



ST.MARYS'S UNIVERSTIY
SCHOOL OF GRADUATE STUDIES

**IMPACT OF LAND USE POLICY CHANGE ON FARMER'S
LIVELIHOOD: THE CASE OF TULU GURACHA KEBELE, GELAN
TOWN**

BY
ETSEGENET GIZAW

JUNE, 2021
ADDIS ABABA, ETHIOPIA

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TOWN**

**A THESIS SUBMITTED TO ST.MARY'S UNIVERSITY, SCHOOL OF GRADUATE
STUDIES,IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE
DEGREE OF MASTERS OF DEVELOPMENT ECONOMICS**

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APPROVED BYBOARD OF EXAMINERS

As members of the Examining Board of the final MA open defense, we certify that we have read and evaluated the thesis prepared by Etsegenet Gizaw under the title “**The Impact of Land Use Policy Change on the Farmer’s Livelihood the case of Tuluguracha Kebele, Gelan Town**”, we recommend that this thesis to be accepted as fulfilling the thesis requirement for the Degree of Master of Art in Development Economics

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DECLARATION

I hereby declare that this work entitled “**The Impact of Land Use Policy Change on the Farmer’s Livelihood the case of Tulu guracha Kebele, Gelan Town.**” is my own work, prepared under the guidance of Wondimagegne Chekol (PhD) and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which has been accepted for the award of any other degree or diploma of the university or other institute of higher learning, except where due acknowledgment has been made in the text.

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ENDORSEMENT

This thesis has been submitted to St,Mary's University,School of Graduate Studies for examination with my approval as a university adviser.

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June,2021

DEDICATION

All praises to the Almighty God, the most gracious, for giving me the strength and determination to complete this study. I would also like to dedicate this paper to my families and my husband for their encouragement and support.

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Abstract

Industrial expansion usually overtakes large area of real agricultural lands. The change of agricultural land to these systems has effect on the farming households who may lose a part or all of their agricultural land. Thus, this study investigated the impact of agricultural land conversion on the livelihoods of farming households in Tulu guracha kebele Gelan Town of Oromia Reginal State, Ethiopia. Both quantitative and qualitative approaches were used to gather data. Data was collected through household survey using questioners and interviews which was analyzed using SPSS version 20. Paired samples test, graph and tables were used to analyze the effect of Industrial expansion. Based on paired sample t-test the study found that a statistical significant decrease in household land size and household annual income from farm. The result of the study also found that the level annual crop production and covered in hectares were significantly decreased after the industrialization process that lead to the inability of the households to produce enough food for household consumption. Industrialization has also increased the number of landless households since 2004. The responsible governmental bodies should re-examine the actual implementation of the legal investment procedures, and re-adjust them in a way that allows the development of industrialization process in a more efficient manner, and with a much lower consumption of land resources.

Key words: Industrialization, Land use policy change, Farmers' livelihood, Annual crop production, Tuluguracha Kebele, Gelan town, Ethiopia

Contents	Pages
DECLARATION	iv
ENDORSEMENT.....	v
DEDICATION.....	vi
ACKNOWLEDGMENT.....	vii
Abstract.....	viii
List of Tables	xii
List of Figures	xiii
List of Acronyms	xiv
CHAPTER ONE	1
INTRODUCTION	1
1.1 Background of the Study.....	1
1.2 Statement of the Problem	3
1.3 Objective of the Study.....	5
1.3.1 General Objective	5
1.3.2 The specific objectives are:.....	5
1.4 Research Questions	6
1.5 Significance of the Study	6
1.6 Scope the study.....	6
1.7 Limitations of the Study.....	6
CHAPTER TWO	7
LITERATURE REVIEW	7
2.1 Theoretical Perspective	7
2.2 Industrial Development in Ethiopia	7
2.3 EPRDF and the Industrial Development.....	7
2.4 Effects of Industrial sprawling on the agricultural lands	8
2.5 The impact of industrialization on agricultural activities.....	9
2.5.1 Farmland loss and reduction in food crop production at household level	9
2.5.2 Increase in Landlessness and Food Crop Price	9
2.6 Socio-Economic Impact	10
2.7 Empirical Literature Review	11

2.8	Conceptual Framework	14
CHAPTER THREE		15
METHODOLOGY		15
3.1	Description of the Study Area	15
3.2	Research Approach	16
3.3	Sources of Data and Data Collection Tools	16
	Sample size determination and sampling procedures for socio-economic study	17
3.5	Data Analysis Techniques	18
CHAPTER FOUR.....		19
DATA PRESENTATION AND ANALYSIS		19
4.1	Introduction	19
4.1	Demographic information	19
4.2	Impact of industrialization on the household land size	21
4.3	The Impact of industrialization on the household average annual income form farm 22	
4.4	Industrialization and Land Use change	24
4.4.1	Current household Living status as compared to before industrialization.....	27
4.5	Effect of Industrialization on Livelihoods and Land Use Change	28
4.5.1	The Effects of Industrialization on Agricultural Activities	28
4.5.2	Effects on the Total Area of Farmland Owned at the Household Level.....	29
4.5.3	Effects on the Crop Production.....	30
4.5.4	Effects on the Employment opportunity and employment income	30
4.5.5	Effects on the Cultivated Land	31
4.5.6	Effects on the Crop Production.....	33
4.5.7	Effects on the employment income.....	34
4.6	Employment opportunities in relation industrial activities	35
4.7	Access to physical capital/ Infrastructure.....	36
4.8	Result of Interview questions	37
4.8.1	Farmers' Perceptions regarding Rapid Industrial Expansion and the Conversion of Agricultural Land	37
4.8.2	Selected Households and Community Leader Perceptions regarding Rapid Industrial Expansion and the Conversion of Agricultural Land	37
4.8.3	Interview in Gelan city Land Administration and Investment Office	38
CHAPTER FIVE		39

SUMMARY, CONCLUSION AND POLICY RECOMMENDATION.....	39
5.1 Introduction	39
5.2 Summary	39
5.3 Conclusions	42
5.4 Policy Recommendation	43
REFERENCES	45
Appendix.....	47

List of Tables

Table 4.1: General Background Information of Respondents	20
Table 4.2: Impact of industrialization on the household land size	21
Table 4.3: Paired Samples test household land size	22
Table 4.4: Impact of industrialization on annual income from farm	22
Table 4.5: Paired Samples test of household income from farm	23
Table 4.6: household's response on farm income comparison before and after Industrialization	23
Table 4.7: Annual crop production and household consumption	24
Table 4.8: Size of agricultural land and causes of agricultural land change.....	24
Table 4.9: Agricultural land converted to industrial establishment.....	25
Table 4.10: Household willingness to convert land compensation.....	26
Table 4.11: Collection of compensation and comparison with land properties.....	26
Table 4.12: Living status of the household and Residential Displaced	27
Table 4.13: Farm Land covered in Hectares by crops before and after 2008	28
Table 4.14: Average Level Annual Production in Qunatals Before and After 2008	29
Table 4.15: Employment opportunity and employment income before and after 2008	30
Table 4.16: Employment opportunities and type of employment.....	33
Table 4.17: Monthly income for unskilled household member and access to employment opportunities for other peoples	33
Table 4.18: problems related to employment in industries.....	34
Table 4.19: Access to physical capital/ Infrastructure	34

List of Figures

Figure 4.1: Mean area of farmland (ha) of households in the study area, 2004-2018	29
Figure 4.2: Cultivated land sizes (in ha) in before and after 2008.....	31
Figure 4.3: Annual production level (in quntals) before and after 2008	32
Figure 4.4: Employment income before and after 2008	32
Figure 4.5: Cultivated land sizes (in ha) in the study area, 2006–2018.....	33

List of Acronyms

ADLI	Agricultural Development Led Industrialization
ALCS	Agricultural Land Conversion
ALs	Agricultural Lands
EPRDF	Ethiopia People Republic and Democratic Front
IDS	Industrial Development Strategy
LC	Land Conversion
ORS	Oromia Regional State
PRA	Participatory Rural Appraisal

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Land is one of three major factors of production in classical economics (along with labor and capital) and an essential input for housing and food production. Thus, land use is the backbone of agricultural economies and it provides substantial economic and social benefits. Land use change is necessary and essential for economic development and social progress. Land is one of the main production inputs, which is a vital element in the socioeconomic development of all nations (Aribigbola, 2008). Yet, this valuable and scarce resource is infixed supply (Azadi et al., 2012), requiring sustainable utilization. In developing countries, most people rely on agricultural productions, making land an important asset (Tuyen, 2013). Therefore, any change to the agricultural land use in these countries requires thoughtful planning to both conserve the land and reduce the risks of undermining the livelihoods of the people.

Industrialization has often been nicknamed as “an engine of economic growth” for nations and usually is an essential and desirable process that accelerates economic growth and reduces long-run poverty (Azadi et al). Despite serving as “an engine of economic growth”, rapid economic growth and a persistent increase in urban population, trigger encroachments and urban sprawling (Cardenas, 1996; Jiang et al., 2012) that undermine agricultural lands and agricultural activities.

Conversion of farmland and forests to urban development and industrialization reduces the amount of lands available for food production. Soil erosion, salinization, desertification, and other soil degradations associated with intensive agriculture and deforestation reduce the quality of land resources and future agricultural productivity (Lubowski et al. 2006). Land use change exerts an essential effect on people’s lives and human well-being (Wang and Chai, 2016).

The agrarian-industrial transition included an upsurge of the industrial sector as compared to agriculture and handicraft and allowed for steep increases in labor productivity in both industry and agriculture (Heinz Erb, Simone, Krausma, &Haberl,2009). Land use policy change may have positive or negative impacts at multi levels of the basin on environment and

local people livelihood, land use change needs to be monitored to understand the change and its impacts to the basin.

In Asia, the loss of agricultural land due to urbanization occurs under conditions almost similar to those observed in Africa. In Hanoi, Vietnam, about one-third of agricultural land has been converted into residential areas. Urban growth is accelerating the loss of agricultural land, raising concerns for the provision of food to indigent citizens and peri-urban farmers' livelihoods. In China's Hang-Jia-Hu region, the alteration of agricultural landscapes to make way for rapid urbanization has reduced the total area of agricultural landscapes in the region (1260665 ha) by 28.5%, from 1994 to 2003 (Pandey, 20015). In Wuhan city (China), farmers' overall level of well-being in all age groups that have lost their land has declined after land expropriation. In China, farmers who could receive compensation above the standard rate were especially those integrated into the framework of local power Europe, North and South America as well as Australia is experiencing this phenomenon. However, unlike developing countries, urbanization is the source of modernization and socioeconomic development in North America and Europe (Jian, 2011).

As one of the fastest growing economies worldwide, Ethiopia has registered impressive GDP growth for the past several years. With a population of roughly 110 million (source: World Bank Group, 2019), Ethiopia is the second most populous country in Sub-Saharan Africa. To bring about structural economic change and transform Ethiopia into a middle-income country by 2025, the Government of Ethiopia (GoE) follows an integrated 5-year development plan, the Growth and Transformation Plan (GTP) II. The industrial sector, and more precisely agricultural development-led industrialization, is expected to play a catalytic role towards this goal. Industries areas are expanding in fast rate all over the country. This hasty process of industrialization phenomenon is occurring all over the country. That means, areas formerly considered being as rural zones are changing into industrial centers swiftly. Particularly this phenomenon is visible in Addis Ababa surroundings rural areas. Gelan is located in Oromia National Regional State, Oromia Special Zone Surrounding Addis Ababa at a Distance of 25 km South East from Addis Ababa. The former rural area and now changed to industry centers.

Among all other towns in Ethiopia, Gelan town has experienced the highest level of LC for industrialization following its designation as an 'industrial hub' of the country in 2004/2005. Gelan town has shown a speedy switch from a typical rural area to a more industry center. For instance, before the Ethiopian millennium in 2008, there was no banks, no schools,

limited infrastructures, electricity, road for instance local people want go Akaki market was on foot and using animals such as Horse, Mules and Donkey and searching for social service particularly the fundamental ones (school and health care centers) used to travel to Akaki and Addis Ababa.

In rural area of Gelan Prior to 2008 agriculture is the dominant economic activities and before the designation of as industrial zone the area produced different agricultural products like Teff, Wheat and others for consumption as well as marketing purposes. Most of the farmland was used by the local farmers and was administered in four rural kebeles before merge into the town of Gelan (i.e. TulluGuracha, Moreno,Sidamuash and ChaféTumaa). The re-integration of the rural kebeles was accompanied by land use changes in which agricultural lands (ALs) that used to be the local farmers only means of their household's livelihood and survival, were converted to other land use types. Therefore, those kebeles were most affected by agricultural land conversion (ALCs) by industrial activities. But the kebele namely Tulu Guracha in the town of Gelan were specifically selected for this study. The reason to select this kebele, it is almost entirely the conversion of agricultural land in to industry and it is obstacle to locale agricultural activity and the income of the farmers.

1.2 Statement of the Problem

Large body of empirical evidence shows industrialization play a catalytic role in the transformation of agrarian societies. In spite of the “catalytic” role that industries play in the processes of realizing rapid economic growth, the industrialization in agricultural societies and the process of industrial expansion into agricultural lands (Agricultural Land Conversions, ALC's) involves major and irreversible socio-economic dynamics and land use changes. As stated in literature Industrialization and urbanization consumed close to half a million hectares of arable land in the peri-urban areas of Vietnam between 1993 and 2008 alone (Tran, 2013). Many studies conducted in Vietnam and China revealed the negative outcomes of ALCs on smallholder farmers' livelihoods (Suu, 2009; Nguyen, 2011; Tran, 2013). In spite of the reported negative outcomes of ALCs, however, adequate empirical studies and appropriate planning prior to land conversion, and the implementation of plans with appropriate monitoring strategies would both benefit local communities and investing companies. In sum, land use change provides many economic and social benefits, but comes at a substantial economic cost to society. Land conservation is a critical element in achieving

long-term economic growth and sustainable development. Land use policy, however, must strike a balance between private property rights and the public interest

One of the policies to change land use is through industrial park. It is a clustering of enterprises that provides a variety of services and facilities to the occupants (UNIDO, 1962). Industrial parks have been widely used in Southeast Asian countries¹ as a means to achieve structural transformation, and their success has driven many developing countries to mimic such industrial-development strategies (UNIDO, 2015). Ethiopia is a case in point. The construction of industrial parks in Ethiopia, most of them state-owned, is a key policy instrument of the Growth and Transformation Plan I (GTP I, 2010- 2015) and the second GTP (GTP II, 2016-2020).

Industrial expansion in Ethiopia has been growing rapidly since 2008s. This requires extensive land holdings, and this led to widespread encroachment on agricultural land and a negative impact on local farmers (Oqubay, 2019). The proposed research areas are known to have some of the most fertile farmlands in Ethiopia. The land is mainly used to grow teff and wheat of high quality and quantity for household use and sale on the local, regional and national market. Urban residents including those in Addis Ababa depend on the cereals produced in this Ethiopian grain basket. Preliminary data obtained from the Akaki District Agricultural Department (2018), where the study sites are situated, shows that rapid investment inflow and the subsequent transformation of agricultural lands for investment uses in the urban fringe, reduced cultivated land by 11.4% and crop production by 18.3% between the 2005/06-2009/10 harvesting seasons (Dadi, et al., 2016). Equally, the total hectares of cultivated land that grow teff and wheat crops (stable food crops) shrank by about 26.3% in the same period (Dadi, et al., 2016). Decline in the size of cultivated land and total production implies not only the reduction of farmland holdings and production but also a decline in traditional farming jobs, leading to household food insecurity and vulnerability.

In this study, emphasis is placed upon the ways in which the lives of household members have changed due to land conversion processes, and whether or not land is still seen as a crucial livelihood asset for the security and sustainability of people's livelihoods. A closer look was taken at Gelan in Tulu gurachakebele and where large areas of agricultural land are expropriated to facilitate the expansion of investments and the provision of the infrastructural system. Gaining knowledge about the living situations of the local people before and after land conversion provides useful insights into the impact land conversion practices have on

the lives of the people who are directly affected and Several implications for the people partly or entirely losing their agricultural land, especially when looking at factors such as poverty, landlessness, the level of compensation. Generally this study focused on studying the impacts of rapid industrialization on selected livelihood incomes and land uses.

So this fast rate of industrialization displaced farmers and affected their livelihood as well as their confidence to invest in the urban economy and lack of training for farmers on the use of compensation money limited their potential to invest in different urban sectors after being organized in micro and small Scale Enterprises. Therefore, this kebele that were most affected by agricultural land conversion (ALCs) initiated by industrialization activities were considered in this study.

In Ethiopia experiencing massive land-use change that is often characterized by an expansion of the area cultivated with industrialization at the expense of agricultural land use. Several studies have been done on the impact of industrialization on land use change and livelihood income both in developed and developing countries for instance the study by Debi et al (2018), Brahimia et al (2020), Zhanqi et al (2016), Jie Yin et al (2020), Hatami and Shafieardekani (2014), Luand et al. (2011), Suu (2009), Kavzoglu (2008), Ghatak and Mookherjee (2013) and Wang and et al. (2011). However, to the best of my knowledge none of the empirical works have been carried on generally in ethiopia and particularly in Gelan Tulu Guracha kebele. Therefore, this study intended to fill this research gap.

1.3 Objective of the Study

1.3.1 General Objective

The general objective of the study is to assess the effect of land use change to industry on the farmers' livelihood in TuluguachaKebele, in Oromia Regional State Gelan Town.

1.3.2 The specific objectives are:

- Analyze the effect of agricultural lands converted into industrial development on the livelihoods of farmers
- To assess the procedures involved in agricultural land conversion and assess the perception of the farming households on the compensation.
- To assess households access to infrastructure after the industrialization process.

1.4 Research Questions

The specific research questions are:

1. What is the effect of agricultural lands converted into industrial development on the livelihoods of farmers?
2. What assess the procedures involved in agricultural land conversion and assesses the perception of the farming households on the compensation?
3. How they are households access to infrastructure after the industrialization process.

1.5 Significance of the Study

To the best of my knowledge, comprehensive study on the effects of agricultural land invasion for industrial uses and its impacts on the livelihoods of farming households are not generally available in the proposed study areas in particular. Therefore, contributing to the prevailing knowledge gap regarding the consequences of indiscriminate conversion of agricultural lands for non-agricultural uses on the livelihoods of farming households and there income depends on local food crop production availability is the priority of this study. Thus, the results of the study are summarized in such a way as to be used as a source of valuable information or inputs for policy designers, development planners, land use planners, decision makers and researchers.

1.6 Scope the study

The study was conducted in one rural kebele named Tulu guracha situated in the town of Gelan and Gelan located in the Addis Ababa Special Zone. The decision to limit this research to Gelan because the location of this area along the only railway line and highways connecting Addis Ababa with Djibouti, due to that Rapid industrialization led to widespread encroachment on agricultural land and taking place a negative impact on farmers income compared to similar small towns in the special zone.

1.7 Limitations of the Study

The presence of research limitations helps one to reflect upon the choices made during the preparation phase and the actual fieldwork and helps to identify possible unanswered or unaddressed questions that could be considered in the future research. Since it focuses on the impact of industrialization on land use and farmers income some of the most important limitations are, lack of obtaining accurate information and complete data on the total size of farming households whose farmlands where expropriated, and time. And unanswered limitation will be considered in the future research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Theoretical Perspective

All over the world, although there are differences in land tenure related to land access, land property and land use, agricultural land conversion has happened as the result of socio economic and political changes in the last centuries (Leblond, 2008). There has also been large amounts agricultural land conversion in developing countries in their efforts to transform from agricultural-based economies to industrial-based economies (Barnett, 1991).

2.2 Industrial Development in Ethiopia

A look at the limited literatures the researcher reviewed on the historical modern industrial development in Ethiopia did not allow the researcher to learn the exact time modern industry was introduced into the country or the type of industry introduced first. Some sources indicated the introduction of the 'grain mill in present day Holleta in 1896 (Getachew, 2007), while others bring it to mid-20thc during the imperial regime and following the construction of Ethio-Djibouti railway line (Mohammed, 2002; Ayele, 2003; Moti, 2004). Here the completion of the railway line that reached Addis Ababa in 1917 was seen as major driver/stimuli for the introduction of modern industries. The railway line brought a new horizon of communication to the external world (mainly Italy, Greece and Armenians) that signified the beginning of trade and the flourishing of new urban centers along the new line, mainly for commercial reasons (Befekadu and Birhanu, 2000). According to Ayele (2003), untapped resources and local markets attracted these countries to establish manufacturing industries with the aim of producing goods for domestic markets.

2.3 EPRDF and the Industrial Development

The collapse of the Derg regime and the assuming of political power by the EPRDF regime have come with opportunities for the industrial sectors and to those interested in the sector. The EPRDF replaced the command economy of the Derg with a _free market economy that left the door open to all interested private sectors (domestic and foreign) in a bid to modernize the economy. The federal government crafted well elaborated industrial development strategy in 2002 (IDS, 2002). The IDS consists of eight major principles or pillars in which the industrial development would be based on. Some of the most important pillars outlined in the IDS promote the Agricultural Development Led Industrialization

(ADLI), export oriented development and the expansion of labor-intensive industries (IDS, 2002), and the process has continued to attract international attention for its achievements and for pursuing a home-grown development strategy, with an active industrial policy at its center.

2.4 Effects of Industrial sprawling on the agricultural lands

In spite of government efforts, however, the process of agricultural land conversion is taking place at a fast rate in Ethiopia due to the changes in the economic structure in the country over the last two decades. The changes are apparent in the peripheries of major urban centers partly due to the processes of rapid urbanization and partly due to growing demands for investment land in manufacturing and commercial agriculture. The expansion of cut flowers, for instance, has transformed considerable sizes of agricultural land in many parts of the country while investment in the manufacturing sector has initiated an extensive conversion of agricultural lands in the peri-urban areas of the major urban centers particularly in Oromia Regional State. Birhanu (2006) study the effects of horizontal expansion of Finfine on the agricultural lands and the livelihoods of farmers in the periphery before the FZS was formally established as a zone in order to check the continued expansion. According to their findings, the continued expansion of Addis derived from population growth, poor urban land use and development planning led to the incorporation of large tracts of land owned by farmers. The expansion also resulted in the full integration of areas such as Burayyu, Sabata, LagaDadhi and near the main city are Bole Kotebe, Bole Bulbula, Makkanisa Labu and Keraniyo Booke in order to meet land demands for residential expansion by evicting poor farmers (Feyera, 2005).

Oromia Regional State (ORS) has formulated a watershed based General Master Land Use Plan of the region at the scale of 1:50,000 [www.ffe.ethiopia.org,]. From this Master Plan, ORS has developed an integrated LUP for Finfine surrounding Oromia Special Zone that consists of 8 towns and 6 rural woredas in 2011. The main objective of this plan was —to save the loss of prime agricultural lands and to assist farmers in the woreda in producing non-cash crops once a year; and in doing so to improve their livelihoods and to develop land use zoning. The efforts were to remedy accelerated land losses in the peri-urban interfaces of the entire town within the special zone. In this respect, all the towns in the FSZ: Dukem and Gelan in particular, have experienced the highest level of land conversion for private owned scattered warehouses used for industrial purposes and the construction of IZs/IPs compared to all other towns in the central highlands of Ethiopia since 2004.

2.5 The impact of industrialization on agricultural activities

2.5.1 Farmland loss and reduction in food crop production at household level

The massive conversion of land use change for industrialization, residential and infrastructure construction has caused a sharp reduction of the cultivated farmland size that in turn negatively affected the total crop production both in the studied kebele and per households. The study results clearly shows that large scale appropriation of agricultural lands has led to complex and diverse socio-economic impacts directly on their livelihoods through insufficient production of crop required to feed their family and meet other basic needs.

In connection with this, the processes of land conversion were also exacerbated by the excessive demands for housing expansion as industrialization often acted as a stimulus in attracting more people (i.e. labor and those who need better infrastructure) to the areas (Dadi, et al., 2016, 2015; Lodder, 2012; Azadi, et al., 2011). Some of the farmers left with part of their farmland could in no way be able to buy yield-enhancing inputs (i.e. chemical fertilizers, pesticides or insecticides, etc.) in order to improve the productivity of the land.

The change in the farmland holding size was more or less similar in both the studied kebele . Of the food crops cultivated in this area, teff and wheat are most affected by the land conversions. As the result of these reductions, farmers who once used to supply surplus food crops, mainly teff, to the urban residents (Taye, 1991) has become unable to meet their own yearlong food requirements for their family (Dadi. et al., 2015). This shows a clear indication of the gaps in the government policy of economic growth strategies by attempting to promote industrialization at the expense of using limited fertile agricultural lands as an incentive to attract investors.

2.5.2 Increase in Landlessness and Food Crop Price

Studies by Nguyen et al., (2009, 2010); Nguyen (2009, 2011), Lodder (2012), Tan (2015) in Vietnam and Li (2011) in China reveal that the process of economic modernization was considered as a success in boosting national economic growth. Yet, the process of rapid industrialization accompanied with urbanization has initiated a widespread conversion of fertile agricultural lands that seriously affect the livelihoods of agricultural households and agricultural outputs at national and local levels. According to the findings of these studies, many farmers were left without farmland and exposed to serious household food insecurity.

Apparently, the results of this study also coincide with the negative outcomes of agricultural land conversion identified in most developing countries. Derived solely by the ambition of

attracting as many investors as they can, the government's strategy of using land as one of the incentives has deprived local farmers access to their farmland. A good demonstration for this is that, prior to the launching investment land preparation in 2005 (i.e. farmland expropriation), all of the household heads involved in the survey had farmland on which they grew food crops. As time goes on, however, the number of landless farmers had shown a sharp increase in the studied kebele. Of the total surveyed households, the majority of them lost more than half of the farmland they own and now earn nothing from this sector.

The reduction in farmland size and crop production not only harmed the livelihood of the local farmers in the study areas, but civil servant and urban residents were also subject to shortages of preferred supplies and sky-rocking prices even at the farm gate (local) market shops. Food security on national or global levels is often related to macro level production, marketing, distribution and acquisition of food by the population as a whole, while household food availability is related to the household assets, of which land is crucial.

In the face of the rapid loss agricultural land to the point of exhausting the remaining few hectares of land in the study areas and the sharp rise in the price of food crops has been causing grim livelihood situations in these areas. Landless households are drastically affected by the gradual deterioration of their living situation, contradicting unfulfilled promise by the government and investors in creating employment opportunities and other trickle-down effects for local people. The level of human capital development (level of education and skill) in the study area is very low; most of the affected household miss limited employment opportunities except for working as low paying wage laborer or gatekeeper- some of them on their expropriated ex-farmlands, In this respect, studies in other countries indicate similar experiences of industrialization efforts and its correlated decline in agricultural land have complex consequences on peasant households. According to Nguyen Van Suu (2009), where land is State-owned, land conversion remains tremendously challenging for affected peasant households resulting in landless and jobless peasantry (Cardnas, 2009), household food insecurity and income disparity and (Tan, 2015) are among the most prominent issues arising from this process.

2.6 Socio-Economic Impact

With regard to the effects of ALCs, numerous studies concluded that ALC for nonagricultural uses has significantly contributed to the overall real GDP. However, controversies exist when it comes to the livelihoods of the local people who lose the land. Some studies reported positive outcomes of ALCs in terms of the trickle-down effect for the local people, while

others report the opposite, where affected households were marginalized and in most cases, their livelihoods were ruined. International experience shows that, unsustainable and unregulated land conversion undermines secure land tenure and employment in agriculture in peri-urban areas and initiates or aggravates livelihood vulnerability among subsistent farming households (Cardenas, 1996; Eila, 2000; Van Suu, 2009; Chen, 2009; Azadi, et al., 2009, 2010; Nguyen, 2011 and Rudi, et al., 2012). Furthermore, different studies have documented that ALCs have affected the livelihoods of farming HHs by making them landless and/or by reducing employment opportunities in the agricultural sector (Nguyen, 2011, 2009; Azadi, et al. 2011).

2.7 Empirical Literature Review

Debi et al (2018) conducted a study on Land-use change and livelihoods of non-farm households: The role of income from employment in oil palm and rubber in rural Indonesia. The study analyses the role of different types of agricultural and non-agricultural employment income for non-farm households in rural Jambi, one of the hotspot regions of Indonesia's recent oil palm boom. Data from the survey show that employment in rubber and oil palm are important livelihood components for non-farm households. Employment in oil palm is more lucrative than employment in rubber, so involvement in the oil palm sector as a laborer is positively associated with total household income. Regression models show that whether or not a household works in oil palm is largely determined by factors related to migration background, ethnicity, and the size of the village area grown with this crop.

Brahima et al (2020) investigated a study on Impact of Agricultural Land Loss on Rural Livelihoods in Peri-Urban Areas: Empirical Evidence from Sebougou, Mali. This study analysed the consequences of urbanization in the city of Ségou on the major sources of livelihoods for residents in the neighboring rural municipality of Sebougou. Three villages in the municipality of Sebougou were selected due to the fact of their proximity to the city of Ségou. The study interviewed 120 randomly sampled family heads using a structured questionnaire. The respondents were owners of farmlands or people who had lost their land as a result of urbanization. The study analysed the data using multi-linear and logistic regression models. The results showed that age, occupation, land size, and level of education had significant positive impacts on the farmers' annual family income, while family size and gender exerted negative effects. Low-yield lands and youth emigration increased the likelihood of farmers losing their lands to urbanization. Conversely, land size, yearly income,

and age had negative predictive effects on agrarian land loss. The results highlight the need for land management authorities to implement policies to protect agricultural land.

Zhanqi et al (2016), conducted a study on the impacts of land use change on residents' living based on urban metabolism: a case study in Yangzhou city of Jiangsu province, china this study aims to reveal the impacts of land use change on residents' living standard in Yangzhou based on urban metabolism by sensitivity and regression analysis. Results showed that during the period from 1995 to 2014, the flux of energy increased about 156.56% and the ratio of fuels & electricity energy flow had increased from 2.86% to 9.20% due to energy demands getting larger, while the built-up land increased by 415.05 km² and the cultivated land reduced by 417.24 km². Sensitivity analysis showed that the expansion of built-up land improved residents' living standards and enriched their material life, while people's lives were also increasingly dependent on energy consumption and sustainability was being reduced. The regression analysis indicated that people's lifestyles were transforming to economical and intensive utilization of resources with the built-up area expansion. The results can provide feasible recommendations for land use planning and urban development from the aspect of human life and well-being.

Jie Yin et al (2020) conducted a study on Rural Land Use Change Driven by Informal Industrialization: Evidence from Fengzhuang Village in China. This study investigates the spatial expansion process, the de facto land use change, and their endogenous driving forces in the village of Fengzhuang since the 1990s. Fengzhuang is a specialized village in Hebei, North China, in which above 80% of rural residents are engaged in the manufacturing of mahogany furniture. Land use data were extracted from a participatory rural appraisal (PRA) survey conducted in 2014–2015. The results suggest that the land in Fengzhuang has been expanding rapidly under the influence of the informal furniture industry. The villagers transform their residential areas into family workshops and factories for the production of furniture. Most rural areas officially marked as residential are, in effect, used for industrial production, resulting in the informality of land use and circulation. The in-depth survey also reveals that the informality of the furniture industry, the bottom-up process of land development, and the evolution of government regulation are the major reasons leading to the de facto change of land use in Fengzhuang. The study offers a microscopic perspective of land use change, which helps to explore the formation and change of rural land use and actual functions, as well as the mechanisms behind them. These findings are expected to provide

some implications for improving rural development strategies, rural planning, and governance in China's specialized villages such as Fengzhuang.

Hatami and Shafieardekani (2014) conducted a study on the effect of industrialization on land use changes; evidence from intermediate cities of Iran. The intermediate cities of Iran are most important province in industrial process of Iran. The aim of this paper is considering the impact of Industrialization on Land Use Changes in Intermediate Cities of Iran. For do it, we have presented a regression model for testing the hypothesis of this research. Estimation results indicate that Industrialization has a significant impact on Land Use Changes in intermediate cities of Iran. According to the result, Industrialization has a significant impact on Land Use Changes in intermediate cities of Iran, also, A lag of arable land has a significant positive impact on Land Use Changes in intermediate cities of Iran.

Lu and et al (2011) in their study "Effects of urbanization and industrialization on agricultural land use in Shandong Peninsula of China" developed a method to extract singlecropping land, double-cropping land and other land use/land cover categories for 1978, 1999 and 2006 from seasonal variations in Normalized Vegetation Index (NDVI) during a crop calendar year. Spatial analysis results indicated significant changes of arable lands and other land use/land cover categories due to the urbanization and industrialization. The most possible reason is due to the continuous adjustment of government's policies and shift of farmer's economic interests.

Suu (2009) in his study analyzes and explains the questions of how, in what ways and to what extent agricultural land conversions have been affecting farmer livelihoods in one peri-urban Hanoi village. argue that the state's appropriation of agricultural land use rights have created essential socio-economic impacts on the farmers whose agricultural land have been appropriated for purposes of industrialization and urbanization. In coping with the new situation, while the party-state's policy on vocational training and job creation shows limited impacts, many farmers in my case study rely on their natural capital in the form of residential land use rights to not only escape poverty but also to shift to new strategies of livelihoods.

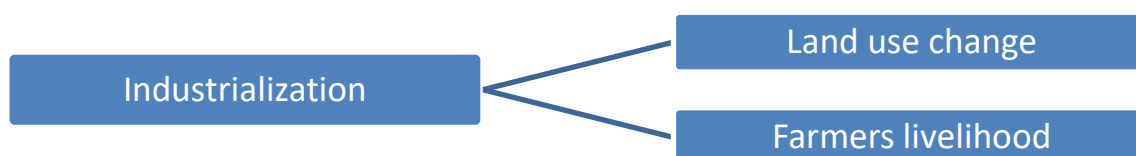
Kavzoglu(2008) studied the resulting urbanization in the Gebze district of Kocaeli in Turkey. Land use and land cover changes that occurred in the region were investigated using satellite images acquired in 1987, 1997, and 2002. In the detection of changes post classification comparison approach is employed using an artificial neural network classifier, specifically a multilayer perceptron with back propagation learning algorithm. Results show some

important findings regarding the size and nature of the change that occurred in the study area. In the despoiled areas, a large number of pixels of pasture and forest lands have been replaced by urban pixels; as a result, the total area of urban pixels doubled in the 15-year period with a higher urbanization rate between 1997 and 2002. A significant amount of forest land, about 38% for deciduous and 22% for coniferous forest has been destroyed. In addition to the statistical estimates of the change, its spatial distribution was also investigated through a map of change that helps to determine the areas where considerable degradation and deforestation have taken place.

Ghatak and Mookherjee (2013), in their paper address the question of how farmers displaced by acquisition of agricultural land for the purpose of industrialization ought to be compensated. Prior to acquisition, the farmers are leasing in land from a private owner or local government with a legally mandated sharecropping contract. Compensation rules affect the decision of the landlord to sell the land ex post to an industrial developer, and ex ante incentives of tenants and landlord to make specific investments in agricultural productivity. Efficiency considerations are shown to require farmers be overcompensated in the event of conversion.

Wang and et. al (2011) have driven the physical, social and economic driving forces of those changes to grasp the trends in land-use change and the effects of land policies and to formulate strategies for the protection and sustainable use of agricultural land. The results indicated that, although the overall change in land use was not large, cultivated land was significantly reduced and developed land rapidly increased. A great deal of high quality cultivated land was changed to developed land and low quality cultivated land generated from unused land, which has resulted in a serious threat to food supplies in China.

2.8 Conceptual Framework



Source: Literature and Own formulation

CHAPTER THREE

METHODOLOGY

3.1 Description of the Study Area

The town of Gelan is located in central Ethiopia, Oromia Regional State, 25 km respectively south of Addis Ababa. It lies directly and adjacent along the highway connecting Addis Ababa and Djibouti. Gelan is one of the eight towns of the Finfine Surrounding Oromia Special Zone (FSOSZ). Geographically, the towns lie between $8^{\circ} 53'N$ - $8^{\circ} 44'N$ latitude and $38^{\circ} 46'E$ - $38^{\circ} 56'E$ longitude. There are four rural kebeles in this special zone, one of the study areas is Tuluguracha kebele and this is located at the center of Gelan town. In this kebele out of a total 1,536.47 hectare of land, 235 hectares have been used for industry. Land for long time has played the fundamental role among Gelan inhabitants' life. Numerous socio-economic lives are intensely attached with their productive asset i.e., land. Hence economically inhabitants of Gelan are dependent on their land.

Land use type in this study area is undergoing rapid changes due to the ongoing dynamic demographic and economic changes in this area. The physical proximity of the area to the capital city of Addis Ababa makes these more attractive than many other places for the establishment of investment projects. And the government policy of establishing different investment projects and the use of scarce natural resources such as agricultural land with cheap price tags as an incentive to attract private enterprises but it plays a key role for the prevailing rapid agricultural land invasion in the study area. As a result, the land use types in most parts of this area have passed through considerable changes over the last decades.

According to the Ethiopian Central Statistics Agency CSA (2007) report the total population of Tuluguracha kebele is 3,577. Males account for 57 percent whereas females account for 43 percent of the total population. Ethnically, 81.24 percent of the population is Oromo, 17.1 percent is from Amhara, 0.81 percent from Tigray and the remaining 0.85 percent of the population is from various ethnic groups (Oromia Urban Planning Institute, 2007).

Farming (introduction) is the means of subsistence for the people within the research area of Tuluguracha kebele in Gelan. The farmers of the area produce a variety of cereal crops and fatten animals. They supply their agricultural products to the nearby large urban centers like Akaki and Dukem. Pertaining to their social relations, farmers of Gelan have strong social and cultural affiliations. This is shown by the spatial pattern of their settlement that is mainly

reflected by the settlement of male adults around their lineage. Farmers of the area as in most parts of Ethiopia have common grazing areas and water ponds that serve during dry seasons for their animals. They also have a culture of supporting each other during times of harvesting, plowing and social ceremonies during times of distress and happiness.

3.2 Research Approach

The study was carried out by using a mixed method approach (i.e. qualitative and quantitative). According to C.R Kothari (research method) 2nd revised edition Quantitative research is based on the measurement of quantity or amount. And qualitative research approach is employed to gather data. This approach helps to comprehend the perception, and attitude of informants towards the current livelihoods of farmers and socio- economic transformation in the area.

3.3 Sources of Data and Data Collection Tools

The household survey was conducted in order to generate quantitative data. Some of the information collected through household surveys count or measure the demographic characteristics, access to resources, agricultural land ownership and size, crop cultivation and amount of crop harvest, livestock holding size, employment and income from off-farm and non-farm activities and monthly/yearly savings. Furthermore, the amounts of compensation money were also included and all the data in the questioners were also personally collected by the researcher itself.

Interviews were another method that, the researcher used to collect qualitative data. Semi structured interviews were made with selected elderly and affected households from the study kebele and with key informants purposefully selected from investment offices, the office of rural/urban land administration and the agricultural department. The intension of the interview with the selected farmers was to get an in-depth knowledge and understanding of people's past and present livelihood situation. In addition, in different time of my field stay, The study used to make informal conversations with residents local government officials on several issues related to converted lands to industrial investment and compensation money were also discuss. Because informal conversations were important to adding and supporting the formal interviews.

In this study, observation was used as one of the critical methods to gather information with the other firsthand information gathering method (interview). For that reason, during the field work, observation was made for almost two months, February 25, 2021 to April 10, 2021.

During my observation both planned and unplanned observation were applied. For instance, planned observations in villages, Agricultural areas, community's events, business areas, social service institutions were made. On the other hand at different time of my field stay, I made unplanned observation as I used to watch every day activities of local farmers. Throughout observation time I tried to learn about the changes occurring, how local farmers struggled to cope up with changes, how socio-economic life in the community looked like, what positive and negative changes due to industrialization,. Thus by recording important elements which I obtained through observation and I have analyzed it with information from interviews.

3.4 Sampling size Determination

Sample size determination and sampling procedures for socio-economic study Probability and non-probability sampling methods were used to determine sample sizes in this study. Probability sampling was used to determine the optimal sample size required to administer household surveys. In determining the representative sample sizes for the study, the following steps and procedures were applied. Israel (2009) provides a simplified formula to calculate sample sizes of finite population, which is used to determine the sample size for this particular study. A 93% confidence level is assumed for this formula to determine the sample size, at $e=0.07$ and the sample size is determined by the following formula. Therefore, the study were conducted a sample of 1300 units from the population 1300. Therefore, for their representativeness sample is determined using a scientific formula adopted from (Yamane, 1967).

Then the sample size is determined by the following formula.

$$n = \frac{N}{1 + N(e^2)}$$

where 'n' is the required sample size,

N is the population size and

e is the level of percision

Applying the above formula $n = \frac{1300}{1+1300(0.07)^2} = 176.3907$

Rounding to nearest integer therefore, the sample size for this research is 176 household of the study area.

3.5 Data Analysis Techniques

This study is based on both quantitative and qualitative data. A Mixed Methods Approach (MMA) was used to analyze the data. Equally, qualitative approach helps to explore an in-depth and comprehensive processes of a household's behavioral traits such as perceptions, attitudes, practices of understanding reactions to social and economic of their surroundings. Most of the quantitative data or inferential statistics such as t-tests were analyzed using SPSS software. SPSS was also used to generate bar graphs, tables, charts used to enhance visualization as well as description of some quantitative data. In addition to SPSS, MS-Excel is also used to draw bar graphs and line charts to study the trends and patterns of a few variables such as farmland holding sizes, cultivated farmland sizes and crop production before 2008 and after 2008. Qualitative data were analyzed through content and context analysis. Generally, the analysis and discussion of quantitative and qualitative data were done by triangulating results to either supplement the result or verify qualitative responses.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

In this chapter, the data collected using questioner and presented based on the objectives of the study set above. This section presents and explains data which was obtained from questionnaire. The finding presents on the basis of the specific objectives of the study. The section contains three sub-sections detailing general information and findings of the two objectives. To analyze the Impact of Land Use policy Change on the Farmers' Livelihood in Tulu guacha Kebele, Gelan Town sample size of 166 households was undertaken.

Descriptive statistic was used to analyze and interpret the results of the study. The descriptive analysis consists of central tendency measurements (frequency and frequency distribution, percentage, & cumulative percentages). Also, tabular explanations are used with the help of SPSS.

A total of 176 questionnaires were distributed to the respondents and from that 170 (96.59 %) questionnaires' were collected through a self-administered survey and 166 (94.31%) questionnaires' were properly filled and ready for analysis, then the data were entered into SPSS.. The dataset was rechecked to ensure the accuracy of the data entry. The minimum and maximum data values on each variable related to each case were checked to detect any irregular or unusual data values.

4.1 Demographic information

This section covers Gender of the household head, age of the household head, household size, education level, marital status, religion and occupation of the respondents at.

Gender

Table 4.1 shows that more than half of the respondents 160 (96.4 %) were male and 6 (3.6 %) the respondent's female.

Age

As per the table below majority of the respondents were in the age group of above 61 years 68 (41%), and followed by 51-60 years 63 (38 %), 41 -50 years 30 (18.1 %) and 31 - 40 year 5 (3 %).

Table 4.1: General Background Information of Respondents

No.		Item	Frequency	Percent	Cumulative Percent
1	Gender	Male	160	96.4	96.4
		Female	6	3.6	100.0
		Total	166	100.0	
2	Age	31 - 40 year	5	3.0	3.0
		41 - 50 year	30	18.1	21.1
		51 - 60 year	63	38.0	59.0
		Above 61	68	41.0	100.0
		Total	166	100.0	
3	Household size	1 -5	55	33.1	33.1
		6 -9	63	38.0	71.1
		above 10	48	28.9	100.0
		Total	166	100.0	
4	Education level	Illiterate	136	81.9	81.9
		Grade 1- 4	28	16.9	98.8
		Grade 5 – 8	1	.6	99.4
		Grade 9 and above	1	.6	100.0
		Total	166	100.0	
5	Marital status	Married	158	95.2	95.2
		Widowed	5	3.0	98.2
		Divorced	3	1.8	100.0
		Total	166	100.0	
6	Religion	Orthodox	139	83.7	83.7
		Protestant	1	.6	84.3
		Others	26	15.7	100.0
		Total	166	100.0	
7	Occupation	Farming activities	26	15.7	15.7
		Non farming activates	117	70.5	86.1
		Both	9	5.4	91.6
		Others	14	8.4	100.0
		Total	166	100.0	

Source: Own computation and survey, 2021

Household size

Results depicts that 38 percent of the households have a family size of 6 – 9, 33.1 percent of the respondents have a family size of 1 – 5 and 28.9 percent of the respondent have a family size of above 10 . For this result we can understand that majority of the respondents have a family size of 6 – 9.

Education level

Results depicts that 81.9 percent of household head have illiterate and 16.9 percent of the respondents have 1 – 4 grade. For this result we can understand that majority of the respondents were illiterate.

Marital status

The data shown in table 4.1 above, marital status of the respondents have been in sample area. The findings are that 95.2 % of the respondents have been married, 5 % of the respondents have been widowed and 3 % of the respondents have been divorced.

Religion

As per the table 4.1 presents religion of the respondents have been sample area. Majority of the respondents orthodox (83.7 %) and followed others (15.7 %).

Occupation

Results depicts that,70.5 percent of the respondents have engaged in non-farming activities, 15.1 % of the household were engaged in farming activities, 8.4 % of the respondents engaged in others and 5.4 % of the respondents have engaged in both.

4.2 Impact of industrialization on the household land size

Did you have a farm land before industrialization took place in your kabele

According to the respondents response before the industrialization took place in the sample keble all household have a farm land.

Table 4.2: Impact of industrialization on the household land size

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
land size operated in hectares	166	1	10	3.14	1.415
land taken for industry purpose`	166	0	10	2.73	1.645

Source: Own computation and survey, 2021

As per the table above before the industrialization took place the average household land size operated in hectares was 3.14 hectares with the minimum 1 hectare and maximum value 10 hectare. After the industrialization process took place in the area on the average 2.73 hectares land was taken from each household with the minimum value of 0 and the maximum value 10 hectares. The minimum value of zero indicates that the household land not taken to industry

purpose and the maximum value of 10 implying that the entire land of the household were taken to industry purpose.

Table 4.3 shows results from a paired sample t-test conducted to evaluate the impact of industrialization on the household land size. There results indicate a statistical significant decrease in the household land size before (M=3.14, SD=1.415) and after the industrialization took place (M = 2.73, SD = 1.645), $t(166) = 4.943$, $p < 0.000$ (two tailed). The mean decrease in land size is 0.410 hectares with a 95% confidence interval ranging from 0.246 to 0.573. The t statistics value 4.943 indicates a large effect size with 1 percent significance level.

Table 4.3: Paired Samples test household land size

Paired Samples Statistics				Paired Samples Test					
		Mean	N	SD	Land size -land to industry	Mean	SD	T	sig(2- tailed)
Pair 1	Land size	3.14	166	1.415		0.410	1.068	4.943	0.000*
	Land to industry	2.73	166	1.645					

Source: Own computation using SPSS of the survey, 2021, * $p < 0.05$

4.3 The Impact of industrialization on the household average annual income form farm

Table 4.4: Impact of industrialization on annual income from farm

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Average annual income from farm	166	16000	80000	40439.76	11616.837
Average annual income HH after farm land taken by industry	166	2000	65000	24833.73	18516.501

Source: Own computation and survey, 2021

Based on the table 4.4 above before the industrialization took place the average household annual income from farm was 40,439.76 birr with the minimum 16,000 birr and maximum value 80,000 birr. After the industrialization process took place in the area on the average annual income of the household from farm was 24,833.73 birr with the minimum value of 2000 and the maximum value 65,000 birr. The minimum value of 2000 indicates that almost all land of the household was taken to industry purpose and the maximum value of 65,000 birr implying that the maximum average annual income from farm.

Table 4.5: Paired Samples test of household income from farm

Paired Samples Statistics				Paired Samples Test					
		Mean	N	SD	Income from farm – income from farm after indu..	Mean	SD	T	sig(2-tailed)
Pa ir 1	income from farm	40439.76	166	11616.837		15606.024	17272.759	11.641	0.000*
	Income from after in du.	24833.73	166	18516.501					

Source: Own computation and survey, 2021

Table 4.5 shows results from a paired sample t-test conducted to evaluate the impact of industrialization on the household annual average income from farm. There results indicate a statistical significant decrease in the household annual average income from farm before (M=40,439.76, SD=11616.837) and after the industrialization took place (M = 24,833.73, SD = 18516.501), $t(166) = 11.614$, $p < 0.000$ (two tailed). The mean decrease in annual average household income from farm is 15,606.024 birr with a 95% confidence interval ranging from 12,959.031 to 18,2530071. The t statistics value 11.641 indicates a large effect size with 1 percent significance level.

Table 4.6: household's response on farm income comparison before and after Industrialization

		Frequency	Percent	Cumulative Percent
Valid	Yes	14	8.4	8.4
	No	152	91.6	100.0
	Total	166	100.0	

Source: Own computation and survey, 2021

As per the table 4.6 above majority of the respondents 152 (91.6 %) say no to the question that are you getting more income from farm now as compared to the industrialization took place. 14 (8.4 %) of the respondents say yes to the question. From the household response it can be concluded that industrialization process in the area reduced the annual farm get income of the household after the industrialization process.

4.4 Industrialization and Land Use change

Table 4.7: Annual crop production and household consumption

Farm production Feeding period		Frequency	Percent	Cumulative Percent
Valid	less than 3 months	138	83.1	83.1
	3 - 6 months	6	3.6	86.7
	6 - 9 months	3	1.8	88.6
	9 - 12 months	3	1.8	90.4
	above one year	16	9.6	100.0
	Total	166	100.0	

Source: Own computation and survey, 2021

Based on the table 4.7 above depicts that the level of crop production and consumption level of the household in the study area. As per respondents response majority of the respondents 138 (81.3 %) the annual crop production level able to feed their family only for less than three months. 3.6 percent of the respondent's level of crop production able to feed their family for three months to six months. From the total respondents only 16 (9.6 %) of respondents crop production level were able to feed their family for more than one year. From the forgoing discussion it can be concluded that majority the household in the study area unable to feed their family from crop production for more than three months and this is because of land use change from agriculture to industry.

Table 4.8: Size of agricultural land and causes of agricultural land change

Size of agricultural land		Frequency	Percent	Cumulative Percent
Valid	Decreasing	148	89.2	89.2
	Intact	18	10.8	100.0
	Total	166	100.0	
Major causes of agricultural land change		Frequency	Percent	Cumulative Percent
Valid	Converted to investment in industries	158	95.2	95.8
	Fall within urban housing expansion	7	4.2	100.0
	Missing	1	0.6	
	Total	165	99.4	

Source: Own computation and survey, 2021

As per the table 4.8 above depicts that the level of household agricultural land size over the past 12 years. According to respondents response over the past 12 years the level of agricultural land was decreased. 10.8 % of the respondents were responded that over the past 12 years the size of household agricultural land was no changed. Based on the respondents response the major cause of decreasing the agricultural land over the past 12 years was agricultural land converted to industry area or to industrialization.

Table 4.9: Agricultural land converted to industrial establishment

		Frequency	Percent	Cumulative Percent
Valid	0.25ha(1 kert)	2	1.2	1.2
	0.75-1ha (3-4kert)	5	3.0	4.2
	1-1.5ha (4-6kert)	7	4.2	8.4
	whole farm land	152	91.6	100.0
	Total	166	100.0	
<hr/>				
Consulted by local/regional government authorities about the conversion of your land		Frequency	Percent	Cumulative Percent
Valid	Yes	49	29.5	30.6
	No	111	66.9	100.0
	Total	160	96.4	

Source: Own computation and survey, 2021.

Based on the table 4.9 above presents the level of household agricultural land converted to industrialization process. From the total respondents 91.6 % of the respondents were responded that the whole farm land converted to industry and followed by 4.2 % 1 to 1.5 hectares land converted to industry. From the above discussion it can be concluded that almost all agricultural land in the study area converted to industry. As per the table 4.8 above majority (66.9 %) of the respondents were not consulted by local/regional government authorities on the conversion of your land but only 29.3 % of the respondents have consulted by local/regional government authorities about the conversion of your land. The result implying that there was no proper coordination between farmers and local administers to convert agricultural land to industrialization process.

Table 4.10: Household willingness to convert land compensation

Household willingness		Frequency	Percent	Cumulative Percent
Valid	Voluntarily	39	23.5	24.4
	Involuntarily	121	72.9	100.0
	Total	160	96.4	
Total		166	100.0	
Compensation		Frequency	Percent	Cumulative Percent
Valid	Yes	158	95.2	99.4
	No	1	.6	100.0
	Missing	7	4.2	
	Total	166	95.8	

Source: Own computation and survey, 2021

As per the table 4.10 above is depicts household willingness to convert land compensation. From the total respondents 72.9 % of the respondent to convert their agricultural land to industry were involuntarily but 23.5 percent of the respondent were converted voluntarily. And also as per the table above from the total respondents 95.2 % of the respondents were received compensation.

Table 4.11: Collection of compensation and comparison with land properties

Collection of compensation		Frequency	Percent	Cumulative Percent
Valid	All in one installment	128	77.1	81.5
	Installment was made phase by phase	30	17.5	100.0
	Total	158	94.6	
Comparison with land properties		Frequency	Percent	Cumulative Percent
Valid	Higher than aggregate value of my land and properties on it	12	7.2	7.6
	Was equivalent to the value of my land and properties on it	9	5.4	13.4
	Lower than the aggregate value of my land and properties on it	55	33.1	48.4
	Very much lower than the aggregate value of my land and properties on	82	48.8	100.0

	it			
	Total	158	94.6	
	Missing	8	5.4	
Total		166	100.0	

Source: Own computation and survey, 2021

Based on the table above 4.11 above is presents collection of compensation and comparison with land properties. Based on the findings 77.1 percent of the respondents were collect the compensation money all in one installment and 29 % of the respondents were collected after installment was made phase by phase. As per the table 4.10 is depicts respondent comparison on compensation and land properties and according to the respondent response 48.8 % of the respondent were the compensation very much lower than the aggregate value of my land and properties on it, 33.1 % of the respondents were the compensation lower than the aggregate value of my land and properties on it and 12 % of the respondents were the compensation higher than aggregate value of my land and properties on it. Majority of the respondents (52.4 %) were used the compensation for built a house, bought a Bajaj, for temporary expense, deposited in bank and share for their own family. 13.3 % of the respondents were do nothing on their own compensation money.

From the above discussion it can be concluded that the compensation lower than the aggregate value of farm land and properties on it.

4.4.1 Current household Living status as compared to before industrialization

Table 4.12: Living status of the household and Residential Displaced as compared to per industrialization

Living status of the household		Frequency	Percent	Cumulative Percent
Valid	Agree	47	28.3	29.0
	Unsure	17	10.2	39.5
	Disagree	30	18.1	58.0
	Strongly Disagree	68	41.0	100.0
	Total	162	97.6	
Residential Displaced				
		Frequency	Percent	Cumulative Percent
Yes		17	10.2	11.0
No		137	82.5	100.0
Total		154	92.8	

Source: Own computation and survey, 2021

As per the table 4.12 above present's current household living status as compared to before industrialization took place. As per the finding majority of the respondents 41 % of the respondent have strongly disagreed on the statement that current household status and standard of living improved significantly after collecting compensation, 18.1 % of the respondents have disagreed, 10.2 % of the respondent have unsure and 28.3 % of the respondents have agreed on the statement.

Based on the table above from the total respondents 82.5 % of the respondents were not displaced from the residential areas to other area because of ongoing investment activities in the area but 10.2 % of the respondents were displaced.

From the forgoing discussion it can be concluded that the industrialization process in the study area were not significantly improved the living status of the household.

4.5 Effect of Industrialization on Livelihoods and Land Use Change

4.5.1 The Effects of Industrialization on Agricultural Activities

Effects on the Cultivated Land Area

The following section quantifies the effect of industrialization on cultivated land area in hectares. As per the table 4.13 below, the mean value of teff before 2008 covered in hectares was 1.62 but after the industrialization process i.e after 2008 the mean value of teff covered in hectares was 0.27. The mean difference between before and after the industrialization was 1.35 hectares and implying that because of the industrialization process on the average 1.35 hectares land covered in teff was decreased. The average farm land covered in hectares for Chickpea before the industrialization process was 0.82 and after the industrialization process 0.03. The figure indicates because of industrialization farm land area covered by chickpea was decreased from 0.82 hectares to 0.03 hectares. The result of this study consistent the finding of Dadi et al.(20115),Brahima et al (2020) and Yin et al (2020).

Table 4.13: Farm Land covered in Hectares by crops before and after 2008

	N	Minimum	Maximum	Mean	Std. Deviation
Teff	Before 2008	0	5	1.62	0.976
	After 2008	0	3	0.27	0.587
Chickpea	Before 2008	0	6	0.82	0.883
	After 2008	0	1	0.03	0.171
Wheat	Before 2008	0	3	0.65	0.613
	After 2008	0	2	0.04	0.230
Others	Before 2008	0	1	0.04	0.195
	After 2008	0	2	0.01	0.155
N	166				

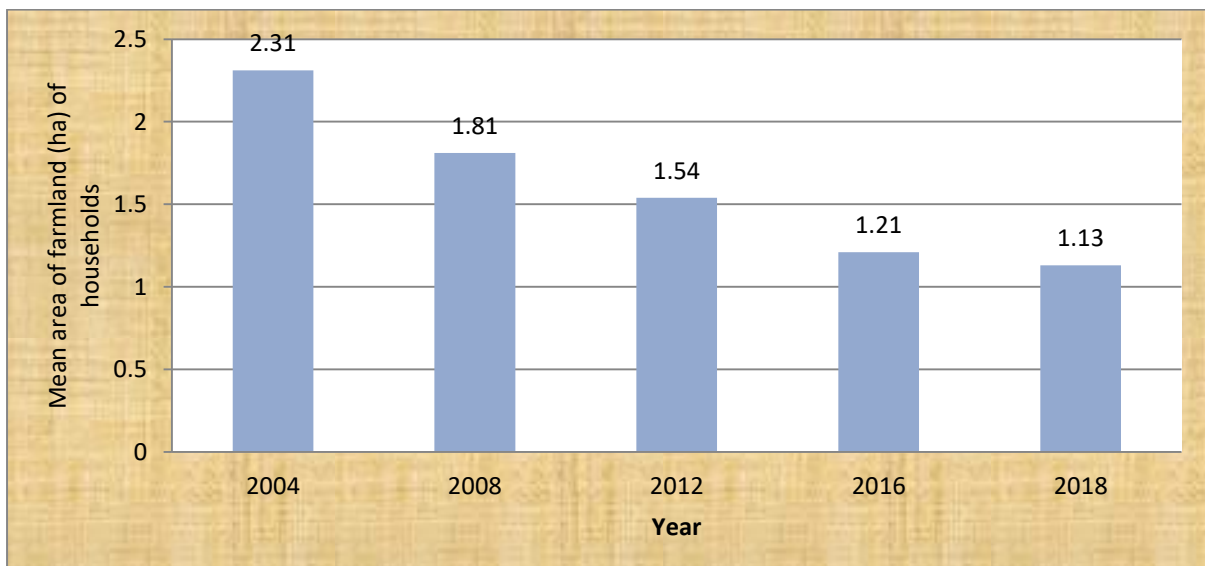
Source: Own computation and survey, 2021

As based on the table above, average farm land covered in wheat before and after the industrialization process was 0.65 hectares and 0.04 hectares respectively. The figure indicates a decreasing trend after the industrialization process. In the study area the average farm land covered in other crops was 0.04 hectares before the industrialization process and 0.01 hectares and after the industrialization process. From the above discussion it can be concluded that due to the industrialization process farm land area covered by different crops was significantly decreased. The result of this study consistent the finding of Dadi et al.(20115),Brahima et al (2020) and Yin et al (2020).

4.5.2 Effects on the Total Area of Farmland Owned at the Household Level

In line with the general conversion of agricultural land into other land industries, the farm land size per household decreased in the case study area. Figure 4.1 shows this trend. As presented in Figure 4.1, the mean farmland area owned by households who lived within the study area a significant decline. In 2004, in the early years of industrial development, the mean area of farmland used by households was 2.31 ha. Four years later, the figure decreased to around 1.81 ha, and shrank further to 1.13 ha in 2018. The comparison of the trend in both case study areas shows the following picture. The result of this study consistent the finding of Dadi et al.(20115),Brahima et al (2020).

Figure 4.1: Mean area of farmland (ha) of households in the study area, 2004-2018



Source: Own computation and survey, 2021

4.5.3 Effects on the Crop Production

The following table 4.14 presents the effect of industrialization on crop production in quntales. As per the table, the mean value of teff production before 2008 was 16.41 quntals but after the industrialization process i.e after 2008 the mean value of teff production was 2.36 quntals. The figure indicates that the level of teff production significantly decreased because of industrialization process. The average production level of Chickpea before the industrialization process was 21.14 quntals and after the industrialization process 3.04 quntals. The figure indicates because of industrialization production level of chickpea was decreased from 21.14 quntals to 0.03 quntals. The result of this study consistent the finding of Dadi et al.(20115), Debi et al (2018),Brahima et al (2020) and Yin et al (2020).

Table 4.14: Average Level Annual Production in Qunatals Before and After 2008

	N	Minimum	Maximum	Mean	Std. Deviation
Teff	Before 2008	5	30	16.41	6.283
	After 2008	0	25	2.36	5.431
Chickpea	Before 2008	0	40	21.14	8.259
	After 2008	0	37	3.04	7.309
Wheat	Before 2008	0	89	12.01	9.424
	After 2008	0	14	1.73	3.919
Others	Before 2008	0	5	0.15	0.790
	After 2008	0	2	0.01	0.155
N	166				

Source: Own computation and survey, 2021

As based on the table above, average production level for wheat before and after the industrialization process was 12.01 quntals and 1.73 quntals respectively. The figure indicates a decreasing trend after the industrialization process. In the study area the average production for other crops was 0.15 quntals before the industrialization process and 0.01 quntals and after the industrialization process. From the above discussion it can be concluded that due to the industrialization process the level production in different crops was significantly decreased. The result of this study consistent the finding of Dadi et al.(20115), Debi et al (2018),Brahima et al (2020),Brahima et al (2020) and Yin et al (2020).

4.5.4 Effects on the Employment opportunity and employment income

As presented in table 4.15, before the industrialization process the average number of household member employed in the industry was 0.01 and after the industrialization process household member employed in the industry was 1.02. The result indicates that after

industrialization took place in the study area on the average one household member get employment opportunity. Based on the table below, before and after the industrialization process monthly average employment income was 2630.46 birr and 1266.96 birr respectively. The result of this study consistent the finding of Dadi et al.(20115),Debi et al (2018),Brahima et al (2020) and Yin et al (2020).

Table 4.15: Employment opportunity and employment income before and after 2008

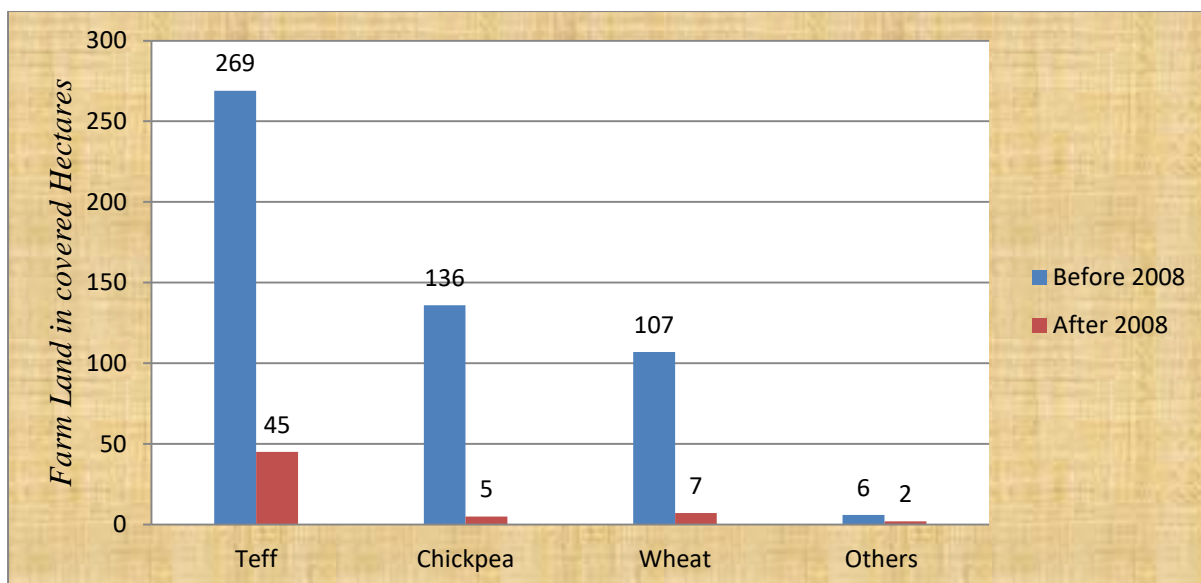
	N	Minimum	Maximum	Mean	Std. Dev.
No HH member employed in the industry	Before 2008	0	1	0.01	0.078
	After 2008	0	4	1.02	1.175
Monthly average employment income	Before 2008	1000	5000	2630.46	912.870
	After 2008	0	3500	1266.96	795.158
N	166				

Source: Own computation and survey, 2021

4.5.5 Effects on the Cultivated Land

In the following section, quantify the total area of agricultural land in their Tuluguacha Kebele (in Oromia Regional State Gelan Town)and explain the impac of land conversion on the sizes of cultivated land. The figure below shows the total area of aggregated cultivated land and the proportions of the area covered by various important crops before and after 2008. The bar graph in Figure 4.1 indicates a general reduction of agricultural land in the case study area. The cultivated land under teff shrank from 269 ha and 45, chickpea shrank from 136 ha to 5 ha and wheat shrank from 107 ha to 7 ha before 2008 and after 2008 respectively. The total cultivated land areas under other crops before and after 2008 was 6 ha and 2 ha respectively. This clearly shows the swift decline of croplands after the industrialization process.The result of this study consistent the finding of Dadi et al.(20115),Debi et al (2018),Brahima et al (2020) and Yin et al (2020).

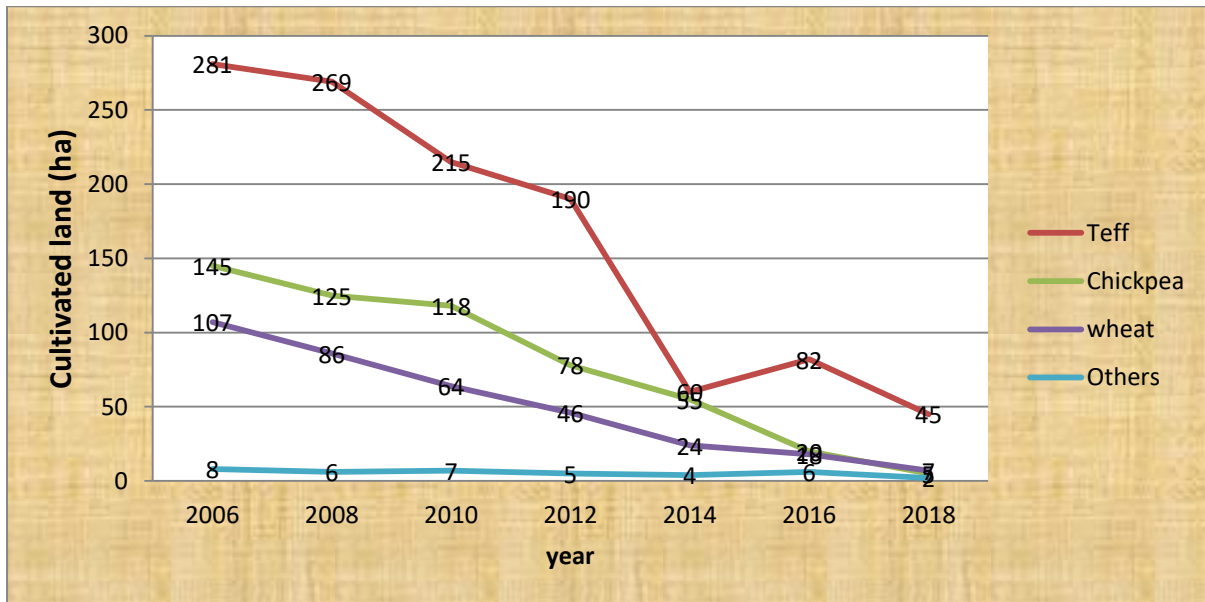
Figure 4.2: Cultivated land sizes (in ha) inbefore and after 2008



Source: Own computation and survey, 2021

In the following section, we quantify the total area of agricultural land in the study area and explain the effects of land conversion on the sizes of cultivated land. The figure below shows the total area of aggregated cultivated land and the proportions of the area covered by various important crops between 2006 and 2018. The trend lines in Figure 4.3 indicate a general reduction of agricultural land in the case study area. The cultivated land under teff and chickpea shrank from 281 ha and 145 ha respectively in 2006 to 45 ha and 45 ha respectively in 2018. Equally, total cultivated land areas under pulses dropped in a similar manner over the years recorded. This clearly shows the swift decline of croplands over time. The result of this study consistent the finding of Dadi et al.(20115),Debi et al (2018),Brahima et al (2020) andYin et al (2020) and Yin et al (2020).

Figure 4.3: Cultivated land sizes (in ha) in the study area, 2006–2018

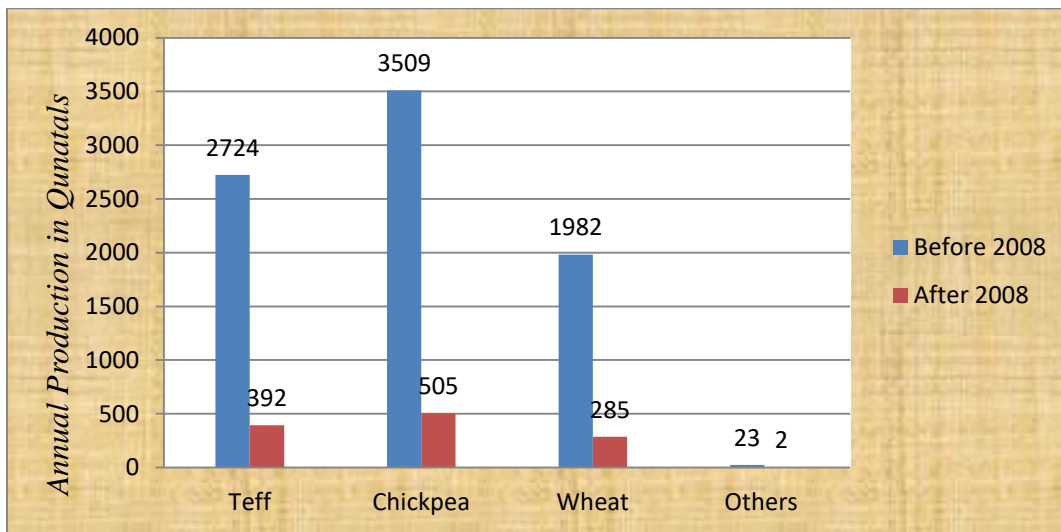


Source: Own computation and survey, 2021

4.5.6 Effects on the Crop Production

In the following presents, quantify the total production in their Tuluguacha Kebele (in Oromia Regional State Gelan Town) and explain the effects of land conversion on annual production level. The figure below shows the total production by various important crops before and after 2008. The bar graph in Figure 4.2 indicates a general reduction of annual production level in the case study area. The cultivated land under teff shrank from 2724 quntals and 392 quntals, chickpea shrank from 3509 quntals to 505 quntals and wheat shrank from 1982 quntals to 285 quntals before 2008 and after 2008 respectively. The total annual production under other crops before and after 2008 was 23 quntals and 2 quntals respectively. This clearly shows the swift decline of crop production after the industrialization process. The result of this study consistent the finding of Dadi et al.(20115),Debi et al (2018), Brahimia et al (2020) and Yin et al (2020).

Figure 4.4: Annual production level (in quntals) before and after 2008

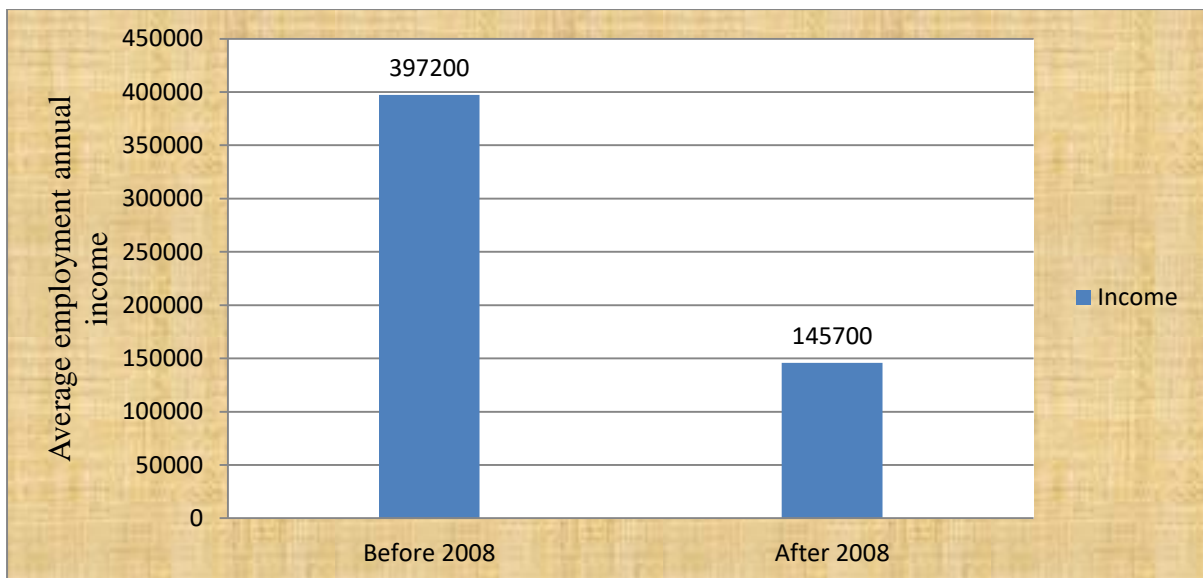


Source: Own computation and survey, 2021

4.5.7 Effects on the employment income

In line with the general conversion of agricultural land into other land uses, the level of employment income decrease. Figure 4 .5shows the effect of industrialization on annual employment income. As indicated in the figure average annual employment income before and after 2008 was 397,200 birr and 145,700 birr respectively. This clearly shows sharply reduction in employment income after industrialization process. The result of this study consistent the finding of Dadi et al.(20115) and Debi et al (2018).

Figure 4.5: Employment income before and after 2008



Source: Own computation and survey, 2021

4.6 Employment opportunities in relation industrial activities

Table 4.16: Employment opportunities and type of employment

Are you hired in the industry		Frequency	Percent	Cumulative Percent
Valid	Yes	114	68.7	68.7
	No	52	31.3	100.0
	Total	166	100.0	
Type of employment		Frequency	Percent	Cumulative Percent
Valid		52	31.3	31.3
	Daily laborer	27	16.3	47.6
	Foreman	7	4.2	51.8
	Compound keeper	68	41.0	92.8
	Professional work	12	7.2	100.0
	Total	166	100.0	

Source: Own computation and survey, 2021

Based on the table above from the total respondents 68.7 % of the respondents family member was hired in any of the nearby investment activities but 31.3 % of the respondents were not hired in any of the nearby investment activities.

As per the table 4.16 above is presents the type of employment that the household member hired in any of the nearby investment activities. From the total respondents 41 percent of the family member were hired in compound keeper, 16.3 percent were hired in daily laborer, 7.2 percent were hired in professional work and 4.2 percent were hired in foreman.

Table 4.17: Monthly income for unskilled household member and access to employment opportunities for other peoples

		Frequency	Percent	Cumulative Percent
Valid	Less than 1500	14	8.4	12.2
	1501 - 1750	43	25.9	49.6
	1751 - 2000	45	27.1	88.7
	More than 2000	13	7.8	100.0
	Total	115	69.3	
Missing	System	51	30.7	
Total		166	100.0	
		Frequency	Percent	Cumulative Percent
Valid	Yes	165	99.4	99.4
	No	1	.6	100.0
	Total	166	100.0	

Source: Own computation and survey, 2021

As per the table 4.17 above is presents monthly income for unskilled household member. From the total respondents 27.1 percent of the family member were paid on average monthly income of birr 1751 to 2000 birr, 25.9 percent were paid on average monthly income from birr 1501 to 1750, 7.8 percent were paid on average monthly income more than 2000 birr and 8.4 percent respondents were paid on less than 1500 birr.

Based on the table above from the total respondents 99.4 % of the respondents, other people in the locality have access to employment opportunities in the processes of industrial establishment but 0.6 % of the respondents were not.

What are the major problems related to employment in industries?

Table 4.18: problems related to employment in industries

		Frequency	Percent	Cumulative Percent
Valid	Lack of education	134	80.7	80.7
	Lack of skill	16	9.6	90.4
	Availability of excess labor from other places	16	9.6	100.0
	Total	166	100.0	

Source: Own computation and survey, 2021

As per the table 4.18 above is presents major problems related to employment in industries. From the total respondents 80.7 percent of the respondent's problem related to employment in industry was Lack of education, 9.6 percent of the respondents problem related to employment in industry was lack of skill and availability of excess labor from other places.

4.7 Access to physical capital/ Infrastructure

Table 4.19: Access to physical capital/ Infrastructure

Access to permanent road		Frequency	Percent	Cumulative Percent
Valid	No	166	100.0	100.0
	yes	0		
Access to Potable Water and Power/electric				
		Frequency	Percent	Cumulative Percent
Valid	Yes	100	60.2	60.2
	No	66	39.8	100.0
	Total	166	100.0	
Access to Health centers and Schools				
		Frequency	Percent	Cumulative Percent
Valid	No	166	100.0	100.0

Source: Own computation and survey, 2021

As per the table 4.19 above is presents access to physical capital/ infrastructure. According to the respondents response in the study area there was no access to permanent road and access to potable water and access to health centers and schools in the area. From the total respondents 60.2 % of the respondents were access to access to potable water and Power/electric due to industrialization in the area.

4.8 Result of Interview questions

4.8.1 Farmers' Perceptions regarding Rapid Industrial Expansion and the Conversion of Agricultural Land

In addition to distributing questionnaires, interview was also used as another data collection method was used. Accordingly, the researcher forwarded a couple of open ended questions, do you think that industrialization is important for this area. The results obtained from the interview reveal that the industrialization process it is not good for the study area because after the industrialization process most of the farmers they are poor. In addition, the interviewer was asked to do you think that the compensation mechanisms fair and paid be on time and for this question the respondents revealed that it was paid on time but the compensation is much lower than the value of land on agricultural base. Lastly, the respondents were asked to can you tell me if there is a problem with livelihood due to the reduction in your farmland and the respondents revealed they faced with a lot of problem like shortage of food crop and children dropping out from school to support the household.

4.8.2 Selected Households and Community Leader Perceptions regarding Rapid Industrial Expansion and the Conversion of Agricultural Land

In addition to farmer's perception, selected household and community leader interviewer was also used as another data collection method was used. Accordingly, the respondents were asked to how much land is taken for industry in this area and the revealed that 235 hectares agricultural land converted to industry. In addition, the respondents were asked to do you believe that all households those who their land taken for industry got fair compensation and they responded that compensation is not fair and as the cost of living increases the living condition of the farmers do not improve much what was before and crop production has been greatly reduced. Lastly, the community lander were asked to in what way the area households is benefited and/or affected by industrialization and they revealed that there is no benefit because the majority of households are not educated as a result didn't use and change the compensation as a permanent or sustainable income and they did not got a good employment opportunity except compound keeper.

4.8.3 Interview in Gelan city Land Administration and Investment Office

In addition to respondent's interview and community leader interview Gelan city administration office and investment office was interviewed in relation to industrialization process. Accordingly, the administration staff was asked to did you believe that the compensation given to the farmer is sufficient after the agricultural land has been taken over by industry and they responded that the did not believe because the land was gin to the farmer in a sustainable manner but from the compensation not. As a result of this problem, the land administration office is working with the concerned government body to rehabilitate the affected farmers. In addition the office was asked to have your office or related organized awareness creating trainings or orientation on the management and sustainable use of compensation money for the beneficiaries and reveled that training has been provided in the past but from the last three years, they are working the government to support them by organizing and access to business.

CHAPTER FIVE

SUMMARY, CONCLUSION AND POLICY RECOMMENDATION

5.1 Introduction

This chapter presents the summary of findings, conclusion and policy recommendation based on the findings from the study. Summary of findings and conclusions from the estimated results is presented in the next section whilst section 5.4 presents policy implications on the basis of the findings of this study.

5.2 Summary

The main objective of the study is the impact of land use policy change on the farmers' livelihood in Tulu guacha Kebele, in Oromia regional state Gelan town. In this study there are two specific objectives for which the researcher collected data and analyzed it as it is shown in chapter four. Analyze the extent of agricultural lands converted into industrial developments and the effects of these changes on the livelihoods of affected farmers.

Find out the processes and procedures involved in agricultural land expropriation and assess the perception of the farming households towards the amounts of compensation money.

Related to the demographic characteristics of respondents Table 4.1 specifies that majority of the respondents 96 % were male headed. Regarding their age level majority of the respondents were in the age group of above 61 years 68 (41%) and followed by 51-60 years 63 (38 %). Regarding to household size majority of the households has a family size of 6 – 9(38%). Moreover, 81.9 percent of household head have illiterate and 95.2 % of the respondents have been married. Regarding religion majority of the respondents orthodox (83.7 %) and followed others (15.7 %). As per the table 4.1 Results depicts that 70.5 percent of the respondents have engaged in non-farming activities.

In addition to demographic information of the respondents, descriptive analysis was made. In this regard table 4.2 shows that the average value of household land size before the industrialization operated in hectares was 3.14 hectares and after industrialization 2.73 hectares land was taken from each household with significance mean difference between the two.

Paired sample t-test was conducted to evaluate the impact of industrialization on the household land size. There results indicate a statistical significant decrease in the household land size before and after the industrialization took place with a difference statistically significant at t value = 0.000.

Regarding to the impact of industrialization on annual income from farm table 4.3 shows the average household annual income from farm before the industrialization was 44,614.46 birr and after industrialization was 15,492.52 birr with significance mean difference between the two. Paired sample t-test was conducted to evaluate the impact of industrialization on the annual income from farm. There results indicate a statistical significant decrease in the farm income before hand after the industrialization took place with a difference statistically significant at t value = 0.000.

Related to Industrialization and land use change and as per table 4.7 indicated that majority of the respondents 138 (81.3 %) the annual crop production level able to feed their family only for less than three months. According to respondents response over the past 12 years the level of agricultural land was decreased. From the total respondents 91.6 % of the respondents were responded that the whole farm land converted to industry and followed by 4.2 % 1 to 1.5 hectares land converted to industry. Related to the conversion of land implying that there was no proper coordination between farmers and local administrators to convert agricultural land to industrialization process. As per the table 4.10 is depicts respondent comparison on compensation and land properties and according to the majority respondent response the compensation very much lower than the aggregate value of my land and properties on it.

In related to current household living status as compared to before industrialization took place and the result indicates industrialization process in the study area were not significantly improved the living status of the household. As the result of industrialization process 10.2 % of the respondents were displaced residential areas to other area because of ongoing investment activities in the area.

Regarding the effect of industrialization on Cultivated Land Area and as per the table 4.13, the mean value of teff before 2008 covered in hectares was 1.62 but after the industrialization process i.e after 2008 the mean value of teff covered in hectares was 0.27. The average farm land covered in hectares for Chickpea before and after the industrialization process was 0.82 and 0.03 respectively. The Average farm land covered in wheat before and after the

industrialization process was 0.65 hectares and 0.04 hectares respectively. Generally, all crops covered in hectares indicate a decreasing trend after the industrialization process.

Regarding the effect of industrialization on crop production the mean value of teff production before 2008 was 16.41 quintals but after the industrialization process i.e after 2008 the mean value of teff production was 2.36 quintals. The average production level of Chickpea before and after the industrialization process was 21.14 quintals and 3.04 quintals respectively. In addition the average production level for wheat before and after the industrialization process was 12.01 quintals and 1.73 quintals respectively.

Table 4.15: Presents the effect of industrialization on employment opportunity and employment income and as per the result the average number of household member employed in the industry was 0.01 and after the industrialization process household member employed in the industry was 1.02.

Employment opportunities in relation industrial activities were analyzed in the study area and the result indicates that majority of the respondents family member was hired in any of the nearby investment activities but majority were hired in compound keeper. In addition to this, access to physical capital and infrastructure was assessed in the study area and the finding implying that all respondents have not access to access to permanent road and access to health centers and schools but majority of the respondents was access to potable water and Power/electric due to industrialization in the area.

Finally in addition to distributing questionnaires, interview was also used as another data collection method was used and analyzed from respondents, community leader and administrative staff. The result indicates that industrialization process it is not good for the study area because after the industrialization process most of the farmers they are poor, that 235 hectares agricultural land converted to industry, the compensation given to the farmer is sufficient after the agricultural land has been taken over by industry and they responded that they did not believe because the land was given to the farmer in a sustainable manner but from the compensation not.

5.3 Conclusions

Industrial Development Strategy in 2002 in general, and the establishment of Industrial Development Corridors in 2004 in particular, the Ethiopian government aims to promote economic growth through industrialization, facilitated through domestic and foreign investments. Many initiatives for industrial investments, along with a number of incentives and concessions, have been in place ever since.

The purpose of this study was to analyze the effect of land use change to industry on the farmers' livelihood in TuluguachaKebele, in Oromia regional state Gelantown. To address the problem the study aim to find answers to the following basic research questions. The first research question was how many hectares of agricultural lands were converted for industrialization and how have these changes influenced the livelihoods of the affected households in terms of livelihood assets?. And the second research question how the level of crop production affected when agricultural lands were converted for industrialization. Third research question was what processes and procedures were involved during land conversion and how do the affected households understand and respond to major loss/gains in livelihood assets and compensation money?. The fourth research question was how they are household's access to infrastructure after the industrialization process?

In line with the aforementioned research objective and research question the following conclusion were made

The study shows that there has been significant decrease in average value of household land size after the industrialization process. The study concluded that there has been a significant reduction in annual income from farm after industrialization process. This study concluded that in the sample area on the average from 1 to 1.5 hectares land were converted to industry from each household. Household were not willing to convert with land compensation or the conversion involuntarily even the converted land compensation very much lower than the aggregate value of my land and properties on it .

In the study area as compared to the pre industrialization period from the post industrialization period the living status of the household were decreasing. The study concluded that after the industrialization the cultivated land area of teff, wheat, Chickpea and others where significantly decreased. And also after the industrialization period the annual crop production level of teff, wheat, Chickpea and others also significantly decreased.

Informants reported that in the initial phase, local people expected to benefit from trickle-down effects, including additional income opportunities and improved infrastructure, however, started complaining after some years that many benefits did not arrive as expected. One dissatisfaction was that although agricultural land was converted into industrialization. In consequence, the substantial conversion of farmland into ‘industrial land’ negatively affects local people not only through the loss of their farmland but through the lack of promised employment opportunities and improved infrastructure that might have otherwise offset their losses in the agricultural sector.

5.4 Policy Recommendation

It recommend that the responsible governmental bodies at woreda, regional and federal levels should re-examine the actual implementation of the legal investment procedures, and re-adjust them in a way that allows the development of industrialization process in a more efficient manner, and with a much lower consumption of land resources. This would also mean to give priority to developing already converted lands instead of looking for new farmlands, so as not to further affect the livelihoods of many more farming households.

The responsible governmental bodies give special attention and assistance to those farmers who had lost (parts or all of) their land due to industrialization, and to help them to develop abilities and capacities to cope with the new situation, e.g. to increase their productivity on the remaining fields. This should be of a high priority accompanying measure not only to guarantee long term local food and labour supply but in order to avoid eventual social conflict and the generation of peri-urban shanty towns. More specifically the following policy should recommend.

- Training and awareness creation should be given to the farmers in order to invest their compensation in permanent income earning investment.
- In the study area there should be improvement of agricultural activities through the introduction of intermediate technologies and modifying cropping patterns.
- In the industrialization process there should be involvement of stakeholders, decision makers at the local, regional, and national level to avoid farmer’s problem after the industrialization process.
- When industrialization takes place in the area the community should access to water supply, school, health centre and power to improve the living status of the household.

- The concerned body should adjust the current compensation mechanisms since majority of the respondent were said that compensation very much lower than the aggregate value of my land and properties on it.

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Appendix

Structured questionnaire

Dear Respondent,

My name is EtsegenetGizaw I am attending MSc at St. Mary's University. I am conducting a research on the title "The Effect of Land Use Change to Industry on the Farmers' Livelihood

in TuluguachaKebele, in Oromia Regional State Gelan Town'' as a partial fulfillment of the requirements for the Masters of Development Economics, St. Mary's University.

This questionnaire is designed to collect data The Effect of Land Use Change to Industry on the Farmers' Livelihood in TuluguachaKebele, in Oromia Regional State Gelan Town. The data to be collected through the questionnaire is highly valuable to meet the objectives of this study. Therefore, you are kindly requested to fill in and return the questionnaire. The information you supply would be used for academic purpose only and will be kept confidential.

Thank you in advance for your cooperation!

No need of writing your name;

Put “√” mark for your choice

PART I: Background Information

1. Sex of head of the respondent : Male Female
2. Age of the household head_____

3. Household size _____
4. What is your Education level
 Illiterate grade 1 – 4 grade5- 8 grade > Grade 9
5. Household marital status Single Married Widowed
 Divorced
6. Your religion?
 Orthodox Protestant Muslim Others
7. What is your occupation
 Farming activates Non farming activates both
 Others
8. Did you have a farm land before industrialization took place in your kabele
 Yes No
9. If you yes Q8 what is your land size operated in hectares _____
10. How many hectors of your land taken for industry purpose? _____
11. What was your household average annual income from farm _____
12. What is your household average annual income after your farm land taken by industry

13. Are you getting more income as compared farming _____

PART I: Industrialization and Land Use change

1. For how many months of the year that you annual crop production could able to feed your family? A) <3 months B) 3-6 months C) 6-9 months D) 9- 1year E) > 1 year.
2. What has happened to the size of your agricultural land over the past 12 years?
 A) Increased B) decreasing C) intact
3. If your answer to Q2 is ‘decreasing ‘what are the major causes for that?
 A). converted to investment in industries. C) Shared with family member
 B) Fall within urban housing expansion
4. If your answer to Q2 is ‘a’, how many hectare/“kert” is converted to industrial establishment?
 A) 0.25ha(1 kert) B) 0.25-0.5ha(1-2kert) C)0.5- 0.75ha(2-3kert) D) 0.75-1ha (3-4kert) E) 1-1.5ha (4-6kert) F) whole farm land
5. Were you consulted by local/regional government authorities about the conversion of your land? A) Yes B) No

6. If your answer to Q5 is ‘yes’, how did you decide/ convinced to give up your land and properties on it?
 A) Voluntarily B) Involuntarily
7. Did you receive compensation?
 A) Yes B) No
8. If your answer to Q7 is ‘yes’, how did you collect your compensation money?
 A) All in one installment C) not yet paid
 B) Installment was made phase by phase
9. If your answer to Q7 is ‘yes’, how did you rate/compare the amount of compensation money with your land and properties on it if any? Compensation money was:
 A) Higher than aggregate value of my land and properties on it
 B) Was equivalent to the value of my land and properties on it
 C) Lower than the aggregate value of my land and properties on it
 D) Very much lower than the aggregate value of my land and properties on it
10. What did you do with the compensation money? Explain, four major activities
 A) -----
 B) -----
 C) -----
11. How do you rate your household’s current living status and standards before collecting compensation money and after collecting compensation? Do you thing, your living status and standard improved significantly
 A) Strongly agree E) Disagree
 B) Agree F) strongly disagree
 C) Unsure
12. Have you ever displaced from your residential areas to other area because of ongoing investment activities in your area? A) yes B) No

Part II: Effect of Industrialization on Livelihoods and Land Use Change before and after 2004

	Before 2008	After 2008
Farm Land in Hectares covered by		
Teff		
Chickpea		

Wheat		
Others		
Level annual production in qunatal		
Teff		
Chickpea		
Wheat		
Others		
Number of household members that employed in the industry		
Average employment income per month		

Part III B. Employment opportunities in relation industrial activities

1. Is there anyone of your family member who is hired in any of the nearby investment activities?
 - A) Yes
 - B) no
2. If your answer is 'yes', can you indicate the type of employment?
 - A) Daily labourer
 - B) Foreman
 - C) Compound keeper
 - D) Professional work, specify -----
3. How much is the average monthly income for unskilled household member employed in industry? (in birr)
 - A) <1,500
 - B) 1501-1750
 - C) 1751-2000
 - D) >2000
4. Do other people in your locality have access to employment opportunities in the processes of industrial establishment?
 - A) Yes
 - B) No
5. If your answer to Q6 is 'yes', what type/s of employment/job opportunities are easily/ commonly available for local people in your area? Indicate in terms of their decreasing order of availability
 - A) Wage labour
 - B) Daily labour
 - C) Compound keeper
 - D) Casual work
6. What are the major problems related to employment in industries?
 - A) Lack of education
 - B) Lack of skill

- C) Availability of excess labor from other places
- D) Employers are selective: prefer people from urban origin than from rural area

Part IV: Access to physical capital/ Infrastructure

1. Do you get access to permanent road due to industrialization in your locality?
A. yes B. No
2. Do you get access to Potable water and Power/electric due to industrialization in your locality?
A. yes B. No
3. Do you get access to Health centers and schools due to industrialization in your locality?
A. yes B. No

Part V: Land use Change Data from Land Administration Office

Land use type	Size in local unit (i.e. Hectares)			
	Year E.C	Before 2002/2003	In 2007/2008	In 2011/2012
Cultivated land				
Grazing land				
Industrialized				
Others,				

A. Interview of the Farmers

7. Do you think that industrialization is important for this area?
8. Do you think that the compensation mechanisms fair and paid be on time?
9. Can you tell me if there is a problem with livelihood due to the reduction in your farmland?

B. Interview of the Selected Households and Community Leader/ Focus Group

How much land is taken for industry in this area

Do you believe that all households those who their land taken for industry got fair compensation? And any follow-up after that.

1. In what way this area households is benefited and/or affected by industrialization

C. Interview in Gelan city Land Administration and Investment Office

1. Did you believe that the compensation given to the farmer is sufficient after the agricultural land has been taken over by industry?

2. Had your office or related organized awareness creating trainings or orientation on the management and sustainable use of compensation money for the beneficiaries?