Addis Ababa University

College of Development Studies

Center of Environment and Sustainable Development

The Impact of Agricultural Investment on Local Livelihood and Environment in Guba Woreda, Benishangul-Gumuz Region, Ethiopia

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The Impact of Agricultural Investment on Local Livelihood and Environment in Guba Woreda, Benishangul-Gumuz Region, Ethiopia

By

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This is to certify that the thesis prepared by Temesgen Disassa entitled: Impact of Agricultural Investment on Local Livelihood and Environment in Guba Woreda, Benishangul-Gumuz Region, Ethiopia submitted in Partial Fulfillment of the Requirements for the Degree of Master of Arts in Environment and Sustainable Development complies with the regulation of the university and meets the accepted standards with respect to originality and quality.

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DECLARATION

I declare that this thesis is submitted for the partial fulfillment of the degree of Master of Art in Environment and Sustainable Development. It is my original work and has not been presented for an award of a degree in any other university.

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Acronyms:

ADLI:	Agricultural Development Led Industrialization
AI:	Agricultural Investment
BGR:	Benishangul-Gumuz Region
CSA:	Central Statistics Agency
CSO:	Civil Society Organization
EFCCC:	Environment, Forest and Climate Change
EIA:	Environmental Impact Assessment
EMP:	Environmental Management Plan
ESA:	European Space Agency
FAO:	Food Aid Organization
FDI:	Foreign Direct Investment
FDRE:	Federal Democratic Republic of Ethiopia
GERD:	Grand Ethiopian Renaissance Dam
LULCC:	Land Use or Land Cover Change
MOARD:	Ministry of Agriculture and Rural Development
MOFED:	Ministry of Finance and Economic Development
NDVI:	Normalized Difference Vegetation Index
NIE:	New Institutional Economics

Abstract

Now a day, the notion of investment in agricultural sector intends to increase production and productivity of agriculture, create employment opportunities, and enhance local revenue. Agricultural investment is expected to improve the living conditions of local communities and ensure efficient utilization of natural resources. However, in the study area the effect of agricultural investment on local communities' livelihood and environment was not well documented. This study, therefore, examined the impact of agricultural investment on local livelihood and environment in Guba woreda, Benishangul-Gumuz Regional State. Both qualitative and quantitative research methods were employed in this study. Quantitative data was derived mainly from structured questionnaires administered to households, and qualitative data was analyzed through review of documents and smi-structured and unstructured in-depth interviews with key informants. Systematic random sampling technique was employed to draw 150 household heads from Aysid kebele in Guba woreda. To analyze the implications of agricultural investment on local communities' livelihood and environment, specific statistical tests Chi-$X^2$and T-test were utilized in the study. In addition to descriptive statistics, multiple linear regressions were employed to estimate the effect of some explanatory variables on dependent variable. The regression result revealed that 31% variation in dependent variable is explained by independent variables. To supplement the survey data, a remote sensing satellite image data (landsat5 and sentil2) was collected with ground verification. Based on this, the land use or vegetation cover change map or image was analyzed by employing Arc GIS10.5 software to calculate the NDVI *values. Unlike the theoretical hypothesis, the time series result indicated the trends of production and productivity of small holders farming is declining and the average fiscal revenue share of agricultural investment is insignificant (7%). Concerning employment opportunities, out of 167 functional projects, 102(61%) investment projects created 2,428 permanent and 44,476 temporary job opportunities for communities. Out of these the share of local communities in both permanent and temporary employment is 8% and 33% respectively. On the other hand, the local communities in sample kebele claimed that agricultural investment has potential threats: deforestation (82%), dispossessions of land (75%), mal-practices (86%), violent conflict (77%), and increase charcoal production practices (80.1%), and increase the incidence of forest fire (64%). In relation with overall transformation of land escape the survey results in the study indicated that land use or cover change is severely increasing from time to time. The satellite image analysis indicates intense land use dynamics over the past three referenced years (1990-2000, 2000-2010 and 2010-2019). The result revealed that the forest or dense woodlands reduced by 1% per year in the 2010-2019 periods. Crop lands increase on average by 26%. However, the rate of increment per year was higher in the 2010-2019 time periods. The increment is 2.6 % per year and it is on the expense of dense and open woodlands. Furthermore, the survey results indicated that the major causes for conflict between local communities and investors: increasing land less migrant communities 86(63%), lack of local communities' participation in land dealing 94(69%), practices of informal land renting 113(83%), and 121(89%) encroachments in investment farm land by local communities. Based on the findings it is recommended that in agricultural investment process land identification, preparation and land transfer to investors has to be done along with the local communities' consultation and participation to minimize the adverse effects of investment projects.*

Key words: Agricultural investment, Livelihood, Land use change and NDVI.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

Investment in agriculture sectors is considered as vital device for realizing economic growth and a way of poverty reduction and livelihood security (Fan and Breisinger, 2011). In view of this, promoting the foreigner and domestic firms demand in agricultural investment (AI) has significant contribution for transforming agricultural based national or local economy.

Agricultural land is a strategic resource for food security, livelihoods, and economic growth. It is also important part of nation's cultural heritage. The pattern and processes of land acquisition for agricultural investment, hence, is required to consider the local communities' relation with land resources. In respect to this, large-scale tracks of land allotment for agricultural investment have raised insightful alarm on food security and agricultural development (Daniel, 2011).

Likewise, the increased levels and unpredictability of food prices has crucial role to a recent rush of desire in agricultural investment and land acquisition (Deininger & Byerlee, 2011). It also raises essential points for policy makers aspiring to establish appropriate policy environment to agricultural sector to contribute to multidimensional development in the future. On other dimensions, they argued that a key reason for large-scale agricultural investment to increase through time is raising wages in the non-farm economy and the desire to equalize returns to labor across sectors.

In recent decades, however, remarkable increase on the foods price during the economic crisis in 2007-2008 stimulated quite a lot of severe detrimental socio-economic and environmental impacts of many developing countries (Moreda, 2017). In addition, it creates further poverty for millions of societies who were already distress from the hunger and poverty in these countries. Developed nations also exposed to these crisis where inflation on price of goods and foods deteriorate the food security situations **(**Rashid and Razak, 2016). This catastrophe makes the agricultural sectors to respond as basic ways in the expansion of economic growth to get rid of the poverty issues as well as ensure livelihood security.

Deininger and Byerlee (2009) stated the benefits of agricultural investment of developing countries: better food availability; farm and off-farm employment opportunities for livelihood

diversification; development of new industries; technology transfer and the benefits promised by the investors including the rehabilitation and upgrading of rural infrastructure and socio-economic facilities. In addition, investors build the capacity of local peoples to enhance their yields and incomes i.e. contribute for long-term poverty reduction to ensure their sustainable livelihoods (Dibaba, et.al, 2019). On the other hand, large-scale intensive agricultural investment threatens the biodiversity, carbon stocks, and the availability of land and water resources (Ramato, 2011).

With regard to this, in Guba woreda the majority of local communities based on gold mining, shifting cultivation using, hunting and gathering, and livestock rearing as means of their livelihoods. On the other hand, currently the region as well as the study area considered as a destination for commercial agricultural investment firms. In respect to this, large-scale land acquisition for agricultural investment is a latest trend to attain the national or regional agricultural development strategy to reduce poverty and increase food security status (MORD, 2009). In connection to this, MOARD reported that the total estimated land identified as potential available for investors in agricultural sectors is 4.8 million in the country and this also indicates that Benishangu-Gumuz Region (BGR) has a large share (1.2 million) as compared to other regions.

In BGR as well as in the study area, however, the land allocated for large scale farming has been used by local communities for shifting cultivation and gathering of various products of forest such as forest honey, forest fruits and roots crops (Abbink, 2011). This study, therefore, investigates to what extent agricultural investment could be achieved without hurting the local communities' livelihoods and the environment to achieve its proposed objective.

1.2 Problem Statement

In recent decades, national and local governments are actively involved in the recent flourish of large-scale agricultural land allotment to foreign and domestic firms. This is founded on the anticipation that agricultural investment make possible transfer of improved farming technology to smallholder farmers, contribute to local level food security by increasing availability of food crops in local markets; increase the purchasing power of local communities through employment generation and local economic development (MoFED, 2010).

Agricultural investment also expected to enhance local revenue and local community development. In respect to this, the national as well as local governments also justifies the current provision of large-scale land to multinational private investors by asserting the existence of underutilized land that is suitable for large-scale farming in the country/local areas.

However, lands that are assumed to be underutilized still have cultural and environmental significance or lands that are being used by the local society for alternative economic activities (Abbink, 2011). The lands targeted to large-scale agricultural investment in the Region as well as in Guba woreda are, in practice, communal lands such as forest, bush, grazing and wetlands. Likewise, Ramato (2011) argued that agricultural investment leads to land acquisition, and it induces a threat to local communities' livelihoods and endangers their chances of achieving food security. He also stated that agricultural investment also causes environmental degradation and threatens culture of local peoples.

In addition, agricultural land acquired for large-scale agricultural investment in the BGR as well as in the study area is often used by local society for various activities and that land transfer could lead to dispossession of land and related natural resources for the local community (Shete, 2016). Despite the facts that in the study area the effect of agricultural investment on local communities' livelihood and environment was not well documented.

On top of this, local communities are often given unrealistic promises of benefits and employment, as well as inadequate and absence of compensation for their loss of livelihood bases. This is compounded by the difficulty to provide legal proof of ownership or title for the land used especially by local communities who have customary land rights, which are not recognized by national legal frameworks. In line with this, some scholars also recognized that fast growing demand for agricultural land is putting pressure on property-rights systems, where customary tenure systems have provided secure land access (Osabuohien, 2014).

Despite several empirical studies in the study areas still there are gaps of common understanding on opportunities and threats of agricultural investment on local communities' livelihoods. Particularly, there is scanty of empirical evidence on a tendency that leads to imperfections of selection of best investors, identification of suitable lands for agricultural investment, compatibility of intervention to existing settlement and livelihood patterns, instituting the needed

human and material capacity that manage land deals and monitor implementation, identification of impact mitigation mechanisms in agricultural investment process.

Therefore, on top of verifying the contradicting results of related empirical studies, this study is to examine the impact of agricultural investment on local livelihood and environment; and to come up with pertinent recommendations to address the predominant problems**.**

1.3 Objective of the study

The general objective of the study is to investigate the impact of agricultural investment on local livelihood and environment in Guba woreda, Benishangul-Gumuz Region.

1.3.1 The specific objectives

Based on the general objective of the study the specific objectives are to:

1. Assess the existing status of agricultural investment in the study area.
2. Examine the contribution of agricultural investment for local community livelihoods and environment in the study area.
3. Analyze the land use and cover change in the study area.
4. Identify the major constraining factors for agricultural investment process in the study area.

1.4. Research questions

To attain the ultimate aim of this study the following research questions were answered:

1. Why massive movement of agricultural investment in the study area?
   - ✓ What are the magnitude, nature and existing status of agricultural investment projects?
2. To what extent agricultural investment affects the local livelihood and environmental conditions of communities in the study area?
   - ✓ What is the contribution of agricultural investment for improving livelihood conditions?
   - ✓ Is agricultural investment affecting the natural resource based livelihoods of local communities?
   - ✓ Do the agricultural investment projects conducting the environmental impact assessment?

3. The extent to what land use and cover dynamics are experienced in the study area
4. What are the major challenges for agricultural investment process in the study area?

1.5 Scope of the Study

The study is focused on agricultural investment implications on local livelihood base as well as environment in Guba woreda. To this end, the study examined agricultural investment effect on local livelihood bases, environment, and identify key constraining factors of agricultural investment in the woreda. In order to make the study manageable in terms of the study aim, available time, finance and facilities, attempts were made to delimit the scope and dimension of the study with reference to target groups to be studied and issues critically required to be analyzed. Therefore, the study was bounded thematically, spatially, methodologically and target population. Thematically, the study focuses on associations among agricultural investment, local communities' livelihoods, and environmental threats. Thus, this study specifically examines the extent to which agriculture investment affects the local livelihoods as well as environmental conditions. Spatially, the study was conducted in Guba woreda BGR, which is located in northwestern part of the country. Methodologically, the research design intended to use in this study is mixed method research design. The study population is total population of Guba woreda. The target population was total households of Aycid Kebele in the study woreda. The selection of woreda and kebele was based on agricultural investment projects distribution and concentration in the study area. Accordingly, the sample population was drawn from Aysid kebele for the study.

1.6 Significance of the Study

The study is to address the effect of agricultural investment on local livelihoods and environment in the study area. Likewise, many other local areas in Ethiopia, Guba woreda in BGR faces a number of agricultural investment challenges that have not been effectively addressed. The study, therefore, contributes to deepen the knowledge and understanding of agricultural investment effects on local livelihoods, environment as well as local economic development. Last but not least, this study can open a gate for other researchers to get baseline data of agricultural investment in the study area and support stakeholders to come up with alternative policy options to properly manage the major constraining factors for agricultural investment.

1.7 Limitation of the study

There were limitations during the research work which have a considerable influence on the research output: some woreda officials were too busy to talk with them to conduct face to face interview. There was also to some extent lack organized secondary data. On top of these operational challenges there were unexpected restrictions due to COVID-19 pandemic to conduct the research work freely and timely. FGD was impossible due to the pandemic. To reduce the research biasness the author focused on data completeness of questionnaire survey through employing signor experts and development agents to make data collection friendly and special focus on secondary data to supplement primary data limitations.

1.8 Organization of the Thesis

The thesis report comprised at least five sections. The first introductory section of the thesis focuses on the background and the problem statement related to the study. The second section presented a review of literatures on basic concepts, theoretical frameworks and empirical evidences of agricultural investment impacts on local livelihoods and the environment. Based on these concepts and theoretical frameworks section three discusses the research methodology. This includes the research design, the sampling procedure, data collection, and method of data analysis. The remaining sections of the thesis report focus on results, discussion, conclusions and the way forwards.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

As mentioned in the introductory section this section is comprised with related concepts, theories and empirical evidences that are reviewed as a road map for analyzing the impact of agriculture investment on local livelihoods and environmental conditions in the study areas.

2.2 Basic Concepts on Agricultural Investment and Local Livelihood

Farmland has, in recent decades, become an essential asset class in developing countries. On top of the economic significance, I could strength livelihood conditions by promoting the uptake of modern farming practices, improving access to inputs, supporting smallholder integration into global value chains, and generating much needed formal employment opportunities (Deininger, 2011). Agricultural investment, particularly in developing countries or localities, is derived by recent spikes of food and energy prices in the world. Now days, states in developed nations are upholding transnational land acquisition as a mechanisms to ensure long-term food security (Cotula, et.al, 2011).

In light of this, agricultural investment is required to raise and stabilize the supply of affordable food, generate employment opportunities, enhance efficient natural resources utilization and inspire growth of secondary and tertiary sectors of the economy (Karlsson, 2014). With regards to this FAO estimates that agricultural investment in developing countries needs to increase by at least 50% to meet the projected demand of a worldwide population that is expected to pass 9 billion in 2050. Besides, firms are acknowledging new opportunities for strong returns from global investments in agriculture for food, fuel and other agricultural commodities (Cotula, et.al, 2011). To reach the Zero Hunger target of eradication of hunger in a sustainable manner, even more investment is needed. However, with shifting consumption patterns, a growing world population, and erosion of the natural resource base, the future strains on agriculture are potentially overwhelming(Karlsson, 2014).

In this regards, the current massive movement in land-based investments has kindled much comprehensive debate, in which strong positions are taken on the impacts of such investments on environment, rights, sovereignty, livelihoods, development and conflict at local, national and

international levels(German, et.al, 2011). Despite the facts that based on how they are structured, agricultural investments may deliver local benefits and include small-scale producers in value chains, or carry environmental and social risks that fall disproportionately on local people. In respect to this there is still dynamic public debate on effective screening of proposed investments: vigorous environmental and social impact assessments, secure local land and resource rights, local voice in decision-making, skillfully negotiation and contract regulation, and effective policy incentives for business models that favor working with local farmers (Ibid).

Large-scale land acquisitions for agricultural investment, therefore, create major risks as well as opportunities for local communities. The major risks may be related to losses of land, water and natural resources for local people in the areas where investments take place (German, et.al, 2011).This can have major consequences for local livelihood, given the high level of dependence on natural resources for livelihood in much of local communities. In this situation securing local land rights is not just a means to avoid arbitrary dispossession, it can also provide local groups with a valuable asset to negotiate with (Cotula, 2012).

The concept of 'livelihood' refers to the ways individuals, households, or groups make a living, attempting to meet their various consumption and economic necessities, coping with uncertainties, and responding to new opportunities (de Haan, 2012). Livelihood outcomes may be distinguished within households and communities due to disparities in power relations and the economic relationships that are entrenched in social and political relations (Ellis, 2000). In short, the concept of livelihood represents the components that comprise the activities in which individuals or families are engaged, drawing on individual and household assets in order to earn a living.

2.3 Theoretical Literature Review

2.3.1 New Institutional Economics Theory

As a vibrant and somewhat latest school of thought, the new institutional economics put forward exciting opportunities to give solution for some of the economic problems that neo-classical economics has got hard to address (Kherallah & Kirsten, 2002). The New Institutional Economics (NIE) is a vast and comparatively young multidisciplinary field that includes aspects of economics, history, sociology, political science, business organization and law. It is an

economic perspective that attempts to extend economics by focusing on the social and legal norms and rules that underlie economic activity and with analysis beyond earlier institutional economics and neoclassical economics. It can be seen as a broadening step to include aspects excluded in neoclassical economics **(**Li, 2014**)**. Williamson (1985) coined the phrase the "New Institutional Economics." This new direction of economics considers that the cost of transacting determined by institutions and institutional arrangements is the key to economic performance. In line with this, Coase (2000) argued that the institutions of a country such as its legal, political, and social systems determine its economic performance.

In line with this, effectiveness in agricultural investment mainly requires: (1) Social aspects: participation of local communities in the entire investment process and inclusiveness of main stakeholders (investors, government, local community & CSOs). (2) Proper institutions: policies, strategies, legal frameworks and responsible organizations. (3) Political stability: peace and security issues as well as managing dispute or conflict if among the stakeholders. (4) Economic aspects: compensation for loss of livelihood resources; employment generation; local revenue and creating other non-farm income generating activities. In relation to this, NIE, therefore, will be utilized to explain essence of institutions, property rights and contract framing to build positive relation between agricultural investment projects and local communities' livelihoods.

2.3.1.1 Property Rights

The essence of property right is one of the basic premises in the theory of new institutional economics. Coase (1960) stated that externalities can be internalized if property rights are well established. In his view, when property rights are well established and there are no transaction costs, an externality can be internalized between two private parties through bargaining and negotiations. His argument also has been used to counter Pigou's call for government taxes to curb negative externalities (Callan, & Thomas, 2013). In line with these notions, Coase argued that government involvement is in fact not necessary if property rights are well established. On the one hand it can be realized that he is recognizing the significance of government intervention where property right is not properly established for local communities on basic properties. The distribution aspects of the outcome, however, would depend on the initial allocation of the property rights. In the presence of transaction costs, on the other hand, different systems of property rights may yield different outcomes in terms of efficiency.

Here the core notion is that assigning property rights help individuals to make bilaterally negotiate regarding an externality between the generator and the recipient. These negotiations can also lead to an efficient outcome regardless of the initial assignment of property rights. In this regards conditions indicate that: no transaction costs, no income effects and third-parties, and allocation of property rights may impact distribution of costs and benefits. In connection with this, in BGR as well as in Guba Woreda land and related properties are not well defined. In this regards, the basic natural resources on which local communities' livelihood based are considered as communal property and held by government. This implies that it is difficult for local communities to take full responsibility to negotiate with potential investors and to govern the spillover effects.

2.3.1.2 Contract Farming

The recent requirements of the new agriculture, food-marketing firms prefer to engage in marketing and production contracts with farmers in developed as well as developing countries to ensure greater coordination of quantity and quality of supply (Kherallah & Kirsten, 2002). In contract farming schemes, farmers benefit from access to technological information and extension services provided by investors/traders. On top of that contract farming reduces both production and marketing risk by ensuring a guaranteed source of supply with specific quality requirements to processors or intermediaries and ensuring farmers an immediate market outlet for their produce as well as access to inputs.

In this regards contract farming offers many benefits for growers, including access to new markets, technical assistance, specialized inputs, and financial resources. Contracts can also reduce crop price variation, helping farmers bear the risk of non-traditional crop production. To the extent that firms contract with smallholders, contract farming has the potential to raise incomes of the poor and promote rural development. On the other hand, where smallholders are excluded from contracting, contract farming may serve to exacerbate income and asset inequalities (Key & Runsten, 1999). The incentives and disincentives of firms to contract with smallholders should be considered in designing policies to regulate or influence the terms of contract relations. Contract farming, on the other hand, cannot be considered a panacea for integrating small farmers to high-value globalized markets. Based on these basic concepts this study will examine the practices of contract farming schemes implementation and its constraints.

In nutshell, several aspects in the NIE such as contract theory, agency relationships, transactions costs and the boundaries of the firms have now become key focus areas (Kherallah & Kirsten, 2002).These theoretical frameworks are useful in analyzing the relationships between the farmer (agent) and the investor/firm owner (the principal), where decisions about the extent of vertical coordination and related contract specifications can influence the financial position and performance of both the firm owners and farmers. In the context of contract farming, these frameworks can be used to analyze and address the problems that could typically constrain or lead to the breakdown of contractual relations in agriculture of local areas.

An externality occurs when the production or consumption decisions of one firm have an impact on the utility or profit of another firm in an unintended way, and when no compensation/payment is made by the generator of the impact to the affected party (Callan & Thomas, 2013). In respect to this, the basic issues here call attention to the fact that lack of compensation/payment is a key feature of externality as a policy problem. Policy solutions to externality problems always involve introducing some kind of compensation/payment to the affected agent. Mostly environmental pollution is considered as typical example of an externality, because many environmental amenities exist outside of markets. One individual or firm doesn't feel the full costs (or benefits) of his or her actions. This implies that others are thus impacted by activities outside of their own control, without compensation. For instance: pollution of air/water, trash, noise. In such circumstances government interventions are considered as correction measure for externalities (Callan, & Thomas, 2013). In addition to that market failures can be managed through bargaining or private negotiation and regulation or price/ tax or quantity/ limits.

Therefore, the actor's action and decision in agriculture investment result in externalities (positive and negative) such as increasing productivity, environmental degradation, violent conflict which are both intended and unintended. These have implication on facilitating or constraining the interactions of local communities and investors. In this study, NIE theory can be used to examine the dynamism of the institutions, actor's interaction and relation in investment land deals, transfer and governance processes for agricultural investment to ensure diversity and sustainability of livelihood strategies.

2.4 Empirical Literature Review

As stated in various evidences, agriculture is the back bone of the national economy and it is the main sources of employment, foreign exchange and food security for a vast majority of its population. Likewise, the struggle to ensure food security and prosperity for the country mainly based on the agricultural sector (Dube et.al, 2019). Thus, on top of designing the mechanisms to increase productivity of smallholder farmers', government focused on prompting large-scale agricultural investment for achieving overall economic growth and development. In this strategy, agriculture has been taken as the engine of national economic growth.

In this regards, specially, the initial targets of ADLI are to: achieve rapid growth in agricultural production, raise income for rural households, attain national food self-sufficiency, and produce surpluses which could be marketed to the urban or industrial sectors. The government's emphasize of building the capacities of the small-scale farmer as fundamental goal in the implementation process would make use of country's huge labor force, abundant agricultural lands, diversified agro-climatic zones and sufficient water resources in the rural areas(Network et al., 2010).

Investments in the agricultural sector have the potential of bringing a number of significant benefits to local communities. However, an active effort by the government is required to ensure that the necessary conditions for the realization of such benefits are in place (Zerfu & Birhanu, 2017). The opportunities have so far proved difficult to materialize, whereas the risks are immediate and often irreversible. Regardless of the right conditions created; there remains a need to assess the opportunity costs of large-scale land acquisitions for agricultural investment compared to alternative uses of the same land and resources.

Even though, these investments may bring benefits, they are not necessarily the preferred development model for all countries. Investments in agricultural sector are costly and entail high economic, socio-political and environmental risks. Likewise, in practice large-scale investment in agricultural land is damaging the food security, incomes, livelihoods, and environment for local people" (Sparks, 2012). To this end, local government envisions a rapid transformation in the agriculture sector to increase production, productivity, markets and employment. Agricultural investment is supposed to provide input for the processing industry, bring foreign currency as

well as technology transfer to the country while the local communities would benefit from employment and infrastructure improvements related to these investments. In connection with this, the study attempted to collect and analyze data from secondary and primary sources on potential benefits and threats of agricultural investment projects, to realize agricultural investment implication on local communities' livelihoods and environment in the study area.

2.5 Trends of Agricultural Investment in BGR, Ethiopia

In Ethiopia large areas have been leased to foreign and domestic investors for large-scale production of food and agro-fuels, mainly in lowland regions where the state has historically had limited control. Much of the land offered is classified by the state as 'unused' or 'underutilized', overlooking the spatially extensive use of land in shifting cultivation and pastoralism (Moreda, 2016). Several of the studies have addressed the enormous scale and speed of expansion of transnational land deals, and emphasized its impact in changing agrarian structures, rural social relations and rural livelihoods. In most cases much of the appropriated land is on peripheral regions territories and that considered a common property resource.

Ethiopia is said to have large uncultivated arable land that can potentially be developed for agricultural purposes. As stated by Moreda (2017) the country has about **51.3** million hectares of arable land, out of which only about **11.7** million hectares are currently being utilized. This agricultural land potential is assumed to exist in the peripheral lowland areas. According to MORDA (2010), the lack of capital and technology is the major factor that has constrained the utilization of the country's investment potential for agricultural development. This has been a key assumption put forward to justify recent commitments to promote and expand foreign direct investment (FDI) in land based investment in the agricultural sector.

In Ethiopia, the country's lowland regions are the major areas where much of the current land acquisitions are taking place (Makki, 2011). It is expected that the expansion of large-scale agricultural investments will benefit the country in a number of ways: increasing foreign exchange earnings from the export of crops; creating local employment opportunities; expanding local infrastructure and social services; and creating opportunities for technology transfer, particularly to local farmers (MOFED, 2011).

In BGR over the past few years a significant number of investors have acquired land across the region (BOEPLA, 2018): FDI (8), Diaspora (34) and Domestic (404). However, despite claims of generating high economic and social returns, the rising land acquisitions for agricultural investment appear to have had adverse impacts on local land-use practices and land resources, including land dispossession, declining access to resources and environmental destruction. This section demonstrates how current large-scale land acquisitions for agricultural investment have created adverse impacts on local livelihoods and the environment.

2.6 Agricultural Investment and Local Livelihood Strategies

In Ethiopia the leasing of land to investors for export-oriented agricultural production especially in lowland regions has been enacted on a grand scale over the past few years. Some empirical studies stated that large-scale land transfers for investment in agricultural sectors have occurred on a significant scale throughout the country, particularly in Benishangul-Gumuz and Gambela Regions. These land transfers undertaken while threatening the customary land rights and natural resource-based livelihoods of the indigenous local communities. In view of this, the study conducted by Moreda (2017) has revealed that indigenous local communities face the threat of losing their land and their natural resource-based livelihood. He also stated the main reason for these threats as follow:

> *"The ongoing land allocation process largely predicated on the state's and other elite groups' perception of abundant 'underutilized' or 'unoccupied' land in the region overlooks the local communities' traditional land-use practices and social relations. Under this misguided notion, the land from which traditional cultivators derive their livelihoods is being treated as 'underutilized' or 'unoccupied', and then transferred to investors for permanent forms of land use" (Moreada, 2017, p12).*

Moreover, in this empirical evidence the author argued that large-scale land transfer for agricultural investment is generating gains for some local economic and political elites, as well as for the state; the region's indigenous local communities, however, have noted little gain and possibly great loss. Here, in my view, part of this finding and generalization puts to some extent extreme dichotomy between the state and the society. This means the generalization outlined by the author contrasts the principle that 'redistributive roles of the state' means the economic benefits gained by the state would be redistributed to society as well as local communities.

2.7 EIA and Its Implementation Practices in Agricultural Investment Firms

The most recent wave of investment in agricultural sectors is still ongoing. Some positive developments such as employment generation, increased government revenues and the construction of much needed social and other infrastructure to the benefit of local communities have been recorded as the consequence of some of the projects, though in general the provision of such benefits has fallen far short of expectations (Lauriciano & Norfolk, 2010).

Notwithstanding these positive impacts, a high number of conflicts and controversies have also been reported (German et al., 2013). In particular the negative impacts need to be analyzed, both in order to understand their causes and to suggest possible ways to minimize such impacts in the future. The focus is by no means an attempt to ignore that some positive outcomes of large-scale land investments have been recorded, nor to deny the possible development potential of such investments. It is, however, a result of the observation of a significant number of negative consequences resulting from the recent wave of large-scale land acquisitions for agricultural investment, which often stand in stark contrast to the reported intensions and high expectations of positive developments that frequently accompany such deals (Sparks, 2012).

In general, the effects of agricultural investment projects can both be positive, when the projects create employment opportunities, construct infrastructure and contribute to local economic development; and negative, when the projects lead to loss of land and livelihoods, and limit local inhabitants' access to water, fire wood and other natural resources that are important for income generation and food security (Aabø & Kring, 2012). In the notion of increasing pressures on land, water and other natural resources it is important to assess the socio-economic and environmental impacts, as well as weigh the opportunity costs, of any activity which entails land area expansion and or significant investments.

2.8 Review of Institutional frameworks Related to Investment in Agricultural Sectors

2.8.1 Policies and Strategies

Agriculture is the back bone of the national economy and it is the main sources of employment, export foreign earning and food security for a vast majority of its population. Likewise, the

struggle to ensure food security and prosperity for the country mainly based on the agricultural sector (Dube et.al, 2019). However, as poverty continue to be the important feature of the country, agricultural performance is not promising. In this regards, lack of appropriate policies and strategies has been considered as the ultimate reason for the sectors past stagnation. As a result, Agricultural Development Led Industrialization (ADLI) was designed to transform agriculture and make it play as an engine for the sector and overall economy. The strategy is also supplemented by various plans so as to realize its objectives of transforming the national economy (Dube et.al, 2019).

Furthermore, the agricultural sector dominancy as the main source of employment and export earning is manifested by the fact that 80% of the total labor force employment and 71% of total export earnings come from agriculture (MOFED, 2013). This implies that growth of all other sectors and the whole national economy is determined by this particular sector. Consequently, the country's aspiration for achieving overall economic growth largely depends on the performance of the agriculture sector.

To this end, on top of designing the mechanisms to increase productivity of smallholder farmers', government focused on prompting large-scale agricultural investment for achieving overall economic growth and development. In this strategy, agriculture has been taken as the engine of national economic growth. Specifically, the initial targets of ADLI are to: achieve rapid growth in agricultural production, raise income for rural households, attain national food self-sufficiency, and produce surpluses which could be marketed to the urban or industrial sectors. The government's emphasize of building the capacities of the small-scale farmer as fundamental goal in the implementation process will make use of country's huge labor force, abundant agricultural lands, diversified agro-climatic zones and sufficient water resources in the rural areas(Network et al.,2010).

Particularly, the government introduced measures like providing the smallholder farmers with technology and better farming practices, improved seeds, fertilizers, irrigation, rural roads, and marketing services to increase agricultural production (Gebre-selassie and Bekele, 2012). A rise in agricultural output in turn was expected to stimulate industrial production by providing food and industrial materials, thus establishing a link between the rural and urban sectors. In other words, the objective of ADLI is to strengthen the linkages between agriculture and industry by

increasing the productivity of small scale farmers and investing in those industries with most production linkages to rural areas. In addition, to achieve this objective effectively the government put clear direction to promote large-scale farming in sparsely populated low land areas of the country like BGR and Gambela Region.

In short the country has been chosen agriculture as a leading sector, and utilized ADLI as a strategy for implementing the agricultural led economic growth model. Increasing production and productivity of smallholder farming has been at the center of the ADLI, and large-scale farming is anticipated to play a vital and complimentary role in the economic and agricultural transformation of the poverty-stricken nation (Lavers, 2012). Based on these policy directions the agriculture has significant contribution for overall national/regional economic growth and wellbeing of the society.

2.8.2 Legal Frameworks

In recent years the top priority of the national government is to increase the productivity of the agro-industrial sector of the country while transforming small-scale farmers (Dube et.al, 2019). However, large-scale land acquisition for agricultural investment is raising complex issues across various dimensions: legal, economic, social, political, environmental, ethical and cultural. Thus, to govern these issues properly large-scale land-based investments need to a 'win' 'win' 'win' situation in which all parties concerned, not least government, local communities and investors. In relation to this, the government policy for large-scale farming is in principle toward win-win-win policies: transparency in negotiations, respect for existing land rights including customary and common property rights, sharing of benefits, and environmental sustainability (FDRE, 2008).

To this effect, the government has formulated investment legislative to guide the fast growth of investment in the country. As indicated in investment proclamation No.280/2002 article 4, the objective of the investment is "to improve the living standards of the peoples through the realization of sustainable economic and social development". This legislative is mainly to address the national investment policy aims, as outlined in the proclamation, among others to: accelerate the country's economic development; exploit and develop the immense natural resources of the country; enhance the role of the private sector in accelerating the development

of the country's economy; make foreign investment play its proper role in the country's economic development; create wide employment opportunities, and enhance the transfer of technical knowledge, managerial skills, and technology required for the progress of the country.

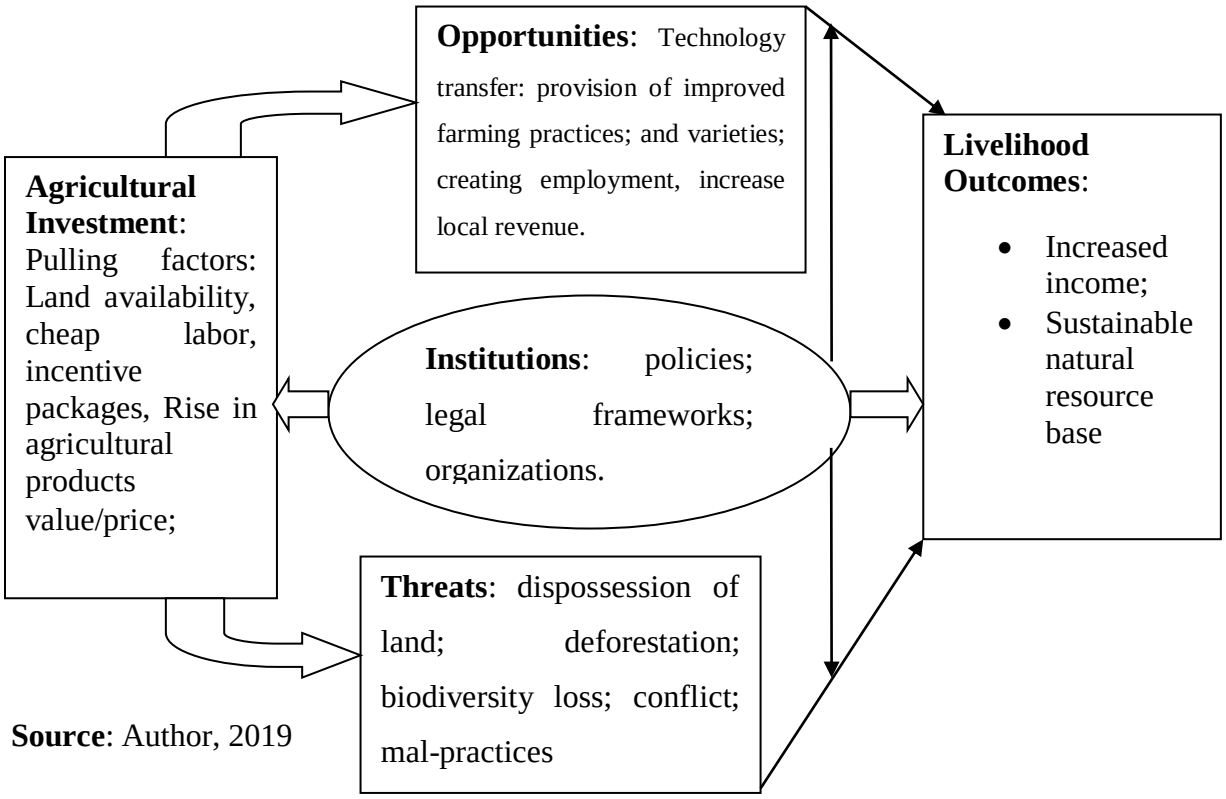
For instance, as stated in Federal Ministry of Council Regulation No.146/2008, Investors in all sectors of the country's economy including foreign investors who will be engaged in agricultural activity are exempted from the payment of custom duties and other taxes levied on imports of all capital goods (machinery, equipment and accessories) and construction materials necessary for the establishment of new projects or expansion/upgrading of the existing one (FDRE, 2008). In regard to this, this study was assessed whether the incentive packages are attracting the potential investors in agricultural sectors as per the policy directions and legal frameworks.

2.9 Conceptual Framework

Some empirical evidences demonstrated that investment in agricultural sector could confer both opportunities and risks (Mungai & Omondi, 2014). They stated that large-scale agricultural investment influences a change in the socio-economic indicators, either at the national or local level through four main channels: social infrastructure, often supported by community development funds using land compensation; employment and jobs; access to markets and technology for local producers; and local or national tax revenue. On the other hand, there are a number of shortcomings and threats: weak land governance; lack of capacity to process and manage large-scale investments; non-viable investment proposals; and resource conflict with negative distributional and gender effects (Deininger and Byerlee, 2011).

Based on these core notions it can be realized that any investment has its own positive and negative spillover effects. In this respect the main duties of the actors in this context is conducting moderating function. To this effect, institutions have vital role to maximize the positive externalities and minimize negative externalities. In addition, responsible organizations arrangement has paramount significance to lead, coordinate, and monitor investment process and its implementation effectiveness as per policy direction and legal frameworks. The Institutional frameworks further support to create conducive environment for designing local livelihood strategies required to secure the livelihood conditions of local communities as well as sustainability of the investment project's productivity or profitability.

Figure 1: Conceptual Framework



Source: Author, 2019

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This section discusses the research design and procedures that was applied in the entire study. It presents a brief description to the study area. It also describes the procedures that was employed for data collection, recording, management, presentation, analysis, interpretation, and measurement of variables. Lastly, the issues of data quality and ethical issues for study are reflected.

3.2 Description of the Study Area

The study is conducted in Guba woreda, Benshanguel-Gumuz Region (BGR) Ethiopia. Guba woreda is located in the north-western part of Ethiopia and is one of twenty woreda as in BGR. It is part of the Metekel Zone and is bordered by the Abay River on the south which separates it from the Kamashi Zone, Sudan on the west, Amhara Region on the north, Dangur woreda on the east, and on the southeast by the Beles River, which separates it from Wonbera woreda.

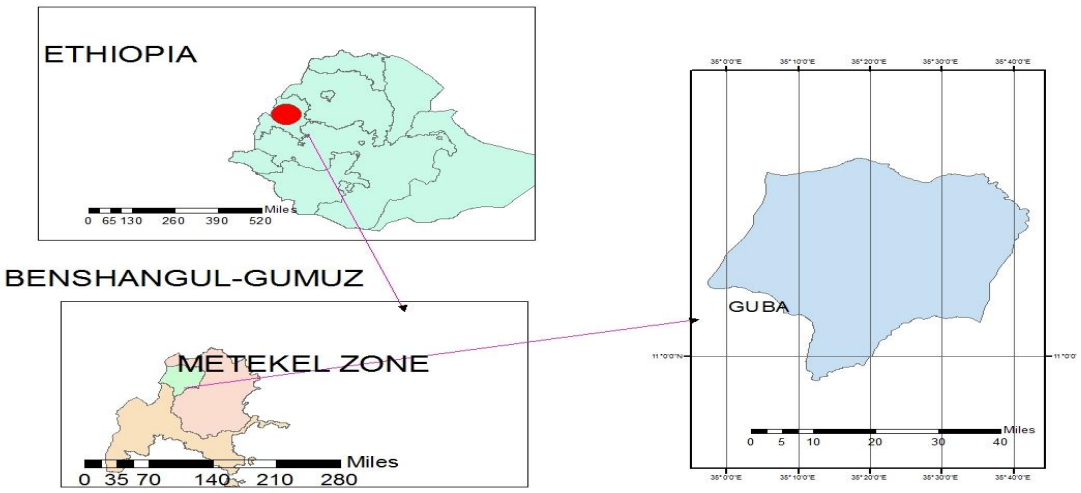
With altitude ranging between 558 m to 2729 m above sea level, and an average daily temperature of 20–25°C, it is gifted with diverse vegetation cover. However, the majority of its area (75%) falls under the lowland category, with a maximum daily temperature of up to 34°C during the hottest periods. The mean annual precipitation ranges between 500–1800 mm. The woreda is mainly the moisture stressed area in the Region.

On the other hand, the Woreda is endowed with a variety of minerals, including gold, copper; zinc, base metal and marble. The traditional gold mining is one of the major sources of income for local communities, especially for Gumuz ethnic groups of the woreda. The woreda has fertile land for agriculture and considered as development corridor. For instance, the Grand Ethiopian Renaissance Hydroelectric Dam (GRED) being constructed on the Blue Nile River is found in this Woreda. It has the total population of 24,640 according to CSA (2017) projection and it is also home to diversified ethnic groups, such as Gumuz, Shinasha, Amhara, Agew, Oromo, Tigray..etc. The woreda has bordered with Sudan and this makes it conducive environment for boarder trade or business center. Due to the fact that the woreda experiencing the rapid

population growth through migration and this is also fundamental reason for increasing high demand for land in the study area.

The main livelihood strategies of the local people are gold mining, agriculture based on shifting cultivation, hunting and gathering, animal rearing and boarder petty trades. On the other dimensions, the woreda considered as a destination for commercial agricultural investment projects. Thus, large size of agricultural land acquisition is a current trend in the woreda. However, local people natural resource based livelihood strategies require sufficient amount of land and related resources for shifting cultivation, free grazing, gathering of forest based products such as forest honey, forest fruits and roots crops. Based on these backgrounds, this study is intended to investigate the effects of agricultural investment on local communities' livelihood-bases and environment. Household serve was conducted on selected household heads purposively selected kebele i.e. Aysid kebele in the study woreda.

Figure 2: Study Area Map



Source: Prepared by the author based on ESRI ArcGIS online data, 2019.

3.3 Research Design

The research design employed in this study was mixed method research design. The design is suitable for quantitative and qualitative data acquisitions to present an inclusive analysis of the study problem (Creswell, 2014). Hence, the study was employed a survey at household level to collect quantitative data while at the same time interviewing individuals to gather qualitative data concerning the research problem. This study was also adopted survey as a strategy of inquiry. Both qualitative and quantitative data were required to answer the research questions posed in this research. It seeks to answer questions about the impact of agricultural investment on local livelihoods and environment.

3.4 Identifying research variables

The research variable identification is mainly based on the variables association with the research problems and research questions designed to achieve the ultimate aim of the study (table1). The variables that incorporated in the study were general background variables such as socio-economic and demographic variables of the respondents. Variables related to agricultural investment contributions for local communities such as technology transfer, improved farming practices, improved varieties, employment generation, non-farm business activities, and local revenue generation.

The impacts of agricultural investment realized through livelihood outcome variables: increased households income, increased well-being, reduced venerability and efficient use of natural resources. On top of these positive outcomes; agricultural investment has negative externalities in relation to dynamics in land use: biodiversity loss, deforestation, violent conflicts and effect on the livelihood bases of the local communities' .i.e. depend on natural resources. Thus, the study also examined the extent to which negative externalities influence the livelihood strategies of the local communities.

Table1: Description of explanatory variables

Variables	Definition	Nature of variables	Expected Sign of MRA
Sex	Sex of respondents	Dummy/Categorical	-
Age	Age of respondents	Continuous/Discrete	-
Household size	Household size of respondents	Continuous/Discrete	+
Farm land size	Farm land size of respondents	Continuous/Discrete	+
Market services	Market availability for production of local communities	Dummy/Categorical	+
Improved varieties	Provision of improved varieties by agricultural firms	Dummy/Categorical	-
Dispossession of land	Dispossession of land and related resources due to expansion agricultural investment projects	Dummy/Categorical	-
Contract Farming practices	Contract farming agreement between investors and farmers	Dummy/Categorical	+
Households perception	Perception of respondents on agricultural investment threats	Dummy/Categorical	-

Source: author depiction, 2020

3.5 Types and Sources of Data

The data source for this study can be from both primary and secondary sources. The primary source data is mainly randomly selected household heads of Aycid kebele in the study area. It also were collected from purposively selected key informants at kebele and woreda level for semi-structured and unstructured interviews. Secondary source of data also were collected from related policy and legal frameworks (Regional Bureau of Environment Protection and Land Administration, and Investment promotion Directorate), publications, government reports, productivity information (Woreda office of Agriculture) and Revenue (Tax) data from Woreda Revenue office, previous researches, bulletins, and magazines, and data base. Based on this, it can be implied that the necessary data for the study was gathered from the main actors of the investment activities: government, investors, and local communities. The types of data that quantitative and qualitative in nature will be, therefore, collected to answer the research questions in this study.

3.6 Methods of Data Collection

Selection of data collection methods depend on several criteria. Observation, interview, questionnaire survey, focus group discussion and documentation are the commonly used methods. In this study the selection of a data collection methods or tools depends primarily on the type of research questions. The nature of required data, type of respondents and the circumstances of data collection was also affected the choice of methods. Based on the given time for this study a cross-sectional-design was employed in this study. In a survey research strategy a cross-sectional design is utilized to collect mainly quantitative or quantifiable data on more than one source and at a single point in time in connection with two or more variables which are then investigated to identify patterns of correlation (Bryman, 2012).

In addition, using different tools to collect data from a variety of informants can create multiple sources of evidence, forming a source of triangulation and the assessment of information from different perspectives (Arko-Adjei, 2011). Accordingly, this study is designed to employ multiple methods to collect the required data concurrently from different sources. Particularly, questionnaires, interviews, focus group discussion, observation, review of documents, informal discussion and field notes are data collection techniques that were employed in parallel to collect data in the study.

3.7 Sampling Techniques and Sample Size

Most scholars agree on that a good sample accurately represents all kinds of elements in proportion to their presence in the population. Sampling is the process of selecting the segment of the population for investigation. It is not possible to examine every item in the population due to the high cost and time it needs (Creswell, 2014). Therefore, this study was conducted by means of sampling to determine the sample size of the study.

3.7.1 Sampling Techniques

The combination of purposive and systematic random sampling techniques was employed to investigate the study. The population of the woreda (24,640) is the study population based on the CSA projection. The target population is total households of the sample Kebele. Hence, the target population from which sample population drawn for this study was total households (**395**

(1,975)) of Aycid kebele in Guba woreda. This kebele has relatively better in agricultural investment projects distribution, concentration, existence of foreign and domestic investors, and diversification of local communities. Thus, the selection of Kebele is based on the distribution and concentration of the agricultural investment projects.

Based on this the sample population was drawn from purposively selected kebele in the study area. Purposive sampling was employed to be flexible in the selection of subjects. Here flexibility is needed to ensure the incorporation of sites having relatively large numbers of investors, and to ascertain the inclusion of kebele with both foreign and domestic investors. On top of this, systematic random sampling method was utilized to select the sample from the sampling frame for questionnaire survey.

3.7.2 Sampling Frame and Sample Size

Sampling frame is the listing of all units in the population from which the sample is drawn. Households, in selected kebele, were used as sampling frame, from which the sample drawn were identified based on the CSA (2017) population projection. In this regards, the units of analysis are households and they were selected by systematic random sampling technique from the sample frame. To this end, employing an efficient method of sample size determination is required to get proper representation of a given population as ingredient of research quality.

To determine the sample size Krejcie and Morgan's (1970) formula is used. The formula is given as:

$$n = \frac{X2\ NP\ (1-P)}{1+N\ (e)^2(N-1) + X^2\ P\ (1-P)}$$

n= the required sample size.$\mathbf{X^2}$= the table value of chi-square for 1 degree of freedom at the desired confidence level (1.96). **N**= the population size (Aysid kebele: **395**hhs). **P**= the population proportion (assumed to be .**5** since this would provide the maximum sample size). **e**= the degree of accuracy expressed as a proportion (.**05**).

$$\mathbf{n= 1.96^2 * \frac{395*.5\ (1-0.5)}{.05^2(395-1) + 1.96^2 *.5\ (1-0.5).}}$$

$$\mathbf{n= \underline{198}}$$

This figure is the required sample size to ascertain adequate representativeness. The sample was drawn from purposively selected sample kebele (Aysid kebele: **395** hhs) through systematic random sampling $\mathbf{K^{th}}$ value of the sample frame 395/150=2.6 ($\mathbf{k}$=3^{red} value). In addition, key informants interview (KII=12) were conducted with purposively selected community leaders (2), Kebele officials=2 DA =2 woreda officials (4) and investors (2).

3.8 Methods of Data Analysis

This study is intended to implement a mixed research approach and generate both qualitative and quantitative data. Both qualitative and quantitative data analysis tools were utilized to conduct the entire data analysis in this study. In this view, descriptive and inferential statistics were used to quantitative data analysis. This includes descriptive statistics such as mean, and standard deviation; inferential statistics such simple linear regression, chi-square test and correlation based on the nature of variables.

Likewise, for qualitative data analysis the typical tools that were used in this study are thematic and narrative analysis for policy documents, responses from key informant interviews (Bryman, 2012). Summarization of field notes, coding and identification of themes and patterns, coding and categorizing were the processes involved in qualitative data analysis. Then the coded materials and notes were used for thematic analysis and interpretation. In addition, the data analysis was supplemented by using the data analyzing software's 'SPSS.v24 and ArcGIS.v10.5 for analysis of satellite images gathered form Landsat5 and sentil2.

On top of this, the use of multiple sources of evidence provides a rich store of information that permits the analysis of a single issue from several perspectives, a process known as 'triangulating data' (Creswell, 2014). This study is multiple sources of evidence having embedded units of analysis. Households are the units of analysis since this study is concerned with the investment in agricultural sector and improvement in livelihoods of households.

Likewise, agricultural investment firm is another unit of analysis since the study is about the benefits and risks of investment in agricultural sector for local livelihoods and environment. This study also describes the personal perception of interviewees towards agricultural investment (AI), which makes an individual a unit of analysis.

3.9 Data Analysis Tools Specification

RQ_{II}. The Contribution of AI for Local livelihoods:

To analyze the contribution of agricultural investment on local communities livelihood; commonly income level of household is considered as universal livelihood outcomes. Based on this notion, household heads income per month was considered as dependent variable in this study. Specific statistical analysis tools were employed to test whether there is significant mean difference between variables in relation to livelihood activities and house hold heads income level due to intervention of agricultural investment in the study area. In this subsection, particularly, some statistical tests to realize the variables association (Chi-square), and mean difference (T-tests).

In addition to this, multiple linear regression analysis (MRA) were utilized in the study to estimate the effect of some explanatory variables on dependent variable.

The equation of MRA model (OLS): $Y= \beta + \beta_1 X_1 + \beta_2 X_2 \ldots + \beta_n X_n + \ldots\ldots\ldots(1)$

Similarly, household's income per month was considered as dependent variable.

- ✓ $\text{HH Income}(Y) = \beta + \beta_1 \text{Sex} + \beta_2 \text{HHsize} + \beta_3 \text{FLsize} + \ldots\ldots\ldots + \beta_n X_n + \varepsilon. (2)$
- ✓ $\text{HH Income}(Y)= 582 + -1281(\text{sex}) + 168(\text{Hhsize}) + 83(\text{Flsize}) \ldots. + \beta_n X_n + \varepsilon. (3)$

RQ_{III}. Analysis of land use or cover change induced by agricultural investment.

Based on remote sensing satellite image data(land sat5 and sentile2), land use or vegetation cover change map or image was analyzed by employing ArcGIS software to calculate the Normalized Difference Vegetation Index (NDVI).

NDVI= NIR-RED/NIR+RED……..(2)

Where, **NDVI** is constructed from near infra-red (**NIR**) and the red band (**RED).** Commonly NIR stands for high vegetation cover and RED for low vegetation cover.

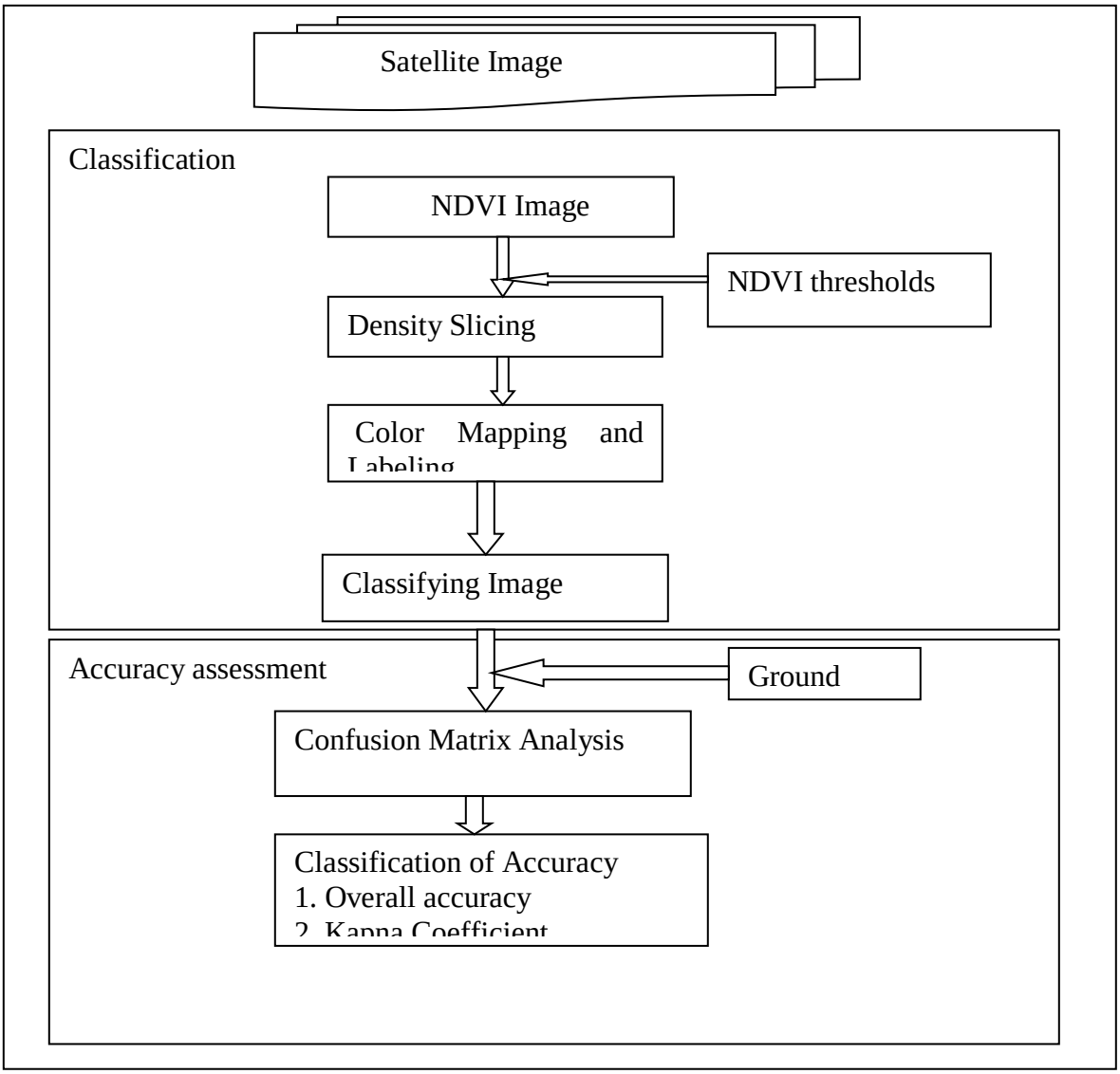
The assessment on dynamics land use was conducted by using time series satellite images. The data and software used with their respective purposes are presented in Table2. The datasets can be available from two platforms, Sentinel 2 Level 2 C images were downloaded from European Space Agency (ESA) data hub (https://scihub.copernicus.eu/) and Land sat 5 Level 1 was from https://earthexplorer.usgs.gov/

Table 2: Data and software employed for assessment of land use or cover change

No.	Data and Software	Year	Spatial Resolution	Processing level	Purpose
1	Landsat-5	1990, 2000 and 2010	30m	Vegetation Discrimination (Visible Red and Near Infrared bands)	Land use/Land cover
2	Sentinel-2	2019	10m	Vegetation Discrimination (Visible Red and Near Infrared bands)	Land use/Land cover
3	ArcGIS 10.5				Stack images, Subset, NDVI calculation, NDVI classification and Accuracy assessment
4	Google earth pro 7				Ground truth collection

Source: author, 2020

Figure 3: Steps for assessment of LULC change



Source: Author, 2020

3.9.1 Data Quality Assessment

Validity, reliability and replication are commonly used criteria for assessing the quality of social research (Bryman, 2012).Validity is concerned with the integrity of the conclusions that are generated from piece of studies. Reliability refers to the question of whether the results of the study are repeatable. Replication also refers to the extent to which the findings of the enquiry are more generally applicable outside the specifics of the situation studied.

Particularly, to ensure the reliability of the qualitative data collected from field work, complete records of all phases of investigation process including the problem formulation, selection of research participants, interview transcripts, field notes and data analysis decisions were cross-checked. Likewise, during filed work before starting the actual data collection pre-testing of survey questionnaire was made to check the reliability and validity of the developed survey questionnaire. The pilot test was conducted on similar households out of the study area.

3.10 Ethical Considerations

Realizing the indispensability of ethical considerations in this research work, researcher considered ethical values of the concerned community/group of people or others. Such consideration involves respecting their norms, non-disclosure of their identities and even changing their names and the dates on which information is obtained from them except for those individuals or groups who consent to the disclosure of their identities. To this effect during data collection care was took to avoid possible discomfort to participants. Brief explanation about the research subject matter, purpose and objective of the study were conducted. Particularly, informed consent, confidentiality and ethical clearance were key ethical considerations:

Informed Consent: The woreda administration workers, officials and residents those respond were approached to get written and verbal informed consent and informed about the purpose, benefits and the risks of the research before interview was conducted. **Confidentiality**: No interviewee or participant was identified by name filled questionnaires stored, and data was secured by proper backup system and no information was disclosed indicating individual respondent and institutions. **Ethical Clearance**: ethical clearance/support letter was obtained from the department of environment and sustainable development at College of Development Studies, Addis Ababa University.

CHAPTER FOUR: RESULTS AND DISCUSSION

4.1 Introduction

This study assessed the implication of agricultural investment on local livelihoods and environment in Guba woreda, Benishangul-Gumuz Region. The study employed descriptive and inferential statics for data analysis. Based on the sample size determination formula the sample population of the study was 198. Out of which 150 respondents were participated in the research process. The number of respondent's participation was determined based on the composition of target population homogeneity and recent restricted situation for the research work due to COVID-19 pandemic. Concerning the response rate 136(91%) responses were complete and 14(9%) response were incomplete. As a result 136(91%) response were utilized for the entire data analysis of the study. On top of this, the study used secondary data from published and unpublished documents and field observation to minimize the respondents' biasness and limitations.

4.2 Demographic and Socio-economic Characteristics of Respondents

In this study the respondents age, sex, marital status, education, religion, family and farm size or land holding size were considered as the demographic and socio-economic factors. These factors are expected to have significant effect on respondent's livelihood conditions and environmental conservation practices to minimize the adverse effects of agricultural investment expansion in the study area.

As stated in (Table 3), out of **133** respondents **123** were male household heads who have average house hold income **3053.51** birr per month. Whereas, **10** female household heads earned **1740** birr per month. This indicates that female household heads have comparatively low average income level to male household heads counter parts. This survey result was supported by Ellis (2000) that livelihood outcomes may be distinguished within households and communities due to disparities in power relations and the economic relationships that are deep-rooted in social and political relations. In light of this, the Independent t-test ($p<.05$) revealed that there is significant mean difference on house hold income per month between male and female headed household

heads. However, the monthly mean household income in both sexes is more or less above the poverty line of the country.

Table 3*:* Sex of respondents and their average household income per month

	Sex of Respondents	N	Mean	Std. Deviation	Std. Error Mean	t- value	p-value Sig. (2-tailed)
Household Income	Male	123	3053.51	2045.727	184.457	1.985	.049
	Female	10	1740.00	1480.390	468.141	2.610	.023

Source: Survey results, 2020

The descriptive table4 below clearly shows the minimum and maximum age, family size and farm land of the respondents. Particularly, concerning the age of respondents minimum age is 20 and maximum is 65, this indicates that the respondents were in the age category of 20-65 years; the mean age is 37 years. This average mean age and range of age groups revealed that majority of the respondents are in productive age groups.

Table 4: Descriptive statistics on age, family and farm size

Respondent's	N	Minimum	Maximum	Mean	Std. Deviation
Age	135	20.00	65.00	37.1185	8.90669
Family	135	1.00	12.00	5.3111	2.41719
Farm land size	133	.50	40.00	9.3835	4.98326

Source: Survey results, 2020

As it can be seen in table5 below, the minimum and maximum family size of the respondents were 2 and 12 respectively. This implies that the average family size exceeds the average national rural family size (CSA, 2017). In line with this the one sample test ($p>.05$) on family size of respondents revealed that there is no statistically significant mean difference on family size of respondents and national rural family size.

Table 5*:* One-Sample Test on family size of respondents

		Test Value = 5					95% Confidence Interval of the Difference	
	N	Mean	Std. Deviation	T	Sig. (2-tailed)	Mean Difference	Lower	Upper
Family Size	135	5.3111	2.41719	1.495	.137	.31111	-.1004	.7226

Source: Survey result, 2020

Marital status is conventionally connected with additional responsibility in the society. In line with this out of the 135 respondents 127 were married (table6). With regard to respondents participation on soil and water conservation practices majority of married (103) respondents confirmed their participation on environmental conservation practices.

Table 6: Marital status and soil and water conservation practices

		Soil and water conservation practices		
		Yes	No	Total
Marital status	Single	1	0	1
	Married	103	23	127
	Divorce	5	0	5
	Widow	1	0	1
	Separate	2	0	2
		112	**23**	**135**

Source: Survey results, 2020

In this study educational level is considered as one of socio-economic factors. It is considered as vital factors that can help the farmers to understand their livelihood activities, environment and easily adopt environmental management practices. As indicated in table7 majority (62) of respondents have no basic education. The survey results revealed that there is statistical association of respondent's educational level with their participation on soil and water conservation practices. As it can be seen in the survey results majority of respondents (55) who

were participated on soil and water conservation practices were illiterate. In this regard, the survey result revealed that the tendency of respondent's participation in environmental conservation practices is inversely related to education level of respondents. Whereas, the Chi-square test indicates that there is statistical association between education level and their participation on environmental conservation practices. This may be linked with the farmer's main livelihood source i.e. crop farming which requires soil and water conservation to enhance the productivity of farm land irrespective of respondents education level.

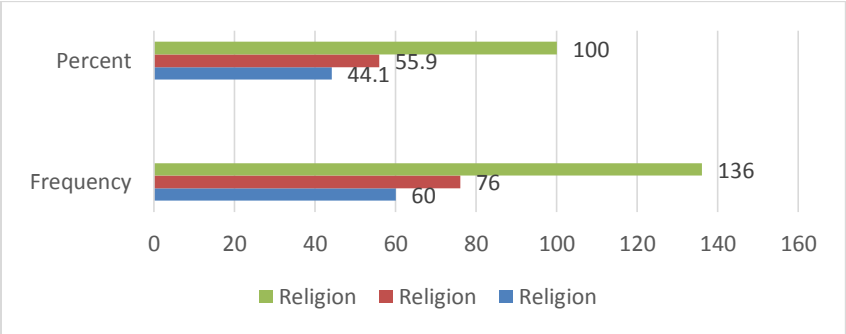
Table 7: Respondents participation on soil and water conservation practices (Chi-square test)

		Soil and water conservation practices					
		Yes	No	Total	T-value	Df	P-value
Educational level	Illiterate	55	7	62	28.461	12	.005
	Read & write	18	0	18	25.904	12	.011
	Primary school	28	6	34			
	Junior school	5	7	12			
	High school	5	2	7			
	Diploma	0	1	1			
	Degree & above	1	0	1			
Total		**112**	**23**	**135**			

Source: Survey results, 2020

As one of main social factors, religions of the respondents have significant influence on the behavior of the local communities particularly with regards to work day hours for participation in local livelihood activities and environmental conservation practices. As indicated in figure4, out of the total respondents who completed the questionnaire, 76(56%) of them were Muslim in religion. Whereas, 60(44%) of respondents were Orthodox in their religion.

Figure 4: Religion of the respondents



Source: Survey results, 2020

4.3 Current position of agricultural investment in the study area

Recently, in Ethiopia as well as BGR, agricultural investment has got attention as vital priority to contribute to the national economy by transforming farming practices particularly in low land areas of the country. In line with this, the national government envisions continuing accelerated growth of the agricultural sector by promoting the participation of the private sector in agriculture so as to foster economic growth. Hence, the number of agricultural investment projects in the region as well as in the study area shows a tremendous increase from time to time.

Table 8: Categories of investment projects and land transferred in Guba woreda, BGR

Region		
Type of investment	Number of investment projects	Land transferred(ha)
Domestic Investment	404	**208602**
Diaspora Investment	34	**39,378**
Foreign Investment	8	**13979**
Total	**446**	**261,960**
Guba woreda		
Type of investment	Number of investment projects	Land transferred(ha)
Domestic Investment	148	**108,593**
Diaspora Investment	3	**14,123**
Foreign Investment	2	**1377**
Total	**167**	**124,193**

Source: Survey results, 2020

As stated in above table8, there are three categories of investment: domestic, diaspora and foreign investment. With regards to land transferred 208,602ha of land was transferred to 404 domestic investors; 39,378ha to diaspora investors and 13,979ha to foreign investors. In relation to this the study area has potential domestic, diaspora and foreign investors. The share of the study area out of the total land transferred is 47%. Likewise, the share of number of investment projects is 37% and there is significant concentration compared to other woreda's in the region. As of the Guba woreda land administration environment protection and investment office report (LAEPIPO, 2020), out of the total land transferred insignificant portion of land 26,874 ha (22%) was developed. Similarly, BOEPLAI (2018) stated some out of 446 investment projects (261,959 ha) firms conducting their business as per the contract agreements were only 36%. Whereas, this information reveals that the study woreda has significant share on number of investment projects and amount of land transferred in the region. In connection to this agricultural investment implication of local communities' livelihood and environment is expected to be high relatively to other areas in the region.

In this regards, it can be realized that the study area as well as the region's potential with respect to commercial farming is mainly unexploited, and the current status of agriculture is a source of major concern as the sector is dominated by traditional small holder farming. On top of this, having large number of domestic investors as well as stimulating local communities to modernize their farming is conventionally expected potential benefits of promoting large-scale commercial farming. This study, therefore, was to examine the extent to which agricultural investment is benefiting the local communities and environment in the study area.

4.4 Motivating factors for agricultural investment in Guba woreda

Based on various empirical evidences, the land transfer for agricultural investment and number of projects showed rapid increase from time to time in the study area. The reason for increase in agricultural investment in the BGR is stated as availability of sufficient arable land which is suitable for large-scale commercial farming. On top of this, there is expectation of significant return in transforming the traditional subsistence based small-scale farming, specifically through technology transfers, infrastructure provision, employment generation. In this regards, the recent increasing motivation in land-based investments has engendered much inclusive consideration,

in which strong positions are taken on the impacts of such investments on environment, livelihoods, development and conflict at local and regional levels(German, et.al, 2011).

The survey results in (table9) revealed that majority 92(77%) of respondents has information on the existence of agricultural investment as well as land transferred to investors. On top of this, as stated in table10, the respondents have replied the reason for massive movement of agricultural investment in their localities. In this regards the respondents point out that the pulling factors for agricultural investment in their local area: availability of fertile land, low land rent, increase in value of agricultural products, credit availability, road infrastructure accessibility, long lease periods, policy directions, labor availability in local areas, tax exemption, peace and security. This was in agreement with the study conducted by Rashid (2016) on determinants of FDI in agricultural sectors in developing countries as well as national policy directions.

Table 9: Local communities' information on existence of agricultural investment and land transferred to investors.

	Information on existence of agricultural investment		
	Yes	No	Total
Information on land transferred	92	13	105
	27	3	30
	1	0	1
Total	**120**	**16**	**136**

Source: Survey results, 2020

In response to the couple of questions as indicated in table10, majority of the respondents agree on the availability of fertile land and existence of conducive environment in their localities. In addition to this some key informants were asked to get their view point on the issues of pulling factors. Based on our discussion they raised some issues in contrast to the survey results:

> "*The land that is considered as unutilized land by everybody in our localities is forest, bush and grazing lands. These classes of lands have direct or indirect benefits for local communities' livelihood. Whereas the massive movement of agricultural investment projects existing in our village were not based on the consent of local communities. Still local communities are silent on the expansion of these projects in the village. This is simply by considering it as policy directions of the government (KII, 2020)".*

In connection to this, some empirical studies has been provided their evidence on the main pulling factors for agricultural investment in various areas/countries. Typically identified attracting factors for potential investors in land based investment are highly debatable due to lack of land use plan and detail land suitability studies.

Table 10: Respondent's perception on pulling factors for agricultural investment in their locality

	Category	Frequency	Percentage
Availability of fertile & unused land for agriculture	Yes	124	91.2
	No	11	8.1
Low land rent per ha	Yes	124	91.2
	No	11	8.1
Rise in agricultural products value/price	yes	120	88.2
	No	15	11
Credit availability	Yes	96	70.6
	No	39	28.7
Road Infrastructure accessibility	Yes	101	74.3
	No	34	25
Long lease periods in years	Yes	93	68.4
	No	41	30.1
Policy directions	Yes	117	86
	No	18	13.2
Labor availability in local areas.	Yes	95	69.9
	No	40	29.4
Tax exemption	Yes	113	83.1
	No	22	16.1
Political stability(peace & security)	Yes	103	75.7
	No	32	23.6
Low population density	Yes	118	86.8
	No	17	12.5

Source: Survey results, 2020

The survey results (table11) further showed that on top of having information on agricultural investment, the respondents were requested for their feeling or perception on the expansion of agricultural investment in their localities. Almost more than half of them recognized that agricultural investment is considered as vital development strategy; particularly, it has significant role for local economic development. In general, majority of respondents considered agricultural

investment is a key development priority and vital for agricultural production and productivity. In addition, it helps to stimulate the local communities to scale-up their farming practices and participation in related investment activities. In line with this, as of the key informants (KII, 2020):

> *"Some model farmers as well as local communities that have financial capacity are showing their motivation to invest in agricultural sectors by sharing experiences and skill from investors in agricultural sectors. If this practice has got special support by local administration, it could help to transform the life styles or livelihoods of local communities."*

In connection to this, there are few model farmers transferred to large-scale commercial farming in the study areas. Whereas, significant number of respondents replied that agricultural investment has no benefit in practices. Particularly, some investors have no capacity and they are renting the portion of investment land for land less, specifically, for migrant communities. This is one of major factors for local violent conflicts or aggravating land resource based conflict in local areas in the region. More over the local culture is exposed due to large number of people's inflow from different parts of the country.

Table 11: Respondent perception of expansion of AI in their localities

	Frequency	Percent
It considered as development partner	70	51.5
It has no benefit	29	21.3
It is due to availability of fertile and cheap land	4	2.9
Low capacity & renting portion of land for land less migrant communities	14	10.3
It can help to change the livelihood pattern of local society	6	4.4
It has a vital role in local economic development	8	5.9
It has influence on local culture	5	3.7
Total	136	100.0

Source: Survey results, 2020

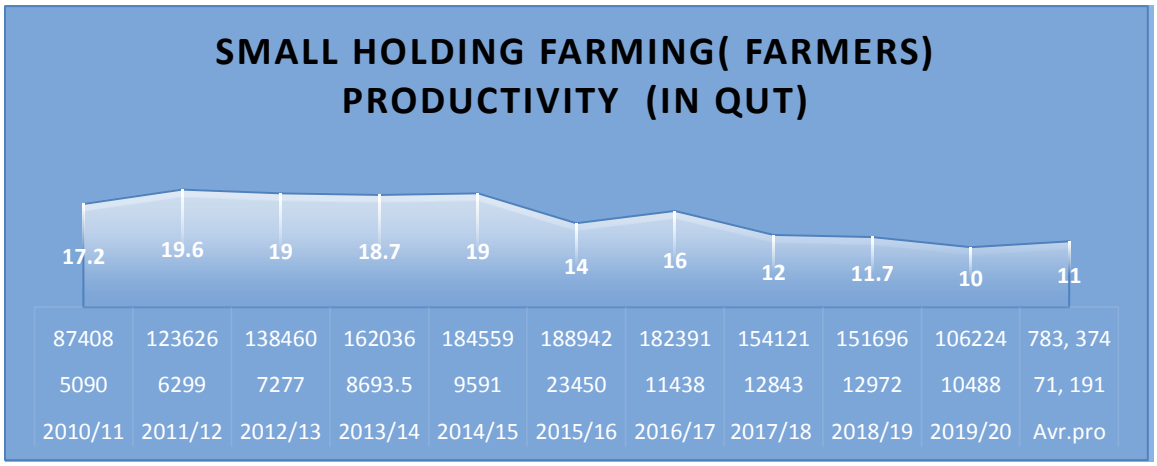
4.5 Agricultural Investment Contribution for Local livelihoods

In recent decades the national and local government on top of designing the strategies to increase productivity of small farmers, the government focused on promoting large-scale investment for achieving overall economic growth and development. This is based on the notion that investments in agricultural sector increase production and productivity of agriculture, create employment opportunities, and enhance local revenue.

In relation to this, it can be realized that the ten years average productivity of small holder farmers seems by far better than five years average large-scale agricultural investment firm's productivity report (table12 &13). Despite the facts that there may be different factors for agricultural productivity, the purpose of large-scale commercial farming is to increase production and productivity as well as to transform agricultural sector. In respect to this, the performance of investors in agricultural sectors in the study area is under expectation and needs valuable support and close supervision to enhance the productivity at least to the local potential or national average.

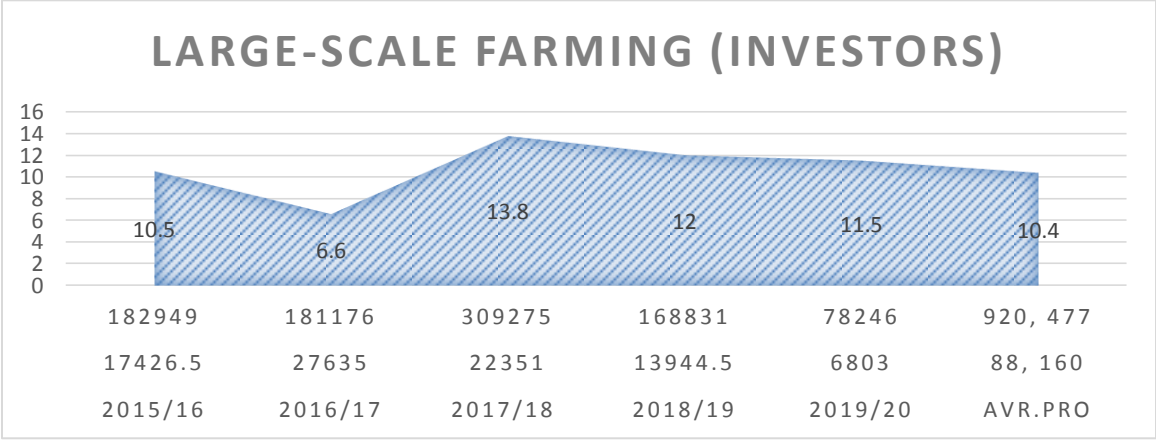
As it can be seen from the time series table the trends of production and productivity of small holders farming is declining. This result was supported by the regional official report (BoEPLAI, 2018) on productivity of common crops: smallholders (15.5 qut/ha) and large-scale farming (5.98 qunt/ha). There may be some common factors that could be applied to increase the production and productivity of small scale farmers. Out of these factors particularly technology transfer such as provision of improved agricultural inputs and farming practices are to some extent expected from agricultural investment firms. This implies that private agricultural investment in the study area has no significant contribution to increase production and productivity of small holder farmers.

Table 12: Ten years' time series data on production and productivity of common crops of smallholder farming.



Source: *Guba woreda Agriculture & Natural Resource office report, 2020*

Table 13: Five years' time series data on production and productivity of common crops of large-scale farming



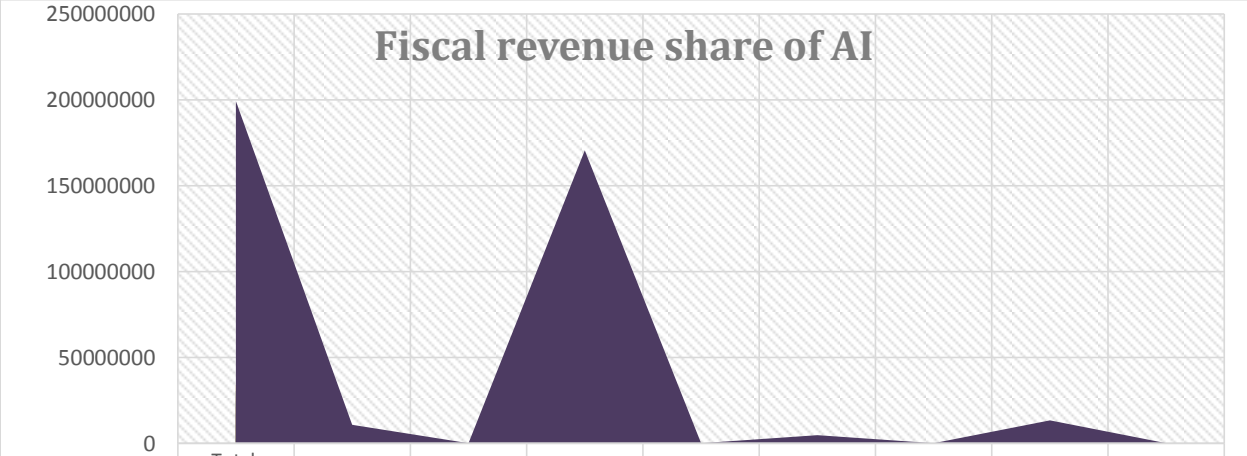
Source: *Guba woreda Agriculture & Natural Resource office report, 2020*

The contribution of agricultural investment for increasing local fiscal revenue is one of the main contributions to enhance local economic growth. Figure5 clearly indicates the nine years' time series data on potential sources of fiscal revenue in Guba woreda. The time series data indicates the lion share of fiscal revenue is covered by manufacturing sectors (86%). The average fiscal revenue share of agricultural investment is 7% and it is relatively better than small holder agriculture and service sectors. Here the total average agricultural sector contribution is 9% and it is insignificant as compared to the regional share of agricultural sectors. This data also

revealed that trends of all sectors contribution for fiscal revenue have no normal distribution as compared to the regional economic sectors contribution to regional revenue.

In line with this, some experts and KII were asked on the reason for extra ordinary increment on the share of manufacturing. They replied that the extra ordinary increment in manufacturing sectors' contribution for fiscal revenue is due to the Grand Ethiopian Renaissance Dam (GERD) construction in the woreda. This implies that when the fiscal revenue is computed without renaissance dam contribution, the share of agricultural investment may expect to be significant. But to have a clear cutting point, it requires the in depth study on the actual revenue potential of the woreda.

Figure 5: Sources of fiscal revenue in *Guba woreda*



	Total. Fiscal Revenue	Service	% Service	Manufacturing	% ManF	Agriculture	% Agri	Agriculture Investment	% share of AI
2011	2703060	164858	0.06	2242099.89	0.83	168,576.56	0.06	127,525.75	0.05
2012	20857661	146930	0.01	19767726.1	0.95	390,210.10	0.02	552794.94	0.03
2013	10856618	551521	0.05	9,317,726.	0.86	333,665.98	0.03	653,704.86	0.06
2014	17199775	670715	0.04	14,936,993	0.87	537,067.60	0.03	1,054,999.	0.06
2015	24507610	950584	0.04	19,828,389	0.81	986,112.71	0.04	2,742,523.	0.11
2016	33824878	1881576	0.06	30329362.4	0.90	248,010.25	0.01	1,365,928.	0.04
2017	30402255	4932029	0.16	21642994.2	0.71	662,193.83	0.02	3,165,037.	0.10
2018	26445177	674134	0.03	22459678.5	0.85	597,234	0.02	2,714,131	0.10
2019	32428816	725429	0.02	30,029,807	0.93	753,927.38	0.02	919,650.89	0.03
Total Sum	199225850	10697776	0.05	170554778	0.86	4,676,998.	0.02	13,296,297	0.07

Source: *Guba woreda Revenue office*, 2020.

Concerning employment opportunities out of 167 functional projects 102(61%) investment projects created job opportunities for communities (table14). The nature of employment

opportunities created in the study area is categorized as permanent and temporary employment. As a result, out of the total employment (46,904); 2,428 and 44,476 were permanent and temporary respectively. More specifically, out of the total permanent 192(161 male and 31 female); and temporary 15,419 (11975 male and 3444 female) employment opportunities were created in local communities. Whereas, out of the total permanent 2236(1835 male and 401 female); and temporary 29,057(27,355 and 1702) employment opportunities were created for communities outside the study area. This information also indicated that the share of local communities in both permanent and temporary employment is 8% and 33% respectively. This findings were supported by Abbink (2011) that employment generation in large-scale agricultural schemes is marked by low earnings on the part of small number of local people participation and hence cannot compensate for lost livelihoods.

Here it can be realized that in spite of an argument that often put forward employment creation in favor of additional investment in agriculture, the data revealed that the contribution of AI for local communities through employment generation is insignificant in the study area.

Table 14: Employment Opportunities created by Investment projects in *Guba woreda*

	Number of Investment projects created employment opportunities	Number of Investment projects unable to create employment opportunities	Total
	102	65	167

Nature of Employment	Local communities			Migrant Communities		
	Male	Female	Total	Male	Female	
Permanent	161	31	192	1835	401	2236
Temporary	11975	3444	15,419	27355	1702	29,057

Source: Guba woreda land administration, environmental protection and investment office, 2020.

The survey results (table15) revealed that the majority of the respondents (60%) replied agricultural investment has no vital benefit for local economic development. While a significant number of respondents (40%) were recognized that agricultural investment (AI) have vital benefits for local economic development. This result is in contrast to the respondent's initial perception or feeling on AI expansion in their localities.

Table 15: Potential benefits for agricultural investment

Whether AI has vital benefits for local economic development?	Frequency	Percent
Yes	55	40.4
No	81	59.6
Total	136	100.0

Source: survey result, 2020

Likewise, as it can be showed in (table16), more than half of respondents illustrated their disagreement on list of benefit streams of agricultural investment in the study area. The survey result is more or less reflections of the production, productivity, employment and fiscal revenue situations of the study area in the aforementioned sections. For instance the benefit streams like technology transfer, contact farming, provision of improved varieties and farming practices are vital contributions expected by local communities from agricultural investment firms to increase the production and productivity of small holder farming. Thus, the productivity of common crops in small hold farming is directly related to limitation of potential benefits agricultural investment.

Table 16: Respondents agreement on benefit streams of agricultural investment

Benefit streams	Strongly disagree	Disagree	Neutral	Agree	Strongly Agree
Technology Transfer	40(29.4%)	13(9.6%)	11(8.1%)	20(14.7%)	52(38.2%)
Employment generation	66(48.5%)	2(1.5%)	8(5.9 %)	27(19.9%)	33(24.3%)
Knowledge & skill development	53(39%)	5(3.7%)	9(6.6%)	35(25.7%)	34(25%)
Community development services	69(50.7%)	7(5.1%)	9(6.6%)	27(19.9%)	24(17.6%)
Increase in local revenue	48(35.3%)	2(1.5%)	17(11.5%)	25(18.4%)	44(32.4%)
Increase in household income level	80(58.8%)	3(2.2%)	2(1.5%)	22(16.2%)	29(21.3%)
Create opportunities for contract farming	88(64.7%)	13(9.6%)	8(5.9%)	16(11.8%)	11(8.1%)
Provision of improved varieties	88(64.7%)	1(.07%)	2(1.5%)	23(16.9%)	22(16.2%)
Improved farming practices	80(58.8%)	-	3(2.2%)	34(25%)	18(13.2%)
Improved infrastructure & public services	86(63.2%)	1(.07%)	4(2.9%)	22(16.2%)	23(16.9%)

Source: Survey results, 2020

With regards agricultural investment contribution, particularly in contract farming schemes, farmers benefit from access to technological information and extension services provided by investors/traders. On top of that contract farming reduces both production and marketing risk by ensuring a guaranteed source of supply with specific quality requirements to processors or intermediaries and ensuring farmers an immediate market outlet for their produce as well as access to inputs. To the extent that firms contract with smallholders, contract farming has the potential to raise incomes of the poor and promote rural development.

In line with, respondents were asked whether they have engaged in practices of contract farming with potential investors in agricultural sectors. As the survey result revealed in table17, almost nearly all of respondents 128 (96%) replied no practices of contract farming or outgrowing

schemes with firms in their localities. In addition to this, the independent-T test result ($p<.05$) indicates that there is statically significant mean difference between the practices of contract farming and household income.

In addition, respondents were also requested to get their viewpoint on whether the agricultural investment has significant contribution to the wellbeing of local communities. As it can be seen in table17, the majority of respondents 78 (57%) stated there is no vital benefits for local community life style. On top of this, output of independent-T test ($p<.05$) also indicates that there is statistically significant mean difference between average household income per month and potential benefits of investment in agricultural sectors. This finding is in disagreement with argument stated in (Deininger, 2011), that agricultural investment could strength livelihood conditions, by promoting the uptake of modern farming practices, improving access to inputs, supporting smallholder integration into global value chains, and generating much needed formal employment opportunities.

Table 17: Independent T-test on AI benefits and household income per month

Practices of contract farming or out growing with investors							
	Categories	N	Mean	Std. Deviation	T	df	Sig(2-tailed)
Household income	Yes	5	1140.00	477.493	-2.058	131	.042
	No	128	3025.64	2039.430	-6.748	11.547	.000
AI has vital benefits for local community's well being							
	Categories	N	Mean	Std. Deviation	T	df	Sig(2-tailed)
Household income	Yes	55	2515.91	1898.692	2.116	131	.036
	No	78	3264.19	2081.200	2.150	122.563	.033

Source: Survey results, 2020

The survey results in table18 below, on the other hand, revealed that on top of potential benefits agricultural investment has potential threat for local communities and environment. The respondents acknowledged that agricultural investment has potential threats: deforestation

(82%), dispossessions of land (75%), mal-practices (86%), violent conflict (77%), and increase charcoal production practices (80.1%), and increase the incidence of forest fire (64%).

Table 18: Potential threats of agricultural investment on local communities and environment

	Categories	Frequency	Percentage
Deforestation	Yes	111	81.6
	No	25	18.4
	Total	136	100
Biodiversity loss	Yes	111	81.6
	No	25	18.4
	Total	136	100
Dispossession of land	Yes	103	75.7
	No	33	24.3
	Total	136	100
Malpractice (rent seeking & cultural influence)	Yes	117	86
	No	19	14
	Total	136	100
Violent conflict	Yes	105	77.2
	No	31	22.8
	Total	136	100
Increase charcoal production practices	Yes	109	80.1
	No	27	19.9
	Total	136	100
Increase the incidence of forest fire	Yes	87	64
	No	49	36
	Total	136	100
Walking distance for fetching water & firewood's	Yes	105	77.2
	No	31	22.8
	Total	136	100
Depletion of wetland & water sources	Yes	119	87.5
	No	16	11.8
	Total	135	99.3

Source: Survey results, 2020

As it can be realized from the aforementioned table the variables can have cause and effect relationship to each other's. For instance, increasing charcoal production practices and incidence of forest fire can be driving forces for deforestation. In line with this, figure6 & figure7 indicated the existing practical evidences in the study area as well as in the region. Particularly, increasing charcoal production practices can be related to conversion of dense or open wood land to large-scale farming projects.

Despite the facts that forest fire may be caused by different conditions and bodies. It has been damaging valuable natural resources like low land bamboo vegetation and other biodiversity's. It is also contributing for climate change every year. As everyone could be understood low land bamboo have various benefits, particularly in the study area as well as in the region i.e. the livelihoods of local communities mainly depends on it.

Low land bamboo, on top of its direct contribution as source of food for local communities; it is practically valuable natural resource for generating household income and shelter construction. While forest fire and agricultural investment expansion severely affecting low land bamboo and other related biodiversity on which local communities livelihoods were based. Thus, such like effects on natural resource base obviously could directly or indirectly affect local communities' livelihood and environment.

Figure 6: Charcoal production practices

Source: Observation, 2020

Figure 7: Forest fire and its effects natural resources

Source: Observation, 2020

With regards to the potential threats of investment in agricultural sectors independent t-test in (table19) was to realize the influence of agricultural investment on local livelihoods by taking the main indicator for livelihood improvement of local communities. House hold income level improvement is one of the indicators for livelihood outcomes. Dispossession of land is not only parcel of farm land dispossession; it could be losing the right to use range land, woodland/forest, water body and communal lands for expansion of shifting cultivation. In relation to existing facts the independent-T test result ($p<.05$) indicates that there is statistically significant mean difference between dispossessions of land and monthly average household income of respondents. In general, the same test also indicates that there is statistically significant mean difference between average household income per month and potential threats of investment in agricultural sectors.

In relation to this, the study conducted by Moreda (2017) has revealed that indigenous local communities face the threat of losing their land and their natural resource-based livelihood. On the other side Moreda argued that the large-scale land transfer for agricultural investment is generating gains for some local economic and political elites, as well as for the state; the region's indigenous local communities, however, have noted little gain and possibly great loss. Here, in my view, part of this finding and generalization put to some extent extreme dichotomy between the state and the society. This means the generalization outlined by the author contrasts the principle that 'redistributive roles of the state' means the economic benefits gained by the

state would be redistributed to society as well as local communities. On top of this, Shete (2016) stated that agricultural land acquisitions for large-scale agricultural investment is often used by local societies for various activities and that land transfer could lead to the dispossession of land and related natural resources for the local community.

Table 19: Independent T-test on AI threats and household income per month

	Agricultural investment threats						
	Categories	N	Mean	Std. Deviation	T	df	Sig(2-tailed)
Household income	Yes	118	3l37.14	1983.615	2.986	131	.003
	No	15	1520.00	1910.198	3.075	18.061	.007
	Dispossession of land						
	Categories	N	Mean	Std. Deviation	T	df	Sig(2-tailed)
Household income	Yes	100	2677.07	1641.635	2.811	131	.006
	No	33	3796.21	2785.969	2.186	39.585	.035

Source: Survey results, 2020

4.5.1 Multiple Linear Regression Analysis

Multiple regression analysis (MRA) is one vital tools to estimate the effects of the explanatory variables on response variable. A multiple regression model is valid, when fulfilled fundamental assumptions. A common rule of thumb: for any explanatory variable if VIF>10, multicollinearity problems should be examined before running the regression analysis (Dhakal, 2018).

Based on the aforementioned concepts, in this study on top of the descriptive statistics, MRA was used to examine the contribution of agricultural investment for local community livelihoods (table, 20). Average household income per month was considered as the dependent variable. Due to the continuous nature of the dependent variable, MRA was employed. This is because it is a widely adopted method to capture the influence of explanatory variables on the dependent variable. A total of nine explanatory variables were included in the regression model.

The model fitness/goodness to the data was checked using R-squared values. Before running the model, model diagnostic tests were conducted. Among others, multicollinearity and normality test were conducted. Existence of problems of multicollinearity was tested using variance inflation factor (VIF values).

In this regression model, the result showed that a mean VIF value of 1.29 and tolerance >0.1 indicating absence of multicollinearity problem with the data. As indicated in the model result, F (9, 128) = 4.098, p (.000) <.05, a 0.305 R-squared revealed that the model is statistically significantly predicted and 31 percent of variation in the dependent variable is explained by the independent variables. Of the twelve explanatory variables included in the model, sex, family size, farm land size, market services, dispossession of land, and household's perception on AI risks were found to be significantly (P<.05) affecting the monthly household income in the study area.

The result showed that sex of the respondents significantly affects the average household income adversely at 10 percent significance level. This implies that being male headed households contributed for increasing monthly income of the household as compared to the female headed households. Household family size was another significant variable that positively affected household monthly average income. The result showed that as increase in one unit of the household size would increase the average monthly income by 168. This implies the role of household (labor contribution) in increasing household income.

Farm land size also affects the monthly income obtained by the households from agricultural investment. The regression model result revealed that a unit increase in land size by one hectare increased the household income from agricultural investment. This shows how land is essential factors of production for improving household livelihood situations. In line with this, as in the descriptive statistics household heads who have participated in the research process have min 1/2ha and max 40 ha i.e. the average holding parcel size is 9.4. In the study area rural land administration is customary tenure system. The max holding size is more than the ceiling of national holding size (10 ha). Even though farm land holding in the study area is not secure tenure system in legal frame works of the country, it has significant contribution for increasing the household income level in varies modality: by developing with family labor or renting partially or fully for land less or migrant communities. However, the cumulative result is not satisfactory due to weak law enforcement in the study area as well as in the region.

In a similar way, marketing services influence the income of the households positively at significant level of 10 percent. The result implied that households that get access for market services/ market information would get more income than those households who may not get

access for the services/ information. Market disposition is one of the factors that negatively affect household agricultural income.

Dispossession of land is not only parcel of farm land dispossession; it could be losing the right to use range land, woodland/forest, water body and communal lands for expansion of shifting cultivation. In relation to existing facts the model result ($p<.05$) indicates that dispossession of land affects significantly local communities livelihoods by reducing land for shifting cultivation and free grazing .i.e. in turn decrease house hold income level. The negative coefficient result showed that as the households are dispossessed from their land for shifting cultivation and free grazing, their average monthly income reduced by 1260 EB.

Similarly, household perception on agricultural risk has negative correlation with the average household income per month as well as local communities' livelihood situations. This implied as they perceive agricultural investment threats, (for instance, deforestation, conflict, mal-practices, walking distance for fetching water and wood fires) would happen, and then they would approximately lose about 1538 EB per month per households. This may happen due to the risky nature of the sector.

On the other hand, some important explanatory variables were not significant in the model:

Provision of improved varieties: it is one of benefit streams expected from expansion of agricultural investment. For instance the benefit streams like technology transfer, contact farming, provision of improved varieties and farming practices are vital contributions expected by local communities from agricultural investment firms to increase the production and productivity of small holder farming. However, more than half of house hold heads participated in the research process illustrated their disagreement on list of benefit streams of agricultural investment in the study area. Likewise, the regression model result revealed that provision of improved varieties has no significant contribution for local communities' livelihoods or for household income.

Contract farming practices: as indicated in the model results $p>.05$, contract farming has no significant contribution for local communities' livelihoods particularly to increase their income level. There is no contract farming practices in the study area. Similarly, almost nearly all of

respondents 128 (96%) replied on absence of practices of contract farming or outgrowing schemes in their localities.

Table 20: Multiple linear Regression Results

Model	Unstandardized Coefficients		t	P-Sig	95.0% Confidence Interval for B		Collinearity Statistics	
	B	Std. Error			Lower bound	Upper bound	Tolerance	VIF
(Constant)	581.906	2592.539	-0.224	0.823	-5718.7	4554.88		
Sex	-1281.21*	633.551	-2.022	0.046	-2536.5	-25.909	0.952	1.051
Age	-15.567	19.941	-0.781	0.437	-55.078	23.944	0.805	1.241
Household size	168.435*	72.388	2.327	0.022	25.007	311.863	0.817	1.224
Farm land size	83.02*	33.398	2.486	0.014	16.845	149.195	0.925	1.081
Contact farming practices	1558.964	955.477	1.632	0.106	-334.19	3452.12	0.902	1.108
Market services	1075.354*	455.724	2.36	0.02	172.396	1978.31	0.537	1.862
Improved varieties	-535.766	453.15	-1.182	0.24	-1433.6	362.093	0.537	1.862
Dispossession of land	-1260.279	399.135	-3.158	0.002	469.445	2051.11	0.859	1.164
HHs perception on AI threats	-1538.55*	653.53	-2.354	0.02	-2833.4	-243.66	0.745	1.343

A mean VIF					**1.29**
F-value					**4.098**
R-values	R	R square	Adjusted R square	Std. Error of the Estimate	
	.552[a]	**.305**	**.231**	**1786.11**	

a. Dependent Variable: Average household income per month

4.6 Environmental Impact Assessment practices in AI projects

The environmental implications of agricultural investment projects can both be positive, when the projects create employment opportunities, construct infrastructure and contribute to local

economic development; and negative, when the projects lead to loss of land and livelihoods, and limit local inhabitants' access to water, fire wood and other natural resources that are important for income generation and food security (Aabø & Kring, 2012). The notion of increasing pressures on land, water and other natural resources is important to assess the socio-economic and environmental impacts, as well as weigh the opportunity costs, of any activity which entails land area expansion and or significant investments.

In order to ensure sustainable development, it is essential to integrate environmental concerns into development activities, programs, policies, etc. Environmental impact assessment as one of environmental management tools facilitates the inclusion of principles of sustainable development aspiration soundness in advance. EIA is a proactive tool and a backbone to harmonizing and integrating environmental, economic, cultural, and social considerations into a decision-making process in a manner that promotes sustainable development.

In connection to this, concerning the environmental management practices of agricultural investment projects in the region as well as the study woreda out of 446 investment projects: 206(46%) projects have EIA/EMP and 240(54%) projects have no EIA/EMP (table, 21). This data reveals that the majority of investment projects are conducting their land development activities without EIA/EMP. This is in contrast to EIA proclamationNo-299/2002 which declared that conducting environmental impact assessment (EIA) is mandatory for categories of projects specified to have EIA whether such projects belong to public or private bodies.

In respect to this, out of 167 investment projects 101 projects have no EIA/EMP. This indicates that in line with agricultural investment expansion in the study area, the local environmental issue is not given due consideration.

Table 21: Practices Environmental Impact Assessment in AI projects

Environmental Impact Assessment for Agriculture investment projects			
	Have(EIA/EMP)	Have No (EIA/EMP)	Achievement (%)
BGR	206	240	46.2
Guba woreda	66	101	39.52

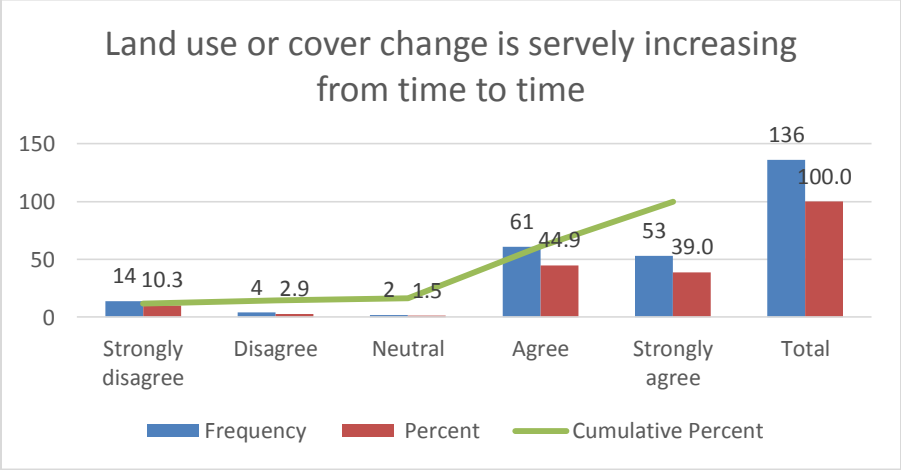
Source: Regional BOLAEPI, 2020

4.7 Land use or cover change in the study area.

Over all transformation of land escape may be induced by direct anthropogenic land use/cover conversions as well as due to climate change factors. Guba woreda as well as Aysid kebele was dominantly covered by forest and woodlands. The expansion of agricultural investment over recent years in the study has brought about an increase in rates of natural resource depletion and occurrences of bushfires.

The survey results (figure8) indicated that majority of the respondents (84%) expressed their agreement on the notion of land use or cover change is severely increasing from time to time. A few respondents reported their disagreement on the statement.

Figure 8: Respondents response on land use/cover change



Source: Survey results, 2020

Moreover as stated in table 22, the respondents were requested to indicate land use or cover conversions. Based on the points raised in the survey questionnaire 97% of the respondents replied conversion of forest, bush and grass land to investment farm land. The rest 90% and 69% give their observation on conversion of village and reserved areas to farm land. The result is in agreement with Abbink (2011) that land allocated for large scale farming has been used by local communities for shifting cultivation and gathering of various products of forest such as forest honey, forest fruits and roots crops to substantiate their livelihoods.

Table 22: Respondents response on the mode of land resource conversion

Mode of conversion	Categories	Frequency	Percent
Conversion of forest land to investment farm land	Yes	132	97.1
	No	4	2.9
	Total	136	100
Conversion of bush and grass land to investment farmland	Yes	132	97.1
	No	4	2.9
	Total	136	100
Conversion of village to farmland	Yes	122	89.7
	No	14	10.3
	Total	136	136
Conversion of reserved or park area to farmland	Yes	94	69.1
	No	42	30.9
	Total	136	100

Source: Survey results, 2020

4.7.1 Land use and land cover change analysis based on time series satellite image

In this study the analysis of land use or cover change was made using time series satellite images of landsat5 and sentil2. Since the L-band has a canopy penetrating capacity, it is highly useful to differentiate forest and non-forest areas. These data sets were used to improve the land use/land cover classification results obtained from Land sat 5 TM and Sentinel 2 classifications.

Remote sensing approaches are the most cost-effective means of quantifying land use or cover change over vast areas of extraordinary spatial and temporal details. Thus, remotely sensed datasets have become increasingly available to the public at no cost. The land sat satellites are the most notable instruments that have been operational in acquiring image data of the globe in a time series basis since the 1970's. More recently, improved in its spatial, spectral and temporal resolutions, sentinel 2 images added up to existing public domain satellites and acquire images of the earth's surface in three spatial resolutions (10m, 20m & 60m) and with five days temporal resolution.

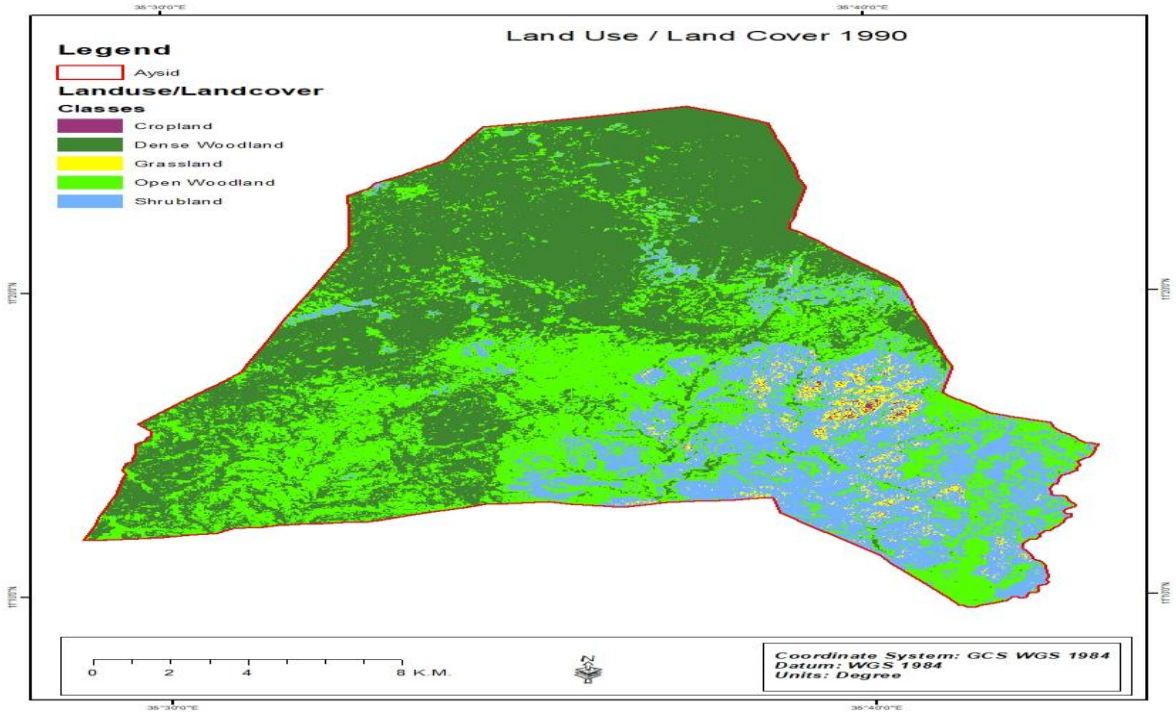
In line with this, the land use or cover change analysis in the reference years from 1990-2010 were characterized by Land sat 5 TM image composites, while the 2019 reference were signified by Sentinel-2 images. Satellite image analysis process image classification is a vital step to identify the land use change in each class. In line with this, the ministry of environment, forest

and climate change commission (MoEFCC) land use classification was utilized in this study. MoEFCC (2016) categorized the board land cover classes into seven classes: forest or dense woodland, cropland, open woodland and grassland, shrub land, wetland, bare lands and built-up areas.

The following figures designate the land use/cover change conversion in the study area using land use/land cover as a proxy. The analysis, therefore, used Land sat5 and sentinels 2 images of Aysid kebele acquired in four-time references 1990, 2000, 2010 and 2019.

As shown in figure9 below the dominant land use or cover in 1990, the dominant land cover is forest or dense woodland (45.8%) and i.e. followed by open woodland (33.34%) and shrub land (18.9%). At this period the share of crop land (0.22%) is very insignificant.

Figure 9: Aysid kebele land use or cover in 1990



Source: LULC Satellite image in1990

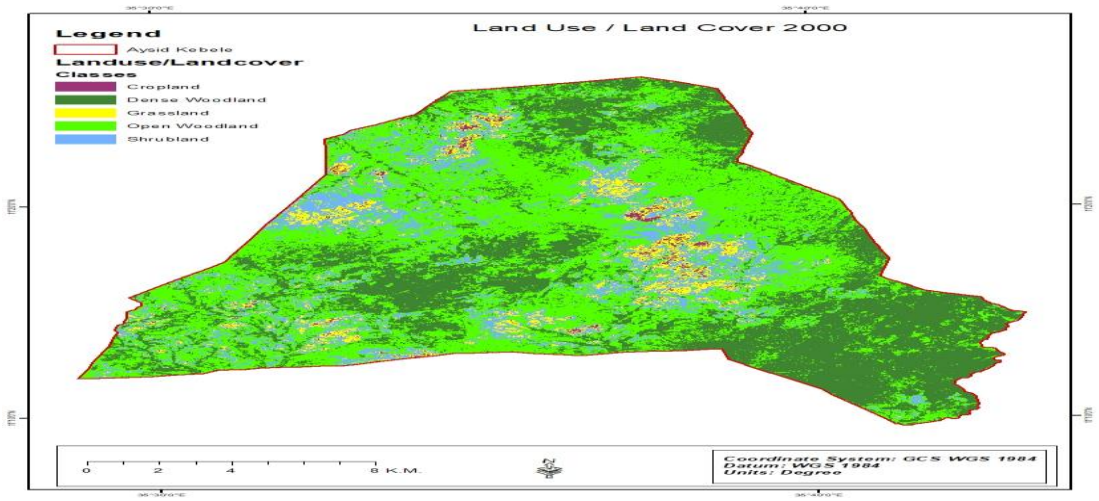
Table 23: Land use or cover change statistics of 1990

Land use/land cover	Area (ha)	Percent (%)
Cropland	91.35	0.22
Dense Woodland	19398.2	45.80
Grassland	738.81	1.74
Open Woodland	14120.6	33.34
Shrub land	8003.79	18.90
Total	**42,352.75**	**100.00**

Source: Quantification of LULC image in 1990

Whereas, it can be seen in figure10 below the land use or cover in 2000, the dominant land cover is open woodland (47%) followed by forest or dense woodland (34 %) and shrub land (14 %). In similar period the share of crop land (0.9%) is still insignificant, while there is 0.7% increment in comparison to 1990 reference period.

Figure 10: Aysid kebele land use or cover in 2000



Source: LULC Satellite image in 2000

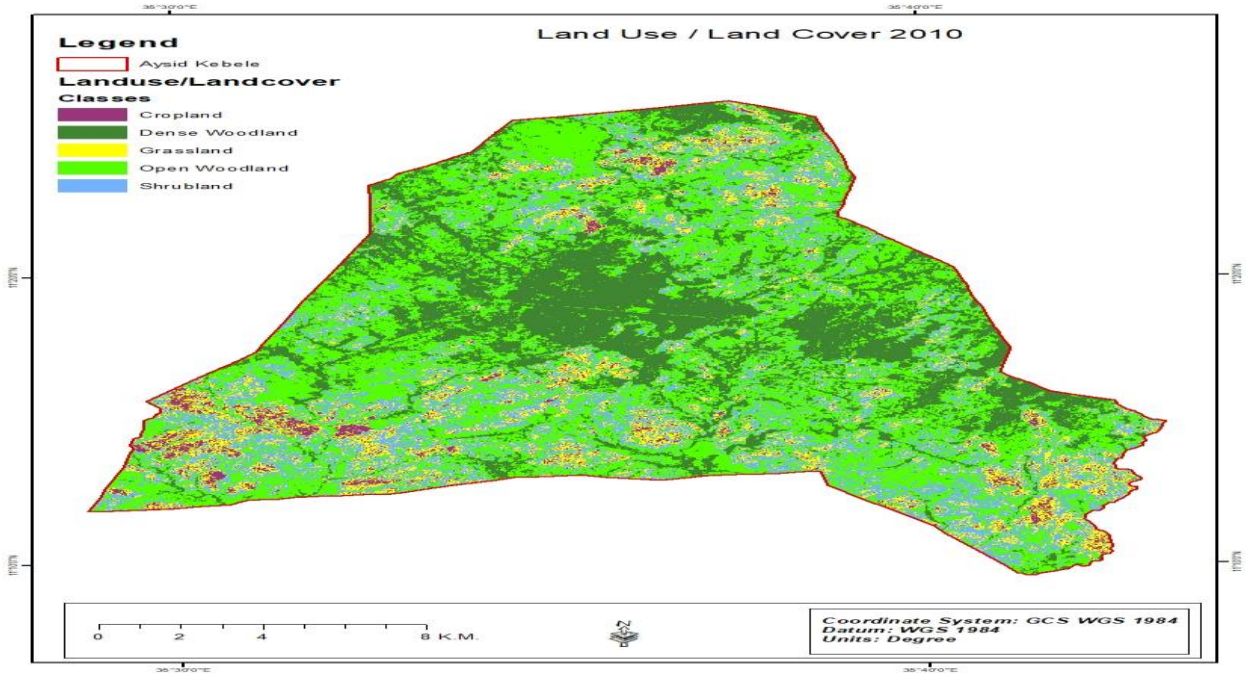
Table 24: Land use or cover change statistics of 2000

Land use/land cover	Area (ha)	Percent (%)
Cropland	380.7	0.90
Dense Woodland	14501.9	34.24
Grassland	2010.42	4.75
Open Woodland	19702.4	46.52
Shrub land	5757.3	13.59
Total	**42,352.72**	**100.00**

Source: Quantification LULC image in 2010

Likewise the image information in figure11 indicated that the dominant land use or cover in 2010 is open wood land (42%) followed by forest or dense woodland (26%) and shrub land (20 %). This period can be considered as turning point for analyzing land use or cover change induced by AI investment in the study area. The share of crop land was (3%) and the trend of change (2.1%) is rapid and significant with reference to the previous periods.

Figure 11: Aysid kebele land use or cover in 2010



Source: LULC Satellite image in 2010

Table 25: Land use or cover change statistics of 2010

Land use/land cover	Area (ha)	Percent (%)
Cropland	1253.97	2.96
Dense Woodland	11134.6	26.29
Grassland	4015.8	9.48
Open Woodland	17619.3	41.60
Shrub land	8329.05	19.67
Total	**42,352.72**	**100.00**

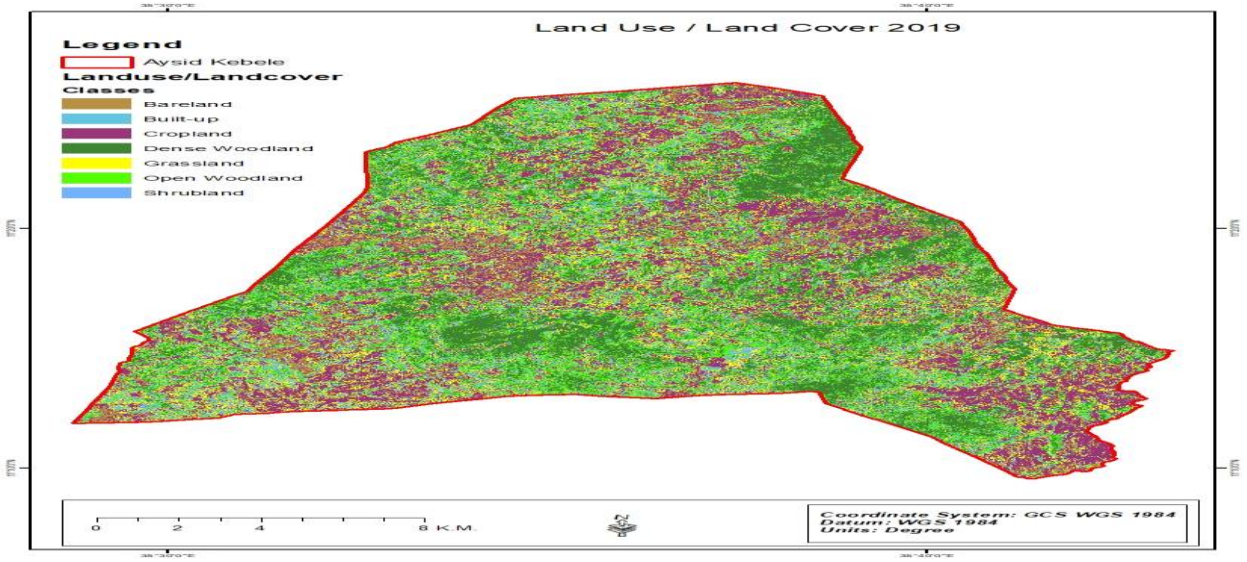
Source: Quantification of LULC in 2010

As shown in figure12, land use or cover change in 2019 clearly indicates the existence of tremendous conversion of land use mainly to crop lands. In line with this, the dominant land use

or cover in this reference period is crop land (26%). As it can be realized from the image information (table26) the rapid increase in crop land is at the expense of dense woodland, open woodland as well as shrub lands. With respect to this, all the land classes' particularly, dense woodlands designated the trend of decreasing at an increasing rate in four referenced periods.

This land use or cover change is expected mainly to be induced by the expansion of agricultural investment in the study area since 2010. Besides this information the secondary sources and key informants were stated that the massive movement of agricultural investment was started in a similar period in the region as well as in the study area. This finding was supported with a study done by Guyu & Aduwa (2020) that indicated 29% and 18% decrease in land area under dense and open forests respectively over a period of 30 years. Conversely there is 32% and 25.6% increase in the land under agricultural land and settlement areas respectively in Anbessa Forest, Benishangul-Gumuz Region.

Figure 12: Aysid kebele land use or cover in 2019



Source: LULC Satellite image in 2010

Table 26: Land use or cover change statistics of 2019

Land use/land cover	Area (ha)	Percent (%)
Bare land	1,449.49	3.42
Built-up	15.52	0.04
Cropland	11,157.90	26.34
Dense Woodland	8,773.04	20.71
Grassland	6,574.56	15.52
Open Woodland	7,345.03	17.34
Shrub land	7,037.52	16.62
Total	**42,353.06**	**100.0**

Source: Quantification of LULC in 2019

4.7.2 LULC change in four time periods (1990-2000, 2000-2010, and 2010-2019).

As aforementioned landsat5 satellite image were used to generate the land use/cover change map of the study area for 1990, 2000 and 2010 referenced years while the 2019 reference year was represented by Sentinel-2 images. The image composite was classified with overall accuracy of 87%. The satellite image analysis indicates intense land use dynamics over the past three referenced years. The study area was mainly covered by the combination of dense and open wood lands in all referenced years. These land covers decrease at increasing rate in similar referenced years.

Particularly, the forest or dense woodlands reduced 1% per year in the 2010-2019 referenced periods. Crop lands increase on average by 26%. However, the rate of increment per year was higher in the 2010-2019 referenced periods (table 27). The increment is 2.6 % per year. This finding is in agreement with the study conducted by GIZ (2018) on land use assessment which indicated that croplands steadily increased since 2000 on average by about 9% at the expenses of forests and wood lands. In 2010-2017 time periods, the rate of increment is 1.77 % per year.

If these trends continuous, the dense and open wood lands can be severely reduced in near future. This has its own implications on local communities' livelihoods and environment, since majority of the communities highly depends on forest and other natural resources for their livelihoods.

Table 27: Summary of LULC analysis of four referenced periods

Land use/land cover	2019		2010		2000		1990	
	Area (ha)	Percent (%)	Area (ha)	Percent (%)	Area (ha)	Percent (%)	Area (ha)	Percent (%)
Bare land	1,449.49	3.42	0.00	0.00	0.00	0.00	0.00	0.00
Built-up	15.52	0.04	0.00	0.00	0.00	0.00	0.00	0.00
Cropland	11,157.90	26.34	1,253.97	2.96	380.70	0.90	91.35	0.22
Dense Woodland	8,773.04	20.71	11,134.60	26.29	14,501.90	34.24	19,398.20	45.80
Grassland	6,574.56	15.52	4,015.80	9.48	2,010.42	4.75	738.81	1.74
Open Woodland	7,345.03	17.34	17,619.30	41.60	19,702.40	46.52	14,120.60	33.34
Shrub land	7,037.52	16.62	8,329.05	19.67	5,757.30	13.59	8,003.79	18.90
Total	**42,353.06**	**100.00**	**42,352.72**	**100.00**	**42,352.72**	**100.00**	**42,352.75**	**100.00**

Source: Quantification of LULC in four referenced periods, 2020

4.8 Major challenges of agricultural investment process in the study area.

As stated in various empirical evidences effectiveness in agricultural investment mainly requires: participation of local communities in the entire investment process and inclusiveness of main stakeholders (investors, government, local community); proper institutions and responsible organizations; peace and security issues as well as managing dispute or conflict if among the stakeholders; and compensation for loss of livelihood resources; employment generation; local revenue and creating other non-farm income generating activities. In relation to this, new institutions of economics (NIE), therefore, would be utilized to explain essence of institutions, property rights and contract framing to build positive relation between agricultural investment projects and local communities' livelihood.

In this regards, this section is mainly focused on major challenges of agricultural investment processes in the study area. Thus, it is crucial to identify existing problems as well as recognizing the causes for existing challenges to indicate possible solutions. Based on the survey results and key informant interviews there is lack of properly defined land and property right to smallholder farmers. This is one of the worthwhile problems for farmers to claim compensation, when there is eviction of local communities land in agricultural investment processes.

Table 28: Level of agreement on potential challenges of AI process

On top of the potential benefits, AI have various Challenges	Frequency	Percent
Disagree	8	5.9
Agree	66	48.5
Strongly agree	62	45.6
Total	136	100.0

Source: Survey result, 2020

As it can be seen from the survey result (table28) almost all respondents have obviously expressed their agreement on potential challenges of agricultural investment in the study area. Here it can be realized that the local communities have awareness on potential benefits and

challenges of agricultural investment projects. In connection to this, the respondents were requested to state their view points on the detail problems and their causes to come up with possible alternative solutions. Accordingly, majority of the respondents expressed their agreement on the specific challenges such as lack of integration among stakeholders, selecting capable investors, adequate service delivery, participating local communities in land identification and transferring process. This finding was supported by the study done in (Dibaba,et.al, 2019) on agricultural investment and role of commercial farming in Benishangul-Gumuz Region that revealed similar results concerning factors constraining commercial farming.

Table 29: Major challenges of agricultural investment process in the study area

	Categories	Frequency	Percentage
Lack of local communities participation in land dealing	Yes	94	69.1
	No	34	25
	Not sure	6	4.4
	Total	134	98.5
Increasing number of land less people	Yes	86	63.2
	No	47	34.6
	Not sure	1	0.7
	Total	134	98.5
Practices of informal land renting	Yes	113	83.1
	No	20	14.7
	Total	133	97.8
Encroachments in investment farm land by local communities	Yes	121	89
	No	13	9.6
	Total	134	98.5
Local administration in adequacy	Yes	122	89.7
	No	10	7.4
	Not sure	2	1.5
	Total	134	98.5

Source: Survey result, 2020

Furthermore, as indicated in table29 respondents were asked to identify major causes for conflict between local communities and investors: increasing land less migrant communities 86(63%), lack of local communities' participation in land dealing 94(69%), practices of informal land renting 113(83%), and 121(89%) encroachments in investment farm land by local communities.

To wrap up this section, the overall survey results revealed that the potential threats of agricultural investment projects are over weighing the potential benefits. This is can be realized from the household survey results, direct observations and analysis of land use dynamics based on time series satellite images in referenced periods since massive intervention of agricultural investment projects in the study area. As a result there were clear evidences on adverse effects of agricultural investment on local communities' local livelihood bases.

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Now a day, on top of designing the strategies to increase productivity of small holder farmers, promoting large-scale investment for achieving overall economic growth and development has been given adequate attention at national and local levels. In this regards, the number of agricultural investment projects are marvelously increasing from time to time in the region as well as in the study area.

In line with this, there are domestic and foreigners owned land-based investments in agricultural sectors in the study area. However, as indicated in official report of Guba woreda, out of the total land transferred (124,193ha) insignificant portion of land 26,874 ha (22%) was developed. This can be related to lack of identifying capable firms in land transferring processes.

On top of this, the intention of promoting private investments in agricultural sector is to increase production and productivity of agriculture, create employment opportunities, and enhance local revenue as a result to improve the living conditions of hosting communities. However, as indicated in time series data the trends of production and productivity of small holders farming is declining in study area. This implies that private agricultural investment in the study area has insignificant contribution to increase production and productivity of small holder farmers. Likewise, the nine years' time series data on potential sources of fiscal revenue revealed that the average fiscal revenue share of agricultural investment is 7% and the lion share is covered by manufacturing sectors (86%). The total average agricultural sector contribution is found 9% and it is insignificant as compared to the regional and national share of agricultural sectors. Concerning employment opportunities out of 167 functional projects, 102(61%) investment projects created 2,428 permanent and 44,476 temporary job opportunities for communities. Out of the total employment opportunities, the share of local communities in both permanent and temporary employment is 8% and 33% respectively. This indicates that the contribution of agricultural investment for local communities through employment generation is insignificant in the study area.

On top of potential benefits agricultural investment has potential threat for local communities and environment: deforestation (82%), dispossessions of land (75%), mal-practices (86%), violent conflict (77%), and increase charcoal production practices (80.1%), and increase the incidence of forest fire (64%). Particularly, increasing charcoal production practices and agricultural investment projects can be related on conversion of dense or open wood land to other land uses. Despite the facts that forest fire may be caused by different conditions; key informants relate it to expansion of agricultural investment projects. It has been damaging valuable natural resources i.e. considered as local livelihood base like low land bamboo vegetation and other biodiversity's. Thus, such like effects on natural resource base obviously could directly or indirectly affect local communities' livelihood and environment.

In addition, dispossession of land is not only parcel of farm land dispossession; it could be losing the right to use range land, woodland/forest, water body and communal lands for expansion of shifting cultivation. In relation to existing facts the independent-T test result ($p<.05$) indicates that there is statistically significant mean difference between dispossessions of land and monthly average income level of household heads in the study area. In relation to this, the regression result revealed that 31% variation independent variable is explained by independent variables. Moreover, in contrast to EIA proclamation No-299/2002 which declared that conducting EIA is mandatory for categories of projects specified to have EIA, out of 167 investment projects 101 projects have no EIA/EMP. This indicates that in line with agricultural investment expansion in the study area the local environment issue is not given due consideration.

The satellite image analysis indicates intense land use dynamics over the past three referenced years (1990-2000, 2000-2010 and 2010-2019). Specifically the forest or dense woodlands reduced 1% per year in the 2010-2019 referenced periods. Crop lands increase on average by 26%. However, the rate of increment per year was higher in the 2010-2019 referenced periods. The increment is 2.6 % per year. Crop lands expansion is on the expense of the dense and open wood lands. This has also its own implications on local communities' livelihoods and environment, thus majority of the communities highly depends on forest and other natural resources for their livelihoods.

Overall, as per the survey results, majority of participants in the research process confirmed that major challenges in agricultural investment process lack of: integration among stakeholders, selecting capable investors, adequate service delivery, participating local communities in land identification and transferring process.

5.2 Recommendation

Based on the findings the following suggestions are outlined to minimize the adverse effects of agricultural investment on local communities' livelihoods and environment:

- ✓ Agricultural investment (AI) processes: land identification, preparation and land transfer for capable investors has to conduct with the local communities' consultation and participation to minimize the adverse effects of agricultural investment projects.
- ✓ Before recommending number of agricultural investment projects to specific local areas, it requires noticeably understanding the implications of potential benefits and threats of projects for hosting communities. This could help to maximize the potential benefits and reduce the adverse implications agricultural investment projects on local communities' livelihood bases.
- ✓ Focusing on efficient land resource utilization by transferring the land for investment project as per their capacity. This can reduce land encroachment, unnecessary land clearing and side charcoal production as well as land related resource conflicts.
- ✓ Practicing contract farming or out growing scheme by incorporating in contact agreement of the firms. Thus, it can benefit farmers to access technological information; reduce both production and marketing risks.
- ✓ Feasibility study on land suitability study has to be conducted by local government before transferring land. This to solve the problems related to production and productivity of a given parcels of land.
- ✓ Creating conducive environment for agricultural investment firms to improve their performance. This can help them to provide community services: promoting the uptake of modern farming practices, improving access to inputs, supporting smallholder integration into global value chains, and generating much needed formal employment opportunities.

- ✓ Strengthening the stakeholder's integration and setting up permanent dispute resolution mechanisms regarding investment related conflict. In connection to these investors has to avoid giving impractical promises to local communities.
- ✓ Improving the awareness and knowledge of local communities on relevant institutional factors at local communities and government levels.
- ✓ Further in-depth research on nexus between agricultural investment and local community's livelihoods by employing econometric or multivariate analysis model.

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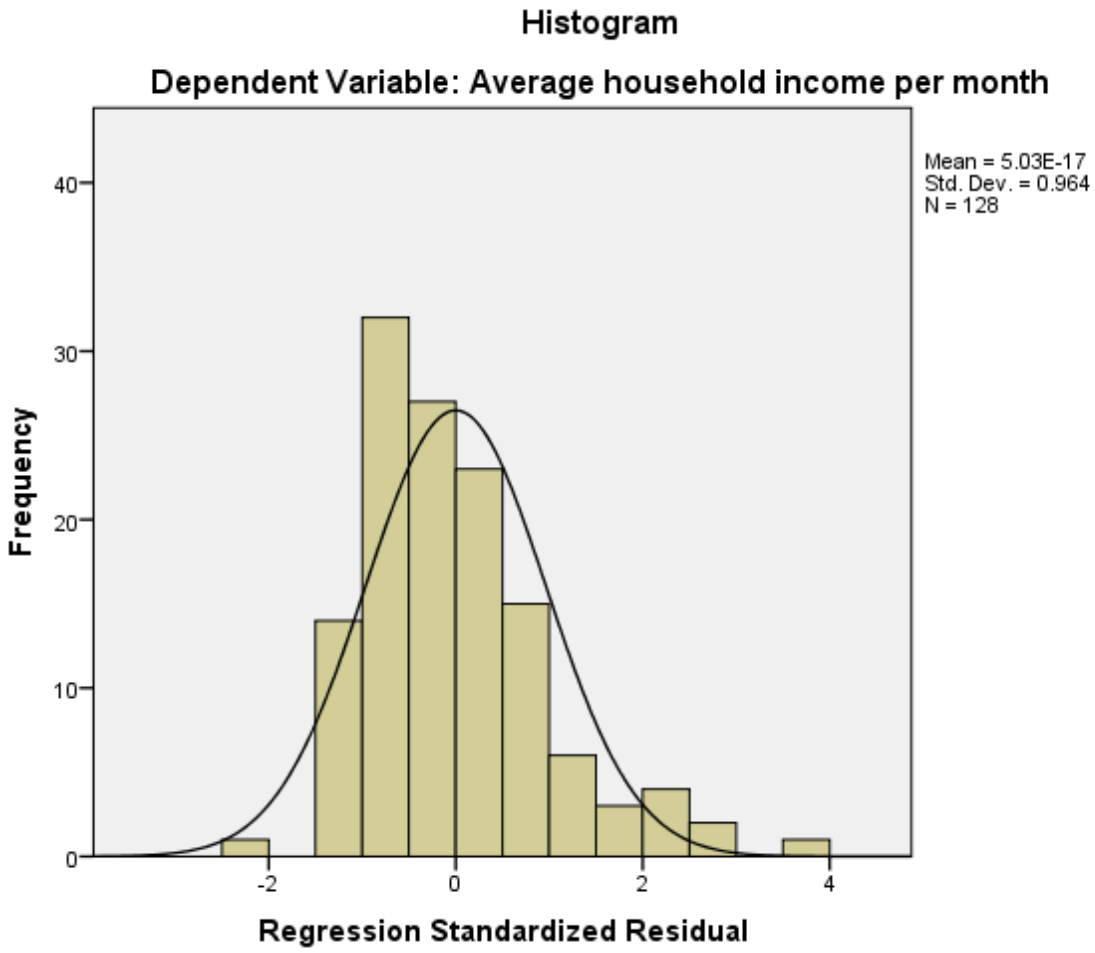
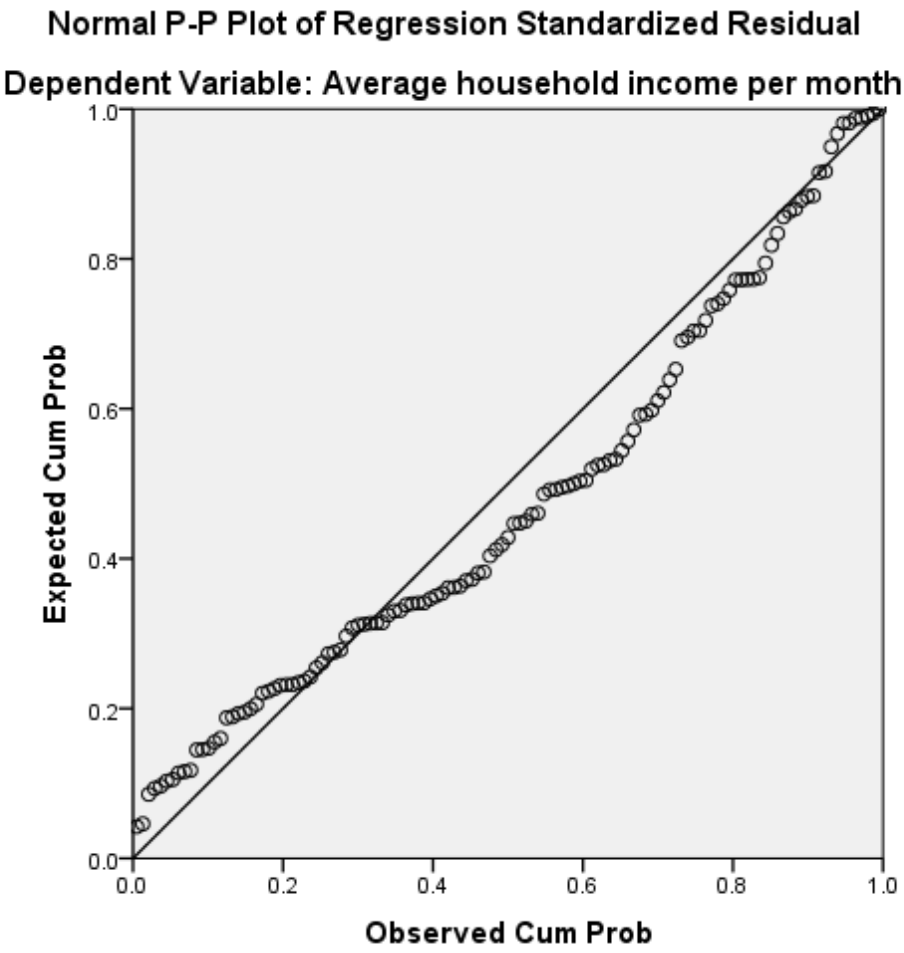
Annexes:


Histogram
Dependent Variable: Average household income per month
Mean = 5.03E-17
Std. Dev. = 0.964
N = 128
Frequency
40
30
20
10
0
-2
0
2
4
Regression Standardized Residual


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: Average household income per month
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0

Overall Accuracy **86.97**

Kappa Coefficient **80.61**

Accuracy Assignment Table:

	Classification	Dense Woodland	Open Woodland	Shrub land	Grassland	Cropland	Bare land	Built-up	**Total (User)**
8	Dense Woodland	137	0	0	0	0	0	0	**137**
7	Open Woodland	0	15	0	0	0	0	0	**15**
6	Shrub land	0	0	12	0	0	0	0	**12**
5	Grassland	0	0	0	20	8	0	0	**28**
4	Cropland	0	0	0	0	170	0	0	**170**
3	Bare land	0	0	0	0	44	12	0	**56**
2	Built-up	0	0	0	0	1	2	1	**4**
	Total (Producer)	**137**	**15**	**12**	**20**	**223**	**14**	**1**	**422**

	Ground truth (Percent):	8	7	6	5	4	3	2	
	Classification	Dense Woodland	Open Woodland	Shrub land	Grassland	Cropland	Bare land	Built-up	**Ground truth total**
8	Dense Woodland	100	0	0	0	0	0	0	**100**
7	Open Woodland	0	100	0	0	0	0	0	**100**
6	Shrub land	0	0	100	0	0	0	0	**100**
5	Grassland	0	0	0	100	3.59	0	0	**104**
4	Cropland	0	0	0	0	76.2	0	0	**76.2**
3	Bare land	0	0	0	0	19.7	85.714	0	**105**
2	Built-up	0	0	0	0	0.45	14.286	100	**115**
	Total	**100**	**100**	**100**	**100**	**100**	**100**	**100**	

Figure: **Forest fire around the study area**

Name of Investment Projects In Guba Woreda	Date of due date (yrs. in E.C)	Land Transfer for firms(ha)
Gutit Agri.dev't Organization	2006	500
Atman Fish & Agri.dev't Org.	2006	1000
Agede agri.dev'tOrg	2007	500
Neka Agri.dev't Org	2006	500
Yomad Agro-Industry	2006	1000
Muluneh Admasu Agri.dev't Org	2001	225
Mebratu Bereh Agri.Dev't Org	2008	500
Africa Agri.dev't PLC	2003	2000
Fregdaw Agri.dev't PLC	2000	279
Kehidam Agri. dev't Org	2003	1000
Zemen Agri. dev't Org	2006	500
Freedom agri. deve't org	2007	650
G-7 Agri. dev't PLC.	2007	1000
Kasababeke Agri.dev't Org	2008	197
Zelalem Siyom Agri. dev't Org	2008	409
Wosfe Hasen Agri. dev't org.	2003	524
Guba Agri.dev't Org	2000	300
Mustofa Agri.deve't Org	2000	254
Momina Adem Agri. dev't Org	2000	257
Finote Slam Agri. deve't Org	1999	299
Michale Dezemed Agri.dev't Org.	2006	376
Adem Akale Agri.dev't Org	2008	400
Horrizon Plantation	2004	20000
Anbesa Sedi Agri. dev't Org	2009	300
BHN Agr. Dev't Org	2007	1000
Adow Matig agri.dev't Org	2006	165
Amard Agro- Industry	2000	1047
Oziyk Agri.dev't PLC	2000	315
Lameda No-2. Agri. dev't PLC.	2004	1074
Daniel Aweke Agri.dev't Org.	2008	400
Luwme Metekel Agri.dev't	2000	550
Bamelak Agri.dev't Org	2000	105
Mekonnet Agri.dev't Org.	2000	85
Te.ti.Agri.dev't Org	2000	526
Shewit Abera Agri.dev't Org.	2007	500
Worku Amed Agri.dev't Org	2002	216
Gizachew Yilma Agro-industry	2007	500

Nigatu Bessie Agri.dev't Org	2008	442
Kokebe Animal prod & Agri. dev't Org.	2000	368
Omedla Agri.dev't Org.	2000	280
Balenikur Agri. dev't Org.	2000	283
Bejer G.weyti Agri. dev't Org.	2000	248
Abdulazizi Agri. dev't Org.	2000	406
Frede Azene Agri. dev't Org.	1999	468
Tsega Aberih Agri dev't Org.	1999	450
Ayma Agr. Dev't Org.	2000	600
G. L.C Agri. PLC	2007	434
Tsega Yeman Agri. dev't Org.	2007	1000
Aysid D. Agro. Industry	2001	951
Kidan mariyam Agri. dev't Org.	2001	241
Tesaye meri Agri. dev't Org.	2008	500
Hana Mariyam Agri. dev't Org.	2007	500
Sumuya Kalid Agri. dev't Org.	2002	506
Mohamed sale Agri. dev't Org	2003	213
Abebe Kebede Agri. dev't Org.	2006	340
AleksanderSalew Agri. dev't	2007	1000
Anmo Alemu Export& Import.	2007	2000
Avenu Agri. dev't org	2007	1300
B.T Agri. dev't Org	2007	1000
Dasenda Trading Agri.dev't	2007	500
Ilaf Agri.dev't Org	2007	1300
E.N S Agri. dev't Org.	2007	1000
Freselam Agri. dev't Org.	2007	2000
H.2.Me Agri. dev't Org.	2007	1000
Hgos Yibrih Agri.dev't Org.	2007	1000
G.D.K.H.Agri dev't Org.	2007	1000
G.L.Agri. dev't Org	2007	500
K.I.W Agri. dev't Org	2008	1000
Kaza wenze Agri. dev't Org.	2007	500
Michale Abrih Agri. dev't.Org.	2007	500
Mohamed Amiru Agri. dev't	2007	2000
Morya Agri. dev't Org.	2007	500
Mulgeta Yetwale Agri. dev't Org.	2007	1000
Solomon Amare Agri. dev't Org.	2007	1000
Solomon Lekun Agri. dev't Org	2007	1000

Taton agri.Industry	2007	2000
Temesgen Yohannes Agri.dev't	2007	500
Yiberih Kinfe Agri.dev't	2008	1000
Yenun Tadese Agri. dev't	2008	750
Kasa mokenone Agri. dev't	2008	500
Yeshimebet Sendeku Agri. dev't	2006	1000
Ekino Dedechanbe Agri .dev't PLC.	2009	350
Aymay Mingiste animal prodduction	2009	20
Sitina Adem Agri. dev't Org.	2009	262
Wedelbit Agri. dev't PLC.	2004	255
Tewolde T/haymanote Agri. dev't Org.	2009	313
Palas Agri .dev't PLC	2007	300
Metekel Agri. dev't PLC.	2000	438
HYBZ Agri. dev't PLC	2007	470
Rawud Agri dev't Org	2007	188
Sebsebe Agri. dev't Org.	2008	300
Getachew & meselu Agri.PLC	2008	351
Abel Horse Agri. dev't PLC	2006	528
Zelek Roba Agri. dev't Org.	2008	334
Kibere Abe Agri. dev't Org.	2008	651
Nawa Agro-Industry PLC	2008	344
Tibebu Geleta Agri. dev't Org.	2008	215
Sarom Agri dev't Org.	2008	430
Haylemariam Agri dev't Org.	2000	500
Yohannes Teferi Agri Dev't Org.	2000	200
Amanuale G/kidan Agri. dev't PLC.	2000	119
Mankush Agri. dev't Org.	1999	624
Idegete Betret Agri.dev't Org.	2000	330
Andenet Kumur Agri. dev't PLC.	2000	506
Jemal Mohamed Agri dev't Org.	2000	213
Feysel bon Agri dev't Org.	2000	192
Fentansh Yegzaw Agri.dev't Org.	2008	452

Egsa General Trading	2009	855
Koabur Agri. dev't PLC.	2009	268
Tesfaye G/silase Agriculture Development Ent's	209	318
Almaz Ayele Agr Dev't	2009	485
Bata hajur Guba Agri.dev't Org.	2009	500
Yimame Seydi Agri. dev't Org.	2006	650
Mulgeta kiros Agri.dev't PLC	2007	471
Commander negash Integrated Agri. dev't Org.	2008	469
T.W.S Agri. dev't Org	2006	1000
Zefrede Agri. dev't PLC.	2000	514
Amu Amu 4G Agri. dev't Org	2003	684
Eshete Agrega Agri. dev't Org.	2007	227
Fikadu Lemneh Agri. dev't Org.	2002	255
Indalkachew Simachew Agri. dev't Org.	2002	626
Aleka Aberih Agri. dev't Org.	2006	330
Dugay Agri. dev't Org.	2009	582
Lugdi Agri. dev't Org.	1999	3341
Marege Agri. dev't Org.	2000	548
Wojezra Agri. dev't Org.	2000	1669
Shaleka/G/Mariyam Agri. dev't PLC.	2004	396
Kaberal Agri. dev't PLC.	2000	943
Yarud Agri. dev't PLC.	2007	322
Ras & hasen Agri. dev't PLC.	2000	513
Brihnu & heruy Agri.dev't Org	2001	383
Fasil Agri. dev't PLC.	2000	628
Muz Yilkal Agri. dev't Org.	2003	303
Ayint Agri. dev't Org.	1999	1403
Resika nga Agri. dev't Org.	2000	560
Mahkat Agri. dev't PLC.	2002	759
A.B.H Agri. dev't PLC.	2000	497
Worray Agri. dev't PLC.	2000	1723
Asmerte Agri. dev't Org.	1999	343
Salew Bata No.1 & 2Agri.dev't Org.	2004	473

Yazezew Solomon Agri. dev't Org.	2001	565
Omedla Agri. dev't PLC.	2006	562
Mustakubel Agri. dev't PLC	2003	574
Fisha Zmichale Agri. dev't Org.	2002	770
Eyasu desta Agri. dev't Org.	2000	339
Enateworke Agri. dev't PLC.	1999	550
Birhanu Tesfaye Agri. dev't Org.	1999	637
Alnur beshir Agri. dev't Org.	2000	293
Merem Mohammed Agri. dev't Org.	2000	309
Gebeyu Gola Agri. dev't Org.	2000	955
Ayima Agri. dev't Org.	2000	245
Idegete Fana Agri. dev't Org.	2002	322
Melkamu & Families Agri. dev't PLC.	2007	1142
Sileshi Adem Agri. dev't Org.	2002	394
Chigicha Agri. dev't Org.	2002	325
Addis Alem Agri. dev't Org.	2002	238
Habib hotel Agri.dev't Org.	2007	700
Dasra Agri. dev't Org.	2000	215
Nega Yeman Agri. dev't Org.	2000	505
Ayma Agri. dev't Org.	2000	600
Y.N. Agri. dev't PLC.	2000	238
Dawit brihanu Agri. dev't Org.	2006	288
Abel horse Agri. dev't PLC.	2006	528
Bazezew Abera Agri. dev't Org.	2000	526
Ikuby & Samuale Agri. dev't Org.	2000	173
Tefere Chane Agri. dev't Org.	2006	638
BT agricultural dev't enterprise	2007	800

Households Questionnaire survey

Respondents Code: ---------

I am, Temesgen **Disassa,** studying MA infield of Environment and Sustainable Development in College of Development Studies Addis Ababa University. Currently I am conducting research on MA thesis topic titled as *"**the impact of agricultural investment on local livelihood and environment in Guba woreda, BGR'***. The effectiveness of this research work demands your information and point of views. Here I can also assure you that the information you give will be kept in confidential and only used for the purpose of the study. I, therefore, thank in advance for your cooperation and support by giving information for successful accomplishments of the study.

I. Demographic and Socio-economic characteristic:

1. Sex of Respondents. 1. Male ------ 2. Female----------
2. Age(in years):----------
3. Marital Status: 1, Single-----2, Married--------3, Divorce-----4, Widow-------5. Separate-----
4. Family Size:----------
5. Farm land size(in ha):----------
6. Portion of land cultivated(in ha):----------
7. Portion of land rented(in ha):----------
8. Type of occupation: 1. Crop farming---2. Livestock production---- 3. Trade----Handicraft----4. Daily labor------ 5. Employed in commercial farming---- 6. Other please specify----------
9. Number of family members engaged in Agriculture----------
10. Educational level: 1. Illiterate---2. Read & write----3. Primary School----------3. Junior school------4. High school----5. Diploma-----6.Degree & above-------
11. Religion: 1. Orthodox-----2.Catholic------3.Muslim-----4. Protestant----------5. Other please specify:----------
12. Main source of household income:----------
13. Total average income per month:----------
14. Other source of income specify:----------

II. Pulling factors for agricultural investment in the study areas.

15. Do you have any information on existence of agricultural investment in your local areas? (1) Yes (2) No 3. Not sure

16. If 'Yes', do you have information on the agricultural land transferred to investors in your local areas? 1. Yes, 2. No, 3. Not sure
17. What do you think the main pulling factors for agricultural investment in your local areas?

No	Items	Yes	No	
1	Availability of fertile & unused land for agriculture			
2	Low land rent per ha			
3	Rise in agricultural products value/price			
4	Credit availability			
5	Road Infrastructure accessibility			
6	Long lease periods in years			
7	Labor availability in local areas.			
8	Tax exemption			
9	Political stability(peace & security)			
10	Low population density			

18. What do you feel concerning the expansion of agricultural investment in your local areas? ------

III. The Impact agricultural investment for local communities and environment.

- **Benefits streams**

19. Please could you rate the extent of your agreement regarding benefits actually gained from agricultural investment using right sign (√)Where,**5** = Strongly agree, **4** =Agree, **3** = Undecided, **2** = Disagree and **1**= Strongly disagree

No	Agricultural investment benefits:	5	4	3	2	1
1	Technology transfer					
2	Employment generation					
3	Knowledge & skill development					
4	Community Development services					
5	Local Revenue					
6	Contract farming					
7	Provision of improved varieties					
8	Other please specify:					

20. One of the top benefits of agricultural investment for local communities and environment is technology transfer.

No	Items	Yes	No
1	Modern farming practices		
	Utilizing improved agricultural inputs: • Seeds • Fertilizers • Farming tools		
b	Knowledge & skills on Environmental conservation practices		
c	Other please specify		

21. Do you have a family member who got employment opportunities in agricultural investment projects? (1). Yes (2).No (3) I have no family member seeking job in investment projects

	Items	Causal	Temporary	Permanent
22	If 'Yes' what is the nature of employment			
		Low	Medium	High
23	How do you rate the salary or payment?			

24	How you or your family gets the employment opportunities in the investment projects?	Tick(√)(you can have multiple response
1	By competition based on Vacancy announcement	
2	Direct contact with firm owners	
3	By informal relationship or relative	
4	By reference	
5	Other please specify:	

25. Who are the first beneficiaries by employment opportunities provided by agricultural investment projects?

No	Main beneficiaries	Yes	No
A	Youth of local communities		
D	Female from local communities		
e	Land less local communities		
f	Land less migrant communities		
g	Other please specify:		

No	Items	Yes	No
26	Have you ever engaged in contract farming or out grower practices with investors		
		Yes	No
27	Do you think that AI has significant contribution for small-rural town's growth?		

28. How agricultural investment enhance generation of local enterprises:

No	Items	Yes	No
	By establishing agricultural product marketing station		
	By conducting agro-processing activities		
	By conducting exchange of products		
	Others Specify:		

❖ **Threats induced by agricultural investment**

29. What are the major threats induced by agricultural investment on local communities and environment?

No	Items	Yes	No
1	Deforestation		
2	Biodiversity loss		
3	Depletion of wetland & water sources		
4	Dispossession of land		
5	Walking distance for fetching water &firewood's.		
6	Violent conflict		
7	Mal-practices(Rent seeking behavior & cultural influence)		
8	Increase charcoal production practices		
9	Increase the incidence of forest fire		

❖ **Land use dynamic induced by agricultural investment**

30. What are the major land use or cover changes experienced in your local areas?

No	Items	Yes	No
1	Conversion of forest land to investment farmland		
2	Conversion of bush & grass land to investment farmland		
3	Conversion of rangeland to investment farmland		
4	Conversion of village to farmland		
5	Conversion of reserved or park area to farmland		

❖ **Environmental conservation practices adopted by AI firms.**

		Yes	No
31	Have you ever participated on environmental conservation practices initiated by agricultural investment firms?		

32. If 'Yes' what are the environmental conservation practices adopted by agricultural investment projects?

No	Items	Yes	No
1	Soil & water conservation practices		
2	Forest fire controlling		
3	Nursery site establishment		
4	A forestation practices		
5	Improved farming practices		
6	Controlling charcoal production		
7	Alternative Income generating activities to reduce the burden on natural resources		
8	Other please specify:		

IV. Challenges of agricultural investment

33. If any challenges concerning employment opportunities in agricultural investment:----------
---

34. Major challenges for agricultural investment in the Study areas.

No	Major Challenges	Yes	No
1	Inadequacy of institutional factors(policy, legal frameworks, organizational arrangement and local informal Institutions)		
2	Lack of integration among stakeholders		
3	Lack of participating local communities in land identification and transferring process		
4	Conflict between Investors and local communities		
5	Lack of adequate service in local administration		
6	Labor scarcity in local areas.		
7	Lack of adequate infrastructure		
8	Other please specify:		

35	What are major causes for conflict between Investors and Local Communities?	Yes	No
1	local administration in adequacy		
2	increasing land less people		
3	customary tenure system		
4	lack of local communities participation in land dealing		
5	practices of informal land renting		
6	encroachments in investment farm land by local communities		
7	Other please specify:		

36. Other suggestions for mutual benefits of investment firms, local communities and environment:--
---

❖ **Major points for Key informant Interviews(KII):**

1. What are the pulling factors for massive agricultural investment in your local area?
2. What are the impacts of agricultural investment on local livelihoods?
3. How do you see the land use dynamic induced by agricultural investment in your local areas?
4. What are the major environmental problems due to agricultural investment?
5. What are the livelihoods or copping strategies for adverse effects of agricultural investment?
6. Major challenges of agricultural investment in contributing local communities' livelihoods in Guba woreda?

Addis Ababa University

College of Development Studies

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