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ADDIS ABABA UNIVERSITY
SCHOOL OF GRADUATE STUDIES

**The Impacts of Urban Built-Up Area Expansion on the
Livelihood of Farm Households, in the Peri-Urban Areas of
Mekelle City: The Capital of Tigray Regional State.**

BY
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June, 2011
Addis Ababa

The Impacts of Urban Built-Up Area Expansion on the Livelihood of Farm Households, in the Peri-Urban Areas of Mekelle City; Capital of Tigray Regional State.

A Thesis Submitted to the School of Graduate Studies of Addis Ababa University in Partial Fulfillment of the Requirements For the Degree of Master of Arts in Geography and Environmental Studies (GeES).

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Abstract

Although Ethiopia is under urbanized even by the African standard with 17% of its total population lives in an urban areas (i.e. above 83% of the total population of Ethiopia depend on agriculture) currently the urban expansion has adverse impacts on many farm households' livelihood sources in the peri-urban areas. The basic problem is that urban growth causes not only loss of agricultural farmlands but also displacement of farm households and challenged for their livelihood sources in peri-urban territories. Such urban expansion affects more of the farm communities in rural-urban fringe areas, especially in developing countries of agrarian economy, like Ethiopia. On the other hand, there are legal rights/issues concerning the farmland holding expropriation and compensation. The federal constitution of Ethiopia under article 40(4 and 8) states that, the farmers who hold farmland have the right not to be expropriated without just compensation for their farmlands. In addition to this, Article 44(2) states that; "All persons who have been displaced or whose livelihoods have been adversely affected as a result of state programs have the right to commensurate monetary or other alternative means of compensation, including relocation with enough state assistance." However, many cities, including Mekelle; did not implement these laws of land and other subordinate laws properly due to weak governance, lack of financial capacity and other problems. As a result, many farm households were displaced from their farmlands with little or no means of compensation and which are presently suffering from food insecurity. Thus the study conducted to investigate 'the major impacts of urban built up area expansion on the livelihood of farm households in the peri-urban areas of Mekelle city, capital of Tigray regional state'. In addition the specific objectives are; identifying major impacts assess the implementation of the legal rights of farmers and their coping mechanisms. The researcher was take a total of 140 (25%) sample size of farmers through systematic and purposive sampling methods and 10 officials for interview and FGD. Data was collected through questionnaires, interviews and FGDs. Due to the urban expansion process 81.4 hectares of farmlands has been converted to urban land use from the selected 90 sample farm households in the peri-urban areas. Out of these almost half of them 40 (45%) were displaced without legal compensation (but with small amount of subsidy only maximum of 3000 birr) and large amount of farmlands 39 hectare (48%) were expropriated without legal compensation. Thus, in the industrial site (Quiha and Adi-ha) the built up area expansion program resulted to loss of 54.1 (from 79.5) hectare of farmland from 61 selected sample holds. The total land holding site left only 25.4 hectares. In the residential site (Aynalem), 29 selected sample households lost a total of 27.3 (from 41.8) hectares of land and were left with 14.5 hectares. The federal and the regional governments should review the laws which were adopted in relation to expropriation and update the packages and amount of compensation to be paid for the displaced farmers in turn with the best experiences of other countries and enfarce the municipality to implement the intended rules and regulations accordingly. Farmers should train and co-operate in order to create alternative sources of livelihood.

Chapter One

Introduction

1.1 Background of the Study

The nature and consequences of urbanization has significant impact on lives (economy) of both in the more developed and less developed countries. Since, urbanization is a natural process that, it grows and expands from time to time parallel with the humankind's settlement preferences it adversely affects the mass of world's agrarian community in general and farm community in the peri-urban areas in particular. This is because farmland resources are scarce by nature but human needs and preferences for settlement as well as agricultural use is unlimited and increases from time to time as global population grows rapidly.

Thus, urbanization process is usually expanding and growing to its surrounding areas at the expense of nearby agricultural farmlands. The process of urban expansion involves both the internal reorganization and outward expansion of the physical structure of urban areas. Such process of urban expansion is a worldwide phenomenon, which could see in the history of all urban centers. Thus, horizontal outward expansion of urban centers can result in loss of prime agricultural farmlands and natural beauties (Minwuyelet, 2004).

Recently, African urbanization is characterized by rapid and uncontrolled urban growth. This has brought various socio-economic and environmental problems. In addition, the mass exodus to cities has already worsened the problems of urban poverty, food insecurity, shortage of housing and basic services, unemployment, ethnic tensions and violence, substance abuse, crime and social disintegrations. This leaves it with an under-developed continent (J. Pater Jaglo, 2000). Thus, urbanization in Africa has brought many negative impacts both on the urban as well as on the peri-urban farm communities throughout the continent.

Ethiopia has a long history of urbanization that developed next to the ancient Egyptian civilization in East Africa: like; Axum, Gonder, Lalibela, Harar, etc. and then finally in the 1880s Addis Ababa has become the capital city of Ethiopia (J. Pater Jaglo, 2005).

Currently, Ethiopia, has 9 (nine) nationally recognized regional states; with each of them having its own capital city. Tigray region is one of these regional states, which is located in the northern part of Ethiopia, and its capital is Mekelle. Mekelle, the capital city (socio-economic and political center) of Tigray regional state is currently experiencing rapid urban expansion and population growth.

In Ethiopia the major causes for the rapid urban expansion (urbanization) are; rural to urban migration and natural population increase. Even though still the level of urbanization is lower even by the African standard. For Example; in 2007, the proportion of population residing in Ethiopian urban centers was 11.9 million forming 16% while on average it was 38% in Africa. However, in Ethiopia the emerging and growing pattern for urbanization is still high (Samson, 2006).

1.2 Statement of the Problem

The basic problem is that urban growth causes not only loss of agricultural farmlands but also changes and challenges their livelihood sources as well as food security as result of urban expansion to its peri-urban territories. Therefore, as the global population growth increases and the expansion of human settlement, particularly the trends towards urbanization are contributing to the conversion of agricultural farmland to urban land uses (UNCHS, 2000).

Now urban expansion is increasing at an alarming rate in developing countries. This is due to fastest growth rate of world's population and change in human settlement preferences. This urbanization process was manifested through the urban physical/horizontal expansion to their peripheral agricultural farmlands. Such urban expansion affects more of the farmers in the peri-urban territory, especially in developing countries and more of the agrarian economy countries; like, Ethiopia (Berhe, 2006).

Generally, urban expansion is one of the basic problems that affect the living standard and food security of many agrarian economy peoples in developing countries. This invasion process leads to the loss of agricultural farmlands and reduction of crops/food productivity. But agriculture is a back bone (stepping stone) for the development of the country, Ethiopia which has ADIL economic policy.

On the other hand, there are legal rights/issues concerning the farmland holding expropriation and compensation. The federal constitution of Ethiopia under article 40(4 and 8) states that, the farmers who hold farmland have the right not to be expropriated without just compensation for their farmlands. In addition to this, Article 44(2) states that;

“All persons who have been displaced or whose livelihoods have been adversely affected as a result of state programs have the right to commensurate monetary or other alternative means of compensation, including relocation with enough state assistance.”

The Ethiopian civil code under its articles (Art 1463-1473) and proclamation No. 455/2005 also provide the mandatory legal procedures of expropriation stating from declaration of public interest to the payment of just compensation. However, many cities, including Mekelle; did not seem to implement the law of farmland expropriation and the subordinate laws properly due to weak institutional governance, lack of financial capacity and standard of land tenure system for investments. As a result, there are many farm households were displaced from their farmlands with little or no means of compensation and which are presently suffering from food insecurity and vulnerability (Berhe, 2006).

Farmland expropriation without just compensation seems to be cause for a several problems such as unemployment, poverty, rural-urban migration and conflict between government and farmers communities as well as among farmers in the peri-urban area and the city. As a result, the livelihoods of the farmers in the peri-urban areas have adversely affected.

The Ethiopian-urban centers are expanding at an alarming rate (4.3%) that resulting in loss of agricultural farmland, loss of agricultural production, and changes/challenges of their livelihood sources. This situation is worst in Mekelle city and its surrounding rural-urban fringe areas.

Although Ethiopia is under urbanized even by the African standard with 17% of its total population lives in an urban areas (i.e. above 83% of the total population of Ethiopia depend on agriculture) currently the urban expansion has adverse impacts on; reduce the mass of fertile farmland, minimize the amount of agricultural productivity and displace many farm households. This process can undermine or minimize the living condition of the agrarian community on the

urban-rural fringe. Therefore, if this condition continued, in the near future, the food security of the huge agrarian community will be under a question mark.

The main goal of this study is, therefore, to examine the major impacts of urban expansion on the farmer's livelihood in the peri-urban areas. Therefore, any concerned body will take an immediate remedial measure for the shortcomings. So, attempt is made to investigate the major causes of urban expansion, the magnitude of the problem in connection with displacement and procedural requirements and its negative effects on farmers in the peri-urban areas of Mekelle city.

1.3 Objective of the Study

1.3.1 General Objective

The general objective of the study is; to investigate the impact urban built-up area (physical and horizontal) expansion on the livelihood of the farm households in the peri-urban areas of Mekelle city, the case of Quiha, adi-ha and Aynalem.

1.3.2 Specific Objectives of the Study

The specific research objectives of the study are;

- ✓ To identify the major impacts of urban expansion on the farmers livelihood in the study area,
- ✓ To examine the implementation of constitutional and other legal rights of the displaced farmers,
- ✓ To compare and contrast the pre and post displacement livelihood pattern of the farm households, and,
- ✓ To identify the survival strategies of the farm households whose livelihood are most severely affected by the expansion of the city.

1.4 Research Questions

The basic questions that are answered while conducting this research study is:

- ❖ What are the causes and magnitude of the urban expansion problem in the study areas?
- ❖ What are the major impacts and associated factors of urban physical expansion to its periphery?
- ❖ Were the displaced farmers are compensated properly according to the legal rights of property and compensation or not?
- ❖ What are the farm households' sources of livelihood income before and after expropriation of their farmlands?
- ❖ What are the current alternative survival strategies of the farm households?

1.5 Research Methodology

1.5.1 Subjects and Data sources

1.5.1.1 Subjects of the Study

For this study, the appropriate subjects are farmers and urban municipality officials; it is because the people in the study areas (peri-urban fringe areas) are primarily engaged in agricultural cultivation. So, their livelihood and food security status is also primarily engaged on their farmlands agricultural production in which currently they are adversely affected by the urban expansion process. The urban municipal officials are also the other concerned subject of the study, this is because they are working with urban-rural fringe interface and they should follow the legal issues of land use and farmer's displacement processes and compensation systems.

1.5.1.2 Data sources of the Study

The research writing was **involving** both the combination of the primary and secondary data sources.

Primary sources: these sources of data were collected from the principal three sources of data, which includes open ended and close ended questionnaires, structured/semi-structured interviews and focus group discussions, with the farmers and municipality administrative.

Secondary sources: the secondary sources of data were also collected from different secondary data sources such as, Woreda/Kebele report documents, various registers and publications (like books, journals, research reports and papers, magazines, newsletters and newspapers), internet materials and others like FAOs, WFPs and land use regulations and policy documents (Such as the EPRDF constitutional legal rights and some other proclamations concerning farmland property and compensation system) as to their practices and implementations in the country as well as the region.

1.5.2 Sample Size and Sampling Techniques

1.5.2.1 Sample Size

The researcher took a total sample size of 140 farmer respondents. The defaults for this decision were based on the; objective of the study, given time frame, budget funded to conduct the study and finally, this sample size is also enough to capture the intended information for the study. The sample households were selected from the peri-urban farm communities only, through multi-stage sampling method. The first 120 sample households are selected through systematic random sampling method (i.e. 90 from displaced farm households and 30 from non-displaced farmers), 20 sample households were selected from the influential elders (such as religious leaders, Eaqub, Edir and Mahber leaders) through purposive sampling method). The remaining 10 official sample respondents were selected from the urban municipal administrative officials as well as from the regional land use and management bureaus based on the purposive sampling method.

Table 1.1: Proportional distribution of sample households

Study sites	Farm Households			Sample size			
	Displaced	Non-Displaced	Total	Displaced	Non-Displaced	Influential elders/leader	Total
Quiha	180	105	285	47	14	8	69
Aynalem	110	72	182	29	10	7	46
Adi-ha	50	43	93	14	6	5	25
Total	340	220	560	90	30	20	140

1.5.2.2 Sampling Techniques

The total 140 sample representative respondents were taken from the total population of 560 farm households. First, the 120 representative samples were selected from the three-district study sites through the systematic random sampling method as a quota system (i.e. Quiha (61), Aynalem (39) and Adi-ha (20)) were selected from the available lists through the systematic random sampling method. Thus, the sample were taken from the farm community in the peri-urban areas only (from two clustered groups as farmers *who took there farmland* and farmers *who doesn't taken their farmland* by the urban expansion between the year of 2000-2010) around the capital city from three different districts/directions.

Secondly, 20 sample households were selected from the influential elders such as religious leaders, Eaqub, Edire and Mahber leaders through purposive sampling method as a quota system (i.e. from Quiha (8), Aynalem (7) and Adi-ha (5) were selected purposively).

Finally, the remaining 10 official sample respondents were select from the main municipality as well as from the three Woredas of the city (where the three study sites included under their administration) through the purposive sampling method in order to acquire the basic and necessary information concerning the land holding and land use policies and their practical implementation accordingly.

1.5.3 Instruments of the Data Collection

In order to acquire the relevant information, the researcher used different models of data collection tools. These included personal field observation on the field site survey, distributing both type questionnaires (i.e. open ended and close ended), semi-formal interviews (in the form questionnaire) and finally, formal interviews and focus group discussion (FGDs) used as tools to collect primary sources of data as well as documented secondary data sources.

1.5.3.1 Questionnaires

To capture the intended information from the given (120 sample) representative samples of farmers in the peri-urban areas, questionnaires were organized under three different issues. These were contains the background and farmland sizes of displaced farmer respondents, issues of compensation & compliances and finally concerning the changes/challenges on their livelihood

and their survival mechanisms. On the other side, questionnaires were also developed for the (10 samples) urban municipality administrative officials (to concerned body) about the legal issues of land property rights & compensation and their reality/practical implementations.

1.5.3.2 Key Informant Interviews

For the sake of in depth understanding of historical trend (pre and post urban expansion) of the rural life and the current invasion of urban expansion brings some changes and challenges (vulnerability and food insecurity) induced/perceived change in the crop production of the rural livelihood in the study areas. The researcher then, conducted interview with selected kebele previous and current administrators, influential elders and/or informal leaders, Woreda land administration and land management officers and finally, with Woreda development agents.

1.5.3.3 Focus Group Discussions (FGDs)

Generally, three group discussions were held during the study. A One-group discussion was held in each of the study sites and another one general focus group discussion was held at one of these study districts i.e. at Quiha). The discussions were held with 5-8 members in each group discussion. The FGD members were selected from influential elders and leaders, purposively based on their approaches and knowhow to the loss of farmlands, expropriation and compensation systems. The aim of the discussion was to understand the major impacts of urban expansion, changes in the farm livelihood and the relationship of farmland size and food security and finally to identify the farmers' adaptation mechanisms.

Another focus group discussion was also held with the Mekelle city administrative officials purposively and selectively, to understand and analyze the implementation of the legal rights of displaced farmers and the compensation system.

1.5.4 Data Analysis and Interpretation

The collected data from different sources were organized into meaningful facts and made detail explanation. This is to mean that, data was analyzed both through quantitatively and qualitatively interpretations.

Quantitative data analysis; were analyzed through the frequency distribution tables and makes use of relative measures, such as percentages, which includes the mean and finally tables, bar charts, and graphs was used to present different variables.

Qualitative data analysis; collected data from various sources were analyzed following a detail description according to the pattern and themes that emerge during interviews and focus group discussions through identification of key concepts and indigenous categories from respondents.

1.6 Significant of the Study

Urban expansion is natural process and it consumes many hectares of prime agricultural lands from their surrounding every years. This results to the change and loss of livelihood sources for the farm communities there. Therefore, investigation of research conduct on the impacts of urban built-up area expansion will contribute some important points. Firstly, the study will contribute as a feedback to the city administration unit as what they do in the peri-urban areas of expansion. Secondly, it may also used as reference material for other similar or related studies concerning the political, social and economic problems of the farm communities in the fringe areas of urban centers.

1.7 Scope/delimitation of the Study

The scope of the study was confined in the suburbs/rural-urban fringe area of Mekelle city. That is the semi-rural areas where influenced by the physical expansion of the city. Consequently, since 2009 the city administrative municipality office was review its new administrative structure by included these three district areas to its administrative unit (i.e. Quiha, Aynalem and Adi-ha). The major variables that were assessed in the study are factors that associated to urban expansion and the major impacts on the livelihood of the farm households.

1.8 Limitations of the Study

Any research study has faced some limitation throughout the life of the study. Similarly this study has a limitation while conducting the study. The first and the problem was lack of secondary data sources i.e. there is no more similar works done and inefficient information provision of the urban municipality documents. In addition the researcher was also faced with some other problems related to the respondent's behavior during he interviews and filling the questionnaires. That is failures of respondents to answer the give questions properly, absence when call for focus group discussion and incomplete municipality's official data.

1.9 Organization of the Paper

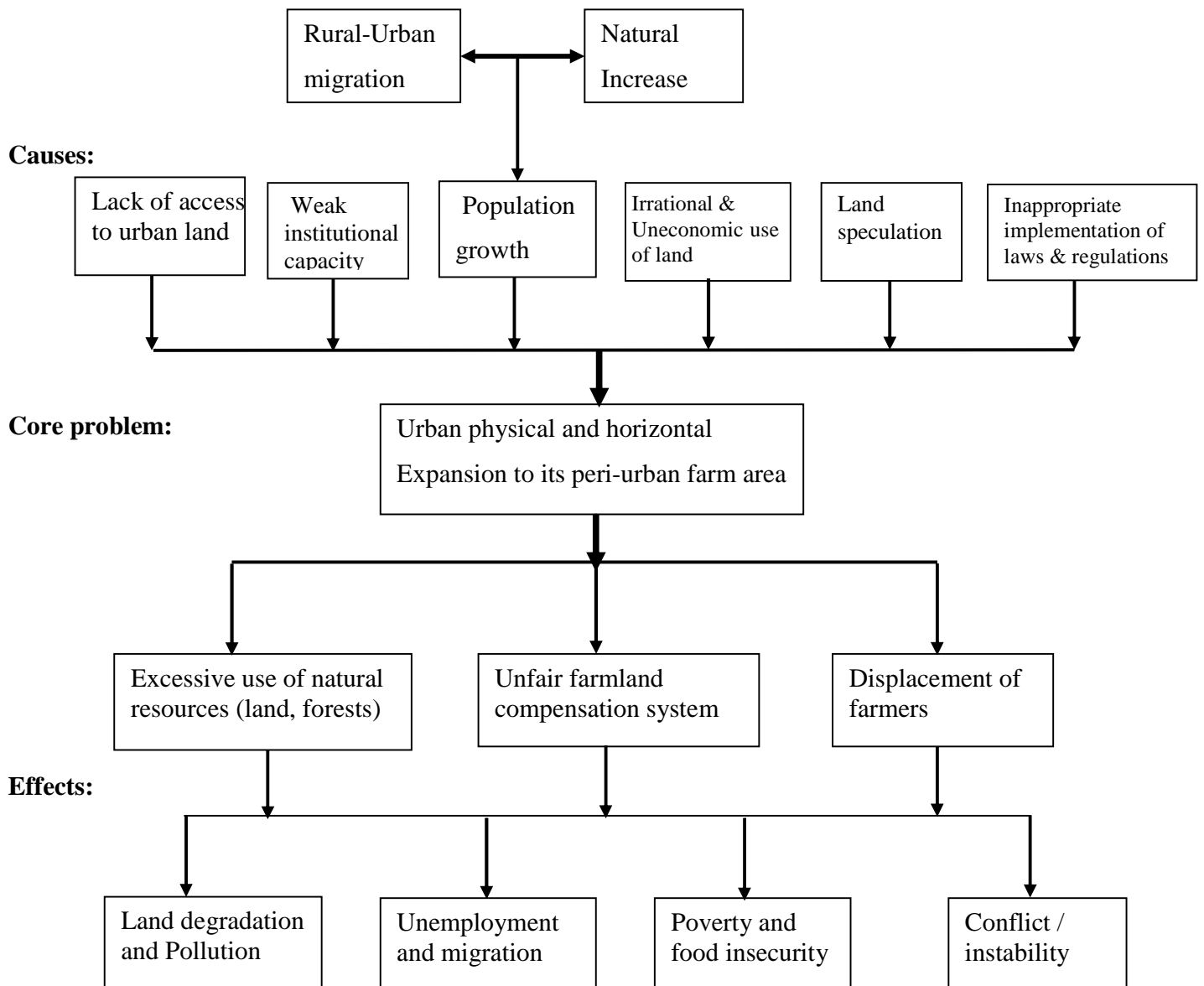
The study paper has contains five chapters. Thus, chapter one contains an introductory part of the problem. Chapter two deals with the related literature review of the study, which includes the conceptual framework and other secondary data sources. Chapter 3 devoted on the general description of the study area i.e. Enderta Woreda in general and Mekelle city in particular, its physical, human and socio-economic pattern of the study area.

The fourth chapter deals on the analysis and interpretation of the finding (collected data) from respondents. It shows the urban expansion pattern and its impacts on the livelihood of farm communities in the surrounding areas of the city. Finally, the last chapter i.e. chapter five is dealing with the paper's final summary, conclusion and possible recommendations.

Chapter Two

Related Literature Reviews

2.1 Conceptual Framework of the Problem



Source: Dayong (2004)

Urbanization process is usually expanding and growing its territory to its surrounding areas at the expense of fertile/prime agricultural farmlands. The process of urban expansion involves both the internal reorganization and outward expansion of the physical structure of urban areas. This urban rapid growth results from fast population growth (natural increase, rural-urban migration), high demand of urban land (lack of access) and other reason that cause to land speculation, weak institutional capacity, inappropriate implementation of laws & regulations and irrational & uneconomic use of land in the rural-urban fringe areas.

Thus the core problem is urban physical/horizontal built-up area expansion to its peri-urban areas. This then results to these effects on the farmers over all livelihood sources of incomes. Such as displacement of farmers, unfair farmland compensation system and excessive use of natural resources (land). Moreover, these farm households then adversely affected by loss their livelihood sources of incomes due to the urban expansion and expropriation process to different socio-economic problems like; poverty and food insecurity, unemployment and migration, land degradation and pollution and finally conflict and instability relation with governmental administrative units of these localities.

2.2 Definition of Terms

Urban area: The definition of Urban have not internationally agreed conceptual meaning, rather different countries define it based on their; social, economic and political organization of their country or region. But as to the general talking an *urban area* is characterized by higher population density and vast human features in comparison to areas surrounding it. Urban areas are created and further developed by the process of urbanization.

Urbanization: Urbanization can be defined as the rapid and massive growth of, and migration to, large cities. Due to the nature of urbanization process results to the conceptual emergence of urban expansion. Urbanization is the expansion of a city into its peri-urban lands, causing to rapid and massive growth of, and migration to, large cities. Urban expansion is linked to increased pollution and obesity, and has adverse effects on the environment of farm community in the rural-urban fringe. Positive and negative consequences can result.

Livelihood: Refers to the sources of income which are categorized into land for cultivation; assets such as livestock; food security; health; skills; capabilities; and education. Thus livelihood means that the assets and access that together determine the living gained by an individual or household.

Displacement of framers: This refers to those farmers who were expropriated their farmlands in the rural-urban fringe. Thus, results to the change/functional movement or displacement of farmers' from that specific area.

2.3 Livelihood and change of livelihood

The fact that, urbanization process brings about change in the way to human life. The change takes place in the peri-urban farming communities and on their socio-economic as well as cultural lives of the people (Argachew, 2008).

The loss of agricultural farm land due to urban expansion pushed peoples out of farm. This phenomenon is directly attributed to change in property rights and food securities such phenomenon (landlessness, loss of farmland and grazing land) made its impact on the farm livelihoods in the peri-urban areas. This cause to loss of agricultural curatorial livelihood sources (Roth, 2006).

As summary urban Expansion results in change of property rights which brings land lessees. Landlessness is accompanied by loss of agricultural livelihood sources and this result to vulnerable food security status.

➤ **Livelihood:** can be defined as the totality of means by which people get over time. Misfield, 2004 and Leutze, 2006, defined livelihood as the activities, the assets and access that together determine the living gained by an individual or household. The most frequently used definition of livelihood is chamber's and Conway's definition; "A livelihood comprises the capability, assets and activities required for a means of living" (chamber and Conway, 2006; cited in CHF, 2008).

All definitions indicate that livelihood is a means of living, which can be achieved through activities using the available assets. Therefore, livelihood can also be defined as a means of survival, which can be achieved through the combination of different asset and diversified sources of incomes with different strategies to get livelihood outputs under certain environment.

➤ **Livelihood assets:** there are five core assets or capitals which households build their livelihood (IDS, 2000; Corny, 2001; DFID, 2002& 2003). These are;

1. **Human capital:** represents the skill, knowledge, motivation and ability to work and good health that to gather enables people to pursue different livelihood strategies.
2. **Natural capital:** represents the natural resource stock; such as land water forests and minerals, from which resources flow and services useful for livelihood are derived.
3. **Financials capital:** denotes the financial resources that people used to achieve their livelihood objectives/needs. It includes savings. and credits, remittance and other liquid assets.
4. **Social capital:** refers to the social resources up on which people draw in pursuit of their livelihood objectives/needs. There are social networks, relationships, shared values, trust and other cultural practices.
5. **Physical capital:** comprises the basic infrastructure and producer goods needed to support livelihoods. These assets are divided in to two: household level assets and community level assets. The household level assets include holding of livestock, machineries, farm and off farm equipments, seeds and fertilizers, etc. the community level asset includes roads, buildings etc.

➤ **Livelihood strategies:** The term livelihood strategy is used to indicate the range and combination of activities and choice that people undertake in order to achieve their livelihood objectives (Carney, 2004).

There are different ways of categorizing household's livelihood strategies and income sources. Income sources can be also categorized as those activities that are natural resources based activates and non-natural resource based activities (Ellis, 2002). Others categorize household's

income sources as farm income, off farm incomes, non-farm income and remittance income from migratory labor (scones, 2002).

- **Livelihood analysis:** there question to be asked in any analysis of sustainable livelihood is; in a given particular context: policy setting, politics, history, agro- ecology and socio-economic conditions; what combination of livelihood assets result in the ability to follow and what combination of livelihood strategy with what outcomes; (IDS, 2000).

Livelihood analysis seeks to understand the fact that lie behind people's choice of livelihood strategy (DFID, 2002). Livelihood analysis also shows how the different livelihood strategies of the household relate to each other, it recognizes that poor people simultaneously undertake a range of different activities and seek to achieve range of livelihood outcomes (Mass field, 2004).

2.4 Cause of urban expansion to its peri-urban areas

According to Adem Siraji and Mezgebe T/Micheal (2006), the urbanization rate of the Tigray region is 4.7% per year. Natural increase and rural-urban migrations are the main and major causes of rapid urban growth and /or urban expansion in the region as well as in the country. Free access to investment, transformation of infrastructure and social services combined with the high population growth and in some case income growth accelerates the physical and horizontal expansion of urban centers.

2.4.1 Population growth

a. Natural increase

In Ethiopia the natural increase/growth rate is 3.2 % with the total rural population of 83% while 17% of the populations were urban dwellers and the rate of urban growth was 4.3% (2008). A high population growth rate induces increased in demand for resources and the rate at which these resources are exploited. In Ethiopia, where technology has not kept pace, the demands for greater productivity, environmentally and economically friendship productive methods and exploitation of land and associated resources (forests, animal resources, etc.) are resorted in order to meet immediate needs.

Table 2.1: Central statistical authority of Ethiopian census on population size

Ethiopia					
N ^o	Years	Population size			Remark
		Total	Urban	Rural	
1	1984	42,616,876	4,869,289	37,747,587	Census
2	1994	53,477,265	7,323,207	46,154,058	Census
3	2007	73,750,932	11,862,821	61,888,111	Census
4	2010	83,544,840	14,386,127	69,158,613	projection
Tigray					
1	1984	2,415,871	240,977	2,174,894	Census
2	1994	3,134,267	468,478	2,667,789	Census
3	2007	4,316,988	844,040	3,472,948	Census
4	2010	4,912,879	968,638	3,944,241	projection

Source: Ethiopian central statistical agency office; (CSA 1984, 1994 and 2007).

Table 2.2: Population trends of Mekelle city

N ^o	Years	Population size	Remark
1	1994	96,938	Census
2	2005	161,828	Projection
3	2010	202,162	Projection

Source: Developed from NUPI's 2004 Mekelle Development plan.

The country was ravaged by both manmade and natural disasters. The proportion of land with forest cover has been diminishing at alarming rates (the same as the loss of farmlands in the peri-urban areas). The land area covered by forests has gone down from approximately 40.0% at the turn of the century to approximately 3.0% at the present time. The annual rate of deforestation is estimated at 88,000 hectares per year while the rate at which this loss is being replaced through afforestation is estimated at 6,000 hectares a year (Tesfahun 2005).

As population increased the demand for land, food, fuel and construction materials increased, resulting in the practice of reckless tree felling. State ownership of forests and the exclusion of local communities from the management and legitimate utilization of forest resources may have contributed to the lack of any consistent effort to replace trees cut for various purposes.

b. Migration

Rural-urban migration: Cities are known to be places where money, services and wealth are centralized. Capital cities are also where fortunes are made and where social mobility is possible. Businesses, which generate jobs and capital, are usually located in such urban areas.

Almost all over the World, rural–urban migration together with the globalization and technological advancement becoming very dominant, especially in developing countries. Thus, it becomes one of the major causes for the rapid urban population growth in many urban centers. For instance, in many developing countries the reasons for this rural-urban migration of peoples are; lack of access to farmlands, unemployment, degraded productivity, climate changes and needs to change in way of livings (from rural life to urban).

Table 2.3: % distribution of migrants by area of previous residence, form of migration and sex in Ethiopia (1994)

Area of previous residence and form of migration		Migration by sex		
		Male	Female	Total
Urban + rural	N ^o	3,194,423	3,722,230	6,916,653
	%	100	100	100
Urban		29.1	23.8	26.3
Rural		70.9	76.2	73.7
Total	N ^o	3,189,604	3,717,019	6,906,623
	%	100	100	100
Urban-urban		19.8	18.1	18.9
Urban-rural		9.2	5.8	7.3
Rural-urban		45.8	51.6	48.9
Rural-rural		25.1	24.6	24.8

Source: Ethiopian office of central statistical agency (CSA, 1994).

People move into cities to seek economic opportunities. A major contributing factor is known as "rural flight". In rural areas, often on small family farms, it is difficult to improve one's standard of living beyond basic sustenance. In modern times, industrialization of agriculture has negatively affected the economy of small and middle-sized farms and strongly reduced the size of the rural labor market.

c. Urban boundary expansion

Urbanization is a natural process that expanding and growing through time over the earth's space. This is because of the urban population growth, rural-urban migration and attractive nature of urban life due to its accessibility and facilities.

In addition, urbanization occurs naturally from individual and corporate efforts to reduce time and expense in commuting and transportation while improving opportunities for jobs, education, housing, and transportation. Living in cities permits individuals and families to take advantage of the opportunities of proximity, diversity, and marketplace competition.

Table 2.4: The urban expansion pattern of Mekelle at different period of time

S/N	Year	Hectare	KM ²	Source
1	1984	1600	16	1993 plan
2	1994	2304	23.04	>>
3	2002	5300	53	Mekelle city
4	2005	7400	74	//
5	2009	8300	83	estimation

Source: -Urban rural linkage /TUDO/ (2008) Mekelle.

Land use and land cover patterns have undergone a fundamental change due to rapid urban expansion and economic development under many economic reform policies. Urban growth has been speed up and extreme stress to the environment has occurred. This is particularly true in developing countries' cities where agricultural land is disappearing each year, converting to urban or related uses. Furthermore, because of the lack of appropriate land use planning and the measures for sustainable development, rampant urban growth has been creating severe environmental consequences and food insecurity.

2.4.2 Income growth

It is clear that as the income of the individuals and cooperative organizations becoming increased these business owners will preferred to goes to urban centers and to expand their accessibility and to attract many other additional customers. This is because urban centers are places where all business activities becoming functional and profitable outcomes.

Given that agriculture is a traditional skill and provides Ethiopia with a more than half of its GDP and 80% of its employment, many city residents came from a family or place where they participated in farming. In 2000, about 50% of the selected households had an estimated monthly income greater than that of 70% of the employed population in Addis Ababa, not including vegetables consumed by the households themselves or cooperative investment allocations (Tefera, 2007).

2.4.3 Investment and transformation of infrastructures

In many developing countries urban planning experiences show that, urban planners usually ignores the resources and lives in the peri-urban areas rather they planned to expand the urban land use pattern for different public services provision and for capital investments by allowing for few investors by displacing hundreds of farmer families in the peri-urban areas (Berhe, 2006).

Land use regulations today still follow that same valorization, despite prevailing evidence that producing food within cities today would solve many looming problems. Governments and planners today tend to systematically seek firms, residences, or commercial centers that will bring them the monetary return, using the rationale that the income generated for the city from this sort of land use will provide the most money for the social services the government provides.

Urban centers are places where, there are better basic services as well as other specialist services that are not found in rural areas. There are more job opportunities and a greater variety of jobs. Health is another major factor. Other factors include a greater variety of entertainment (restaurants, movie theaters, theme parks, etc) and a better quality of education, namely universities. Due to their high populations, urban areas can also have much more diverse social communities allowing others to find people like them when they might not be able to in rural areas.

2.4.4 Uneconomic use of urban land

Many research findings reveal that the irrational and uneconomic use of land leads to the problem of urban sprawl. The expansion of individual dwellings and the provision of extensive farmland to someone investor is often criticized for its excessive land consumption. Moreover, providing land for those poor people who do not have the capacity to build more than their own shelter, and similarly for these who consider themselves as developer/investor would lead to speculation on land (Michelarnaud, 2000).

To sum up, it is clear that the population growth, income growth, investment in free ways and transportation of infrastructure combined with uneconomic use of land leads to spatial expansion of urban centers to their peri-urban areas (Webster, 2002).

2.5 Impacts of urban expansion on the farmers in the peri-urban area

Long lists of evidences from Ethiopian and abroad scholars stated that, urban expansion has many positive and negative effects on farmers in the peri-urban areas. Thus, center of market area, center for production and distribution of goods and services, an opportunity for access to employment are among the positive effects of urban expansion. The negative consequences of urban expansion are loss of prime agricultural farmland, displacement of farm communities, solid waste disposal and land degradation, enclosing surrounding rural land to urban territory, over exploitation of natural resources and conflict.

2.5.1 Positive impacts or effects

Urban centers have positive role/impact on the development of their surrounding peri-urban areas through different ways. The following are the major ones:

2.5.1.1 Center of market area

According to Satterthwaite and Tacoli (2004), the surrounding area of urban centers are mostly engaged in agricultural production either for local consumers or as links to national and export markets, urban centers act as access to market which is the pre-requisite to increasing rural agricultural incomes. Proximity also contributes to minimize the risks of perishable products to produce timely to market areas and to get affordable transportation.

2.5.1.2 Center for production & distribution of goods & services

Tegegn (1998) and other practical activities approved that people who live surrounding urban centers can have possible access to both private and public services such as health, education, banking, postal & telephone and services of different professionals (lawyers) and private services like wholesale and retail, sales of manufactured goods.

2.5.1.3 Access to employment

As to the view of Kamete and Tvedten (2006) assure that people who live around urban centers, because of their proximity, have a better access to employment and modern way of living than those who far rural dwellers. Besides, urban centers create employment opportunities through the development of small and micro enterprises and cooperatives.

2.5.2 Negative impacts or effects of urban expansion

Urbanization has also some negative effects to its surrounding peri-urban areas in different aspects especially, in relation to displacement of farmers from their farmland and to degradation of valuable agricultural land. This is because as the nation's population increase, cities must grow spatially to their peri-urban areas to accommodate more people and to serve different services for them.

In Ethiopia, the urbanization was increased from 5% in 1950 to 16% in 2000, on average 4.3% per year. Furthermore, it is estimated that by 2025, the World's, African's, and Ethiopian's population rate will reach 58%, 52%, and 32% respectively (Wabster R.D, 2005). The reason for an optimistic prediction towards the urbanization growth is that, it will have the following negative effects of urban expanding on their peri-urban areas.

2.5.2.1 Loss of farmland

As pointed out by Dayong (2004) uneven urban expansion will occupy considerable valuable farmland around urban centers, which causes to sensitive contradiction and conflicts with the farmers who are displaced from their farmland. Urbanization negatively affects the peri-urban areas in different ways. As urban centers, expand by occupying fertile farmland, and displacing farmers cause to reduce the amount of production and number of family farmers and move to the nearby urban centers.

In Ethiopia, land taking by regional governmental for expansion of cities and towns is raising rapidly because urbanization leads to outward expansion of cities and results to change in land use and landscape where by the federal and regional agencies and the municipality are expropriating of agriculture land for public purposes. In addition, the federal law on rural land expropriation and compensation, have been crafted by the agencies that are taking land seem to disfavor that are losing the land (Solomon, 2006).

As a result, the farmers with their large family size will be exposed to unemployment and poverty (food insecure) for the reason that they are not well educated and skilled rather depending on their agricultural production. It is understood that, people with out basic qualification or literally skilled are unable to compete and get job in the labor market.

2.5.2.2 Solid waste disposal and land degradation

Kamere, Tostensen and Tvedten (2002) assure that urban centers produce more solid waste products than they can absorb within their own borders. Predominantly urban centers pollute the rural landscape. Industrial, residential and institutional waste in urban area is often dumping directly on to the farmland of their peri-urban areas. These solid wastes, hazardous, plastic, and medical product wastes degrade or structurally change in its size and quality of production of the landscape.

In consonant with this Mc Granahan and Tacoli (2004) claimed that inadequate and improper municipal waste collection and disposal methods are increasingly becoming major sources of land degradation in the peri-urban areas and in turn affect the health and quality of life of the peri-urban residents.

2.5.2.3 Enclosed surrounding villages to urban territory

Tostenen and Tvedten (2002) stated that expansion is one of the causes/effect of population growth of urban centers. According to them, about 10-15% percent of urban growth of the developing world stems from boundary expansion or change while their livelihood style is based on agriculture which is not the core issue of the urban centers administration unit.

2.5.2.4 Over-exploitation of natural resources

According to Mc Granahan, Satterthwaite and Tacoli (2004), rapid urbanization leads to over exploitation of renewable and non-renewable resources of their peri-urban areas (especially, land). Because people who live in urban areas have vary and different consumption pattern than these who live in the peri-urban areas. The demands made by urban centers greatly exceed the carrying capacity of their own territory.

Urban centers, in view of; Kamete, Tostenen and Tvedten (2002), take up 2% of the earth's surface but consumes 75% of the world's resources. They draw on the material resources of vast and scattered peri-urban areas and are dependent on the skin capacity of the environment to a degree, which greatly exceeds the immediate area. This results over exploitation of resources of the peri-urban areas and finally degradation and environmental pollution.

As noted above, the world's resource use is concentrated in urban centers. Urban consumers account for most consumption of fire wood, charcoal, construction materials and land for urban expansion and infrastructure provision which leads to the depletion of rural-based natural resources such as farmland, forests, wildlife and quarry sites, hen often results irreversible damage to the human environment (Mc Granahan, Satterthwaite and Tacoli, 2004)

2.5.2.5 Urban expansion causes conflict

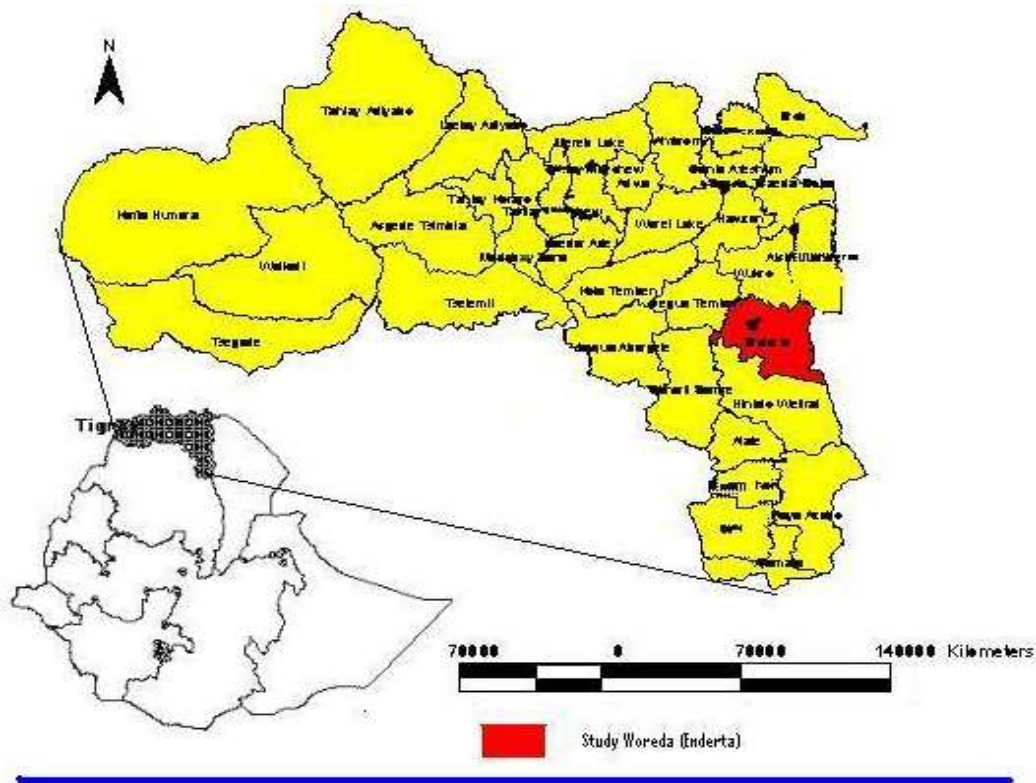
According to Tegegn G/Egziabeher and Danial Solomon (1997), currently urbanization causes for enormous conflicts associated with land acquisition. The most sources of conflict are found at the borders of the urban and rural, common and private, smallholder and investors land. In Ethiopia, the peri-urban land use is changing rapidly from rural agricultural use to other urban activities such as industry, commerce, housing, infrastructure and other services. Thus, transferring of the farmlands from rural to urban land use is increasing from time to time through land acquisition. Such kind of transfer has been the sources of an increasing numbers of land conflicts (Kanji, 2005).

For example, in Mekelle, the farmlands of the peri-urban area are rapidly converted to urban land use. Mekelle municipality decided to include some rural areas in to urban formally while, still some rural farmlands was transferred to individuals investors for different activities without just compensation to the farmers though they have lost their livelihoods (Berhe, 2006).

Chapter-Three

Description of the study area

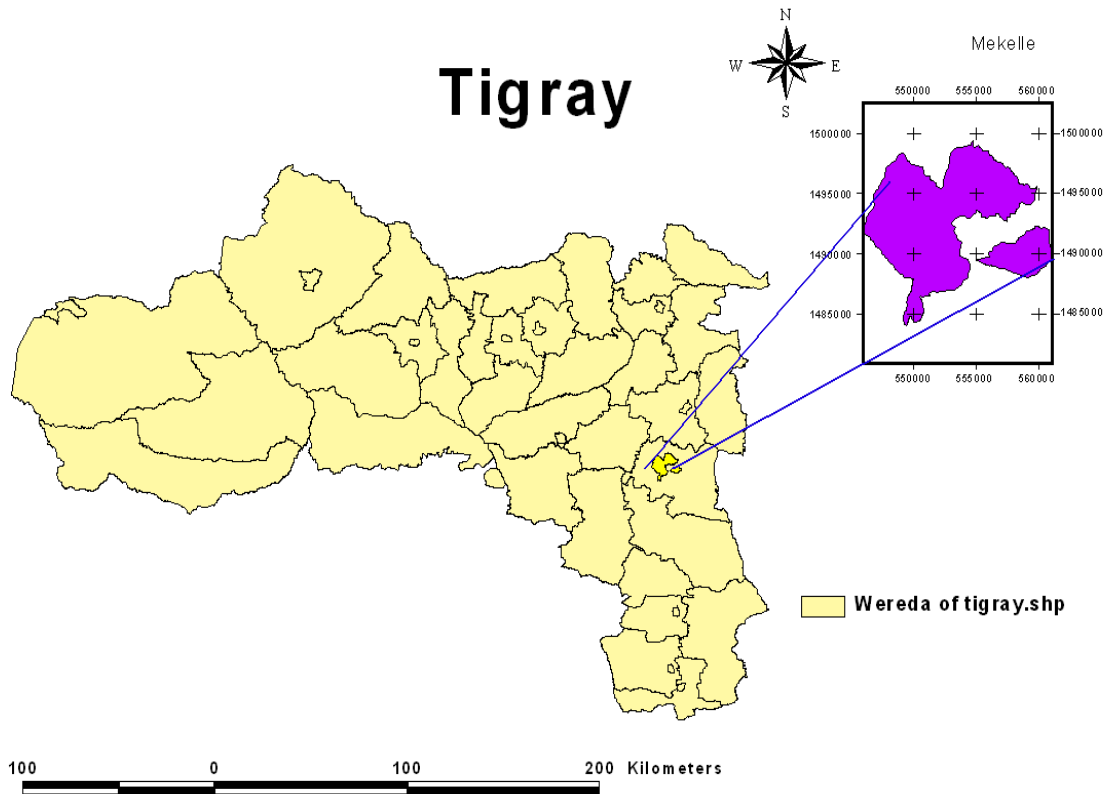
Tigray is located in the northern part of Ethiopia with the capital city of Mekelle. Mekelle, the capital city of National Regional State of Tigray is located at about 783 Km (Mekelle-Addis Ababa) distance far from the north of Addis Ababa. The city, Mekelle is found within the circumscribe boundary of Enderta Woreda, which is in the South Eastern Zone (according to the new arrangement of zones) of the Tigray Regional State. Thus, the study was conduct in the three newly merged to the Mekelle administrative zone. These are: Qiuha, Aynalem and Adi-ha.



Source: -Urban rural linkage /TUDO/ (2010) Mekelle.

3.1 Physical Characteristics

Geographical position: The city of Mekelle is located in the Northern part of Ethiopia at $13^{\circ} 32'$ North of latitude and $39^{\circ} 28'$ East of longitude. Specifically the city is enclosed within the limit of $13^{\circ} 18' 30'' - 13^{\circ} 39' 52''$ North latitude and $39^{\circ} 22' 30'' - 39^{\circ} 39' 33''$ East longitude. It is situated on the flat plateau of the central high lands of the region (bottom edge of Endayesus Mountain).



Source: Mekelle’s Master Plan, Mekelle Municipality Office (2011).

Altitude: Mekelle city is found at an altitude of 2200 meters above mean sea level. This elevation makes the city to be categorized under Weynadega type of agro climatic zone.

Weather condition: during the day time, the maximum daily temperature varies from 12⁰c-28⁰c and during the night time lowers to about 10⁰c. The mean annual rainfall also ranges between 500-700 millimeters.

Areal expansion: As the population size of the city rise from time to time together with demand for land is increased. At its establishment in 1872 by Atse Yohannes IV, the city was relatively equivalent to a village. After 130 years, the city looks like a true large city by engulfing many small villages and towns 15-20 KM surrounding the center of the palace with the population size of 216,587 in 2004. Currently the total land area of the city is 80 Km². As table 3.1, illustrates that, the city of Mekelle had the total land area of 16 KM² in 1984. In 1994, the size of the city reaches up to 23.04 KM². By showing a dramatic increase, the city has reached a 53 KM² area in 2004 and 74 KM² in 2005 by engulfing the vast agricultural lands, neighboring villages and towns.

Table 3.1: The urban expansion of Mekelle at different period of time

S/N	Year	Hectare	KM ²	Source
1	1984	1600	16	1993 plan
2	1994	2304	23.04	>>
3	2002	5300	53	Mekelle city
4	2005	//	74	//

Source: -Urban rural linkage /TUDO/ (2008) Mekelle.

As to the morphology of the city, the shape of one city has a negative or positive impact on the socio economic development of the city. Mekelle city comprises three scattered settlements. Although these *three parts* of the city are disconnected (due to vast Agricultural land, rugged topography, mountains terrain, military camp, long travel distance, and airport), since 2009 they were unified under the city municipal administration (by the dominance city, Mekelle).

First, *the Proper Mekelle*; which comprise areas such as the seat of the National Regional Government of Tigray, geographically the proper Mekelle is located to the west of the Endayesus escarpment. Secondly, *Quiha* is found 10 KM away to the south east of the city. This small town is administratively part of Mekelle. Geographically Quiha is bounded by natural and manmade boundaries in South by Alula Aba Nega International Air port, East by a cliff and North by steep slope. Thirdly, *Aynalem* is one small village to the south of the city disconnected from these two settlements by vast agricultural land, airport and military camps.

Finally, *Adi-ha* is another small village to the North of the city in which it is connects with Mekelle due to the city expansion to its plain and extensive farmland in rural-urban fringe. But currently all (Quiha, Aynalem and Adi-ha) they are rapidly near to connect and merge to each other due to the vast urban expansion of the dominant city of Mekelle especially for the purpose of residential expansions and investments.

3.2 Demographic Characteristics

According to the population and housing census of Ethiopia (1994) report, the total population size of the city at that time was 96,638. In 2000, Mekelle city had a total population size of 122,939 with 2.1% population growth rate and was projected to be 161,828 and 202,162 during the next 2005 and 2010 years respectively.

Table 3.2: Population trends of Mekelle city

N ^o	Years	Population size	Remark
1	1994	96,938	Census
2	2005	161,828	Projection
3	2010	202,162	Projection

Source; Developed from NUPI's 2000 Mekelle Development

As to the Ethiopian census's report on the population composition, 41.4% of the total population of the city were youths (below 15 years old). The productive and aged sections of the city population were 52.5% and 6.1% respectively. In addition to this, 89% of the total population was Orthodox Christians while 8% were Muslims and 1.6% and 1.4% the total inhabitants were Protestants and Catholics respectively.

According to the population and housing census of Ethiopia (2007), the region has a total population of 4,341,456 of which 2,124,853 were male and 2,189,603 were female. The female population was slightly more than the male population, (i.e. 50.75 %). The urban population of the region was 842,723 representing 19.53% of the total. Total population of Mekelle as to 2007 census is 215,546. The female population accounts for about 110,778 (51.4%) and remaining 104,758 (48.6%) are male. The city has a total of households of 63,396 with 3.4 average household sizes for urban areas in Tigray.

3.3 Political or Administrative Division of Mekelle city

According to the city proclamation of N^o 65/2003, the council- mayor model of governance has been introduced to the city. The council-mayor system is a governance arrangement whereby the city council makes all policies and major decisions and enacts pursuant to powers vested by the city proclamation. The system has the following organs: the city council and the speaker of the council, the mayor and the mayor's committee, the manager of the municipal services and the city court.

The municipal and state functions are clearly demarcated and are under the supervision of the mayor and the manager. The manager remains under the supervision of the mayor. According to

the proclamation, the Council from among its members elects the mayor. The highest political body of the city is public representative council directly elected form all Kebelles of the city.

The main functions of the Municipal Service Areas are mainly related to building permissions, land administration and tax collection activities. The managers of the Services Areas are under the direct supervision of the municipal manager while the kebele administration offices are under the direct supervision of the Mayor’s committee. They also play key roles in organizing the people during local development activities.

Table 3.3: The spatial distribution of population, area and population density at Kebele level

s/n	Tabia	Woreda	Population size				Area (KM ²)	Densi ty/ M ²
			Total	Male	Female	%		
1	Aider 03	North	24300	10805	13495	11.5%		
2	Hawelti 18		31501	14489	17012	14.9%		
3	Sewhi Negus (01, 02, 04)		19000	7823	11177	9%		
4	Industry (05,06,07,08)		18281	9075	9206	8.67%		
6	Kedamay Weyane (13,14,15)		27157	11799	15358	12.8%		
Sub Total			120239	53991	66248			
5	Adi Haki 10,11	South	25650	12568	13082	12.13%		
7	Hadenet 16,17		26106	12792	13314	12.4%		
8	Aynalem		3356	1744	1612	1.6%		
9	Addis Alem (19,20,12)		18000	8820	9180	8.5%		
Sub Total			73112	35924	37188			
10	Quiha	Quiha	18,000	8820	9180	8.5%		
Gross Total			211,351	97,703	111,972	100%	53	4.219

Source: -Statistics bulletin 2002/2003, Mekelle city Finance and Economic development.

The administrative territory of the city is divided into three Municipal Service Areas (sub cities) with nicked name of municipal services: the *North* municipal service, the *south* municipal service and *Quiha* municipal service. These municipal services further divided in to the lowest administrative unit called Tabia. In the North Municipal service, they are five Tabias namely *Aider, Hawelti, Sewhi-Nigus, Industry and Kedamay-weyane*. In the South municipal service they are four Tabias namely *Adi-haki, Addis-Alem, Hadenet and Aynalem*. The *Quiha* Municipal service consist only one single Tabia *Quiha* itself.

These different Tabias have different population size and area. Tabia *Hawelti* is the leading in terms of population size with the population size of 31,501. *Kedamay-Weyane* and *Hadenet* follow it with the population size of 27,157 and 26,106 respectively. *Aynalem* the smallest Tabia in the city has 4008 populations.

3.4 Socio-Economic aspect of the city

Mekelle is one of the cities for principal economic and educational centers. The investment projects are on agriculture, industry, hotel, construction, transport and social services. Due to the favorable condition to trade and handicraft associations, the majority of the residents are engaged in micro and small enterprises for its livelihood. Even though, some change is scored still there are different socioeconomic problems in the city.

In Mekelle, there are 66 schools with 52 primary and 14 secondary schools of which 62% are governmental schools but have only one preparatory school (excluding the *Quiha's* *Weldo-nigus* preparatory school). Similarly, there is one University with three sub branch campuses i.e. *Adihaki (FBE), Ayder (health) and Aynalem (veterinary)* 14 colleges, and 50 kindergartens. With regard to health institutions, there are four health centers, four clinics, one hospital and one referral hospital. The education and health coverage of the city reaches 80% and 60% respectively. Of course, there is no clear and research based/defined information about the socio-economic health (food security and poverty status) of the city. However, based on the 1994 census report, regarding the total urban population of Tigray, 21% are employed under different public organizations, 5.4% have their own private organizations, and the majority of the population 65.5% were engaged in many small-scale private activities mainly semi-informal sectors.

The infrastructure services: social services like education, health and water are under the regional state. The electricity and telecommunication services are controlled by independent corporations: The Ethiopian Electric Power Corporation and the Ethiopian Telecommunication Corporation respectively which are directly accountable to the Federal Government. The construction and management of the physical infrastructure services like road and drainage lines are implemented by the municipality. Generally, to this end Mekelle city is the administrative, commercial and industrial center of the Tigray regional state.

3.5 Morphological Advantage

- Investors and dwellers may purchase or rent, lease or freely a land in these localities. In Quiha and Aynalem, relatively there is relatively cheap land value than the main center. This moderates the land value of Mekelle which is highly sky rocketing. Mekelle is surrounded in most direction it has a vast plateau and plain land, which is not a barrier for expansion. If Mekelle able to compensate neighboring farmers and provide basic physical infrastructure it has, a vast land to expand when needed.
- When these people want to construct their own residence or project they can get cheap construction material such as stone, sand other essential materials. As Mekelle expands North to Mesebo area, South to Debry, and West to Enda Arbatu Ensesa and East to Emba ficadu the travel distance to the construction material decrease.

3.6 Topographic Features

Terrain: Mekelle is situated at the foot of a steep cliff of the Endayesus escarpment on the east side. Above the cliff, up to Quiha sub city there is a vast plateau land with scattered settlement. At a distance of 10 KM, north from the center of the city there is also a steep cliff. The altitude of the Ellala area varies from 1960 m above sea level at the foot of the escarpment to 2080 m above sea level. Mountains and steep cliffs have surrounded the city. This topography makes the city to have container like shape.

Altitude: The altitude of Mekelle varies from 2100 m to 3000 m above sea level. This elevation makes the city to be categorized under Weinadega type of agro climatic zone.

Drainage: The city is part of the Tekeze river basin. The Ellala and the Aynalem stream flows from East to West. There are many tributaries feed both the streams with substantial amount of

water during rainy season. These streams are seasonal where the peak discharge is attained during summer. These two rivers are a tributary streams to river Giba. Giba is also a relatively a big river that flows to river Tekeze, then at the Sudan Tekeze joins with river Nile.

3.7 Climate

Is the pattern of changes in Temperature and Moisture Conditions over a period of time highly varies? The agro climatic zone where Mekelle is located is called Weyna dega /Mild climatic condition / the climate of Mekelle and its vegetation varies from time to time. Mekelle was a dense forest covered land. They are some evidence that justify for this;

- In some areas such as Enda Medehne Alem churchyards and Enda Raesy Menafesh areas shows that there was Indigenous high land type of forest such as Tide and zigba. Had it not been the climate changes as a result of human intervention and other global climatic changes the forest coverage of Mekelle would remain until now.
- 100 Years ago the city had had many short perennial and seasonal streams in closed by dense forests, which they do not appear on the ground.

Temperature: Mekelle experiences mild climatic condition with annual average maximum temperature of 24.1⁰C and annual average minimum temperature of 11.11⁰C. There is monthly variation in temperature June is the hottest month with a monthly mean maximum temperature of 27.1⁰C and monthly mean minimum temperature of 13.03⁰C. December is the coldest month with a mean monthly maximum temperature of 21.9⁰C and monthly mean minimum temperature of 8.51⁰C. The temperature of Mekelle varies from place to place as elevation increases temperature decreases. There is also a windward effect in the city around Quiha and Endayesus area the temperature is colder than the cities mean temperature.

Rainfall: There is one short rainy season annually which comprise months of June, July and August .The growing period consist of 120 days per Year and this rainy season is characterized to be erratic, unreliable and unevenly distributed through out the year, the region (Tigray region agriculture & natural resource bureau).

In view of the fact that Mekelle is found to the North of the Equator, its summer /rainy season /occurs by the months of June, July and August. The city has annual average rainfall 618.3 mm/Year. Out of this annual RF Months of July and August in combination comprise the lion

share i.e. 436.7 mm /70.6%/. The highest amount of rainfall occurs by the month of August with a monthly rainfall of 229-mm 37% and July is the second largest rainy month with a monthly rainfall of 207.7 mm /33.5%/.

According to the Ethiopian Metrological Authority recorded rainfall data the highest amount of rain was recorded in 2000 with annual rainfall amount of 888.6 mm. while the lowest amount of rain was recorded in 2006 with the annual rainfall amount was 455.6 mm. The amount of rainfall varies from year to year and from season to season. If the water utilization technology develops the rain, which comes outside summer can has a good advantage in the urban greenery, urban agriculture, and weather condition of the city.

Relative Humidity: Relative humidity, given in weather reports, is the ratio between the actual vapor content of the air and the vapor content of air at the same temperature saturated with water vapor. The relative humidity of Mekelle varies seasonally and timely (hour of the recording). The highest amount of mean monthly RH is recorded by the months of July and August (rain months); while the lowest RH is recorded by the month of May.

The Daily variation of Mekelle's Mean relative humidity is expressed by the highest at 18 GMT, the middle at 06 GMT and the lowest at 12 GMT with annually average RH of 77.28, 53.59 and 42.21 respectively. As the relative humidity, increase the tendency of having a green forest cover increase and vies-versa. Maintaining green ecology has its own multidimensional positive effect.

Wind: Wind is the movement of air. The winds that blew in special pattern that change with the season is called prevailing winds. From the month of September up to June the wind that blew to Mekelle is from 110° - 163° i.e. in the East–West direction, while from the months of July-August the direction of the wind is from 210° - 250° i.e. In the West – East direction.

As to the Ethiopian Metrological Authority the average the wind that blew to Mekelle has the velocity of 2.97 meter/second. This wind velocity varies in time and space Months of February, March and December have the highest Velocity with average wind speed per second 4.03, 3.93 and 3.62 respectively. While the months of August and September are months with low wind velocity of 1.65 and 1.83 respectively. This measurement is taken at 06, 09, 12 and 15 GMT in almost all months the velocity of wind increase from 06 to 15 GMT.

Chapter four

Analysis and findings

This part of the research thesis deals with the description of general characteristics of sample respondents and then information's are presenting, analyzing and interpreting the as collected/gathered from; farmers who were expropriated their farmland (between 2000-2010), from farmers who are expected to be displaced in the near future, from key informants who are interviewed such as formal and informal leaders (Edire, Eequibe and Mahber) and influential elders, municipal experts and official documents through conducting questionnaires, interviews, focus group discussions and document analysis.

Generally, it contain three cooperated or mutually coexisted, parts i.e. some deals with farmer's responses, others deal with the official administrative/experts response to the questionnaires, focus group discussions (FGDs) and interviews and some others also deal with the official (municipal) document analysis.

4.1 General background of the respondents

Table 4.1: General background of the respondents (sex; age and marital states distribution)

Respondents	Sex of HHs heads			Total Family size	Marital status		
	Male	Female	Total		Single	Married	Divorced
Displaced	81	9	90	552	-	82	8
Non-displaced	28	2	30	181	-	29	1
Influential elders	19	1	20	89	-	16	4
Officials	6	4	10	32	2	8	-
Total	134	16	150	854	2	135	13
%	89.3	10.7%	100%	-	1.3	90%	8.7%

Table 4.1, the gender distribution of respondents, out of the total 150 samples majority 89.3 % of the sample respondents were males (male-headed households) and 10.7 % were females and their total family size was 854. Of these 65 %, of the respondents were displaced farm households and 21 % were non-displaced farm households. The remaining 10 % and 4 % were from influential elders and municipality officials respectively.

Table 4.2: Age groups of sample respondents

Respondents	Age groups					
	29-38	39-48	49-58	59-68	69-78	Above 79
Displaced	2	21	38	25	3	1
Non-displaced	2	5	10	11	2	-
Influential elders	-	1	3	12	2	2
Officials	3	4	2	1	-	-
Total	7	31	53	49	7	3
	4.7	20.7	35.2	32.7	4.7	2

The age group structures of the respondent's, majority of them 35 % were aged between 49-58, 33 % were between 59-68 and about 20 % were between 39-48 age group structures. This means the majority were old farm households. As to the marital status of the respondents, majority 90 % of them were married and still they are. About 8.7 % respondents were divorced in different cases and the remaining 2 % were single or unmarried samples (in the municipality office).

Table 4.3: Educational level of the respondents

Respondents	Illiterate	Reed and write	Grade			Diplom a	Degree	MAs	Total
			1-4	5-8	9-12				
Displaced	25	34	26	5	-	-	-	-	90
Non-displaced	4	14	10	3	-	-	-	-	30
Influential's	8	9	2	1	-	-	-	-	20
Officials	-	-	-	1	3	3	2	1	10
Total	37	57	38	10	3	3	2	1	150
%	24.5%	38%	25.2	6.5	2	2	1.2	0.6	100

The above table (table 4.3) indicates the educational level of the sample respondents. Thus, majority 75.5 % of the respondents were literates (63% informal education and 12% formal education). Of them 38 % of these were simply able to read (written materials) and write (simple writing). Formerly there were illiterate before some 10 years but later they have trained (informal education) by some selective students in their districts on Saturday and Sunday. 24.5 % of the sample respondents' were illiterate households. Out of the 75.5 %, 25 % of the farm households were trained from grade 1 to 4th (1st cycle) and 6.5 % respondents were learned from grade 5th to 8th (2st cycle). The remaining official respondents (6 %) were educated from secondary school to MAs level.

4.2 Magnitude of the Expansion Problem in connection with displacement

There are many evidences that show the magnitude of the urban expansion related problem at the expense of farmer's agricultural farmland in relation with displacement of farmers, loss of livelihood sources and problem in implementation of procedural requirements during expropriation and compensation and the practices on the forms and process of compensation in Mekelle city (rural-urban fringe areas).

4.2.1 Displacement of farmers from their farmland

According to the available documented data from the city municipality and authorities, (like the municipality itself, industrial, educational, health and agricultural bureaus) were contributing in the process of expropriation of farmlands in the peri-urban area in the past 10 years, (2000-2010). The detail is indicated in the following table;

Table 4.4 shows that 90 farm households' (with their total family of 552) were displaced from their farmlands due to the urban expansion process between the years of 2000 to 2010. From the total displaced households 81(90%) and 9 (10%) were male and female headed households respectively.

Table 4.4: Number of displaced farmers and amount of expropriated farmland with compensate and no compensate (but subsidy only).

Authority	General information				N° of displaced farmers												Expropriated land (in hectare)			
	Households (HHs)			Total family size	With compensation								Without compensation (but subsidy only)				With compensation		With No compensation	Total
	Male (M)	Female (F)	Total (T)		In cash			Family	In kind			Family	HHs			Family	In cash	In kind		
					HHs				HHs				M	F	T					
					M	F	T	M	F	T	M	F								
Municipality	32	4	36	283	9	1	10	54	5	1	6	48	18	2	20	146	15.2	5.4	23.6	44.2
Industrial	23	3	26	121	10	1	11	71	2	1	3	19	11	1	12	54	6.5	2.4	12.8	21.7
Others	26	2	28	148	16	1	17	98	3	-	3	22	7	1	8	40	5.3	7.5	2.7	15.5
Total	81	9	90	552	35	3	38	223	10	2	12	89	36	4	40	240	27	15.3	39.1	81.4
%	90%	10%	100%	-	39%	3	42%	-	11%	2	13%	-	40%	5	45%	-	33.2	18.8	48%	100%

Source: sample respondents'

In the given time frame (2000-2010), 81.4 hectares of farmlands has been converted to urban land use from the selected 90 sample farm households in the peri-urban areas. Daylong (2004) strengthen that in developing countries in between 2000 and 2020, a total of approximately 10 million hectares of rural farmlands would be converting to urban land use. As a result huge number of farmers (farm families) will be displaced from their farmland and becoming vulnerable and food insecure.

As can be seen on table 4.4 from the total number of displaced farmers, only 38 (42%) and 12 (13%) households were paid compensate in cash and in kind (substitute of farmlands) respectively. While lack of standardized valuation and compensation methods and procedures are causing different valuation by different land taking agencies, resulting in different compensation values for similar land. Thus severely causes for the rises of compliances. Whereas a large number of 40 (45%) household farmers with their 240 families were displaced without or no regular compensate but with subsidy of small amount only.

This clearly shows that, the amount of land expropriated with compensation from the total farmland which were overtaken and converted to urban land use are only 27 and 15.3 hectares (33% and 19%) was expropriated with compensate in cash and in kind respectively, but 39.1 (48%) hectares was occupied with subsidy only. From the city experience and the analysis of the scholars, it is possible to understand that, the magnitude of the problem in connection to displacement of farmers in the peril-urban areas and their compensation system was going to becoming unfair and corrupted process.

4.2.2 Legal and Constitutional rights of displaced farmers

As indicated above (in table 4.4) almost half of the households (45%) were displaced and a large amount of farmland 39.1 hectare (48% of farmland) were expropriated without legal compensation (rather with subsidy only). Whereas, the property right classified under chapter (3) of the federal constitution which deals with the fundamental rights, according to 3 (1) provides that all federal and state level legislative, judicial and executive organs shall have the responsibility and duty to respect and enforce the provisions of this chapter. This indicates that property right is guaranteed not only by legislation but also by the supreme law of the land.

In addition to this, as per the federal constitution, the farmers have also full right of ownership (holding) over the improvements they bring about on the land by investing their capital, knowledge and labor. Furthermore, ownership of land is vested on the state while citizens have usufructs right over land. This may consider as private property. A usufruct right gives the user of the land the right to use the land and the right to benefit from the fruits of his/her labor. It may include crops, trees, houses etc. found on the land or only permanent improvements and works he/she brings about on the land by his/her labor efforts.

Any interference of usufructs right such as expropriation shall entail compensation (federal constitution, art. 40 (7&8)). Moreover, the constitution states that “all persons who have been displaced or whose livelihoods have been adversely affected as a result of state programs have the right to be commensurate monetary or any other alternative means of compensation, including relation with adequate state assistance “(Art, 44(2)).

The federal government has issued a new proclamation N^o 455/2005, the new proclamation also provides that a rural landholder whose landholding has been permanently expropriated shall be paid displacement compensation. This also strengthens the right of the farmers in the peri-urban areas who were displaced due to the spatial expansion of Mekelle city.

Nevertheless, these constitutional rights of farmers in the peri-urban area are not protected by the concerned bodies rather they were violating through closing the room for participation and denial of compensation system. This is a problem, in relation to the right to be compensated farmers who have been displaced or whose livelihoods have adversely affected as a result of farmlands expropriation.

4.3 Procedural Requirements and the experience during expropriation and compensate

As stated on various legal documents, there are many principles/procedural requirements to be followed during expropriation and compensation process. Nevertheless, Mekelle municipality and other federal and regional bureaus are seemed to miss and not practice these mandatory procedures (look at table 4.5).

Table 4.5: Level of participate and transparency during Expropriation plan and process.

Kebele	Participatory, transparent & fulfilling the legal procedures of expropriation				When did you Receive the informed about the expropriation of your farmland				The form of information you informed	
	Yes	Partially	No	Total	Before a year	Before 6 months	Before 3 months	At the time of expropri	Orally	Inform ally
Quiha	-	13	56	69	-	7	9	31	40	7
Aynalem	4	11	31	46	2	4	7	16	23	6
Adi-ha	3	3	19	25	-	1	4	9	14	-
Total	7	27	106	140	2	12	20	56	77	13
%	5	19	76	100	2.3	13.3	22.2	62.2	86	14

Table 4.5 depicts that the analysis of participation, transparency and fulfilled legal procedures and other related problems with expropriation. Out of the 140 farm households who gave their response 106 (76%) of them replied that the expropriation process was not participatory, transparent and did not fulfill the legal procedures-properly (as they have understand from their property right or ownership right). Only 27 (19%) replied that it was fulfilled partially the legal procedures of compensate and expropriate partially, but only 7 (5%) of them were satisfied by the process of expropriation.

With regard to transparency, out of 90 displaced farm households 56 (62.2%) were not notified in accordance with the law about the expropriation of their farmland in a reasonable time since they got the information at the time of expropriation, orally. As a result, they could not participate and express their opinion and views about the expropriation and compensation process. On the contrary, the Ethiopian legal system (1960 civil code) introduced that mandatory legal procurers to assure participatory and transparent process of expropriate and just compensation.

More specifically, article 1465 (1) provides that the declaration of public utility shall not be made until the public interests have been consulted. Sub article (2) also states that any interested party may in the course of such inquiry can express his/her view or criticize the complete projected. In addition to this, the law gives specific focus for the protection of the right of the owner (possessor) of the land to express their views on the necessity of the expropriation within a reasonable time fixed by the competent authority (Art. 1466 (3)).

Accordingly, the law gives due emphasis to transparency. As per article 1466 (2) the land owner (possessor) shall be personally notified of the completed expropriation furthermore, expropriation order shall be served on the owner concerned and on any person whose rights on the expropriated of immovable, land resources have been entered in the register of immovable.

In general the procedural requirements provided under the Ethiopian civil code which can be categorized in to steps also strengthen the fundamental rights which are recognized by the supreme law of the land.

The *first* step is, making public inquiry, it assures transparency and to consult the people on the importance of the project which constitutes expropriation. *Second*, the prospect (expansion of built up area) that renders expropriation necessary should be declared to serve the public interest by the competent authority. The *third* is, determining which the immovable resources requires to be expropriated. As to this step the owner (holders) and other interested parties must be notified individually by the competent authority. The *fourth* is issuance of the expropriation order. The *fifth* and the last are fixing the amount and payment of compensate in advance and then takeover any rights of the immovable by the authority.

Any person, whose interest is affected by the interference of the government in the ways of expropriation, should inform to the competent authority the amount of compensation he/she claims within one month from having been served. That is, when there is disagreement between the farmland holders and the competent authority, in the amount of compensation has to be fixed by arbitration appraisalment committee. The decision of the arbitration appraisalment committee is appealed to all (Ethiopian civil code, 1960th art. 1477). There procedural requirements are mandatory which must be followed and implemented by the competent authority.

However, the farmers who were displaced from the farmland due to spatial expansion of Mekelle city were not notified prior to acquisition and they did not participate in the expropriate process to express their views and exercise their rights provided under the law.

4.3.1. The practice on forms and process of compensation

There was inappropriate process of compensation in Mekelle city. Some of the defects were mentioned in the following table 4.6.

Table 4.6: Process of compensation

Kebele	Receive compensation 0.5 to 1 Birr per care meter (2000-2008)			Form of compensation		Governmental support to invest in value added		Is it Just compensatio n		Reasons for unjust compensation	
	Yes	No	Total	In cash	In kind	Yes	No	Yes	No	Low	√. low
Quiha	-	47	47	39 [•]	8	-	47	-	47	6	41
Aynalem	7	22	29	26 [•]	3	1	28	1	28	7	22
Adi-ha	5	9	14	13 [•]	1	2	12	1	13	3	11
Total	12	78	90	78 [•]	12	3	87	2	88	16	74
Percent	13.3	86.7	100	86.7 [•]	13.3	3.3	97.7	2.2	97.8	18	82

Note that: 78[•] (78-12) => 66 respondents were not received legal compensation but displaced with subsidy only (i.e. the maximum subsidy of 3,000 Birr).

As can be portrayed on table 4.6, the researcher tried to include farmers who were displaced from their farmland with compensations in cash (12) and in kind (12) and out of these (78-12 in cash) i.e. 66 respondents were not received the legal compensation rather small amount of subsidy only (i.e. to recover the costs they spent for compliance). From the farmers who received compensate in cash and in kind only 2 (2.2%) were satisfied with the amount of money they were compensated, whereas 88 (97.8%) of the respondents were not satisfied by the compensation system.

According to the response of the majority number of farmers 87 (97.8%), the compensation paid to them was not just. This is because the amount of the compensation and/or the substitution system was very low (82%) and low (18%) respectively. As to the compensation standards, the Tigray regional government regulation stipulates eight(8) times of the average annual output value in the three years times the average price of six month prior to requisition for these who receive compensation properly 12 (13.3%) of them whereas for the rest this is not practiced.

In many developing countries, the governments pay to farmers a compensation package of that includes different components. In china, for example, the compensation includes three components, these are compensation for the land itself, resettlement subsidies and compensation for improvements to the land and for crops growing on the requisitioned land. It is also stated in the literature that the local governments are permitted to pay the sum of resettlement subsidies and land compensation up to 30 times of the previous three years average output value on the acquired land (Treeger, 2004 and Daylong, 2004).

As Treeger (2004) pointed out further that in china, the population in a village where land will be acquired is divided in to three age groups. These are youth, adults and elders. The local governments then introduced social security fund for the elderly. They are also paid on the monthly basis rather than in lamp sum fashion. This is because they cannot add the value of the money and cannot be trained on it. While the younger and the adults are paid cash compensation. But the cash compensation for adults is double of the youth and, half of it is earmark for job training. Those youth and adults are compensating in the lamp sum fashion.

From this the researcher tends to conclude that, the Ethiopian governments' compensation package is very general, rarely implement and doesn't include different components of compensate system. The amount of money paid to the farmers is very low and the government did not give other alternative/supports such as job training, creation awareness to add the value of the money which they were compensated, and to build an entrepreneurship of the displaced farmers.

4.4 Impacts on farmers and changes on their livelihoods in the peri-urban area

As to the responses from respondent, document analysis as well as scholars' literatures; there are many effects/impacts of urban built-up area expansion to its periphery prime agricultural lands and farm communities. Among them the major once impacts are unjust expropriation, displacement of farmers, decline farmer incomes or loss of sources of their livelihood (such as assets and land holding size) and finally leads to conflicts and money spent for compliance.

4.4.1. Unjust expropriation

Expropriation has many positive as well as negative effects on farmers' livelihood in the peri-urban areas. Among the negative impacts are poverty, unemployment and vulnerability and food insecurity. The details are indicated in table 4.6 below.

Most of the displaced farmers lost about one hectare of their farm lands. From the farmers included in the sample, the large number (57.78%) have lost the whole amount (100%) of their farmland was expropriated, as a result (51.1%) of them were becoming totally unemployed. There are also different reasons for their unemployment. Among these no job opportunity to the farm households (34.4%), (30%) lack of the intended skill (training) and Age (29%) are the main problems for their unemployment in the peri-urban area of farm communities surrounding Mekelle city.

As pointed out by Dayong (2004) farmers have no more other sources of incomes other than their farmland. For this reason, many farm household (farmers) who has loss their farmlands were become totally unemployed. According to him, in most developing countries, there is no yet a social security system for farmers who are displaced from their farm lands.

Currently, from the displaced farmers included in the sample, 17 (19%) and 23 (25.5%) are permanent and temporarily working in governmental and/or non-governmental organizations respectively. On the contrary, 50 (55.5%) of them do not have any permanent source of income for their livelihood. Rather they are struggling /trying to survive by engaging in daily laborers with a minimum monthly income/wage.

Table 4.7: % of famers' expropriated farmland and employment situation

Kebele	Proportion (%) of expropriated land				Negative impacts			Employment situation			Reason for unemployment			
	50	75	100	Total	Unemployment	Poverty	Migration	Daily	Temporary	Permanent	Age	Sex	Skill	No job oppor
Quiha	6	9	32	47	24	20	3	30	11	6	13	2	12	20
Aynalem	8	12	9	29	12	15	2	12	10	7	7	3	11	8
Adi-ha	-	3	11	14	10	4	-	8	2	4	6	1	4	3
Total	14	24	52	90	46	39	5	50	23	17	26	6	27	31
%	15	27	58	100	51.1	43.3	5.6	55.5	25.5	19	29	6.6	30	34.4

On the other hand 27(30%) of the farm household respondents were become unemployed (with enough productive work force) due to the lack of intended skill of work. This means the government (municipality) doesn't matter to them other than compensation provision for the peasant farm household communities in the peri-urban areas of Mekelle city.

4.4.2. Displacement of farmers and its social negative impacts

As can be shown in table (4.7) below, the expansion of built-up area of urban center has many economic as well as social consequences which negatively influence the livelihoods of the displaced farmers in the peril-urban areas.

Table 4.8: migration and other social economic problems

Kebele	Migrated			Economic problems			Social problems	
	Yes	No	Total	Unemployment	Income loss	Costs	Security problem	Separate from Equib, Eider, Mahber and Relatives
Quiha	13	34	47	14	13	20	3	17
Aynalem	4	25	29	16	10	3	1	3
Adi-ha	3	11	14	7	4	3	1	2
Total	20	70	90	37	27	26	5	22
%	22	78	100	41	30	29	18.5	81.5

Table 4.8 indicate that, from the 90 displaced farmers induced in this study sample 20 (22%) farmers were displaced households who migrated to the nearby urban centers of Mekelle city (including Quiha and Aynalem). While, the majority 70 (78%) have not yet prefer to migrate.

As per the migrated farmers, there are also many economic as well as social problems faced following to the migration to nearby city, Accordingly from the 90 displaced sample farm households, 37 (41%) households are totally unemployed next year after their farmland was expropriated. 27 (30%) households sever from declining their yearly as well as monthly income to support their families livelihood supply. And the others 26 (29%) households are suffering from the increment of costs of living intended to survive urban way of life for different activates such as water, wood and food items unlike the rural-urban hinterland living style.

Moreover, out of the 27 (30%) displaced farm households who are migrated to the city, 22 (81.5%) households farmers are also suffering from social relationship problems. since they are far/separate from their relatives, Equib, Eider and Mahber as well as other social (cultural, traditional and religious practices) networks. Finally 5 (18.5%) households are also suffering from security problem in the urban life system.

The general result of the table shows that, the 27 (30%) of the farmers who were displaced from their farmlands were migrated to the nearby city center of Mekelle. This also causes for different economic as well as social life problems which were not common to them before their displacement and migration (when they were in the peri-urban areas).

4.5 Impact of expansion on the livelihood of farmers

Before analyzing the impact of the built up area expansion on livelihood of farmers: it is better to analyze and compare their previous economic status or sources of livelihood in addition to farming (i.e. before and after expropriation) of these farm communities.

4.5.1 Economic status of the displaced famers before expansion

Since rural livelihood is more depend on farmland products, analyzing farmers land holding pattern gets priority in this study. First, according to the built-up area expansion project/ plan and

to make the analysis is being easily understandable the three study sites can be divided into two sector sites i.e. Industrial sites (Quiah & Adi-ha) and residential site (Aynalem).

In the industrial site (Quiah & Adi-ha), there were 79.5 hectares of land holding under 61 selected sample households. In average each households had 1.3 hectares of land holding. The maximum amount of land for one household was 1.5 hectares. Four households had held the maximum amount of land for each in the sample. There was no land holding size of less than one hectare for a household. Many of the respondents (60%) had 1.3 hectares of land holding.

In residential site (Aynalem) there was a total of 41.8 hectare of land holding under 29 selected sample households. The average land holding size of one household was 1.5 hectares, and the maximum holding size was 1.8 hectares. Two households had held the maximum amount of land for each. No households had less than one hectare of land. Five farmers hold 1.8 hectares of land holding for each.

Analysis of farmer's assets such as domestic animals (livestock's), income and number of houses comes next to land holding analysis. There were 1118 domestic animals in the industrial sites (Quiah and Adiha) owned by 61 selected sample households. Among these, livestock were 685, poultries 306 and pack animals were 107. On average, a household has 11 livestock and 2 pack animals. The maximum number of livestock's owned by a household was 37 and pack animals were 12. One household had 37 livestock's and 7 households had 10 pack animals each. 10 households had no pack animals, No household had less than 3 livestock.

In the residential site (Aynalem), the total number of domestic animals owned by 29 selected sample households were 685, of these, livestock were 379, pack animals 98 and 208 poultries, on average, a households had 13, livestock and 3 pack animals. The maximum number of pack animals owned by a household was 8. Two households had 13 livestock each and one household had 8 pack animals. The minimum number of livestock owned by a household was 3. 3 households had no pack animals.

The income data of the respondents in the industrial site shows that 16 farmers had earned less than 50 birr per month. 28 Respondents had earned 51 to 150 birr per month. Respondents who

earn 151 to 250 birr per month were 10. Other 5 respondents were also earned 201-350. The remaining 2 respondents had earned more than 351 birr per month. 400 birr per month was the maximum amount of income earned per month, where as 50 birr was the minimum amount of monthly income earned by the farmers per month.

In residential site, 2 respondents had earned 50 to 150 birr per month. The majority of the 23 households (79.3%) had earned 151 to 250 birr per month. Three respondents had earned 251 to 350 birr per month. The remaining one household has earned more than 351 birr per month. 380 birr per month was the maximum amount of monthly income earned by a household per month and the minimum amount of monthly income earned by one household per month was 50 birr. To generalize, farmers in the residential site were richer (earn higher income) than farmers in the industrial site before land expropriation.

4.5.2 Impact of Expansion on assets/livelihood sources of the farmers a comparative analysis pre and post expropriation

4.5.2.1. Impact on land holding

The revised plan of the town shows that it involved/provided land for urban use from the surrounding rural fringe areas. Implementation of the plan involves the unification of the three semi-rural districts to urban municipality unit, and has following by expropriation of the farmlands and grazing areas from the farm community.

Table 4.9: Impact of urban expansion on land holding

Study site	Respondents land holding pattern (in hectare)							
	Before expropriation				After expropriation			
	Total	Maximum	Average	Minimum	Total	maximum	Average	Minimum
Industrial site	79.5	1.5	1.3	1.0	25.4	0.50	0.41	-
Residential site	41.8	1.8	1.5	1.0	14.5	0.62	0.50	-
Total holding	121.3	-	-	-	39.9	-	-	-

The built up area expansion program resulted to loss of 54.1 hectare of land from 61 selected sample holds from industrial site. The total land holding site left for 61 holdings is only 25.4 hectares. Following this, the average land holding size of a household has declined from 1.3 to 0.3 hectare per household. This means, on average one household has lost 0.9 hectare of land per household. The maximum land holding size has also declined by 90%. All of the total respondents were left with less than 1 hectare of land holding.

In the residential site, 29 selected sample households lost a total of 27.3 hectares of land and were left with 14.5 hectares. The total holding size has declined by 80%. The average holding size of one household in average has lost 1.3 hectare per household (80% of the previous holding) of farmland, because of the urban physical built-up area expansion process. The maximum land holding size has declined to 0.62 hectare and the minimum also has declined by 1 hectare (100%). Majority of the respondents (80%) are left with 0.4 hectare of land per household.

The total land holding size in the industrial site was declined by 80 %. The percentage change shows that more land was expropriated from residential site. In average, the residential site farmers lost more than the industrial site farmers. The reason for such an equal expropriation of land was the nature landscape to attract the urban expansion plan suitable for residential expansion. In the residential site, all farmers lost all of their grazing and farmlands and left with only their home compound there are totally engulfed by the urban expansion process of the city.

4.5.2.2. Impact of livelihood source of incomes

Urban physical and/or horizontal built up area expansion did not immediately/directly affect the income of the farmers in the peri-urban area rather affected it by affecting their sources of incomes. For majority 62 (69%) of the respondent, farming was the first and the most one source of their income and all over their livelihoods depend on it before expansion. Farm activities and their outputs are very dependent on the availability and size of farmland. This means if there is no enough farmland to be cultivate there will be no farm & farm related items & sources of incomes for livelihoods food support in the peri-urban communities.

Table 4.10: Comparative analysis of livelihood source of incomes pre and post expropriation

Additional sources of livelihood other than your farmland cultivation	Before expropriation		What are your alternative sources of livelihood/income	After expropriation	
	Households			Households	
	In N ^o	In percent		In N ^o	In percent
Cattle merchant	12	13.3	Owen Farmland	10	11
Dairy farming	9	10	Dairy farming	8	9
Salt trader (Arhotay)	8	9	Employed/guarding	15	16.7
Camel merchant	7	7.7	Market shop	9	10
Bee farming	6	6.6	Farmland rent	5	5.6
Daily laborer	4	4.4	Daily laborer	18	20
Nothing	28	31	Nothing	10	11
Others	16	18	Others	15	16.7
Total	90	100	Total	90	100

When a comparative analysis is made, one can easily found that differences among the real income of the farm household before & after the displacement and expropriation from their farmland. Thus, as can be see in table 4.10, majority (69%) of the farm household respondents confirm that they have alternative/additional source of incomes (i.e. agriculture related activities) other than farmland cultivation before expropriation. But as their farmland was expropriated and due to encroachment of urban territories take place, these alternative sources of livelihoods were loosed. These were cattle merchants (13.3%); dairy farming (10%), salt trader (Arhotay) (9%), Camel merchant (7.7%), bee farming (6.6%) and others (18%) were among the additional sources of farm livelihood before expropriation.

After expropriation almost all of the additional livelihoods sources were loss /changed as their farmlands were expropriated. Thus most of the farm livelihood was already join to semi-urban life i.e. almost all farm households were out of the rural life of farm cultivation rather they were depends more of to the capital cash flow in the market system. But farmers have not enough and intended experiences, skills and knowledge of urban work types. Some of the previous

alternative livelihood sources of incomes were continued even after the expropriation process such as, dairy farming (9%), daily laborer (20%), Own farmland (11%) and farmland renting (5.6%). But farmers still try to survive their livelihood sources through different new (for them) alternative work types or activities. Among these employed in different GOs and NGOs (mostly guarding), market shopping, brokers and other related activities were current farmers' sources of livelihood incomes. Although those sources of income were available, if there is small change in the market system, the first most vulnerable was these farmers.

The displaced farmers were mostly producing cereals and once a year. As can be seen on the table, the productivity potential was on average 20 quintals per hectare. During the expropriation period, the monetary value of the production was 6,000 birr per hectare (20 quintals times 300 birr = 6000 birr per hectare) but currently, almost all the displaced farmers are unemployed. They do not have permanent source of income. Although currently their income seems too high i.e. on average of 35 birr per day per households; but the purchasing power of the money is not half of that time.

Table 4.11: Comparative analysis of current real income and the incomes from the expropriated farmland

Kebeles	Example: Local Wheat (red) Predictability per hectare (in quintal) per year			Monetary value during expropriation		Current real income per day (in Birr)			Current income compared with the farmland's	
	High	Low	Average	Per quintal	Per hectare	High	Low	Average	Low	V. low
Quiha	30	10	20	300	6000	50	20	35	9	38
Aynalem	30	10	20	300	6000	50	20	35	4	18
Adi-ha	30	10	20	300	6000	50	20	35	4	10
Total									24	66
%									26.67	73.34

According to them, lack of farmland for cultivation, loss of grazing lands (for livestock farming) and lack of job or regular income are the main reasons for the decline their of sources/income of livelihood. Out of the 61 respondents from industrial site 68.8% households confirms that the reason for the decline of their livelihood income are lack of farm and grazing lands, out of the 29 respondents from the residential site 44.8% households confirms that the reason for the decline of their livelihood income is lack of farm land.

Table 4.12: Reason for the decline of livelihood sources of income

Kebeles	Reasons		
	No job	No farmland /grazing land	No regular income
Quiha	12	32	3
Aynalem	9	13	7
Adi-ha	3	10	1
Total	24	55	11
%	26.7	61.1	12.2

24.6% of the 61 respondents from industrial site and 31% of the 29 respondents from residential site have attributed absence of job for the decline of their income. The 24% of the 29 respondents from residential site and 6.6% of the 61 respondents from the industrial site reasoned out that, lack of regular income for the decline of their livelihood sources of income.

4.6 Conflict and money spent for complaining process:

There is a conflict between the municipality and the farmers who were displaced from their farmland with and without compensation the displaced farmers have complained as a result they have been complaining to different levels of government administration. The details are mentioned in the following tables.

As have seen on the (Table 4.1 page 40) 81.4 hectares of farmland which was possessed by 90 farmers way converted to urban land use. Table 4.10 also shows that from the 90 displaced farmers included in the sample 61.1 % were applying compliant to different level of governmental offices by their representatives for about 3-5 years (between 2000-2010).

Table 4.13: farmers' frequency of complaining

Study sites	Having arise a compliance on expropriation			Frequency of complaining to different levels of government on average (2000-2010)							
	Yes	No	Total	City government		Zone government		Regional government		Federal government	
				Per year	Total	Per year	Total	Per year	Total	Per year	Total
Quiha	40	7	47	2	6	1	3	1	1	-	-
Aynalem	11	18	29	2	4	1	2	-	-	-	-
Adi-ha	4	10	14	1	2	1	1	-	-	-	-
Average	-			2	4	1	2	1	1	-	-
Frequenc	-			2	12	1	6	1	1	-	-

Table 4.13 also indicates that the frequencies of complaining on average where 3 times per year to the city government (municipality) similarly 2 and 1 times to southern zone administration of (Maychew city) and Tigray regional government bureau respectively. However none of these governmental administrations have addressed/responsible to listen the compliant of the displaced farmers and are still on problem and continuity complaining.

In similar case Kanji (2008) pointed out that in many African countries, the transferring of farmland from rural to urban land use is increasing from time to time through land acquisition such kind of transfer has been the causes of raising a number of land conflicts and compliances. In Mekelle the municipality has taken large farmland from its hinter land to urban use every year. As a result the farmers who have not satisfied with the expropriation and compensation process have been complaining through administrative proceedings but they are not successful so far.

Table 4.14: Amount of money spent for the complaining process

Kebeles	Amount of money spent for the complaining process per individual						
	Money spent			Per year (in birr)			Total money spent between (2000-2010)
	Yes	No	Total	Highest	lower	average	
Quiha	38	9	61	200	80	140	580
Aynalem	19	10	14	200	80	140	580
Adi-ha	10	4	29	200	80	140	580
Total	67	23	10	-	-	-	-
%	74.4	25.6	100	-	-	-	-

The displaced farmers because of the urban expansion process of the city; were losing their working time and financial resources to the complaining process, i.e. for transport costs and other services of the representatives. Each displaced farmers was contributing on average of 140 birr per year. Thus, a household spent 140 birr per year for some 2 to 3 years. In addition to this the displaced farmers specially the representatives are losing their working time to apply complains to different levels of government. Thus aggravates the economic problems of the displaced formers.

4.7 Farmers’ problems to adopt urban way of life

Farmers have mentioned many problems that they faced while they are struggling to adopt urban way of life lack of knowledge to use their compensated money lack of follow up from the concerned organization and lack of intended skill of work are among the major problems which farmers faced in adopting urban ways of life.

Out of the total 61 sample respondents from industrial sit 10% answers that lack of knowledge how to utilize effectively properly their money is the problem that they faced to adopt urban way of life, 26% of the respondents from residential sit have also faced the same problem out of the total respondent from residential site, 34% said that lack of follow-up from the concerned

organization (urban agriculture micro finance and other concerned bodies) is us the problem that they faced to adopt urban ways of life.

Table 4.15: Problems those formers faced to adopt urban life

Problems	Kebeles/sites					
	Industrial site				Residential site	
	Quiha	Adi-ha	Total	%	Aynalem	%
Lack of money use knowledge	8	2	10	16	9	28
Lack of follow-up organization	22	6	28	46	10	34
Lack of skill knowledge	10	4	14	22	6	21
No problem	7	2	9	15	5	17
Total	47	14	61	100	29	100

Similarly, from the industrial site 46% said that lack of follow up from the concerned body /organization is a problem they have forced while they are struggling to adopt urban way of life 20% respondents from industrial and 21% from residential sites are those who answer lack of intended work skill and knowledge as a main problem they have faced to adopt urban ways of life. The remaining 15% from industrial and 18% from residential sites do not have faced with such problems to adopt urban economic activities.

Key informants of the municipality also confirmed that there was lack of follow-up from the concerned governmental organization /office. They realize this as their failure.

In order to tackle this problem, the municipality has intended to mobilize the farmer with their resource it plane to organized farmers based on their interests in different local cooperatives have also planned to finance formers who finished they money in a short period of time (by consuming or other reason).

4.8 Means of survival and job accessible

From the residential site 30% of the total respondents and 56% from industrial site have out of farming (have not farmland at all) for the proceeded 12 months after their land was expropriated. Out of the remaining (52%) respondents, 44% from the industrial and 70% from residential site

who were engaged on agricultural activities for the preceding 12 months after their farmland was expropriated. Among those who did not work for the preceding 12 months after expropriation, 7% respondents from residential and 10% from industrial site were used the compensation for direct self consumption. Only 10% from industrial sit relied on remittance and 10% of the respondents were engaged on firewood carrying/trading (table 4.15).

Table 4.16: Means of livelihood for preceeded 12 months after expropriation

Means of livelihood for 12 months after expropriation	Residential site		Industrial site	
	Farmers	%	farmers	%
Agricultural	20	70	27	44
Non agricultural	7	24	16	26
Consuming money compensated	2	7	6	10
Remittances	-	-	6	10
Fire wood carrying	-	-	6	10
Total	29	100	61	100

After land expropriation except half of them from the industrial site respondents have departed from agricultural practice. Majority of the residential site respondents are still engaged in agricultural activities

Following the land expropriation, in both sites getting job for the farmer was become difficult. According to the formers response working as daily laborer guard traditional drink house and Irrigation production trading (from the remaining farmland) are among the works which are easily accessible to them. As can shown in table 4.17 out of the total respondents from industrial site daily laborer is easily accessible ob type for 16 respondents traditional drink is easily accessible ob opportunity for the most 5 women’s respondents 16 respondents said guarding is easily accessible job type for them.

Table 4.17: Easily accessible job for farmers after expropriation

Easily accessible job type	Study sites			
	Industrial site		Residential site	
	farmers	%	Farmers	%
Daily labor	16	26.2	6	10.7
Guarding	16	26.2	10	34.5
Irrigation	12	19.7	6	27.6
Local drink	5	8.2	1	3.4
No job at all	12	19.7	4	13.8
Total	61	100	29	100

Daily labor and local drink are easily accessible jobs for 6 and 1 residential site respectively for the majority of 10 respondents respond from residential site guarding is most easily accessible job where as for 8 respondents and 8 respondents from industrial and residential were engaged in small irrigation of fruits and vegetables. The remaining 3 have not yet job at all.

4.8.1. Farmers' means of coping Mechanisms

The loss of arable farmland leads farmers' to change their livelihood strategies from agricultural farming practice to semi and/or non – agricultural livelihood strategy. The situation in the industrial site is a bit different from that of residential site. In the residential site, since their small irrigation land has not yet been totally expropriated, farming activities are not high interrupted. In industrial (Qui ha) site, farmers become totally urbanized and as a result, they total depart from agriculture.

From table 4.18 in residential site, out of the total 29 respondents 6 (20.7%) are totally engaged as daily laborers. 2 (7%) respondents are rented their extra houses for others, 7 (24%) respondents has living with farming by renting land from farmers living in other place. Others 5 (17%) respondents employed in governmental organizations and/or non-governmental organizations. The remaining 9 respondents are also engaged on trade and other activities that help to support their livelihood strategy with the new urban life.

Respondents of farmers from industrial site indicate that majority of them 18 (29.5%) respond they are engaged as daily laborers and 12 (16.6%) respondents engaged on trade related activities. Other 11 (18%) respondents were employed as guarding in governmental and/or in NGOs (non-governmental organizations). Still other 9 (14%) and 6 (9.8%) respondent survive their livelihood supply through rented their houses for other urban dwellers came from different areas and others engaged on another activities as urban life style. The remaining 4 (6.5%) respondents are still doing nothing and are losing their compensated money by direct consumption for about three to four months only.

From my personal observation, there are many female households who are engaged in Traditional or local drink in the industrial site. Almost all farmers have constructed additional rooms for renting in residential site.

Table 4.18: farmers' means of coping Mechanisms

Coping Mechanisms	Industrial site				Residential site	
	Quiha	Adi-ha			Aynalem	
	Farmers	Farmers	Total	%	farmers	%
Daily laborer	14	4	18	29.5	6	20.7
Farming (rent)	2	-	2	3	7	24.1
Guarding (employed)	8	3	11	18	5	17.2
House renting	6	-	6	9.8	2	7
Consuming compensation	3	1	4	6.5	-	-
Trade activities	8	4	12	16.6	4	13.8
Others	6	3	9	14	5	17.2
Total	47	14	61	100	29	100

Though there farmers are struggling to recover/ survive from the shock (due to loss of their assets), majority of them are not satisfied with their current livelihood strategy. Out of the total respondents from residential site, 5% are among those who are satisfied with their current livelihood strategy (Table 4.5).

Chapter five

Summary, Conclusion and Recommendation

5.1 Summary

The main rationale for conducting research on the impacts of the built – up area expansion on the farmers livelihood in the peri-urban area was to find out the realities and best possible fit between the procedural requirements of the farmland expropriation and compensation with what is practically happening when dozens of farmers and farm communities are displaced from their source of livelihood (i.e. farmland).

Thus, this study was intended to investigate the major causes of urban expansion (in the literature), the negative and positive consequences of urban expansion on farmers live in the peri-urban areas, and the problems regarding with the expropriation and compensation process from the perspectives of legal and democratic rights of the displaced farmers. To this end, the following leading questions were formulated:

1. What are / were/ the major causes of urban expansion?
2. Are the mandatory legal procedures of the farmland expropriation and compensation process of the Ethiopian laws implemented in participatory and transparent manner while farmers are displaced from their farmlands (source of their livelihood) because of the urban expansion process?
3. What are the major impacts of the built up area expansion on the farmers' livelihood sources and their coping mechanisms to survive a life without a farmland (urban life).

In order to answer these basic and other questions, the researcher was used both quantitative (more) and qualitative research methods. The sampling techniques employed in this study were multistage sampling method i.e. includes systematic sampling technique, quota sampling technique and purposive sampling technique. To gather the required data/information: questionnaires, document analysis, interviews and focus group discussions were held /used. Review of relate literature was also conducted on topics in relation to the impacts of the built- up area expansion and the procedural requirements during the expropriation and compensation

process. All the secured/gathered information was tabulated, converted in to percentile, analyzed, interpreted and discussed.

The major findings of the research paper reveal that dozens of farmers were displaced from their farmland without legal compensation while very wide/large farmlands were expropriated but still vacant. The displaced farmers have been suffered, from different socio-economic problems such as migration, separation from their social organizations, unemployment and poverty as well as conflict with the municipality. This implies, even though they have their own limitations (problems), the legal procedures of the country are gathering dusts on the shelf instead of being practical on the real ground work.

5.2 Conclusion

After the data were gathered and analyzed, the researcher has arrived at the following conclusions.

Farmers in the peri-urban areas cannot exercise their rights nor could they discharge their obligations. As a result large number 90 of farmers with their 552 families were displaced without legal compensation. This is because the farmers in the peri-urban area do not have adequate knowledge about their rights provided under the law. Similarly the municipality, city administration, public sectors at the regional level and utility companies could not uphold and enforce land laws and regulations properly.

Although there was a large farmland was expropriated in the peri-urban areas from the farm households, still about 20 hectares of land were vacant (i.e. Staying for investors to be come and invest there). Thus, as to the economic use of land analysis, it results negative profit both to the farmers (who do not compensate properly), municipality as well as the overall regional development. While a dozens of farmers were suffering from loss of cultivable farmland.

The negative aspect of rural land taking by federal, regional agencies and municipality is that, the displaced farmers do not get another alternative piece of land to farm or business of room to invest. For this reason they faced difficulties in starting a new urban livelihood because this is the only skill they have on farming work. In addition to this mechanisms are not in a place to

provide them with social and financial management advice and train them in new livelihoods and skills. As a result most evicts squander the compensation they receive because they do not know what to do with it.

Though Mekelle Municipality has given compensation for few displaced farmers, most of them (95%) were not satisfied with the expropriation and compensation process. As a result, they have been complaining to different levels of the governments by nominating representatives together with those farmers who have not got compensations legally.

The mandatory legal procedures and measures which could be exercised during the expropriation and compensation process do not seem to have been practiced before and during the displacement of farmers. Consequently, many displaced farmers with their families have faced intricate economic and social problems.

Most of the farmers who are expected to be displaced in the near future are in fear of displacement even with compensation and substitution. This is because both the compensation in cash and substitution of land (not farmland) were not just, transparent and participatory in the past. Moreover, they know that there are dozens of farmers who were displaced from their farmlands without legal compensation (but small subsidy only) and substitution against to the Ethiopian legal system. This implies that the municipality will face serious challenges in acquiring land from peri-urban areas.

5.3 Recommendation

In the light of the discussions and findings of the study, it is possible to suggest the following recommendations.

The municipality should compensate the displaced farmers based on the monetary value of their product during the expropriation period and pay bank interest starting from the time of their displacement from their farmlands.

The municipality should build its capacity and employ professionals by modifying the existing structure or level with the woreda administration and Tigray regional development and construction Bureau. In addition to these, it should seek on job training programs for its staff and apply modern technology to manage the land resources in the rural-urban fringe areas properly.

The municipality should, in order to give fair, legal and just compensation not only for the displaced farmers but also for those who will be displaced, raise its financial capacity through efficient and effective revenue collection and expenditure management. It should also strengthen its human and non-human capacities to assure proper implementation of law especially in relation to expropriation and land use management in the city.

The city administration should make profound discussion with the rural woreda (Enderta woreda) administration units to alleviate the economic and socio-cultural problems of the displaced farmers who are living in the rural – urban fringe areas, so that rate of migration and compliant will minimize.

It is evident that urban centers interact with their surrounding rural areas economically, socially and administratively. Having this in mind, there should be positive and mutual relationship between these areas. Therefore, when there is an urban expansion to the rural-urban areas, it should will be fair, transparent and participatory and follow the legal systems of the country and international law in tune with the best experiences of other countries.

Good governance and stability appear to be hardly possible unless these farmers who were displaced without compensations and with unjust compensation have got positive (frolic) response based on the mandatory legal procedures stated in various Ethiopian laws. Therefore, the city administration and the municipality as well as any other concerned body should take immediate measure based on the Ethiopian legal process. This is because farmers have no more other alternative income sources other than their prime farmlands.

The federal and the regional governments should review the laws which were adopted in relation to expropriation and update the packages and amount of compensation to be paid for the displaced farmers in turn with the best experiences of other countries. In general the issue of compensation should address the four questions;

- i) What to compensate for?
- ii) How to compensate?
- iii) When to compensate? And,
- iv) How much to compensate?

The city administration and the municipality in collaboration with non-governmental organizations, in order to build the capacity of the displaced farmers to add the value of the money which they have compensated, should provide relevant skill trainings and other facilities such as providing working opportunities, land for residence and credit with a reasonable interest rate and time. This also needs serious attention by both the federal and regional governments. Otherwise they may loss their money within a short period of time unless the awareness has been created through these mechanisms.

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Declaration

This thesis is my original work and has not been presented for a degree in any university and organization and that all the sources of the material used for this thesis has been duly acknowledged.

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