and the behavior of the research population to find conformity with other information gathered from respondents.

Structured questionnaires were used to collect data such as respondent's demographic information's, land size, income, livelihood activities, household food security assessment, and measures adopted by farmers to sustain their livelihoods. The livelihood questions were developed using the sustainable livelihood framework developed by DFID as a guide (DfID, 1999). The food security assessment used the Household Food Insecurity Access Scale (HFIAS) (Coates, Swindale, & Bilinsky, 2007). Separate semi-structured questionnaires with a set of guided questions were used to collect qualitative data about the respondents' households, key informant interview, and focus group discussions. The interviews captured in-depth information such as the land tenure system in the study

area before and after the land expropriation, the implication of land expropriation on the livelihoods and the general welfare of respondents' households.

2.Sampling Technique

The target population for the study was smallholder farmers households affected by land expropriation for gold mining in the study area. Purposive and simple random sampling techniques were applied in the study. Since the study focus on the implication of land expropriation on the affected farmers' households livelihoods, a purposive sampling method was employed to ensure only farmers affected by the land expropriation participated in the research. The sample frame was the list of 427 households affected by the land expropriation in the study area.

Before commencing the research, the research tools were pre-tested on seven smallholder households affected by land expropriation after gaining approval from the Institutional Review Board (IRB) at AUB. The essence of the pretest was to correct any irregularity resulting from the research tools and for the research team, including the Research Assistants, to familiarize with the tools. The seven smallholder farmer households who participated in the pretest were eliminated from the actual research to avoid any contamination effect.

The simple random sampling technique was used to select a sample of 120 affected farmer households (101 males headed, and 19 females headed households) from the sample frame. The simple random sampling technique was adopted to ensure each member of the respondent had an equal chance of being selected for the study to avoid biases that may

come from the researcher's judgment. The lottery method was applied to ensure the reliability of the information gathered (Bernard, 2006). With this method, the sample frame was numbered from 1-420, and the numbers of the sample frame were written on pieces of paper, folded and selected randomly. The random selection technique was conducted repeatedly on each occasion until the sample size was achieved. The household heads of the affected households who were at least 18 years of age responded to the study. The structured and semi-structured interviews were concurrently administered to the research respondents at the household level. During the individual household interviews, detailed notes were capture for better analysis.

Three focus groups were further conducted to obtain further information to buttress the information gathered with the other tools. The focus discussion is made up of smaller groups that allow participants to interact into detail the subject of interest to provide more revealing information due to the group effect (Liamputtong, 2011). A key feature of the focus group discussion is to ensure a small sizable number (6-12) and a homogenous group to open up a discussion (Bernard, 2006). Hence three separate focus group discussions were held each for men headed households (11 participants) female-headed households (10 participants) affected by land expropriation, and the traditional authority (7 members). The focus group for the traditional authorities was meant to confirm some of the information provided by the selected households and gather more information about historical issues. During the focus group discussion, detailed notes were taken. Also, the consent of participants was sought for the conversation to be recorded not to miss any valuable information springing from the discussion. It came up the information gathered during the focus group discussion duplicated most of the information obtained with the other methods.

Additionally, key informant such as the Talensi District Planning Officer, the Reginal Director of Ghana Minerals and Exchange Commission in the Upper East Region, representatives of three mining companies (two small-scale and one large-scale), and two other community members (Assemblymember and one other person) were purposively interviewed. The key informants were interviewed due to their expertise in the subject of research, knowledge of the area, and stake in the research issue.

3.Data analysis

The quantitative data collected were analyzed with STATA version 14.2 software. The raw data was edited and cleaned through sorting to eliminate coding and entry errors that might be encountered. Descriptive statistics analysis was established in the form of frequency distributions to ascertain the changes in respondents' livelihoods after experiencing land expropriation. A multilinear regression was used to assess the percentage of respondents' household land affected by land expropriation on the percentage change in their annual household income. Microsoft Excel was also used to generate graphs for the analysis.

The qualitative data was analyzed by transcribing all the recorded information and carefully organizing the collected information. The responses from the interviews, focus group discussions, and key informant interviews were subjected to content analysis. With the content analysis, emerging themes were identified, coded, and categorized. Inference from the content analysis was made to make meaning of the collected information. In

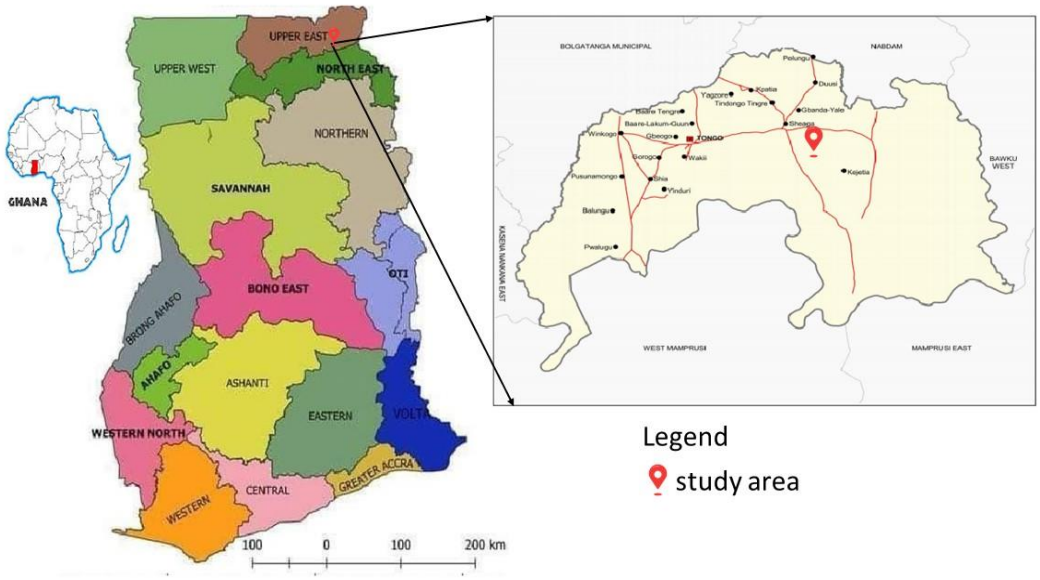
reporting the results of the content analysis, direct quotes of participants in the research were maintained to convey better the responses gathered from the study.

C.Background of the Study Area

1.Profile of the Study Area

The study was conducted in the Gbani community in the Talensi District of Ghana, as shown in Figure 2. The Talensi District is one of the 13 administrative districts in the Upper East Region of Ghana with a population of 81,194 making up of 50.3 % males and 49.7% females. The district was carved out of the Talensi-Nabdam District in 2012 by a legislative instrument L.I.2110 with Tongo being the capital. The Talensi District is bordered by Bolgatanga Municipality to the north, West and East Mamprusi Districts to the south, Kassena-Nankana District to the west and the Bawku West and Nabdam Districts to the east. The district lies between latitude 10' 15" and 10' 60" north of the equator and longitude 0' 31" and 1' 0.5" west of the Greenwich meridian. The district has a total land area of about 838.4 km2 located within one of Ghana's most deprived settings (GSS, 2014).

Figure 2: Map of the Study Area



The district has a topography comprised of relatively undulating lowlands with gentle slopes ranging from 1% to 5% gradient with some isolated rock and some uplands slopes. The district has rocks which have given rise to quarry activities, and the presence of gold has promulgated the proliferation of medium and small-scale gold investors in the district. The nature of the soil in the district is upland developed from granite rocks is shallow with a lower level of fertility, weak organic matter content, and predominantly coarse-textured (Assembly, 2019).

The climate of the Talensi District is categorized as tropical, associated with two distinct seasons (wet rainy and dry season) like other parts of the Upper East Region of Ghana. The wet rainy season starts from May and ends in October characterized with erratic rainfalls. The dry season which is long spans from October to April has no rains. The rainfall pattern in the district ranges between 88mm-110mm per annum with the

average annual rainfall being 950mm. The long dry season is a threat to livelihood and food security in the district. The district records a maximum temperature of 45 degrees Celsius in March and April and a minimum temperature of 12 degrees in December. The vegetation is guinea savannah woodland comprising of short widely spread deciduous trees and a ground flora of grass, which get burnt by fire or the scorching sun due to the long dry season. The nature of vegetation affects the rainfall pattern, which negatively affects the underground water level in the Talensi District (Assembly, 2019).

The economy of the district is predominantly an agrarian economy with the majority of the population engaged in farming. About 90.7%% of the population in the district are engaged in agriculture made up crop production, forestry, fishery, and livestock production. The remaining population engaged in petty trading, craftmanship, mining, and formal sector employment such as government employees. Agricultural activities in the district are mainly smallholder farming. Crop production is the key component in the agricultural sector in the district, with about 96.5% of households being crop producers (Assembly, 2019). Agriculture in the district is predominantly rainfed with little irrigation in the dry season. Agriculture production contributes to 90 % of the local GDP in the district, making it the most important livelihood and contributor to growth. Crop production is mainly food crops such as groundnuts, maize, rice, millet, and sorghum. The district can also boast of economic trees such as dawadawa and shea which are widely distributed in the wild with the harvesting and processing of the fruits and nuts predominantly undertaken by women. The other sectors dominated by women include agro-processing areas such as groundnut oil and shea butter production, pito brewing, rice parboiling, and milling (GSS, 2014).

The preceding paragraphs means that land is a key source of livelihood for the majority of the population in the study area, hence the expropriation of land for gold extraction will have a dire consequence on the livelihoods of households.

2.Gold extraction Processes in the Study Area

Gold in the study community was discovered in 1996 and was associated with artisanal mining activities (van de Camp, 2016). However, major mining activities with the proliferation of investors for the acquisition of mining concessions resulting in the dispossession of smallholder farmers started in 2008 when Yen-Nyeya and Puboataaba mining companies (Ghanaian companies) and others started their operations (Field-Research, 2018-2019).

The study classified active gold mining activities and process into four groups: Firstly, the existence of a foreign mining company, Shaanxi Mining Company (China company) engaged in small-scale mining under the pretext of providing services to two local mining companies (Yen-Nyeya and Puboataaba) since 2008. The second groups involve the fifteen active other Ghanaian based small-scale mining companies with concessions certificates. Thirdly, three large-scale exploration companies, Cardinal Resource Limited (an Australian company), Cassius Mining Limited (an Australian company), and the Shaanxi Mining Company under a new name Shanxi Mining Ghana Mineral Limited (Chines company). Finally, the existence of artisanal/illegal small-scale mining/galamsey activities undertaken by the farmers in the community and other external people (Field-Research, 2018-2019).

D.Empirical Analysis

The factors affecting the change in household income of respondents with the emergence of land expropriation were assessed using linear regression. Since the dependent variable (Y) is continuous, the researcher used a multiple regression model following literature (Islam, Yew, Abdullah, & Viswanathan, 2011). Using the same regression equation, a robust standard error was constructed to standardize the results to reduce any form of unbiases emanating from heteroskedasticity (Hayes & Cai, 2007). The regression model is stated below:

$Y=б_0+б_1X_1+ б_2X_2+ б_3X_3 \dots \dots б_nX_n+Ɛ$ …….equ. (1)

Where:

Y=the percentage change in the annual household income of respondents

B_0= The constant/ intercept

$б_1+ б_2+ б_3,б_n$= The coefficient of estimation

Ɛ=Random error term

X_1=Percentage farmland affected by land expropriation

X_2=Total value of the respondents' household assets

X_3= Gender of respondent

X_4=Age of respondents

X_5=Education of respondents

X_6=Household size of respondents

X_7=Years of farming

X_8=Participation in artisanal mining

X_9=Access to extension services

$Y=[(Y_1-Y_0)/Y_0]*100$ ……..equ. (2)

$X_1=(X_a/X_0)*100$ ……..equ. (3)

Where

Y_1= Total household income after land expropriation

Y_0=Total household income before experiencing land expropriation

X_a=Total farmland affected by the land expropriation

CHAPTER IV

RESULTS AND DISCUSSION

This section represents the results of the primary data and discussion. The discussion is organized under four sub-headings: The implication land expropriation on land tenure system, social differentiation and community reactions to land expropriation, livelihood implications of expropriation, and strategies adopted by respondents to sustain their livelihoods.

A.Socio-economic and Demographic Characteristics of Respondents

Table 1 provides the socio-economic and demographic characteristics of respondents and their households. Accordingly, 84% of the respondents in the study are males, while 16% are females. The majority of a male-headed household is a representation of the study area, with men being the household heads. The average age of respondents in the study is 47.5 years, which means a majority of the respondents are within the active working-age range. In terms of the educational attainments of respondents, 72% of the respondents had no education, 18% had a primary school education, 6% had junior high education, and 4% of the respondents had senior high school education. Overall, a greater proportion of the respondents did not have a formal education. It must be emphasized that none of the respondents had attained tertiary education. The low level of education among the respondents indicate that they are more susceptible to land expropriation because land is

their main source of livelihood. People with a higher level of education may be more likely to adapt to shocks and changes, such as land expropriation, than people with lower or no form of education but depend mainly on land for their livelihoods. The average years of farming among respondents is 31, which suggests farming has been their main source of living. Also, the average household size of respondents is nine people. The relatively larger household size means that respondents may greatly feel the impact of land expropriation since every member of the household depends on the same parcel of land to drive their livelihoods.

As shown in Table 1, on average, 3.18 acres (1.29 ha) of the respondents' farmlands have been expropriated. It can be observed that, before the land expropriation (2007), the average land size of respondents was 5.63 acres (2.28 ha). However, this was reduced to 2.45 acres (0.99 ha) after the expropriation (2018). The results imply that smallholder farmers have meager farmland to sustain their livelihood activities with the emergence of land expropriation. Smallholder farmers in the study area have been made more vulnerable since they have been dispossessed of their main source of livelihood, the natural capital (land). As shown in Table 1, the average household annual income of respondents in 2007 was GH₵ 523.92($104.78), which represent about 93.99% of income from agriculture. However, the value drastically declined to GH₵291.75 ($58.35) in 2018, and agricultural income represented only about 18.89% of the household income. The changes in income mean respondents of the study have further been impoverished after losing their farmlands to the gold extraction activities. As shown in Table 1, the total value of respondent's assets is GH₵ 365.92 (74.57 USD), and about 53% of the respondents have access to agricultural extension services in the past five years.

Table 1: Socio-economic and Demographic Characteristics of Respondents (n=120)

Variable	Description	Value
Sex distribution	Percentage of male respondents	84
	Percentage of female respondents	16
Age	Average age of respondents	47.5
Educational attainment	Percentage of respondents with no education	72
	Percentage of respondents with primary education	18
	Percentage of respondents with junior high education	6
	Percentage of respondents with senior high education	4
Years of farming	Respondents average years of farming	31
Household size	Respondents average household size	9
Size of land expropriated	The average size of respondents' household land expropriated, measured in acres (2.4 acres=1 hectare)	3.18 (1.29 ha)
Household land size in 2007	Average respondent's household land size before land expropriation measured in acres	5.63 (2.28 ha)
Household land size in 2018	Average respondent's household land size after land expropriated, measured in acres	2.45 (0.99 ha)
Household income in 2007	The average income of respondents' household before expropriation (2007) measured in Ghana Cedis (GH₵)	523.92 ($104.78)
Household income in 2018	The average income of respondents households after land expropriation (2018) measured in Ghana Cedis (GH₵)	291.75 ($58.29)
Household assets	The average value of respondents household assets measured in Ghana Cedis (GH₵)	365.92 ($73.18)
Access to extension	Percentage of respondent access to agricultural extension services in the last two years	53

B.The Implication of Land Expropriation on Land Tenure System of the Study Area

The land tenure system in the community is a customary tenure system with the control of land based on trusteeship. Land use right is based on settlement and inheritance. An individual, clan/family, becomes the legitimate custodian of the piece of land over an unlimited time frame for settling at an area. The custodian of land has the right to use the land for agricultural production and construction purpose. With this land tenure system, household/ family/ clan/community heads, who are mostly male, act as trustees over land, on behalf of the households/ family/clan/community. Land in the community is a collective property (communal) and follows the patriarchy line of succession. With the patrilineal trajectory, the male descendants of the household head are liable to inherit land from their families. Decisions regarding the control and use of land are taken by the household head, which is mostly male-based on the traditional customary tenure norms of the community. Women do not control land in the community and can only have access to land through marriage or through begging, which is unsustainable. It was reported the above gender inequalities in the control of land in the community predates land expropriation.

The customary and traditional rules governing the control and use of land in the study area is being regulated by the traditional council headed by the Chief and Tindaana (Earth Priest). The Chief and Tindaana, as the traditional heads of the community, play different and overlapping roles in several areas such as land governance. The Chief as the traditional head leader of the community performs oversight responsibility in the maintenance of law and order, settlement of disputes, and serves as the developmental head for all development projects initiated in the community. However, the Tindaana is the spiritual head that connects the living to the dead through libations and sacrifices.

1.Land Tenure System before Land Expropriation

Before the expropriation, the Chief as the traditional head could allocate land under his control for farming and construction purpose without external consultation. The Chief could also allocate land for developmental projects in the community in consultation with the Tindaana, and his elders. In some instance where the Chief has no control over an area of land, consultations with the appropriate household/family will be undertaken before land can be allocated for developmental projects.

Household/family heads (Landlord[2]) with the allodial title over a land area can allocate their controlled land area for agricultural purpose without any external consultations and approval. Parallel to the allocation of land for agricultural purposes; landlords could allocate land to members within the community for settlement without prior external consultation and approval. However, with the allocation of land to an outsider of the community for settlement, the Chief and Tindaana must be informed due to their roles as traditional heads in ensuring peaceful settlement in the community. In any form of allocation of land according to the land tenure system, the landlords are obliged to consult other male members of their families.

As was uncovered during the face to face interview, before the expropriation, the allocation of land for whatever purpose in the study area did not go with monetary compensations; however, separate symbolic rites accompanied with the customary

[2] Landlord refers to the custodian or allodial title holder of a parcel of land. The landlords are the household/family heads who control an area of land. these incluse the Chief, Tindaana, and any other household/family head who have control over a given land area.

governance were performed for the allocation of land for developmental projects, agriculture, and settlements. In terms of developmental projects like the construction of schools, which is anticipated to benefit all members of the community, it was reported the Tindaana pour libation to the ancestors and the gods to pave the way for the commencement of such developmental project after the Chief has allocated an area. Concerning the allocation of land for agricultural purpose, a live guinea fowl and chicken, and millet[3] will be required by the landlord and his family. On the other hand, a live guinea fowl, three live chicken, and a goat will be required by the landlord as an initial package for the allocation of land for settlement. On the day of commencement of the building for settlement, the landlord and his family, the Chief, and Tindaana will be present at the construction site where libation will be poured by the Tindaana as a rite to welcome and pave the way for a successful and peaceful settlement. After the libation, the landlord, the Chief, and Tindaana are given a live chicken each by the settler/land seeker per the customary laws of the community. These traditional practices for the allocation and acquisition of land had existed in the community over centuries with the use of money/equivalence as a measure of the value for allocation of land prohibited in the community. A 47-year-old woman during the interviews had this to say:

> *How can we sell land, something that does not belong to us? No one owns land; we came and met it. Land belongs to the ancestors, and we do not have the right to sell something that belongs to the ancestors. I think the ancestors will punish anyone who attempts to sell land in this community (Interview, December 2018).*

[3] The millet as a requirement for land acquisition represents the use of the parcel of land for crop production in the Gbani community.

In reaction to the process of land allocation in the community during the focus group discussion for men, a 60-year-old participant said the following:

> *Though I am the household head of my family, I do not have the sole right and responsibility to allocate land for whatever purpose without the consent of my children and other key male members of the family. I am not going to live forever, so it is important for other members of the family, especially my children to know-how and to whom I have given a parcel of land not to create conflict when I am no more alive. As the landlord, I am only a caretaker of the land for my children so it will not be right to ignore them in giving out land.*

The above responses imply that the allodial titleholders of land in the community are only trustees, and it is mandated consultations (internal and/external) are made before the allocation of land. The responses also suggest that land allocation in the community follows the symbolic rite prescribed by the existing customary tenure system.

2.Land Tenure System with the Emergence of Expropriation

It was reported that, until recently, the allocation and acquisition of land in the study community was based on the customary symbolic rites as described above. It was uncovered from the study that the expropriation of smallholder farmers farmlands for gold extraction in recent years is devoid of their consent and knowledge. The rites which were accompanied with the allocation of land for whatever purpose has been avoided with the expropriation for gold extraction.

Respondents reported they were aware of the confiscation of their farmlands only when the gold extraction had commenced on their farmlands. The decisions and concerns of the landlords as enshrined in the customary practices are no longer respected. Farmers

reported they are usually unsure of whether they can use their parcel of farmlands for farm activities in subsequent seasons. A male respondent, 60 years old, during the interview, shared his experience on the recent activities as follows:

> *My two acres of land has been expropriated for gold extraction without my knowledge. Upon inquiry, I was told by the mining company they had acquired a permit to mine on my land, and the Chief is aware of their presence. I could not take any action because the companies are well connected to the government, the chiefs, and the police, and they may call for my arrest. I could not also go to the chief because my actions will be interpreted as a sign of disrespect and perhaps be sanctioned by the chief and elders. The expropriation has deprived us of the farmlands our ancestors left for us and the future generation.*

A 55-year-old female respondent in reacting to the current situation during the interview indicated that:

> *We are now strangers in our community. The farmlands given to us by our ancestors have been taken away from us, making us beggars of land in our community. Before this incident, we had abundant land in the community for our livelihood activities without restriction. The leaders of the community who are supposed to cater to our welfare are bedfellows to the mining companies due to the monetary benefits. I understand the chief of this community is even a shareholder in one of the mining companies.*

The results reveal that farmers right to use their main asset (land) has been hazy in recent years with the land expropriation. Landlords and their families no longer feel secure in the community. The lives and livelihood of smallholder farmers have been compromised, leaving them in tatters.

The respondents of the study pointed out the mining companies, the elite, and the chief and leaders of the community as key beneficiaries of the expropriation. However, the smallholder farmers who depend primarily on land for their livelihoods, women, and

children are the main victims of the expropriation. The period where the landlords are consulted for the allocation and acquisition of land for the execution of projects in the community are over. The landlords have become tenants on their land and can be evicted any time unannounced.

To have a vivid overview of the situation, the traditional authorities of the community were queried about their role in the current land expropriation activities. The Chief of the community refuted any claim that they are bedfellows with the mining companies. The traditional leaders indicated they are equally not consulted at the initial stages of the land expropriation. The traditional authorities reported they are only made aware of the processes after the Talensi District Assembly and the Mineral and Exchange Commission have granted a concession [4]to the mining companies. They further stressed that there had been several conflicts emanating from the community due to the expropriation of land, and had the traditional authorities been involved in the initial stages, the tension created in the community would have been curbed.

Discussions with two small-scale mining companies and one large-scale revealed the Chief and Tindaana are actively involved in the acquisition of the mining concession. The companies pointed out that both the chief and Tindaana had to ink on the mining licensing certificates before the Ghana Mineral and Exchange Commission can grant a concessionary approval. It was revealed monetary payments are made to the community leaders before they append their signatures. It was also discovered about 10% of the ore from the mining concessions from the small-scale companies after the extraction of the

[4] Mining concession is the amount of land licensed to individuals, groups and companies to undertake mining activities.

gold goes to the traditional leaders such as the Chief and his elders, and the Tindaana as a monetary payment in the form of royalties.

It must be emphasized, the introduction of monetary component for the allocation and acquisition of land in the community other than those rites mentioned in the preceding paragraphs in this research had prehistorically not existed. The implication is that the existing customary system of non-monetary allocation and the consultations before allocating land have been flawed with the commencement of land expropriation for gold extraction in the community.

C.Social Differentiation and Community Reactions to Expropriation

1.Social Differentiation among Respondents

The expropriation of farmlands for gold extraction in the study area has created differentiation among smallholder farmers. As was discovered by the study, land in the community before the expropriation was plentiful with each household having access to pursue their livelihood activities. However, recent years have seen a swift change in this structure with farmers scrambling to access land to pursue their crop production activities as a result of the expropriation of their farmlands.

Table 2 depicts the social stratification that has been created among smallholder farmer households with the emergence of land expropriation in the community. Based on the land size, the study has classified smallholder farmer into three separate groups in line with the average land size of smallholder farmers (smallholder farmers have less than 2 hectares) in Ghana (MOFA, 2016). Based on this background, Respondent households

whose farmlands have been entirely expropriated were classified as 'Land Poor Farmers'; farmer households with land size greater than zero but less than 5 acres (less than 2 hectors) are classified as 'Land Marginal Farmers'; and farmer households with land size 5 acres and above (2 hectors or more) are classified as 'Land Moderate Farmers'.

Table 2: Household Landholding before and after Expropriation

Landholding	Number of observations=120	
	2007	2018
Land poor (0 acres)	-	13%
Land marginal (< 5 acres or less than 2 ha)	18%	83%
Land moderate (≥ 5 acres/ 2ha)	82%	4%

Note: 2.47 acres =1 hectare

From Table 2, during the base year (2007), there were no land poor farmers in the study area. However, with the expropriation, the land poor farmers who were nonexistent hitherto is infamous at 13% of the respondents. Additionally, the marginal land farmers who accounted for 18% of the respondents before the expropriation astronomically increased to 83% with the emergence of land expropriation. On the other hand, land moderate farmers have significantly reduced from 82% to 4% after the emergence of land expropriation. Respondents reported that the expropriation had affected them greatly making them vulnerable to poverty and food insecurity. A 60-year-old male respondent during the interview shared his story as follows:

> *My entire household has lost everything in this community. The mining companies have confiscated my 3 acres of land. I went to my field on one day and realized that a group of galamsey operators have also destructed the remaining 1-acre field. Besides, I am not strong to participate in the galamsey activities. My household is suffering a lot due to the land expropriation in this community.*

It was also reported the social differentiation emanating from the expropriation is highly intensive among women. It was uncovered shea, which a key livelihood source for women has negatively been affected. The yield of shea trees and the availability of the nuts has been reduced due to the massive cuts of shea trees and soil degradation resulting from land expropriation for gold extraction. Information gathered during the study indicates the scarcity of suitable land resulting from the expropriation has made women access to land more difficult. Respondents reported the expropriation had made the lives and livelihood of women-headed households[5] , especially the de jure [6]women-headed households more deplorable and complicated. A 57-year-old female respondent indicated that:

> *Two acres of my household land was expropriated by the mining companies with my consultation and compensation. I had about two acres remaining, which were at different locations. Due to the scarcity of land as a result of the land expropriation, my late husband's brother, who was immensely displaced by the expropriation has resorted to taking one acre of my remaining land. Now, I have only about one-acre land available for crop production. The situation has affected my livelihoods negatively. I think we have been made slaves in our community*

[5] Women headed household are the households where there was no male up to the age of 18 years present at the time of the research. The women making the women headed households were either widow or had their husbands/ the male head traveled

[6] The de jure women household heads are the women households where the woman present is a widow.

The study uncovered the new social group of land poor farmers and women-headed households affected by the expropriation depend on the mercies of other families who have not been hit/ slightly affected by the expropriation to access farmlands annually for crop production. It was disclosed the current situation of land expropriation among smallholder farmers had created land scarcity in the community. The expropriation has also trampled upon the capabilities of smallholder farmers and their fundamental human rights to ownership of assets.

2.Compensation of Farmers Affected by Land Expropriation

Since smallholder farmers precious asset (land) has been expropriated with their livelihoods affected, the research sought to assess the compensation packages that victims of land expropriation benefited. Out of the 120-respondents interviewed, 5% of the respondents confirmed having received compensation for the expropriation of their farmlands. It was reported that only the Shaanxi Mining Company only made compensation payment. Respondents reported a selective mode of compensation towards the elites, and their associates were initiated. Displaced farmers who protested the expropriation and those with no association with the company were denied of any compensations, as was gathered by the study.

Nonetheless, farmers who have been dispossessed by the other companies had not received any form of compensation. Evidence from the study reveals no form of compensation emerged from the other mining companies involved in land expropriations. A 54-year-old male respondent indicated the situation as follows:

> *My one-and-a-half acres of land was lost to the compensating company, and two other companies expropriated two acres of my farmland. I struggle to pursue my livelihood. I depend on other people to get land for my production activities. I have not received compensation from anybody, not even the District Assembly or the government.*

A 45-year-old male respondent who received compensation said that:

> *The compensating company expropriated my two-acres of farmland. Another acre of land was expropriated by a different company. However, I only received GH₵ 1,000.00 (200 USD) as compensation from the compensating company. Though I was compensated, I think the amount was small for the value of the land lost.*

A further investigation by the study revealed land value in Bolgatanga, the regional capital of the Upper East Region which is about 13 Km away from the community is valued between GH₵ 10, 000 (2,037.98 USD) and GH₵ 15,000 (3,056.98USD) for 0.25 acres of land (one plot). Considering the destruction marred on smallholder farmers due to the expropriation, it was imperative to assess how the Talensi District Assembly and the government responded to the plight of the displaced farmers. It was observed no form of support had been initiated by the district assembly or the government to help sustain their livelihoods. An interview with the District Planning Officer of the Talensi District Assembly confirmed no scheme is currently in place by the assembly to help sustain the livelihoods of the affected farmers, however, the District Planning Officer indicated the assembly would strategize to restore the plight of the dispossessed farmers.

3.Community Reaction to land Expropriation

The study gathered that before land expropriation, the people within the study area coexisted peacefully without conflicts. There was never any sign of conflict or social tension among people, families, clans, or groups in the community. However, with the

emergence of land expropriation and dispossession of smallholder farmers of their farmlands, the peaceful co-existence has been thrown into the drain. The unity and respect people in the community used to accord to the traditional leaders before the expropriation seemed to have been eroded, due to the perception and allegation that the traditional authorities are benefiting from the expropriation.

There is also a growing tension and conflict between aggrieved victims of land expropriation and the mining companies. For instance, there is a recurring conflict between the youth of the community and one of the mining companies (Shaanxi). The conflict between the displaced farmers and the company first emerged in 2012 due to three factors. Firstly, the company's operation was accused of leading to the death of young people in the community. It has been reported that the operation of the company has led to the death of over 100 young men in the community since its inception [7] . During the time of the research, about 16 deaths were recorded due to the explosions from the blasting of metals by the company leading to the rejuvenation of the existing tension between the community and the company [8]. The incident led to massive demonstrations with placards by the aggrieved youth of the community in Bolgatanga to register their displeasure[9]. The research team could not engage with the company due to the detention of top executives, and the abscondment of other members as a result of fear of being harmed by community members. Secondly, the company was accused of neglecting its promise of employing most of the

[7] https://www.ghanaweb.com/GhanaHomePage/NewsArchive/Deaths-of-over-100-miners-in-Talensi-blamed-on-Minerals-Commission-oth

[8] https://www.ghanaweb.com/GhanaHomePage/NewsArchive/Death-toll-in-Shaanxi-mine-explosion-hits-16-717674

[9] https://www.theindependentghana.com/en/news/36274-massive-demonstration-looms-against-shaanxi-mining-company-in-upper-east.

workers from the community. Finally, the company was accused of being discriminatory and adopting a preferential approach of compensating only a few displaced farmers. In 2012 when the conflict first emerged, members of the community brutalized the equipment of the company leading to the detention of some of the perpetrators. A 45-year-old female respondent indicated that:

> *The land expropriation has created chaos in our community. Until now, we lived peacefully in the community. We were not fighting nor quarreling. We were each other's keeper. I could speak my mind in the community without any fear/intimidation. Now we do not trust each other as members of the same community. The expropriation has made us more individualistic because you can be reported to the Chief and other members in support of the operation that you are against the companies. And you know everyone wants to be aligned to the elites and the Chief so they can gain favor.*

The study gathered that, due to the persistent tension that the expropriation has created and in an attempt to perpetuate their operations and silence the discontent among victims, one of the mining companies (Shaanxi Mining Company) has provided the community with a 10-unit classroom block for basic education and about four boreholes to supply the community with potable water.

The study also uncovered the social conflict and tension does not only linger between the companies and the community members but also exists between two of the large-scale mining companies; Shanxi Mining Ghana Mineral Limited (the metamorphosed company) and Cassius Mining Limited. The latter accused the former of trespassing its gold mining operation to the concessional area of the latter. This purported conflict of interest led to the latter seeking legal redress through litigation at the Bolgatanga High Court.

The above means that the community adopted both violent and peaceful paradigms to register their displeasure against the expropriation of their farmlands, the associated deaths due to lack of proper safety standards and carelessness, and inequality in employment and compensation.

D.The implication of Land Expropriation on Respondents Livelihoods

1.Livelihoods of Respondents

The sources of income of the victims of land expropriation were assessed to ascertain the variance after the emergence of land expropriation. In this research, the livelihood sources of respondents were categorized into agrarian, diversified, and non-agrarian livelihood sources. The agrarian livelihood sources in this research is mainly from crop production activities and livestock production as a supplement, non-agrarian livelihood sources are those activities such as wage labor, migration, petty trading, mining activities, and all those activities outside the agrarian realm, and diversified livelihoods sources encompass the simultaneous agrarian and non-agrarian livelihood sources of income generation. Table 3 provides an overview of the livelihood sources of smallholder farmers in the study area.

Table 3: Respondents Livelihood Sources before and After Land Expropriation

Livelihood strategies	Number of observations=120	
	2007	2018

Agrarian	83%	10%
Diversified	14%	59%
Non-agrarian	3%	31%

As shown in Table 3, when there was no land expropriation (2007), respondents who depended entirely on agrarian as a source of income were 83%. However, the emergence of land expropriation (2018) displacing smallholder farmers led to a drastic reduction to 10 %. However, respondents who engaged in diversified livelihoods had significantly increased from 14% when there was no land expropriation to 59% after smallholder farmers were being dispossessed of their farmlands. Similarly, respondents that were entirely non-agrarian surged from about 3% to 31% with the emergence of land expropriation.

As shown in Table 3, only 3% of farmers exclusively engaged in non-agrarian livelihood sources before land expropriation (2007). These respondents indicated in 2007, they had migrated from the community to Accra and were engaged in menial jobs, which were non-agrarian livelihood sources of income generation.

A 35-year-old male respondent who pursued entirely agrarian livelihood strategy in 2007 when there was no land expropriation and currently depends on non-agrarian strategy said this:

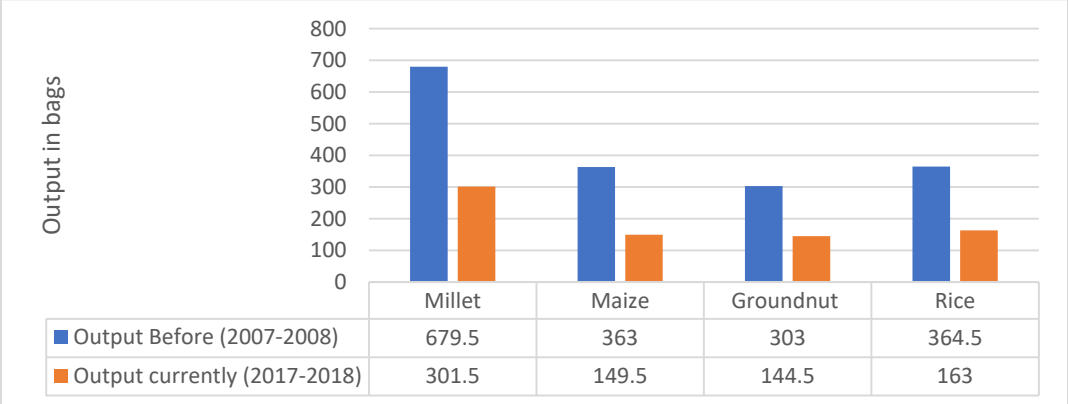
> *Before my land was expropriated, my household was mainly earning income from farm production. However, with about three acres of my household land expropriated. I have no option than to adopt other ways of surviving. My wife does petty trading, and I engage in the galamsey activities to sustain my household's livelihood.*

The study revealed the land expropriation affected smallholder farmers whose livelihood sources is predominantly agrarian. Respondents revealed the non-agrarian livelihoods form a chunk of their household income after their farmlands have been dispossessed.

2.Respondents Crops Output before and after Land Expropriation

As a part, the major crops cultivated by respondents are maize, millet, groundnuts, rice, etc. The study discovered there was no change in the major crops produced in the study area with the emergence of land expropriation. However, the output of these crops has declined due to the land expropriation, which has dispossessed smallholder farmers of their farmlands. Respondents reported they are compelled to apportion the remaining meager land after the dispossession for the cultivation of these crops. Other respondents also had to temporary solicit for farmlands from unaffected households for their crop production activities. This reduction in crop production due to limited land size has significantly affected the output of the affected farmers. Figure 2 provides a vivid picture of respondents' major crops output before and after the land expropriation.

Figure 3: Comparison of Respondents Crop Output before and after Expropriation



	Millet	Maize	Groundnut	Rice
Output Before (2007-2008)	679.5	363	303	364.5
Output currently (2017-2018)	301.5	149.5	144.5	163

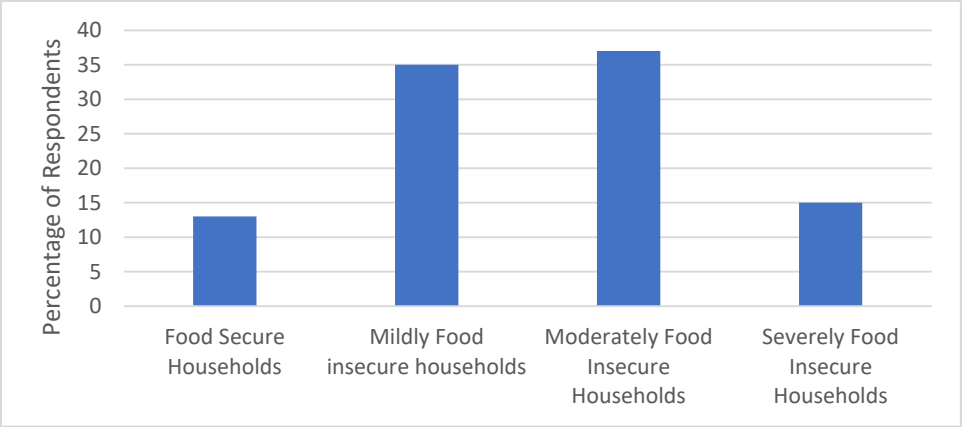
Note: Output of crops is measured using the number of bags

As shown in Figure 2, respondents output for millet before land expropriation (2007) was 679.5 bags; this has significantly reduced to 301.5 bags after the land expropriation (2018). Maize output before the land expropriation has also reduced significantly from 363 bags to 149.5 bags. Furthermore, respondents output for groundnuts reduced from 303 bags to 144.5 bags. Similarly, respondents output for rice reduced from 364.5 bags to 163 bags after the expropriation. The reduction in output could have a dire consequence on the food security of the households of the respondents. Similarly, the reduction in output could affect the income of respondents since land is the main source of livelihoods in the affected community. The significant reduction in output could also mean the households of the respondents are living in jeopardy with the emergence of land expropriation in the community.

3.Respondents Food Security Status

The food security status of the respondents' was assessed using the Household Food Insecurity Access Scale (HFIAS). The HFIAS was developed by the USAID's Food and Nutrition Technical Assistance (FANTA) to monitor and evaluate program interventions. The HFIAS was used to determine the household food security prevalence and household access related conditions.

Figure 4: Respondents Food Security Status



The food security prevalence was assessed by classifying households into food secured households, mildly food-insecure households, moderately food-insecure households, and severely food-insecure households. From Figure 2, about 13% of respondents' households are food secured, 35% of the respondents' households are mildly food insecure, 37% of the respondents' households are moderately food insecure, 15% of are severely food insecure.

The reaction of respondents to food insecurity access related conditions is stated in Table 4. About 75% of respondents were uncertain about their household food security, 67% ate food not preferred, 47% ate monotonous diet, 37% ate undesirable foodstuff, 53% ate a small meal, 46% ate fewer meals a day, 15% of the respondents did not have food of any kind in their households, and 12% of the respondents slept hunger due to limited resources culminated from the land expropriation.

Table 4: Respondents Household Food Security Access Related Conditions

Domain	Category	Percentage of respondents (N=120)
Anxiety and uncertainty about food supply	Worry about	75
Insufficient Quality (variety and preferences of food)	Unable to eat preferred food	67
	Eat a monotonous diet	47
	Eat undesirable food	37
Insufficient food intake and its physical consequences	Eat a small meal	53
	Eat fewer meals in a day	46
	No food of any kind available	15
	Sleep hunger	12

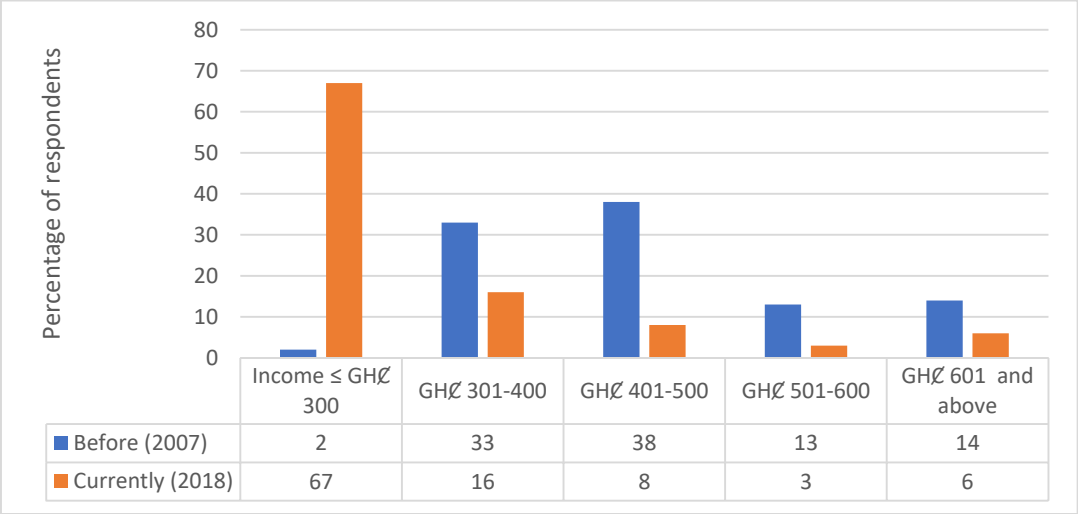
There is an apparent indication that expropriation of the smallholder farmers land has implicated on the household food security of the victims. The study gathered that the inaccessibility and limited land size for crop production and the associated low output due to the expropriation were the underlining factors affecting respondents' household food security.

4.Respondents' Household Annual Income before and after the Expropriation

Figure 3 depicts the annual household income of the research respondents before and after land expropriation in the study area. Accordingly, respondents with their annual household income less than or equal to GHS 300 ($60) increased from 2% to 67% with the emergence of land expropriation. Also, the percentage of respondents' households whose

annual earnings ranged between GH₵ 301 and GH₵ 400 ($60.2-$80) drastically declined from 33% to 16% after the expropriation. Similarly, the respondents with income between GH₵ 401and GH₵500 ($80.2-$100) declined from 38% to 8% with the emergence of land expropriation. Finally, smallholder farmers with income from GH₵501 to GH₵600 ($100.2-$120) reduced from 13% to 3%, and farmers with incomes of GH₵601 and above ($120.2 and above) reduced from 14% to 6% with the emergence of land expropriation in the study community.

Figure 5: Respondents' annual Household Income before and after Expropriation



No. of observation is 120

The progressive fall in the percentage of households' income from the relatively higher income categories suggests that the land expropriation has relegated smallholder farmers from higher- to low-income groups. Additionally, the study discovered that the influx of people into the community due to the gold extraction is putting further burden on the limited income of respondents' household with the high prices of foodstuff.

Respondents stated that the high price of food, which is caused by the increase in demand is making the living condition in the community unbearable. Attesting to how the land expropriation has affected respondents' household income during the interviews, a 60-year-old male respondent indicated that:

> *The land expropriation has affected my household income. My household used to earn between GH₵ 500 to GH₵ 600 income per annum, mainly from farming activities. However, the expropriation has overthrown my household from about two acres of land, which has made us poorer. The sad thing is that we have not had any support to sustain our livelihood. Now my household earns about GHS 50 from farming. I find it difficult raising money to take care of my children.*

Another respondent, a 55-year-old female, indicated that:

> *Before the land expropriation, my household could make about GHS 700 per annum. Out of this amount, about GHS 100 is made from shea butter processing while the remaining amount is obtained from farming activities. The expropriation of two acres of my farmland has denied us income. We do not earn income from either of the shea butter nor the farming activities in recent times. My son completed Senior High School, but it was difficult to raise the requisite amount for him to further his education, so he dropped out of school.*

The result implies that the quality of life among smallholder farmers has been in a deplorable state with the emergence of land expropriation. The welfare and long-term progress of respondents of the study have been hampered with the emergence of land expropriation.

5.Econometric Analysis

The study analyzed the factors determining the change in respondents' household income using multiple linear regression to assess the relationship. Following the review of the literature and availability of data, the variables (and their description) used in the model is presented in Table 5.

Table 5: Definition of Variables and Descriptive Statistics (n=120)

Variable	Description	Mean	Std. Dev.	Min	Max
Dependent Variable					
% Change in household income	% change	-48.693	27.44328	-88.8889	0
Independent variables					
% Land affected	land size affected in acres	59.1658	20.96699	16.7	100
Value of assets	value of assets in Gh	365.917	304.0331	100	1500
Gender	0=female, 1=male	0.84167	0.366584	0	1
Age	Age in years	47.4917	10.9935	25	66
Education	1=no education, 2=primary education, 3=Junior High School education, 4=Senior High School, 5=Tertiary education	1.425	0.784969	1	4
Household size	1=from 1 to 5, 2=from 6 to 10, 3=11 and above	2.13333	0.517482	1	3
Years of farming	No. of years engaged in farmining	31.1667	9.998599	10	52

Participation in artisanal mining	0=no, 1=otherwise	0.5	0.502096	0	1
Access to extension service	0=no, 1=otherwise	0.53333	0.500979	0	1

Table 6: Determinants of Changes in Respondents' Income (2007 and 2018)

	Standard Error			Robust Standard Error		
	Coef.	Std. Err.	P>|t|	Coef.	Std. Err.	P>|t|
Land lost percent	-0.2062***	0.0724	0.005*	-0.2062***	0.07185	0.005**
Value of asset	0.0412***	0.00943	0.000*	0.0412***	0.00895	0.000**
Gender	9.86836***	3.58589	0.007*	9.86836*	5.21497	0.061
Age	-1.0625***	0.24832	0.000*	-1.0625***	0.25944	0.000**
Education	0.18112	3.72884	0.961	0.18112	3.22121	0.955
Household size	8.35052***	2.38115	0.001*	8.35052***	2.47109	0.001**
Years of farming	-0.0484	0.24109	0.841	-0.0484	0.20878	0.817
Artisanal mining	9.94259***	2.60237	0.000*	9.94259***	3.03946	0.001**
Extension	-0.3493	2.83483	0.902	-0.3493	2.4863	0.889
_cons	-30.766**	14.3511	0.034	-30.766**	15.5385	0.05

*significant at 10%, **significant at 5%; *** significant at 1%

From the regression result, an adjusted R-square of 0.79 implies that 79% of the variation in the respondents' household income can be explained by the combination of the independent variables stated in Table 6 at 95% confidence level. From Table 6, the percentage of land affected is statistically significant in both models and has a negative

relationship with the percentage change in income. The value of respondents household assets also statistically significant in both models and has a positive relationship with the percentage change in income. The gender of respondents is significant in the OLS model and insignificant in the robust model with a positive relationship with the percentage change in income. The age of respondents is statistically significant in both models and has a negative relationship with the percentage change in income. Education of respondents is statistically insignificant in both model but has a positive relationship with the percentage change in income. The insignificant in education could be explained by limited variation in the data; the majority of (72%) respondents were uneducated. The household size of respondents shows statistically significant in both scenarios and establish a positive relationship with the percentage change in income. Years of farming shows statistically insignificant in both models and has a negative relationship with the percentage change in income. Participation in artisanal mining/galamsey activities shows statistically significant in both models and has a positive relationship with the percentage change in income. Finally, the access to extension is insignificant and has a negative relationship with the percentage change in income.

E.Measures Adopted by Respondents to Sustain their Livelihoods

Since the expropriation of land for gold extraction led the expulsion of smallholder farmers and their livelihoods, victims of this exploitative capital accumulation adopted measures to sustain their livelihoods and welfare in the study area. Table 7 indicates the adopted by the study respondents to sustain their livelihoods.

Table 7: Measures Adopted by Respondents to Sustain their Livelihoods

Coping and Adaptation Strategies	Percentage of respondents (N=120)
Migration	73.3
Family Support	60.8
On-farm Labour	46.7
Off-farm labor	65
Livestock	85
Poultry	91.7
New land	45.8
Remittances	65.8
External Support	46.7
Sale of Property	58.3
Petty Trading	50.8
Artisanal Mining	50
Reduce eating	70
Shea nut gathering and processing	69

As shown in Table 7, about 73.3% of respondents sustained their livelihoods through migration, 60.8% had family support, 46.7% engaged in on-farm labor, 65% engaged in off-farm employment, 85% engaged in livestock rearing, 91.7% rear poultry, 45.8% acquired new land, 65.8% accessed remittances, 46.7% got external support, 58.3 soled

properties, 50.8% engaged in petty training, 50% engaged in artisanal mining/galamsey, 70% reduced eating, and 69% engaged in shea nut gathering.

Respondents indicated they had not received any support from the government of Ghana, the Telensi District Assembly, nor the mining companies to sustain their livelihoods. Respondents also indicated no form of job training had been marred to them after their main source of livelihood has been expropriated. It was evident that the mining companies were only interested in their welfare without considering the plight of the smallholder farmers.

The Talensi District Planning Officer was contacted regarding the role of the assembly to support the victims of land expropriation. The Planning Officer succumbed the government or the assembly have instituted no intervention, but they would collaborate with stakeholders to institute a program to support the affected farmers. The above evidence implies that the wellbeing of the smallholder farmers who are victims of land expropriation would enormously be affected. It was observed that the smallholder farmers were the most affected of the expropriation and hence adopted the various strategies to sustain their livelihoods. It must be noted that respondents pursued livestock and poultry as a supplement to crop production before the expropriation. However, with the emergence of land expropriation, livestock and poultry production are used as measures to sustain livelihoods.

Respondents indicated that the above measures were adopted to sustain their livelihoods after the expropriation. However, the strategies are inadequate to improve their wellbeing, and there is a need for government intervention to alleviate the affected farmers.

F.Discussion of the Main Findings

1.The Implication of Land Expropriation on Land Tenure System in the Study Area

The land tenure system in the study area takes the customary trajectory where customary laws regulate the control and use of land. With the customary tenure system, the control and use of land are not reserved to an individual, but a clan/family or the community (Aha & Ayitey, 2017). The result shows that men are the household heads and have the ultimate responsibility in the control and use of land. With the customary land tenure system, the decision regarding the allocation, what to use the land for and by whom is a reserved of men (Joseph Awetori Yaro, 2009). This result is in line with other research which shows that the tenure system in Northern Ghana is patrilineal with women being alienated (Kansanga, Andersen, Atuoye, & Mason-Renton, 2018; D. Tsikata & Yaro, 2014). The gender bias of the existing customary system is an outcome of social and gender politics emanating from colonization (D. Tsikata & Yaro, 2014). The male-centered land tenure system was molded by colonial and postcolonial governments efforts in establishing control and authority, and the neoliberal agenda at the rural areas by defining new codes of agrarian social relations and institutions and reinforcing the gender role of agrarian politics (Boone, 2015; Nchanji & Bellwood-Howard, 2016; Njoh, Ananga, Anchang, Ayuk-Etang, & Akiwumi, 2017).

The study reveals that, before the expropriation, the land tenure system did not permit an activity to be executed on one's land without the consent of the landlord/trustee and his family. However, the emergence of land expropriation has transformed this customary preexisting terms, which follow similar findings elsewhere (Aha & Ayitey,

2017; Levien, 2011; Schoneveld & German, 2014). In India, the government-supported private investors to expropriate about 5000 ha of land belonging to farmers for the development of the export zone. The affected farmers knew their fate only after the notes of acquisition of their farmlands was posted (Levien, 2011). Similar to this finding, evidence in Ghana shows nine companies in six different communities have expropriated vast tracts of land ranging between 5,000 to 70,000 ha belonging to farmers for plantation without any form of consultation (Schoneveld & German, 2014). The circumstance tends to create land tenure insecurity, as observed in this study. Surprisingly, Ghana has a regulatory framework that does not protect the usufructuary or specify the level and kind of consultation needed for the expropriation of land making investors and the traditional authorities to explore the lapses without any ramification (Apoh, Wissing, Treasure, & Fardin, 2017). Though the constitution of Ghana vividly states that the traditional authorities have an obligation of responsibility to the local people in performing their fiduciary duties to land, it does fail to stipulate the consultation principle. Though the National Lands Policy of 1999 of Ghana insist that the custodians of land be consulted for any interest in land, it lacks constitutional backing for its effectiveness (Schoneveld & German, 2014). These observations are quite worrying, given the farmers depend on land for their livelihoods; hence the expropriation of land for gold extraction without the sense of responsibility will affect the livelihoods and tenure security of smallholder farmers.

The study reveals that the traditional customary land tenure system in the community is under threat with the emergence of land expropriation. The tenure system has been reinvented with the introduction of monetary or its equivalence in the allocation and acquisition of land. The preexisting rites for land allocation and acquisition as already

discussed have been altered with the traditional authority and elite in the community being the beneficiaries at the expense of the smallholder farmers. The result is corroborated with findings of (Curry & Koczberski, 2009; D'Odorico, Rulli, Dell'Angelo, & Davis, 2017; Hausermann et al., 2018; Panikkar & Tollefson, 2018; Peters, 2009; Sikor, 2012; Joseph Awetori Yaro, 2006, 2009; Zhang & Wu, 2017). Zhang and Wu (2017), with evidence from China, highlighted the role of capitalism in the commodification of land. Sikor (2012), highlighted land expropriation in Vietnam for plantations is leading to the commodification of land and the expansion of land markets. D'Odorico et al. (2017), has stressed that land expropriation for capitalist accumulation has created a private property and commodified land, which hitherto was common property. Peters (2009) analysis of the land and agrarian transformation in Africa asserted that transformation is creating the condition for expropriation, which is commodifying and transforming the tenure system. Panikkar and Tollefson (2018), in assessing the social, historical, and political transformation of resources and land in Bristol Bay, Alaska confirmed that the reforms had created the avenue for capitalist exploitation, change in land use, and the trading of land. Bury (2005) in the analysis of land acquisition for gold extraction has stressed on the role of neoliberal land reforms in the proliferation of mining companies in Cajamarca, which has reinvented land tenure institutions and systems. Evidence from Southern Ghana has shown how land expropriation for gold extraction paved the way for the creation of informal markets and change in tenure regime (Hausermann et al., 2018). Research conducted across the regions of Northern Ghana also revealed the role of Chiefs in transforming the exiting rights in the current neoliberal and market economy (Joseph Awetori Yaro, 2009).

The monetization and commodification of land in the community in the recent era is alien to the customs of the community. The land which used to be egalitarian in the community has become scares and a tradable property in the market, and this could have dire consequence on the livelihoods of farmers who depended on the land.

2.Social Differentiation and Community Reaction to Expropriation

Empirical results from the study show the emergence of social differentiation in the study community due to land expropriation. The study reveals that smallholder farmers are most affected and marginalized in the community due to the displacement and expulsion associated with land expropriation. It was observed that the Chief and elite in the community are those gaining much from the expropriation. The results are consistent with the findings of other studies (Greco, 2015; Joseph Awetori Yaro, 2009; Joseph A. Yaro, 2016). Greco (2015), revealed land expropriation in Tanzania has made smallholder farmers more vulnerable. Joseph A. Yaro (2016) has also highlighted how traditional authorities have recorded the prehistorical land tenure system to their benefit at the expense of farmers.

The result showed 13% of the farmers had been rendered land poor (no land), with 83% being marginal landholders (< 5 acres), and 4% being land moderate ($\geq$ 5acres) with the emergence of land expropriation in the study community. This result is in line with studies in Cambodia which posit land expropriation has created landlessness among farmers whose source of livelihood has been restrained and are wallowing in poverty (Neef, Touch, & Chiengthong, 2013). Greco (2015) stressed that about 70% of respondents were

rendered landless in Tanzania with the commence of the rice project, which expropriated smallholders' farmlands. Similarly, the expropriation of land for gold extraction in the Upper West Region of Ghana has rendered about 60% of research respondents landless (Nyantakyi-Frimpong & Bezner Kerr, 2016). Evidence from out-grower schemes in Uganda and Tanzania have demonstrated how land expropriation has created agrarian social class among farmers and the inequality in the benefits that accrue to each social group (Bush et al., 2018). The emergence of land expropriation has compromised the crop production activities of farmers in favour of gold extraction.

Despite the implication of land expropriation on smallholder farmers and the creation of agrarian social differentiation, surprisingly, only a handful of the respondents have been compensated for the expulsion. The empirical results show about 95% of respondents affected by the expulsion have not been compensated. The results partially reflect the findings of Aha and Ayitey (2017), which stated 57% of smallholder farmers displaced in Ghana for biofuel production were compensated. It was apparent that 5% of the respondents who were compensated were all males. Respondents reported one could only receive compensation not necessary because of deprivation of land use but the relationship with the Chief and the compensating company. The results are in line with the findings of Hausermann et al. (2018) which pointed to the exclusion of women in the compensation of cocoa farmers affected by land expropriation for gold extraction in Southern Ghana, though the majority of the affected farmers were women. The research findings point the amount of compensation paid was $200 per household, which was woefully inadequate, but as indicated above, the compensation was made to the cronies of the Chief and the mining company. Similarly, the expulsion of 1000s of farmers in

Cambodia for sugarcane production proposed a compensation package of $100-$200 per hectare of land (Borras Jr & Franco, 2013). Aha and Ayitey (2017) asserted that compensations normally given for expropriation do not follow the logic of the value of land or land size affected; it builds on the negotiation skills, influence, and connections within the local area. In Cameroon, negotiation towards compensations after contestation for land expropriation did not involve female households who were displaced (Ndi, 2019). Findings from land expropriated for gold extraction in the Upper West Region of Ghana pointed out compensations of $250 was paid for 6.5 ha and $150 paid for 10 ha based on the value of crops on the land expropriated but not for usage deprivation, though, such compensation ignored women crop value (Nyantakyi-Frimpong & Bezner Kerr, 2016). Hausermann et al. (2018) asserted the lower level of compensation packages to farmers led to farmers reaction by instituting an informal negotiation for compensation package in gold mining communities.

Schoneveld and German (2014) assert the challenges associated with the compensation of farmers for expropriation in Ghana is largely associated with the lack of a legal comprehensiveness which specifies and guarantees compensation process. The existing laws on compensations only make mandatory for fair, reasonable, and timely compensation for deprivation of usage by the state (Aha & Ayitey, 2017). The Mineral and Mining Act (Act 703) authorizes the allodial holder of land to claim compensation; however, there is no clarity regarding the proportion of sharing the compensation among the allodial holder and the usufructuary holder. In most cases, the allodia compensation is paid out to the Chiefs and Tindaana. There is also a lack of clarity in the valuation method specified, and the recipients of deprivation use compensation (Kidido, Ayitey, Kuusaana, &

Gavu, 2015). Kidido et al. (2015) asserted that the compensations regulations for deprivation for allodial holder have a colonial transition which has always been skewed towards the Chiefs/ the traditional authorities.

The study showcase land expropriation has the potential of disintegrating existing social cohesion and creating a fragile relationship between people in the community. It is evident the community initially employed a violent approach to contest what was regarded as illegitimate expropriation of their farmlands which led to the destruction of the equipment of a mining company and the arrest and detention of some members of the riot group. Following the unsuccessfulness of such moves, the community has resorted to a symbolic and peaceful protest to channel their grievances to the appropriate authorities. The findings reflect other studies which showcase various tactics in the form of violence, symbolic, peaceful approaches have been employed by different group of people as a reaction to their expulsions, and inequality and lower compensation packages to land expropriation across the globe (Borras Jr & Franco, 2013; Hall et al., 2015; Martiniello, 2017). In Kampong Speu, Cambodia, community members used combined approaches of sabotage, burning, and stoning of bulldozers, rallying to police headquarters and court, highway barricades to register their displeasure to the expropriation of their farmlands and the associated low compensation packages (Borras Jr & Franco, 2013). In Fanaye in northern Senegal, smallholder farmers used violent approach to protest the dispossession of 20,000 hectares of their farmlands by Italian investors with support from the government which led to the death of one smallholder farmer with about 21 others injured (Martinez-Alier et al., 2014). Smallholder farmers in Northern Ghana adopted fire burning of mango plantations to register their displeasure towards the expropriation of their farmlands without

consultation and compensations (Joseph Awetori Yaro & Tsikata, 2013). Bush (2009) asserted that the illegal artisanal mining (galamsey) adopted by rural communities is a resistance mechanism by rural communities resulting from their expulsion and lack of development in the gold mining areas. In the Amuru District in northern Uganda, women symbolically used naked protest to contest the dispossession of 10,000 ha of their farmlands by the Madhvani Group for sugar plantation (Martiniello, 2017). Martiniello (2017), argues that the smallholder agrarian politics of contestation in the countryside has contributed to agrarian social change. Example, the naked protest in Uganda led to a temporal halt of the operation of the expropriated company. Similarly, Philippines farmers contested 1.4 million ha of land allocation to Chinese investors leading to the cancellation of the contract (Hall et al., 2015). On the other hand, not all rallies and movements about farmers and communities are in the contestation of resistance against land expropriations. There are instances whereby the agitations by communities encountered with land expropriation rally to be incorporated into the expropriation process (Hall et al., 2015). Contraly to the result, evidence from Malibya in Mali involving the expropriation of between 162,000 and 871,000 ha of land shows sections of farmers agitating for their integration into the project (Larder, 2015).

The smallholder farmers resistance, as embedded in the agrarian politics of smallholder farmers, is used as a weapon for emancipation and to sustain their livelihoods. Since the expropriation of smallholder farmers land has a huge implication in reinforcing differentiation, communities have always resisted what they consider as unlawful expulsion of their farmlands.

3.The Implication of Land Expropriation on Respondents Livelihoods

Land is the main source of livelihood for rural communities in the countryside (Chambers & Conway, 1992). However, the expropriation of land for gold extraction is imposing difficulty for smallholder farmers with the transformation of livelihood sources due to the dispossession of farmlands. Unsurprisingly, the results highlight the transformation in the source of income in the study area. The study reveals a drastic increase in diversified and non-agrarian livelihood sources after the expropriation. The findings imply the majority of smallholder farmers have shifted their primary source of livelihood from agriculture to depend more on the non-agrarian source. The results reflect the findings of Okoh and Hilson (2011), which suggest the transition of smallholder farmers into non-agrarian livelihoods in mining communities in the Eastern Region of Ghana. Similarly, Hirons (2014) highlights the shift in smallholder livelihoods in mining communities in Elimina in the Central Region of Ghana. The results also corroborate the agrarian transformation with the decline of the agricultural source of livelihood from 100% to 60% after the expropriation of land for Jatropha plantation in the Asante Akim North District of Ghana (Hamenoo, Adjei, & Obodai, 2018). In the event of land expropriation, smallholder farmers without the financial mussels to acquire new farmlands for their livelihood activities transition out of the agrarian sector to non-agrarian sectors as the alternative source of their livelihoods (Alhassan, Shaibu, & Kuwornu, 2018). In New Guinea, Koczberski and Curry (2005) highlighted how land expropriation resulting from population pressure had influenced agrarian livelihood shift. Predictably, in about 70% of the livelihood sources of smallholder farmers affected by land expropriation for biofuel production in Sierra Leone came from non-agrarian sources (Bottazzi, Crespo, Bangura, &

Rist, 2018). Findings from Bhandari (2013) indicate the availability of arable land as a key factor affecting the change in smallholder livelihoods in rural communities. Bhandari (2013) stressed farmers with access to land for their livelihood activities are more likely to remain in agrarian as a source of livelihood.

Since the prospects of the smallholder farmers in the study area depend on land, the expulsion of respondents affected the output of the major crops cultivated in the community. The results show a drastic decline of millet, maize, groundnuts, and rice output from 679.5 bags, 363 bags, 303 bags, 364.5 bags to 301.5 bags, 149.5 bags, 144.5 bags, and 163 bags, respectively. The decline in crop output is in keeping with the findings of Bottazzi et al. (2018), where rice yield among smallholder farmers in communities affected by land expropriation was 40% lower than areas without expropriation. Similarly, the expropriation of land for biofuel production affected the crop output of 33.3% of smallholder farmer respondents in Ghana (Acheampong & Campion, 2014). Findings of Hausermann et al. (2018) also reveal that gold extraction negatively affected cassava and plantain yield in Southern Ghana. Ouoba (2018) points to an increase in crop output largely dependent on cropland, hence the increase in mining intensity and expropriation of land affects farmers livelihood source and reduces crop yield.

The study reveals a high level of food insecurity and uncertainty related to the food security of smallholder farmers affected by land expropriation. The results show that about 87% of respondents are food insecure, composed of 35% mildly food insecure, 37% moderately food insecure, and 15% of the respondent household being severely food insecure. These results are in line with the findings of Hausermann et al. (2018), which reported 97% of food insecurity among respondents affected by land expropriation for gold

extraction in Southern Ghana. Similarly, in the Upper West Region of Ghana, 79% of farmers affected by land expropriation for gold extraction were food insecure (Nyantakyi-Frimpong & Bezner Kerr, 2016). In the Talensi-Nabdam District (before the splitting) the WFP (2012) reported a 39% of moderately or severely food insecurity among people in the area. In Sierra Leone, 53% of farmers affected by land expropriation were food insecure (Bottazzi et al., 2018). It was uncovered the daily dietary of the respondents and their households is monopolized with carbohydrate emanating from cereals such as maize and millet. The limited quantity of rice and groundnuts of the respondents are kept for special occasions. It was observed respondents prioritized the quantity of foodstuff against the quality and variety after the land expropriation. Similar to the findings of Hausermann et al. (2018) in gold extraction community, respondents reported reduced land size, low crop output, high prices of food products in the local market with the influx of people into the community associated with the land expropriation for gold extraction were key causes of food insecurity in the study area.

Furthermore, the results show land expropriation has negatively affected smallholder farmers household's income. The average household income of the research respondents reduced from GH₵523.92 ($104.78) before the expropriation (2007) to GH₵291.75 ($58.29) after the expropriation (2018) of smallholder farmers land. The results also reveal the majority of the respondents belong to the lowest income category of GH₵300 ($60) or less, with a drastic surge of respondents from 2% to 67% after the expropriation. As already discussed in the preceding paragraphs, land expropriation exploits, distorts, and destructs the primary source of livelihoods to smallholder farmers, and that affects a household's income. The results of the study are confirmed by other

studies, indicating the exploitative nature of land expropriation for gold extraction and its implication on livelihoods and income (Andrews, 2018; Ayelazuno, 2011; Bury, 2005; Hausermann & Ferring, 2018; Hausermann et al., 2018; Kidido et al., 2015; Moomen, 2017; Ouoba, 2018; Schueler, Kuemmerle, & Schröder, 2011). On the contrary, other studies see the presence of gold extractions as a source of improving the income of smallholder farmers due to their probable engagement in small-scale mining activities (Hilson, 2016; Hilson, Amankwah, & Ofori-Sarpong, 2013; Wilson, Renne, Roncoli, Agyei-Baffour, & Tenkorang, 2015)

From the regression results, the household income of respondents is significantly influenced by the percentage of land affected, the value of assets, gender, age, household size, and respondent participation in artisanal mining/galamsey activities. On the other hand, household head level of education, years of farming, and access to extension services are insignificant. Reflecting the findings of other studies, the results show that an increase in the percentage of land lost to the expropriation contribute to a reduction in the percentage change in income reflecting the previous discussions confirming land as the main source of farmers livelihoods in the community (Bottazzi et al., 2018; Jiao, Smith-Hall, & Theilade, 2015; Melaku, Ewnetu, & Teketay, 2014; Radel, Schmook, & Chowdhury, 2010). Similar to other studies, the results show the value of assets of farmers contribute positively to the percentage change in income of farmers (Jiao et al., 2015). The regression results indicate that male-headed households contribute positively to the percentage change in income than women-headed households which reflects the findings of other studies (Jiao et al., 2015; Melaku et al., 2014). On the contrary, other studies show how women-headed households contribute more than men to the change in income (Panda,

2015). In line with other studies, the results show that younger people have a positive percentage change in income than older people (Jiao et al., 2015; Melaku et al., 2014). The regression output signifies that higher education contributes greater than lower education to the percentage change in income which reflects the findings of other studies (Alhassan et al., 2018; Jiao et al., 2015). In line with other research, it is also apparent that larger household size contributes positively to the percentage change in income due to availability of labor (Jiao et al., 2015; Panda, 2015; Radel et al., 2010). Reflecting on the findings of other studies, respondent's engagement in artisanal mining seem to contribute to a positive change in income (Hilson, 2016; Hilson et al., 2013; Wilson et al., 2015). The positive contribution of artisanal mining to the percentage change in income is, however, contrary to other studies (Andrews, 2018; Bury, 2005). The regression result indicates that longer years of farming does not contribute positively to the percentage change in income, which is contrary to other results (Alwarritzi, Nanseki, & Chomei, 2015). Finally, access to extension service contributes negatively to the percentage change in income, which is contrary to other studies (Melaku et al., 2014). The negative relationship with access to extension service could be because about half of the respondents have not accessed extension services in the last five years, and the expropriation of land which farmers could not apply the knowledge acquired.

The result of the study clearly indicates the neoliberal policies and the expropriation of land for gold extractions without compensation has displaced farmers of their livelihoods, and it has reinforced poverty and food insecurity and contributed negatively to the welfare of smallholder farmers in the study area.

4.Measures Adopted by Respondents to Sustain their Livelihoods

Land expropriation through capitalist accumulation has worsened the plight of victims by underpinning existing poverty and marginalization among smallholder farmers in the study area. As shown in Table 7, respondents adopted short to medium term measures to sustain and improve their livelihood activities. The results show respondents adopted measures such as migration, family support, on-farm labor, off-farm labor, livestock, and poultry rearing, the acquisition of new land, engagement in artisanal mining, external support, sale of a property, petty trading, the reduction in the amount of eating, and shea nut gathering. The strategies adopted by respondents in this study reflect findings of other studies on land expropriation and livelihoods (Alhassan et al., 2018; Antwi-Agyei, Stringer, & Dougill, 2014; Cobbinah, Black, & Thwaites, 2015; Cobbinah, Gaisie, & Owusu-Amponsah, 2015; Hamenoo et al., 2018; Hilson & Garforth, 2013). From the study, besides agriculture-related strategies such as poultry and livestock which were 91.7% and 85%, the most important measure adopted by respondents to sustain their livelihoods is migration (73.3%) which is in line with other studies (Cobbinah, Gaisie, et al., 2015; Sow, Adaawen, & Scheffran, 2014).

Following other studies, the results show that artisanal/galamsey activity is a key coping and adaptation strategy in gold mining communities with about 50% of respondents engaged in mining as a way of sustaining their livelihoods (Bush, 2009; Verbrugge, Cuvelier, & Van Bockstael, 2015).

In summary, smallholder farmers displaced of their livelihoods by land expropriation for gold mining adopted various measures ranging from agricultural and non-agricultural measures to sustain their livelihoods. Though the strategies adopted by

respondents are not adequate to restore their lost plight, the strategies adopted seem to be the viable measures available to respondents especially, the fact that no compensation or support has come from the government.

G.The Linkage between Findings and Theory

The findings show capitalist executes land expropriation for gold extraction with profit motive leading to the expulsion of farmers without consultation, which impacts negatively on their livelihoods. Unfortunately, the majority of the affected farmers of land expropriation have not been compensated. Furthermore, the few respondents who were compensated had received payment far below the market value of their land. These findings of land expropriation for gold extraction in the study community is directly in line with the theory of primitive accumulation, which involves the divorcing of farmers from their productive sources such as land. The expropriation of land without consultation and compensation, the creation of social differentiation, and evolving conflict to the benefit of the investors at the expense of the smallholder farmers are also central to primitive accumulation which comes with a coercive and exploitative mind for capital accumulation.

Additionally, the findings of the study are in line with the relationships indicated in the conceptual framework. As shown in the conceptual framework, institutions and proceses and the transformation of the customary land tenure system will lead to the expropriation of land by displacing smallholder farmers, creating tenure insecurity, and worsen farmers access to farmlands. Again, the theory stipulates the expropriation of land negatively affect the livelihoods of smallholder farmers, which reflects the results of the

study with farmers exiting agriculture. Based on the negative implication of the policies and expropriation on farmlands and livelihoods, the framework indicates it will negatively affect the welfare of smallholder farmer household which reflects the results of the study with reduced households' income, reduced crop output, and high food insecurity. The outcome means that the institutional policies and the associated land expropriation have greatly affected smallholder farmers.

CHAPTER V

CONCLUSION AND RECOMMENDATIONS

A.Conclusion

The results from the study show that the neoliberal reforms in Ghana have paved the way for the proliferation of investors and capital accumulation with the expropriation of land for gold extraction. This capital accumulation motive with the expropriation of farmlands hitherto used by smallholder farmers for their livelihoods has had a negative implication on the land tenure system of the study area, the livelihood, and welfare of smallholder farmers.

The result shows that the traditional land tenure system has been transformed with the emergence of land expropriation without consultations. It was reported the traditional authority receive monetary compensations before inking the concessionary documents of the mining companies, which is contrary to the customs in the study area. The exchange of part of the ore to the traditional authorities as a form of royalty by the mining companies was also nonexistence in the study area before the expropriation for gold extraction. The introduction of the land market through land leasing, registration, and permitting of concessionary areas was equally nonexistence before the expropriation in the community. It was discovered land in the study area before the expropriation was plentiful and egalitarian with farmers having easy access to land for their crop production activities. However, the expropriation and the associated transformation is alien to the community. The

transformation of the land tenure system has evolved the difficulty in land access and created tenure insecurity among smallholder farmers in the study area. Surprisingly, it was unveiled the Chief and Tindaana who are meant to protect the people in the study area are comfortably supervising the demise of the smallholder farmers with the emergence of expropriation. It was also observed the expropriation is perpetuating the gender agrarian politics introduced by colonization in the study area by further limiting women access to land for crop production.

The study found the existence of social differentiation and marginalization with the emergence of land expropriation in the community. The expropriation has led to the displacement of farmers leading to the creation of a new class of farmers without farmlands. Farmers who initially had abundant land to pursue their livelihoods now depend on households who are not largely affected by the expropriation and nearby communities to access land for crop production, following the expropriation. The study reveals farmers are exiting agriculture as the primary source of their household income due to the emergence of land expropriation.

The study revealed that despite the expulsion of farmers from their farmlands for gold mining, only a handful of respondents were compensated. The majority of farmers deprived of their land-use rights have not received any form of compensations or support service to sustain their livelihoods. Though the amount of compensation, as reported above, was insufficient to offset the land use deprivation, women households were dissociated. It was also noticed compensation did not follow the logic of land use deprivation but rather based on the level of connection and association with the compensating company and the traditional authorities.

The differentiation of farmers and the lack of consultation and compensation associated with the expropriation has given rise to conflict and social contestations in the community. The study indicates a violent approach to brutalizing the equipment of one of the companies was initially adopted. However, farmers resorted peaceful and symbolic demonstrations and contestations following the unsuccessfulness of the violent approach to resist the expropriation.

The study depicts the dwindling of smallholder farmers farm outputs for major crops produced. The output for crops such as millet, maize, groundnuts, and rice have reduced drastically with the emergence of land expropriation in the study area. Additionally, the expropriation has inflicted food insecurity among respondents, with about 87% of the respondents being food insecure.

Contrary to the arguments by proponents that land expropriation will lead to the reduction of rural poverty, the findings of this study show the exaggeration of poverty in the study area. Additionally, the econometric results indicate that the percentage land affected by expropriation, the gender of respondents, the value of assets, age of respondent, the household size of the respondent, and respondent participation in artisanal mining activities significantly affect the percentage change in respondents household income.

The study reveals that due to the negative implication of the land expropriation on the livelihoods of smallholder farmers, respondents adopted certain measures to sustain their livelihoods and welfare of their households. The result show respondents relied more on non-agrarian sources to sustain their livelihoods.

Though not part of the initial research objectives, the study uncovered various lacuna in the legal framework of land management in Ghana. The study reveals the lack of

protection for the customary land tenure and use right, lack of a comprehensive framework specifying the level of consultation in land use deprivation, a weak framework of compensation, and the lack of clear specification of persons to be compensated in the event of deprivation of use. These gaps in the land administration in Ghana has rendered smallholder farmers vulnerable to the neoliberal environment and the capitalist quest of accumulation.

In summary, land expropriation for gold extraction in the study area has created limited land access and tenure insecurity, social differentiation, and affected farmers livelihoods.

B.Recommendations

The study results have provided a better understanding of the livelihood of smallholder farmers and their vulnerability to land expropriation for gold extractions. It has also highlighted how lapses in the regulatory framework regarding land administration in Ghana, which is explored by the capitalist actors in a neoliberal environment. Various policy recommendations have been provided to reduce the vulnerability of smallholder.

The expropriation negatively affects farmers, and given that land is the main source of farmers' livelihoods, there is a need to protect the security of farmers and their farmlands. The land tenure security of smallholder farmers in this instance is moving away from the land market, privatization and formal land titling to a framework that recognizes the customary land tenure system. The security of tenure can be achieved by ensuring land

administration in Ghana properly recognizes and protect the customary and usufructuary land interest.

As noted in the study that land expropriation for gold extraction leads to loss of farmlands, depletion of soil fertility, and decline in agricultural production as challenges faced by smallholder farmers without an alternative form of welfare. Therefore, to ensure sustainable livelihoods and equitable development as proclaimed by proponents, it is vital to pay critical attention to the needs and livelihoods of farmers in mining communities. The empowerment and institution of alternative source of livelihoods for the affected farmer to ensure victims of expropriations are not made worse off are necessary.

There is a need for effective and proper regulation in the gold extraction sector to ensure sustainability. Gold extraction activities, as shown in the study, destruct the natural resources and the environment which has huge repercussions on the lives of people in the rural communities, which calls for effective regulation to ensure the sustainability of the natural environment.

The study points to the lack of compensation for farmers affected by the expropriation, making farmers more vulnerable. The government needs to institute fair and appropriate compensation packages for affected farmers of land expropriation to ensure the sustainability of their livelihoods. There is also the need for an elaborate specification of the recipient of the compensation to ensure fairness. The measures instituted should ensure the investors in gold extractions put in the proper roadmap to compensate victims before the approval of mining concessions.

To ensure smallholder farmers are not affected by land expropriation, the government should demarcate areas of arable land that should be reserved for smallholder farmers to pursue their livelihoods and issue appropriate sanctions to deviants.

The government should ensure all stakeholders concern with the gold mining such the valuation committees, farmers, traditional authorities, Environmental Protection Agency (EPA), the mineral commission, the district assembly, and other parties are incorporated in decision making. It is necessary for the incorporation of all the relevant actors to ensure there is no dissatisfaction by any stakeholder and the reduction of conflicts associated with land expropriation.

Finally, investment in research and development towards the provision of extension services is important to sustain and improve the farming activities of smallholder farmers. Research and development should ensure that farmers knowledge such as composting is incorporated to find a sustainable and lasting solution to improve their farming activities.

C.Future studies

The result of the study is a context-specific case in Northern Ghana, which follows the patrilineal trajectory of tenure system. Hence there is the need for similar research to be conducted in Southern Ghan, which is matrilineal. Future research should also investigate land expropriation for gold extractions and its implication on the natural resource sustainability and human health.

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Appendix

Appendix A

HOUSEHOLD SURVEY QUESTIONNAIRE

Questionnaire # (/) Name of interviewer……

Date: / / 2018

District: …… Survey entered into STATA ☐

Community……

Section A: Demographic information		
S/N		
D1	Household head	[0] No [1] Yes
D2	Gender	[0] Female [1] Male
D3	Age	[_____ (Year)
D4	Education	[1] None [2] Primary [3] Junior High [4] Senior High [5] Tertiary
D5	Marital status	[1] Single [2] Married
D6	Total Household members i.e. thosefeeding on the same pot	…….
D7	Household members below 15 years	……
D8	Household members above 64 years	…….
D9	Number of persons in a room	…….
D10	How long have you been farming?	_____(year)
D11	Religion	[1] Christianity [2] Islamic

		[3] Traditional [4] Other
D12	Has your household experienced land lost because of the gold mining activities?	[0] No [1] Yes
D13	Total household land lost to the mining activities (acres)	……(acre)

Section B: Effects of land lost on access to physical assets			
P1	Nature of roads	Before (2007)	After (2018)
		[1] Bad (motorable in the dry season) [2] Fair (no tarmac, but motorable all year round) [3] Good (tarmac)	[1] Bad (motorable in the dry season) [2] Fair (no tarmac, but motorable all year round) [3] Good (tarmac)
P2	How far is the nearest Primary School from your home village?	……(KM)	……(KM)
P3	How far is the nearest Junior High School from your home village?	……(KM)	……(KM)
P4	How far is the nearest health service provider (Hospital/Clinic) from your home village?	……(KM)	……(KM)
P5	Distance to the nearest market	……(KM)	
P6	Access to farm equipment and tools (E.g tractor, water pump)	[0] No [1] Yes	[0] No [1] Yes
P7	Which of the following farm equipment does your household own? (NB: code; 1=equipment owned by respondent 0= equipment not indicated by respondent)	[ ] Tractor [ ] Harvester [ ] power tiller [ ] Water pump [ ] Sprayer	[ ] Tractor [ ] Harvester [ ] power tiller [ ] Water pump [ ] Sprayer
P8	House quality	[1] Mud house [2] Brick house [3] Block house [4] Other (specify)…	[1] Mud house [2] Brick house [3] Block house [4] Other (specify)…

P9	Access to electricity?	[0] No [1] Yes	[0] No [1] Yes
P10	Which of the following household belongings do you own? (use the codes; 1= household belongings owned by respondent, 0= belongings not indicated by respondent)	[ ] Television [ ] Radio [ ] Mobile phone [ ] Furniture [ ] Utensils [ ] computer [ ] Decoder [ ] Others (specify)	[ ] Television [ ] Radio [ ] Mobile phone [ ] Furniture [ ] Utensils [ ] computer [ ] Decoder [ ] Others (specify)
P11	Which of the following fixed assets does your household own? (place 1=when respondent indicate ownership of the asset, 0=when respondent does not indicate ownership)	[ ] Car [ ] Motor bicycle [ ] Bicycle [ ] Tricycle [ ] Shops [ ] others	[ ] Car [ ] Motor bicycle [ ] Bicycle [ ] Tricycle [ ] Shops [ ] others
P12	Access to potable water?	[0] No [1] Yes	[0] No [1] Yes

Section C: effects of land lost on access to natural Assets			
N1	Do you have your own farmland? (household land)	[0] No [1] Yes	[0] No [1] Yes
N2	Household land size (own in acres)	**Before (2007)** **……**	**After (2018)** **……**
N3	Access to forest resources (fruits, firewood, etc.)	[0] No [1] Yes	[0] No [1] Yes
N4	Which of the following livestock do you rear? (1= livestock indicated by respondent, 0=livestock not reared)	[ ] Goat [ ] Sheep [ ] Cattle [ ] Horse [ ] Donkey	[ ] Goat [ ] Sheep [ ] Cattle [ ] Horse [ ] Donkey

Section D: To what extent has the land expropriation (land lost) affected the following social activities?		
S1	Family living nearby	[1] Did not have any effect at all

		[2] Had little effect [3] No change [4] Did have an effect [5] Did have a significant effect
S2	Political influence	[1] Did not have any effect at all [2] Had little effect [3] No change [4] Did have an effect [5] Did have a significant effect
S3	Number of activities done with neighbors (strength of relationship)	[1] Did not have any effect at all [2] Had little effect [3] No change [4] Did have an effect [5] Did have a significant effect
S4	Participation in groups (e.g agriculture or tree planting group)	[1] Did not have any effect at all [2] Had little effect [3] No change [4] Did have an effect [5] Did have a significant effect
S5	Number of social groups participated (eg funerals, wedding)	[1] Did not have any effect at all [2] Had little effect [3] No change [4] Did have an effect [5] Did have a significant effect
S6	Participation in farming exchange or farm help	[1] Did not have any effect at all [2] Had little effect [3] No change [4] Did have an effect [5] Did have a significant effect
S7	Opportunities to obtain Assistance (eg family members, friends and community members in any form)	[1] Did not have any effect at all [2] Had little effect [3] No change [4] Did have an effect [5] Did have a significant effect
S8	Social spending (weddings, funerals etc)	[1] Did not have any effect at all [2] Had little effect [3] No change [4] Did have an effect [5] Did have a significant effect
S9	Your level of participated with any NGO	[1] Did not have any effect at all [2] Had little effect [3] No change

		[4] Did have an effect [5] Did have a significant effect

Section E: Human capital		
H1	What is the number of your household members with no education?	……(people)
H2	What is the number of your household members with Primary education?	……(people)
H3	What is the number of your household members with Junior High School education?	……(people)
H4	What is the number of your household members with Senior High School education?	……(people)
H5	What is the number of your household members with tertiary education?	……(people)
H6	What is the percentage of household members in good health?	……% (percentage)
H7	Did you receive extension training with the past one year?	[0] No [1] Yes
H8	Did you receive skills training in livelihood diversification (e.g dress making)	[0] No [1] Yes
H9	Are you aware of the policy leading to the land expropriation?	[0] No [1] Yes

Section F: effects of land lost on access to financial capital and well-being			
F1	Do you engage in salary job?	[0] No [1] Yes	
F2	What is the value of your household belongings? (averagely)	……(GHS)	
F3	Owned poultry	[0] No [1] Yes	
F4	Access to credit (loan, credit input etc.)	Before land lost	After land lost
		[1] Did not need credit [2] Needed credit but I did not get/ got less than expected [3] Have access to credit	[1] Did not need credit [2] Needed credit but I did not get/ got less than expected

			[3] Have access to credit
F5	Amount of credit you accessed from the formal sources (banks or micro-finance institutions) for the past 12 months (average amount) (GHS)	……..(GHS)	
F6	Amount of credit you accessed from the informal sources (family, friends, neighbors) for the past 12 months (average amount)	……..(GHS)	
F7	What is the monthly household food expenditure (only food items)? NB: average	……(GHS)	
F8	What is the monthly household non-food expenditure (non-food items)? NB: average	……(GHS)	

Section G: land lost on financial capital of the household			
F1	How has land expropriation affected your household income?	[1] Significantly worsened [2] worsened [3] No change [4] Improved [5] Significantly improved	
F2	Do you earn income from pension and other government support (eg LEAP)?	[0] No [1] Yes	
F3	Do you earn income from rent (house, land etc)?	[0] No [1] Yes	
F4	Do you earn income from remittances?	[0] No [1] Yes	
F5	Do you earn income from farming (livestock, crop production, poultry)?	[0] No [1] Yes	
F6	Do you earn income from off-farm activities (trading, value addition etc)?	[0] No [1] Yes	
F6	What is the average annual income of your household	**Before land expropriation**	**After land expropriation**

	(including farm and off-farm income)	…….....(GHS)	…….(GHS)
F8	What is the percentage of farm income on total annual income (%)	……. %	…….%
F9	What is the percentage of off-farm income on annual household income	……..%	…….%
F10	Did you benefit from food aid at least once, in the last five years? (including NGOs, friends, families, etc.)	[0] No [1] Yes	
F11	Did you receive any farm support in the last five years? (eg inputs, equipment)	[0] No [1] Yes	

Section H: Implication of land lost on livelihood strategies			
LS1	Do you have a replaced land for food production after the expropriation?	[0] No [1] Yes	
LS2	If yes, how suitable is the current land compared to the one before the land lost	[1] very suitable [2] suitable [3] no change [4] unsuitable [5] very unsuitable	
LS3	How has losing land for the mining activities affected your level of food production compared to your food production level before the expropriation?	[1] significantly worsened [2] worsened [3] no change [4] improved [5] significantly improved	
LS4	List of major crops grown before and after land lost (1= crops grown by respondent, 0=crops not indicated by respondents)	Crops grown before land expropriation	Crops grown after land expropriation

		[ ] Millet [ ] Maize [ ] groundnuts [ ] guinea corn [ ] Beans [ ] Sorghum [ ] soya beans [ ] Sesame [ ] Sweet potatoes [ ] Rice [ ] [ ] [ ] [ ] [ ]	[ ] Millet [ ] Maize [ ] groundnuts [ ] guinea corn [ ] Beans [ ] Sorghum [ ] soya beans [ ] Sesame [ ] Sweet potatoes [ ] Rice [ ] [ ] [ ] [ ] [ ]
LS5	Is there a change in major crops grown because of the land lost?	[0] No [1] Yes	
LS6	How has the change in the major crop grown affected your household food crop production?	[1] significantly worsened [2] worsened [3] no change [4] improved [5] significantly improved	
LS7	Livelihood activities engaged in before and after land lost (1=livelihood activity participated by respondent, 0=activity not indicated by respondent)	Livelihood activities before land expropriation	Livelihood activity after land expropriation
		[ ] Food crop production [ ] livestock rearing [ ] poultry rearing [ ] Fishing [ ] Charcoal burning [ ] Hunting [ ] petty trading [ ] basket weaving [ ] Wood gathering [ ] Shea butter processing [ ] rice parboiling [ ] Shea nut picking [ ] Vegetable production [ ]	[ ] Food crop production [ ] livestock rearing [ ] poultry rearing [ ] Fishing [ ] Charcoal burning [ ] Hunting [ ] petty trading [ ] basket weaving [ ] Wood gathering [ ] Shea butter processing [ ] rice parboiling

		[ ] [ ]	[ ] Shea nut picking [ ] Vegetable production [ ] [ ] [ ]

Monthly Food Security				
MFS1	Were there months that your household failed to meet their food needs in the past 12 months?	[0] No [1] Yes		
MFS2	If yes, which months did your household not have enough food to meet the household demand in the last 12 months? (consider food from own source, aid borrowed, purchased)	Place 1 in the box beside the month respondent did not have enough food. Place 0 in months not indicated by the respondent. (yes=1, No=0)		
		Month	code	
		December		
		November		
		October		
		September		
		August		
		July		
		June		
		May		
		April		
		March		

		February		
		January		

Section I: Implication of land lost on food security			
	Question	Options	Code
FS1	Did you worry your household will not have enough food in the past 4 weeks?	0=No (skip to QS3) 1=Yes	
FS2	How often did this happen?	1 = not often (once or twice in the past 4 weeks) 2 = Sometimes (three to ten times in the past 4 weeks) 3 = Often (more than ten times in the past 4 weeks)	
FS3	Did you or any household member not able to eat your preferred kinds of foods due to lack of resources in the past 4 weeks?	0 = No (if no, skip to GFS5) 1 = Yes	
FS4	How often did this happen?	1 = not often (once or twice in the past 4 weeks) 2 = Sometimes (three to ten times in the past 4 weeks) 3 = Often (more than ten times in the past 4 weeks)	
FS5	Did you or any household member eat a limited variety of foods due to a lack of resources in the past 4 weeks?	0=No (skip to QS7) 1=Yes	
FS6	How often did this happen?	1 = not often (once or twice in the past 4 weeks) 2 = Sometimes (three to ten times in the past 4 weeks) 3 = Often (more than ten times in the past 4 weeks)	
FS7	Did you or any household member eat some foods that you really did not want to eat due to lack of resources to acquire other types of food in the past 4 weeks?	0=No (skip to QS9) 1=Yes	

FS8	How often did this happen?	1 = not often (once or twice in the past 4 weeks) 2 = Sometimes (three to ten times in the past 4 weeks) 3 = Often (more than ten times in the past 4 weeks)	
FS9	Did you or any household member eat a smaller meal than you felt you needed because there was not enough food in the past 4 weeks?	0=No (skip to QS11) 1=Yes	
FS10	How often did this happen?	1 = not often (once or twice in the past 4 weeks) 2 = Sometimes (three to ten times in the past 4 weeks) 3 = Often (more than ten times in the past 4 weeks)	
FS11	Did you or any other household member eat fewer meals in a day because there was not enough food in the last 4 weeks?	0=No (skip to QS13) 1=Yes	
FS12	How often did this happen?	1 = not often (once or twice in the past 4 weeks) 2 = Sometimes (three to ten times in the past 4 weeks) 3 = Often (more than ten times in the past 4 weeks)	
FS13	Was there ever **no food** of any kind to eat in your household because of lack of resources to get food in the last 4 weeks?	0=No (skip to QS15) 1=Yes	
FS14	How often did this happen?	1 = not often (once or twice in the past 4 weeks) 2 = Sometimes (three to ten times in the past 4 weeks) 3 = Often (more than ten times in the past 4 weeks)	
FS15	Did you or any household member go to sleep at night hungry because there was not enough food in the last 4 weeks?	0=No (skip to QS17) 1=Yes	
FS16	How often did this happen?	1 = not often (once or twice in the past 4 weeks)	

		2 = Sometimes (three to ten times in the past 4 weeks) 3 = Often (more than ten times in the past 4 weeks)	
FS17	Did you or any household member go a whole day and night without eating anything because there was not enough food in the last 4 weeks?	0=No (end this section and skip to section J) 1=Yes	
FS18	How often did this happen?	1 = not often (once or twice in the past 4 weeks) 2 = Sometimes (three to ten times in the past 4 weeks) 3 = Often (more than ten times in the past 4 weeks)	

Section J: copying and Adaptation Strategies			
AS1	Are there interventions by the government to support your livelihood after the land lost?	[1] Yes [2] No	
AS2	Have you benefited from any skills development training by the government after losing your land?	[1] Yes [2] No	
AS3	What coping and adaptation strategies have you out in place to sustain the livelihood of your household	Strategies (1=Yes, 0= No)	(1=Yes, 0= No)
		Wage labor	
		Migration	
		Remittances	
		Livestock production	
		Poultry product	
		Acquisition of new land	
		Skills and occupational training	
		Agricultural technology	
		Sell a property	
		Refusal to move	

		Dependent on aid	
		Reduction of consumption	
		Engaged in gold mining	
		Petty trading	
		Others (specify)	
AS4	How has these coping and adaptation strategies improved the well-being after you lost your land?	[1] significantly worsened [2] worsened [3] no change [4] improved [5] significantly improved	

Appendix B

HOUSEHOLD IN-DEPT INTERVIEW

Land tenure system

1. What was the land tenure system that existed before?

   .....

2. How was land allocated?

   ……

3. Who were the actors involved in land allocation?

   ……

4. How has the tenure system changed?

   ……

5. How did families access land?

   ……

6. How did individuals access land?

   ……

7. What kind of land rights existed?

   ……

8. What is the current land tenure system in your community?

   ……

9. How has the land tenure system changed in your community?

   ……

10. How is land allocated in recent years?

    ……

11. How do you access land for your crop production?

    ……

12. What kind of land right do you possess?

    ……

Mining

1. How is the mining operations in your community?

   ……

2. How was your land taken for gold mining?

   ……

3. Who are the actors in the mining?

   ……

4. Who are the beneficiaries of the mining operations?

   ……

5. How is the mining operations beneficial to your household?

   ……

6. Who are the most affected of the mining operations in the community?

   ……

7. How have you reacted to the land lost?

   ……

8. How do the miners acquire land for their activities?

   ……

9. How were you compensated for losing your land?

……

10. What kind of job training did you receive for losing your land?

……

Livelihood and adaptation

1. What was your land use before losing land?

……

2. How is your land use now different from before losing land?

……

3. what were your livelihood activities before losing land to the mining operations?

……

4. What are your current livelihood activities?

……

5. How has the mining activities affected your livelihood activities?

……

6. How has your crop production activities been affected?

……

7. What are the changes in crop production?

……

8. How has your household coped and adapted to the livelihood changes?

……

9. To what extent has the adapted strategies solved your household needs?

……

Socio-economic information

1. How has the mining affected your household?

……

2. How has the mining affected your household land size?

…….

3. How has the mining affected your household assets?

……

4. What is the implication of the mining on your farm equipment?

……

5. How has the mining affected your household farm income?

……

6. How has the mining affected your total household income?

……

7. What are the alternative means of accessing land?

……..

Food security

1. What is the effect of the mining on your household food security?

   ……

2. How has the mining affected your household nutritional intake?

   ……

3. How do you manage your household expenditure?

   ……

4. If there were months your household failed to meet your food security/nutritional needs, how did you cope with the situation?

   ……

Appendix C

INTERVIEW GUIDE FOR FOCUS GROUP DISCUSSION

A. Mining

1. How is the mining operations in your community?
2. Who are the actors in the mining?
3. Who are the beneficiaries of the mining operations?
4. How is the mining operations beneficial to your household?
5. How is the mining operation beneficial to the community?
6. How is the mining operation beneficial to the nation?
7. Who are the most affected of the mining operations in the community?
8. How does the mining operation affect households, the community, and the nation?
9. How does gold mining affect women, men, and children differently?
10. Who are the most affected by gold mining activities?
11. How do the miners acquire land for their activities?
12. How was your land taken for gold mining? (was is associated with conflict?)
13. What has been the role of the community leaders in taking your land?
14. What is the role of government in taken your land?
15. What is the role of the individual land owners in giving land to the miners?
16. To what extent do individuals voluntarily give out their land to the miners for any reason (e.g benefit)?
17. How did you react to the miners for taking your land?
18. What was the result of your reaction?

19. How were you compensated for losing your land?

20. What kind of job training did you receive for losing your land?

21. What is the security of your remaining land in this era of gold mining?

B. Land tenure system

1. What was the land tenure system that existed before?
2. How was land allocated?
3. Who were the actors involved in land allocation?
4. What is the role of the Tindaana and the Chief in the allocation of land before the gold mining operations and now?
5. How has the tenure system changed?
6. How did families access land?
7. How did individuals access land?
8. How is the process of accessing land by women different from men?
9. What kind of land rights existed?
10. What is the current land tenure system in your community?
11. How is land allocated in recent years?
12. How do you access land for your crop production?
13. What kind of land right do you possess?

C. Livelihoods

1. How long have you been in this community?

2. What are the current livelihood activities of farmers in the community?
3. How has the livelihood activities among farmers changed over the years with the mining activities?
4. How has your land use changed as a result of the mining activities?
5. What were the main crop production activities before the mining activities?
6. How has the crop production activities been changed with the commencement of the mining activities?
7. How has the change in crop production as a result of the mining activities affected your household?
8. What coping and adaptation strategies did you adopt to sustain your crop production and livelihood activities?